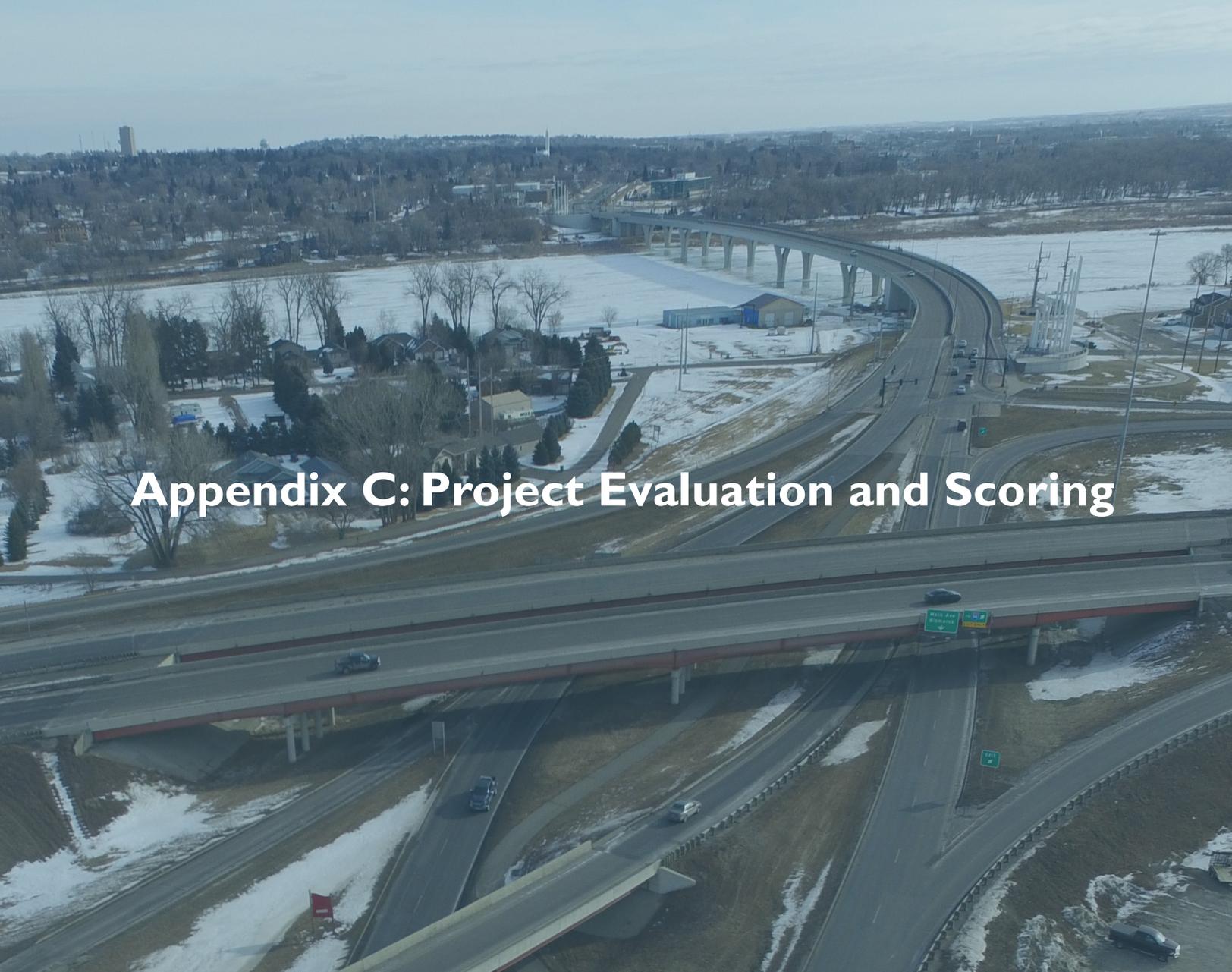


Bismarck-Mandan **Metropolitan Transportation Plan**

APPENDIX B: PROJECT EVALUATION AND
SCORING





Appendix C: Project Evaluation and Scoring

Bismarck-Mandan Metropolitan Transportation Plan

December 2019



PROJECT EVALUATION & SCORING

The following methods were developed to score and assist with the ranking of the potential universe of projects for the Arrive 2045 Bismarck-Mandan Metropolitan Transportation Plan (MTP).

It is important to note this process only scored and evaluated projects for the purposes of assisting project prioritization. The scoring and technical ranking does not represent the actual prioritized order in which projects will be prioritized by Arrive 2045 and then by the development of the Bismarck-Mandan Transportation Improvement Program (TIP). Final project prioritization is driven by technical scoring but is also influenced both financial and political inputs.

PRIORITY ANALYSIS SCORING

A range of four scoring scenarios was developed to initially technical rank and score projects.

SCENARIO #1 - RAW TECHNICAL SCORE

The full universe of projects reviewed by the Steering Committee (SC) was evaluated based on the Scoring Metric Objectives (SMOs) developed as part of the overall Goals, Objectives and Performances Measures. SMO's were those objectives which were determined to have the most relevant to scoring technical merits of projects. Raw scoring per the SMOs is shown on the attached scoring spreadsheet.

Scenario 1 outputs simply provide a raw score of how each project ranks technically. This output is absent any other variables. Total available points for any given project would be 45.

SCENARIO #2 - GOAL WEIGHTED COMPOSITE SCORE

Based on both public input and Steering Committee input, each of the seven (7) goals established for Arrive 2045 were given a prioritization weight. Scenario 2 used Scenario 1 - Raw Technical Scores and added the weighted scoring as follows for relevant SMOs:

- » Safety & Security: Weight by 4.5 multiplier
- » Infrastructure Conditions: Wight by 5.0 multiplier
- » Congestion Reduction: Weight by 3.6 multiplier
- » System Reliability: Weight by a 2.3 multiplier
- » Reduce Project Delays: Weight by a 1.2 multiplier

Scenario 2 outputs reflect both a raw technical score of each project and then a relative weighting for each of the SMOs. Total available points for any given project would be 166.5.

SCENARIO #3 - WEIGHTED SCORE + PUBLIC PRIORITY

Scenario 3 was developed to add scoring to reflect public input gathered as part of the first round of public input. Scenario 3 adds a bonus for projects which were identified as a public priority/desire during the Futures Summits conducted in the fall of 2018. Two potential bonuses were given for a project identified as a public priority:

- » Bonus #1 - If a corridor segment, interchange, grade separation or intersection was identified by the public it received an additional 10 percent bonus of the total available points after initial weighting per scenario #2, or an additional 16.5 points.
- » Bonus #2 - If a project was also part of the top 3 intersections, grade separations, interchanges, or corridors it received an additional bonus of 10 percent, or additional 16.5 points. Thus, some projects would get a 20 percent boost in points.

Scenario 3 reinforces projects already scoring high based on raw and weighted technical criteria. Scenario 3 also serves to add value to capacity orientated project identified by the public which may not currently score high on existing technical scoring needs. Scenario 3 serves to also create separation between logical and potentially illogical capacity/expansion projects.

After Scenario 3 scoring the total available points for any given project would be 199.8 points.

SCENARIO #4: TECHNICAL SCORING + GOAL WEIGHTED + PUBLIC INPUT + MACRO CLUSTER ANALYSIS

Scenario 4 added a 10 percent scoring bonus to individual project components of the top four (4) project clusters evaluated as part of an Macro Level Analysis completed for Arrive 2045. Those included the following:

- » South Mandan Arterial
- » West Mandan Interchange
- » Northern Bridge Corridor
- » NE Bismarck (assume full interchange)

Because each of these clusters are regionally significant, Scenario 4 will further allow projects of regional significance to further stratify themselves. The bonus points were added to the component parts of each project cluster. This bonus was not added to project components of the Transportation System Management and Operations Project Cluster given that these projects all scored very high as part of the Scenario 1 and 2.

Total available points for any given project following Scenario 4 scoring would be 216.45 points.

PROJECT PHASING

To assist the process of developing a program of determining a projects relative timing or need, the full universe of projects was scored based on a couple inputs. First, using E+C Level of Service (LOS) for 2015, 2030 and 2045. A relative need value was given to projects on corridors with an LOS of D, E or F in either of the three models. Secondly, additional analysis was done based on projected changes in TAZ growth for overall study area to add some significance of need to projects with in projected growth areas.

Finally, connectivity and relative adjacency (sequencing) approach was used to generally smooth projects into a relative time band of need. For example, the final segment of 43rd Avenue (Project 81) was scored as a high need given the adjacent improvements along the corridor, etc.

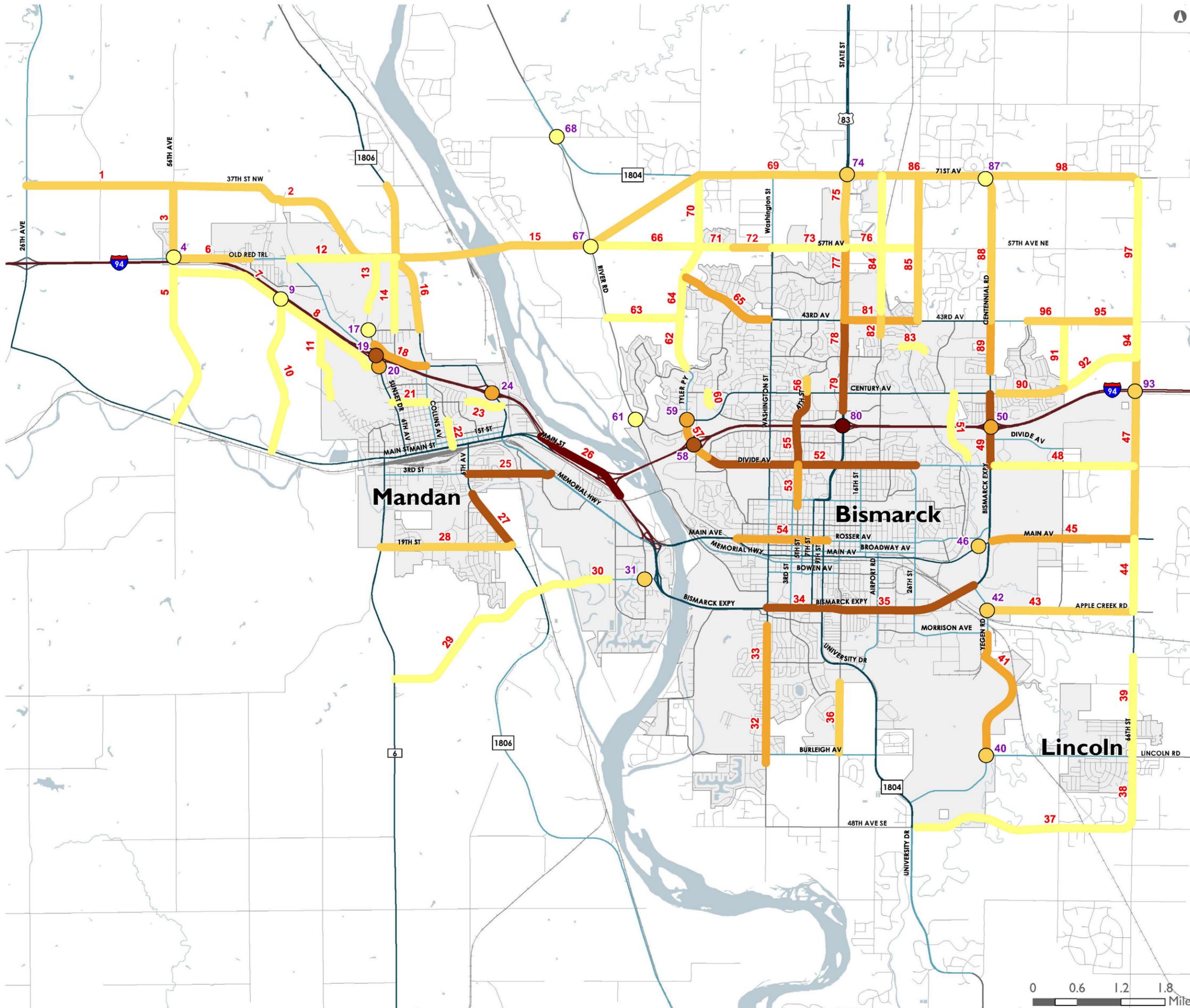
SUMMARY

Based on guidance from the SCM, Scenario 4 was used to support development of the Arrive 2045 MTP. Overall projects scores from each scenario for each project are attached.

ID	Scenario 1	Scenario 2	Scenario 3	Scenario 4
1	16	58.50	75.15	91.80
2	16	58.50	75.15	91.80
3	19	72.90	89.55	89.55
4	13	51.30	67.95	67.95
5	15	54.90	71.55	88.20
6	20	82.10	98.75	98.75
7	9	33.30	49.95	66.60
8	9	33.30	49.95	66.60
9	12	42.80	42.80	42.80
10	10	36.90	36.90	36.90
11	13	47.70	47.70	47.70
12	13	47.70	47.70	47.70
13	10	36.90	53.55	53.55
14	13	47.70	64.35	64.35
15	18	67.50	84.15	100.80
16	16	56.60	73.25	73.25
17	11	42.30	58.95	58.95
18	24	83.60	83.60	83.60
19	29	111.10	127.75	127.75
20	22	74.80	74.80	74.80
21	14	54.50	54.50	54.50
22	13	53.30	53.30	53.30
23	11	40.50	57.15	57.15
24	23	86.30	86.30	86.30
25	28	100.70	117.35	117.35
26	34	126.30	142.95	142.95
27	28	86.70	103.35	120.00
28	18	66.90	83.55	83.55
29	9	33.30	33.30	49.95
30	9	33.30	49.95	66.60
31	17	69.50	69.50	69.50
32	22	82.90	99.55	99.55
33	23	89.20	89.20	89.20
34	29	106.40	106.40	106.40
35	27	99.70	99.70	99.70
36	17	62.10	62.10	62.10
37	14	51.30	51.30	51.30
38	13	47.70	64.35	64.35
39	14	53.10	86.40	86.40
40	16	60.80	77.45	77.45
41	21	81.60	81.60	81.60
42	17	62.60	79.25	79.25

ID	Scenario 1	Scenario 2	Scenario 3	Scenario 4
43	18	65.70	82.35	82.35
44	13	49.50	66.15	66.15
45	23	84.70	84.70	84.70
46	20	73.70	73.70	73.70
47	16	60.30	93.60	110.25
48	15	56.70	73.35	73.35
49	27	101.10	101.10	101.10
50	25	91.10	107.75	107.75
51	9	33.30	33.30	33.30
52	28	99.60	99.60	99.60
53	23	84.00	84.00	84.00
54	24	91.50	91.50	91.50
55	27	102.50	102.50	102.50
56	17	65.70	65.70	65.70
57	24	86.60	86.60	86.60
58	28	101.90	118.55	118.55
59	22	78.50	78.50	78.50
60	9	33.30	33.30	33.30
61	15	58.20	74.85	74.85
62	9	33.30	49.95	49.95
63	13	47.70	47.70	47.70
64	9	33.30	33.30	33.30
65	21	83.30	99.95	99.95
66	13	47.70	64.35	64.35
67	9	33.30	49.95	66.60
68	12	42.80	42.80	42.80
69	19	69.80	86.45	86.45
70	13	47.70	64.35	64.35
71	13	47.70	47.70	47.70
72	16	58.50	58.50	58.50
73	12	44.10	60.75	60.75
74	16	58.10	91.40	91.40
75	17	61.70	78.35	78.35
76	13	47.70	47.70	47.70
77	24	91.40	124.70	124.70
78	28	107.30	140.60	140.60
79	29	111.10	127.75	127.75
80	34	130.50	147.15	147.15
81	23	87.80	87.80	87.80
82	20	72.70	89.35	89.35
83	11	40.50	40.50	40.50
84	11	40.50	40.50	40.50

ID	Scenario 1	Scenario 2	Scenario 3	Scenario 4
85	17	62.10	78.75	78.75
86	18	67.50	84.15	84.15
87	14	51.30	84.60	101.25
88	18	67.50	84.15	100.80
89	22	79.30	95.95	95.95
90	19	74.00	90.65	107.30
91	13	47.70	47.70	47.70
92	9	33.30	49.95	66.60
93	17	64.40	97.70	114.35
94	14	51.30	67.95	84.60
95	16	58.50	75.15	91.80
96	16	58.50	75.15	91.80
97	13	47.70	64.35	81.00
98	16	58.50	75.15	91.80



Priority Scenario #1 Raw Technical Score

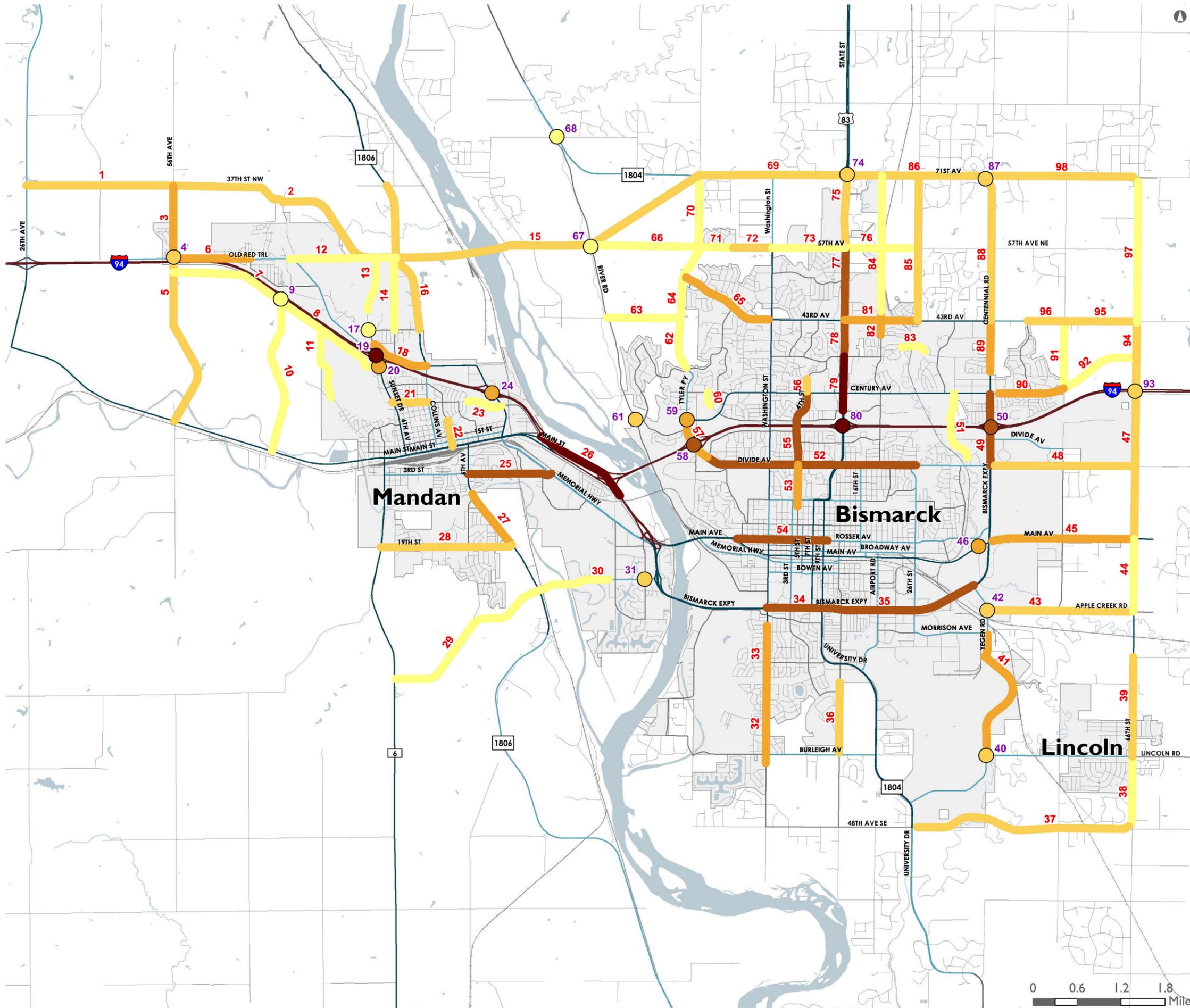
- Up to 15
- 16 - 20
- 21 - 25
- 26 - 30
- 30+



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Priority Scenario #2 Technical Score + Goal Weighted Composite

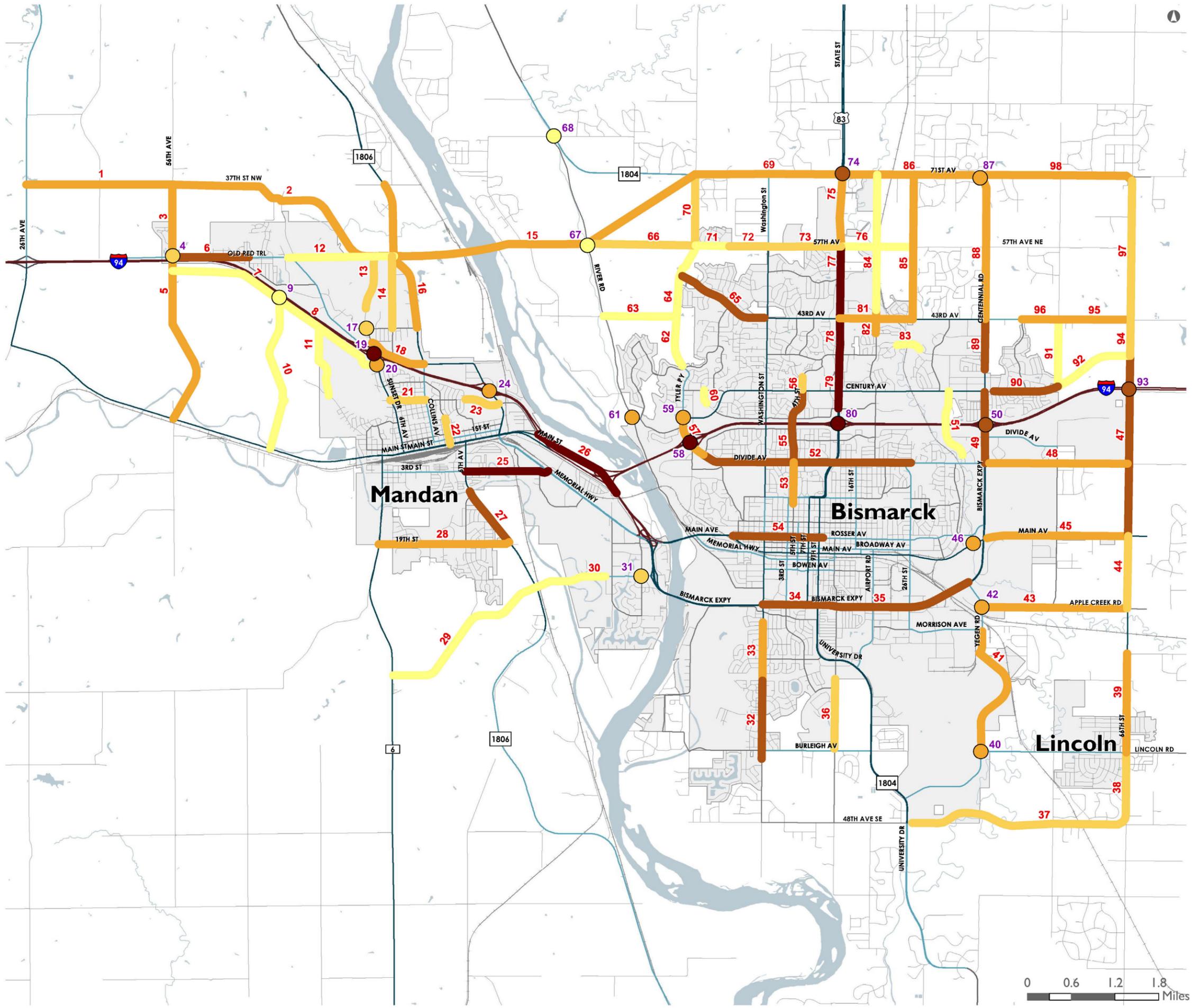
- Up to 50
- 50 - 70
- 70 - 90
- 90 - 110
- 110+



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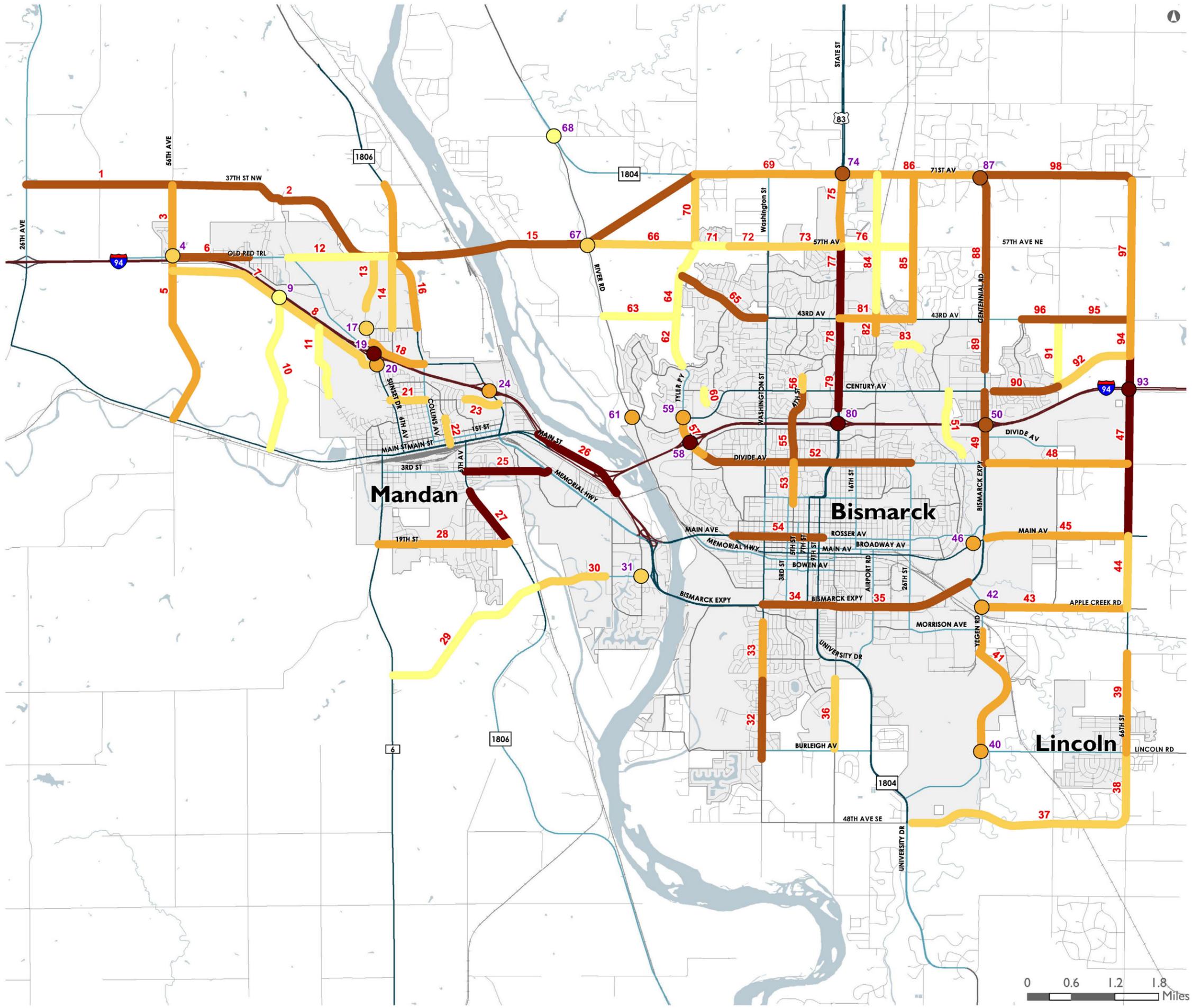
Priority Scenario #3 Technical Scoring + Goal Weighted + Public Input

- Up to 50
- 50 - 70
- 70 - 90
- 90 - 110
- 110+



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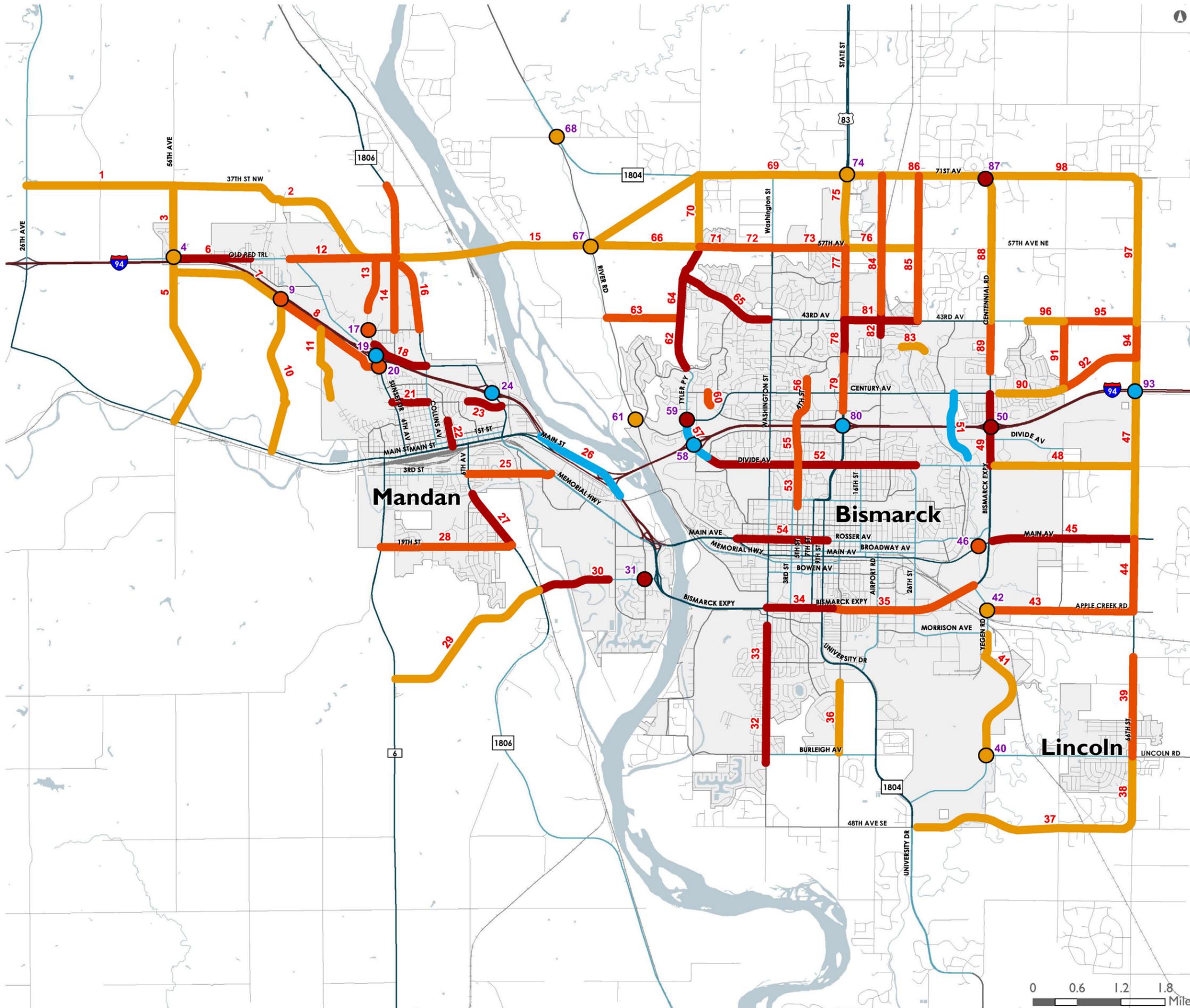
Priority Scenario #4 Technical Scoring + Goal Weighted + Public Input + Macro Cluster Analysis



- Up to 50
- 50 - 70
- 70 - 90
- 90 - 110
- 110+



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Project Phasing

- Phasing**
- Short Range
 - Mid Range
 - Long Range
 - To be Determined



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Bismarck-Mandan **Metropolitan Transportation Plan**

APPENDIX C: PUBLIC ENGAGEMENT



Bismarck-Mandan MPO METROPOLITAN TRANSPORTATION PLAN



Issue 1 | September 2018

INTRODUCTION & BACKGROUND

The Bismarck-Mandan Metropolitan Planning Organization announces the update of the Metropolitan Transportation Plan, called Arrive 2045. Arrive 2045 will establish a long-range vision and strategy to shape the region's transportation systems. Arrive 2045 starts with three Futures Summits.

Arrive 2045 focuses on the following key outcomes:

-  Establish needs for transportation investments covering multiple modes of travel - Including roads, public transit, bicycle, pedestrian, and freight;
-  Directly Impact how transportation projects are prioritized;
-  Guide decision making of future transportation funding;
-  Influence the physical environment, policies, and planning for the transportation network in the Bismarck-Mandan MPO area.

The BMMPO leads the development of the MTP in partnership with the City of Bismarck, City of Mandan, City of Lincoln, Burleigh County, Morton County, North Dakota Department of Transportation, the Federal Highway Administration and Federal Transit Administration. Arrive 2045 is a long-range planning document that sets forth direction and strategies to help shape the future of the Bismarck-Mandan area's transportation network.

Arrive 2045 builds on current and recently completed transportation plans completed by the BMMPO. The BMMPO has recently completed the Bicycle and Pedestrian Plan and is currently updating both the Metropolitan Freight Study and Transit Development Plan. Arrive 2045 is a multimodal plan, so it will incorporate and prioritize the needs of all modes. Input and recommendations from these other studies are folded together in Arrive 2045 to create the overall transportation strategy for the Bismarck-Mandan area.

The public has a big role to play in the Arrive 2045. Because the plan guides decision making and prioritizes future funding to fulfill the transportation needs of the area, it is critical that citizens and stakeholders engage in Arrive 2045. Arrive 2045 will kick off with a round of three Futures Summits (see back page). These events will give the public a firsthand chance to provide input and comments in a workshop style setting.

STAY CONNECTED



Public comments welcome!

Wade Kline
728 East Beaton Drive
West Fargo, ND 58078

or to Wade.Kline@kljeng.com
with "MTP Public Input"
in the subject line



Website

Information regarding the Metropolitan Transportation Plan will be housed on the project's

website: www.Arrive2045.com



Survey

Please take a short survey to help us understand your opinion about the future of transportation in the Bismarck-Mandan MPO area.

Online: www.surveymonkey.com/r/YSCZV5B

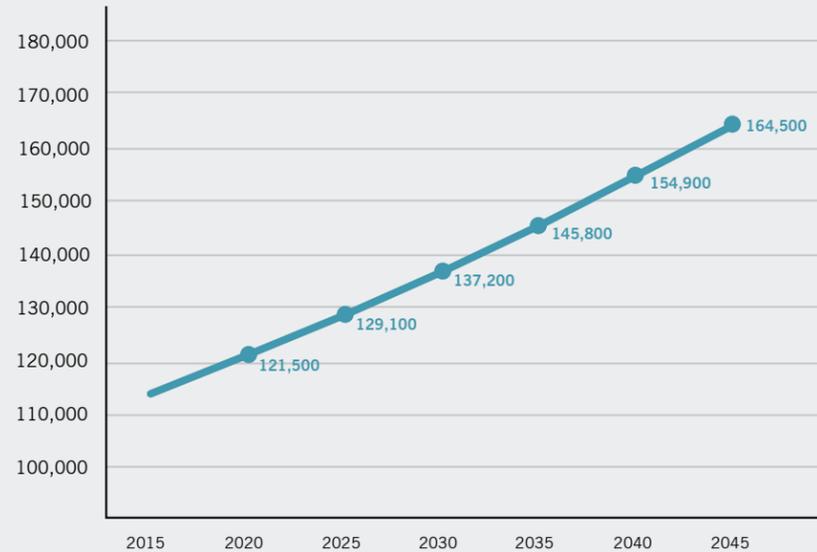
A paper copy can be requested by calling
701-355-1852

EXISTING CONDITIONS & TRENDS

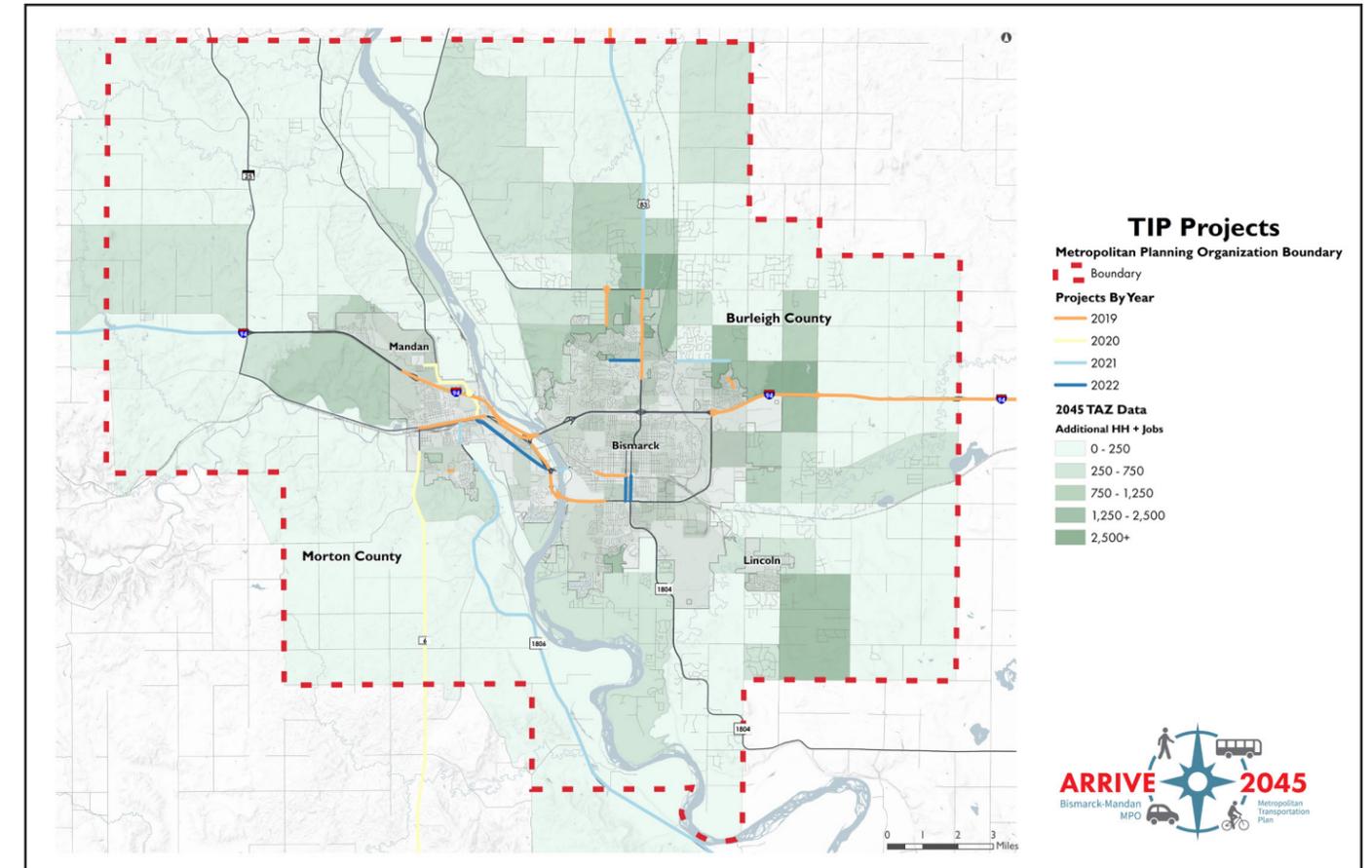
Projected Growth Trends

To support development of Arrive 2045, the Bismarck-Mandan MPO developed demographic forecasts to the year 2045. The forecasts considered growth in population, households and employment over the next 25 plus years. A total of three scenarios of future growth were evaluated by the Bismarck-Mandan MPO, and in the end a **Medium Growth/Continue Past Trends** scenario was selected. As such, Arrive 2045 is premised on 1.2% growth rate, which reflects the average trends between 1985 – 2015. These growth trends are allocated to specific areas of the communities, or traffic analysis zones (TAZ's), to generate future traffic forecasts. The development of future traffic forecasts will support the identification and prioritization of future transportation projects.

Projected Population Growth



EXISTING CONDITIONS & TRENDS



DEVELOPING THE METROPOLITAN TRANSPORTATION PLAN

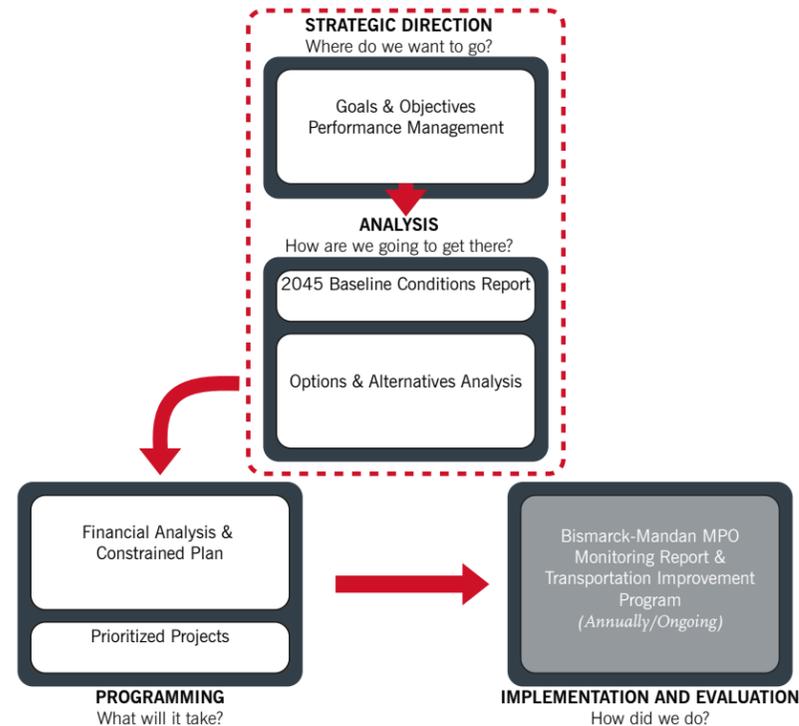
As shown to the right, Arrive 2045 will involve the development of several interrelated elements: Strategic Direction & Vision, Systems Analysis, Prioritization & Financial Analysis and Implementation and Evaluation.

Strategic Direction & Vision - Arrive 2045 is built upon the development of a performance management program which establishes existing conditions and measures current performance.

Systems Analysis – Based on projected conditions Arrive 2045 will evaluate a range of transportation investments and projects to determine a best fit set of eventual projects and project concepts.

Financial Analysis & Prioritization - A key component of Arrive 2045 will include the development of financial analysis that allows for a fiscally constrained list of projects which meet anticipated future revenues.

Implementation & Evaluation - Arrive 2045 sets the development of the Transportation Improvement Program (TIP) for the Bismarck-Mandan MPO and can be annually evaluated through existing tools such as the BMMPO's annual Monitoring Report.



Building Upon Programmed & Committed Projects to Meet Future Needs

Arrive 2045 will use projected growth trends in jobs and households, on top of existing and projected transportation improvements, to determine the level of future transportation investment needed over the next 20 to 25 years. A travel demand model will be used to assist in forecasting future transportation needs.

The map above shows projected growth in jobs and households to the year 2045 along with projects currently programmed for improvement between 2019 and 2022. Most of the projected growth in the Bismarck-Mandan area is likely to occur in newer areas and neighborhoods outside of those corridors currently planned for improvement. Arrive 2045 will evaluate the development of new future investment to better serve areas of projected development to provide new or improved transportation facilities in the years ahead.



ARRIVE 2045 FUTURES SUMMIT



The Bismarck Mandan MPO announces the Arrive 2045 Futures Summit to support the Metropolitan Transportation Plan update. The Futures Summit meetings are developed to gather input and guidance on how to invest in the transportation decisions in the Bismarck-Mandan Metropolitan area. Participants will engage in workshop style exercises to help develop the next 2045 Metropolitan Transportation Plan.

October 9, 2018

6:00 to 8:00 PM
Lincoln City Hall
74 Santee Road
Lincoln, ND

October 10, 2018

9:00 to 11:00 AM
Bismarck State College
National Energy Center
for Excellence - Room #431
1200 Schafer Street
Bismarck, ND

October 10th, 2018

6:00 to 8:00 PM
Mandan City Hall
205 2nd Avenue NW
Mandan, ND

All meetings are open to the public and will provide residents an opportunity to discuss and share ideas and feedback on issues facing the Bismarck-Mandan MPO area. More information is available at www.arrive2045.com.

RECEIVED

SEP 24 2018

Arrive 2045 Transportation Futures Summit



The Bismarck-Mandan Metropolitan Planning Organization announces the update of the Metropolitan Transportation Plan, called Arrive 2045. Arrive 2045 will establish a long-range vision and strategy to shape the region's transportation systems. Arrive 2045 starts with three Futures Summits.

The Futures Summit meetings are developed to gather input and guidance on how to invest in the transportation decisions in the Bismarck-Mandan Metropolitan area. Meeting participants will engage in **workshop style exercises** to help develop the next 2045 Metropolitan Transportation Plan.

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- Establish needs for transportation Investments covering multiple modes of travel - Including roads, public transit, bicycle, pedestrian, and freight
- Directly Impact how transportation projects are prioritized;
- Guide decision making of future transportation funding;
- Influence the physical environment, policies, and planning for the transportation network in the Bismarck-Mandan MPO area.

All meetings are open to the public and will provide residents an opportunity to discuss and share ideas and feedback on issues within the Bismarck-Mandan MPO area. More information is available at www.arrive2045.com.

If unable to attend, written comments can be submitted through the project webpage or mailed by October 19th, 2018, to Rachel Drewlow, Bismarck-Mandan MPO, 221 5th Street North, Bismarck, ND, 58501. To request accommodations for disabilities and/or language assistance, contact Title VI/ADA Coordinator at 701-355-1332, MPO@bismarcknd.gov, TTY 711 or 1-800-366-6888 at least five (5) days in advance of the meeting.

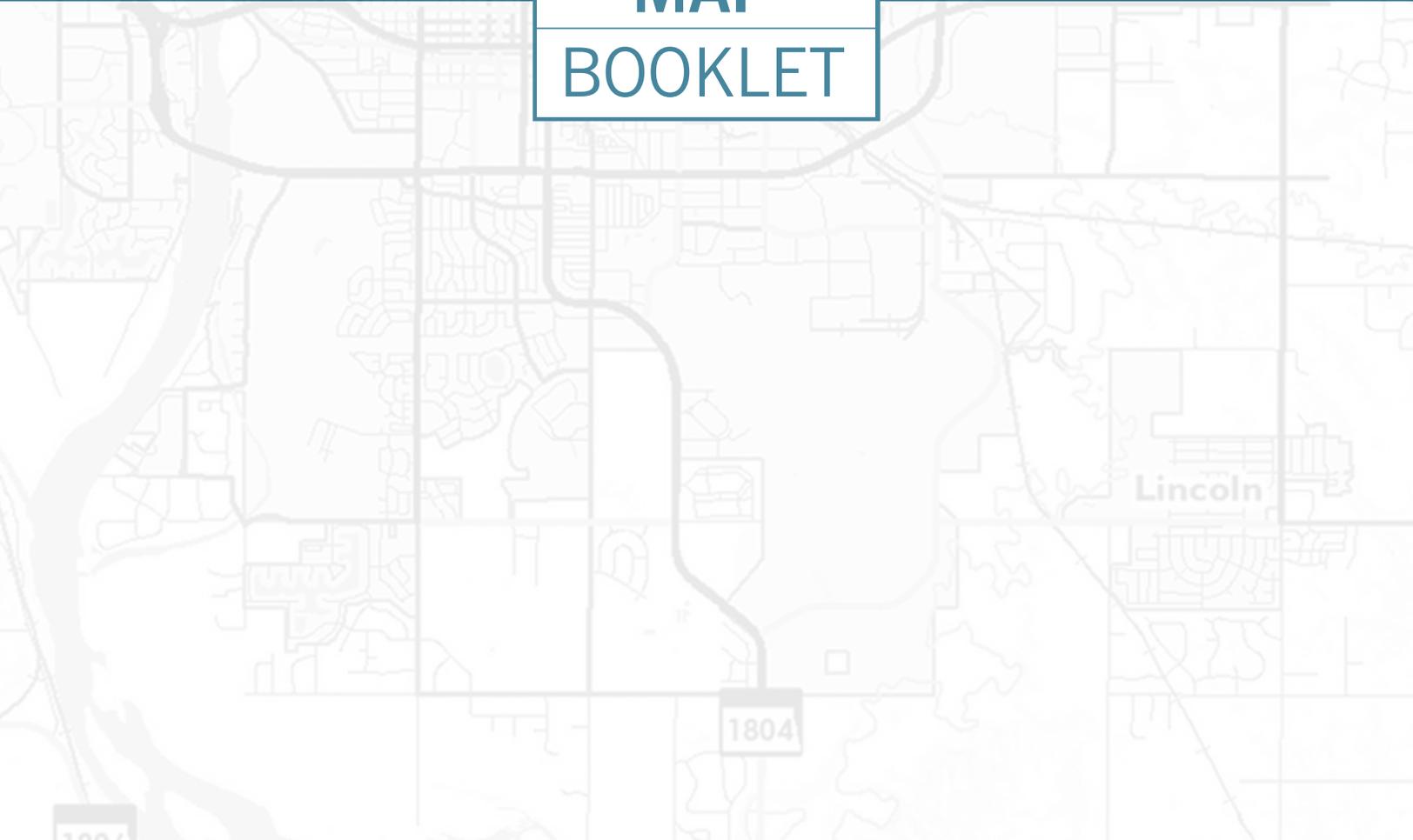
ARRIVE 2045

Bismarck-Mandan
MPO

Metropolitan
Transportation
Plan



MAP
BOOKLET



2045 Household Growth

Metropolitan Planning Organization Boundary

Boundary

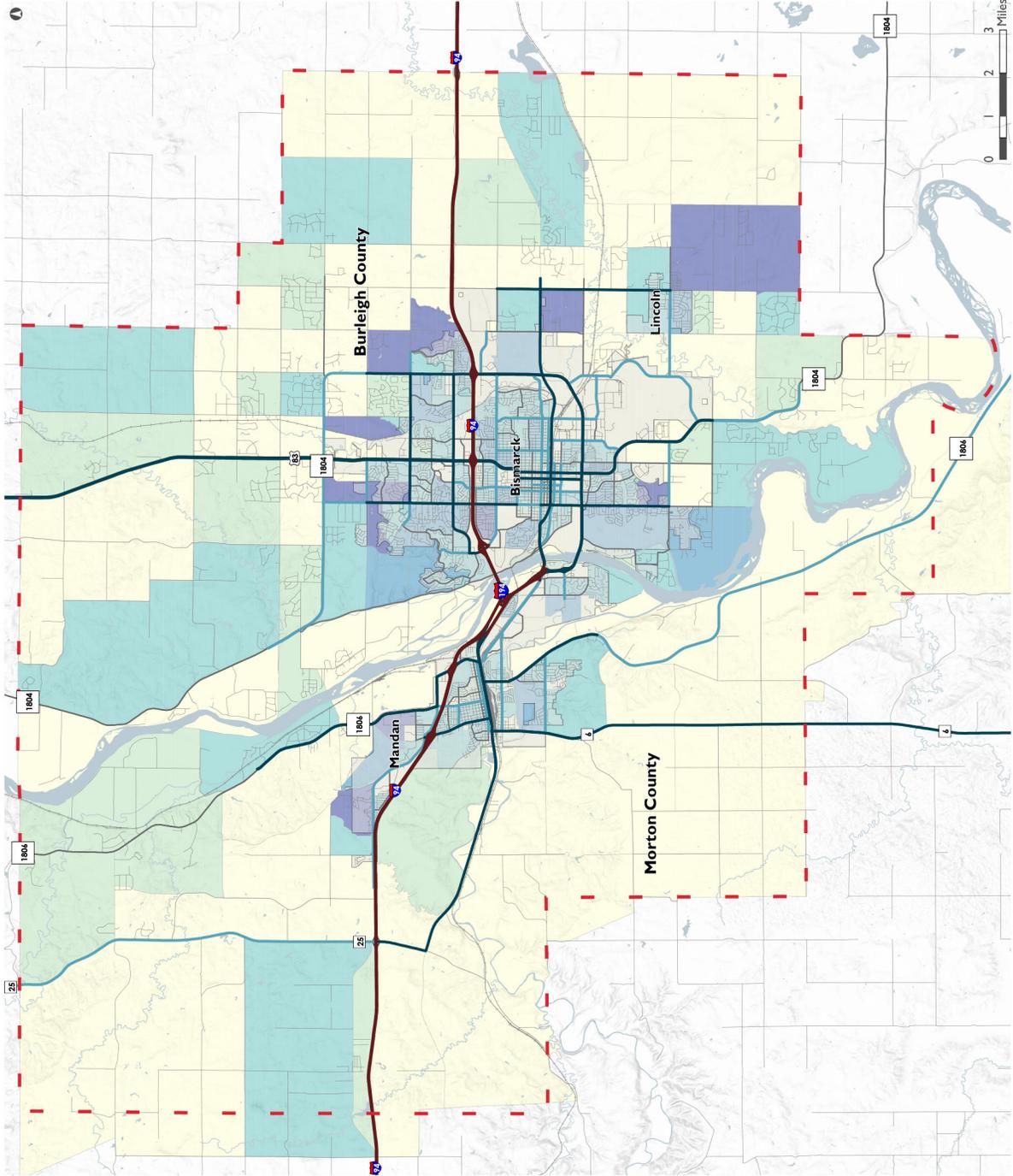
Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

2045 TAZ Data

Additional Households

- 0 - 100
- 101 - 200
- 201 - 500
- 501 - 1000
- 1001 - 1564

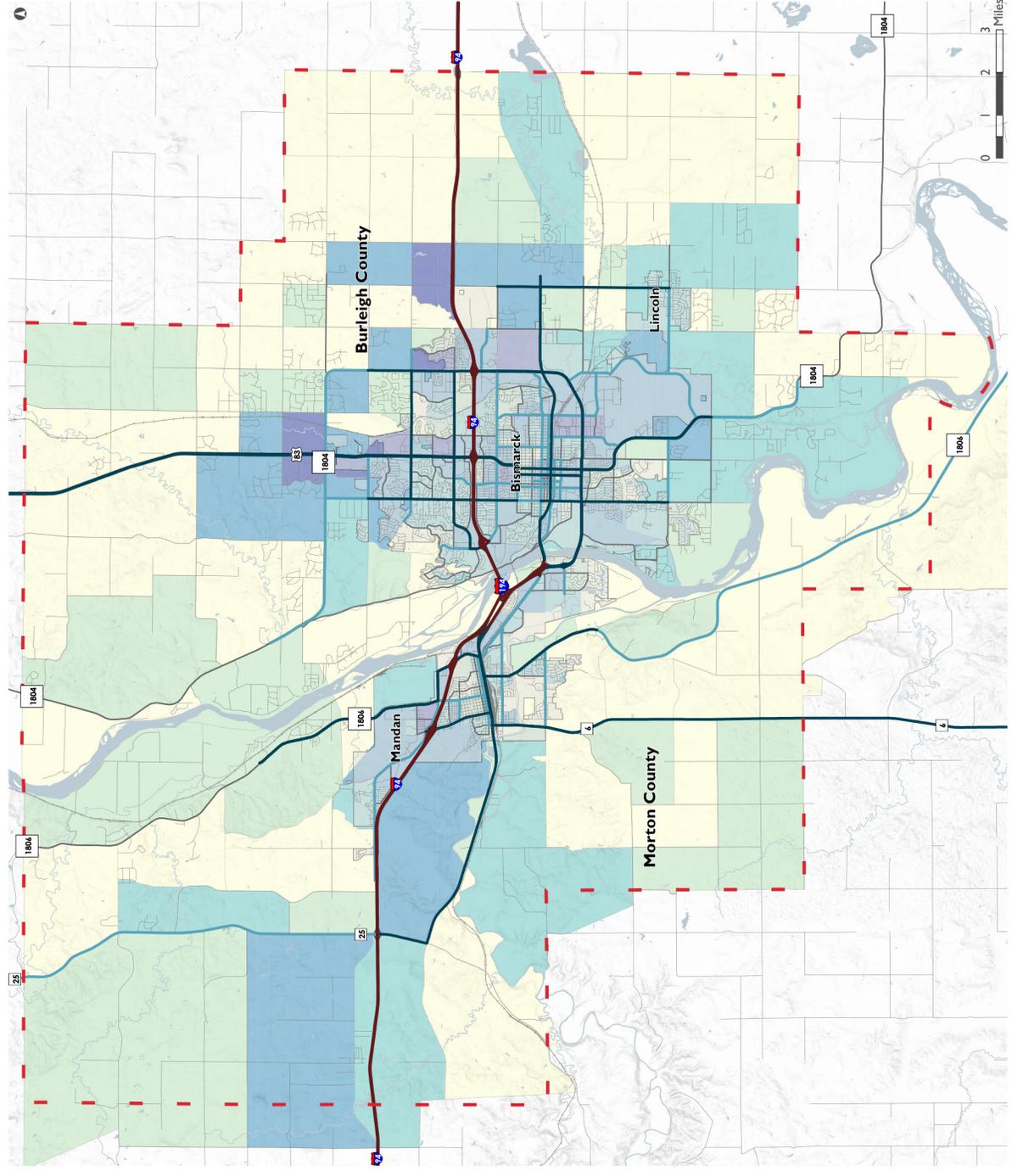


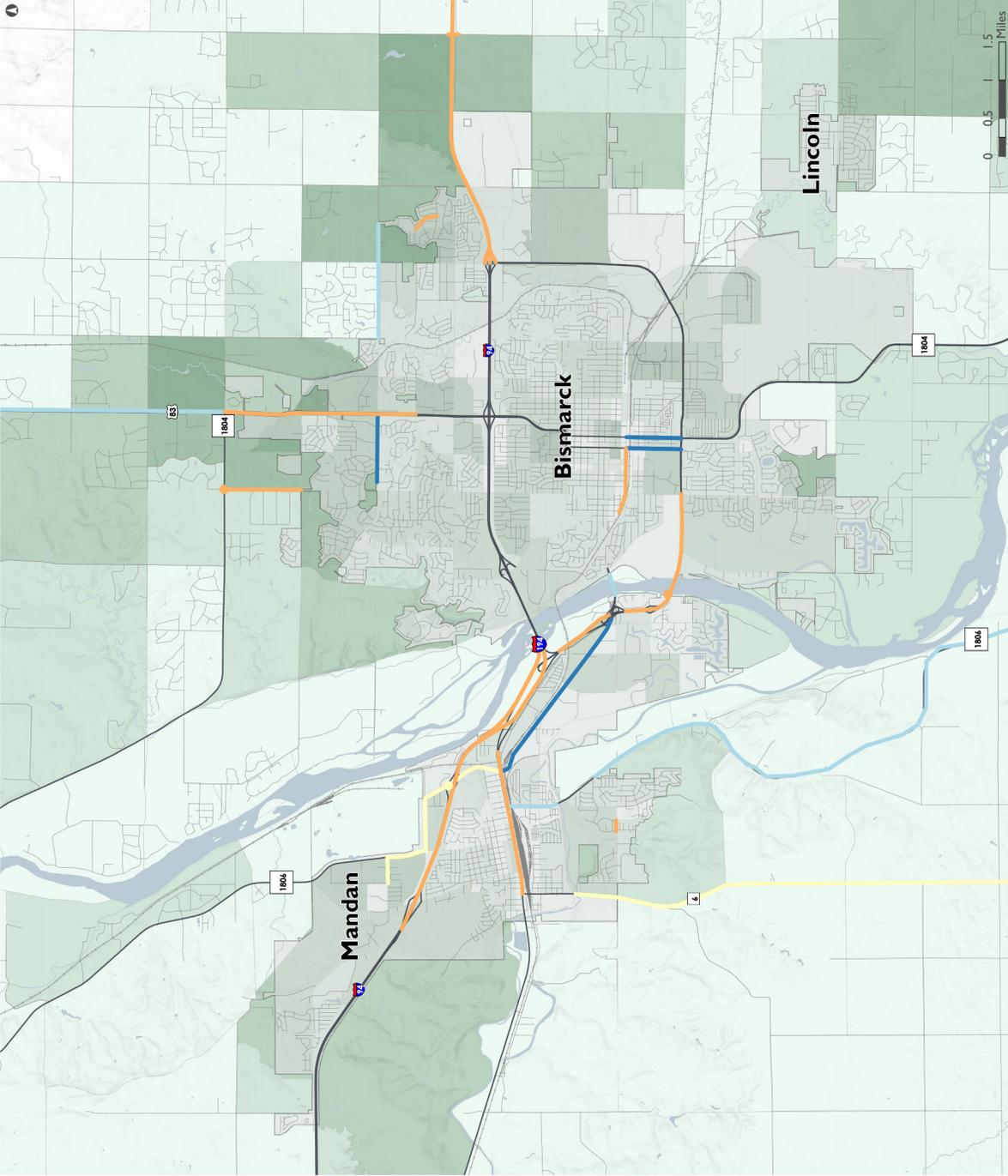
2045 Jobs Growth Metropolitan Planning Organization Boundary

- Boundary
- Roadway by Functional Classification**
 - Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector

2045 TAZ Data

- Additional Jobs**
- 0 - 10
 - 11 - 50
 - 51 - 250
 - 251 - 1500
 - 1501 +





TIP Projects

Projects By Year

- 2019
- 2020
- 2021
- 2022

2045 TAZ Data

Additional HH + Jobs

- 0 - 250
- 250 - 750
- 750 - 1,250
- 1,250 - 2,500
- 2,500+

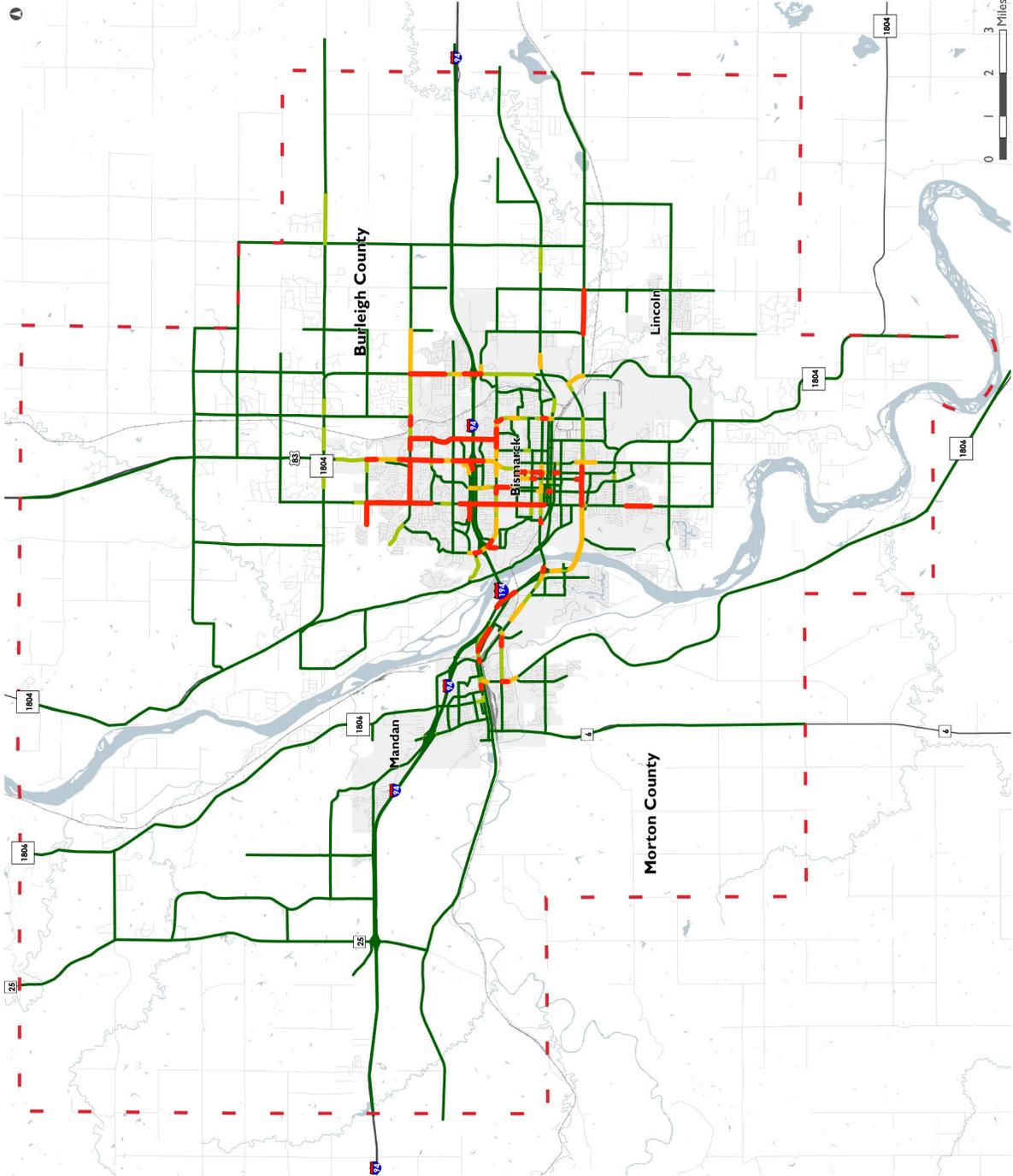


Level of Service 2030

- LOS 2030
- F (Red line)
 - E (Yellow line)
 - D (Green line)
 - A - C (Light Green line)

Metropolitan Planning Organization Boundary

Boundary (Red dashed line)



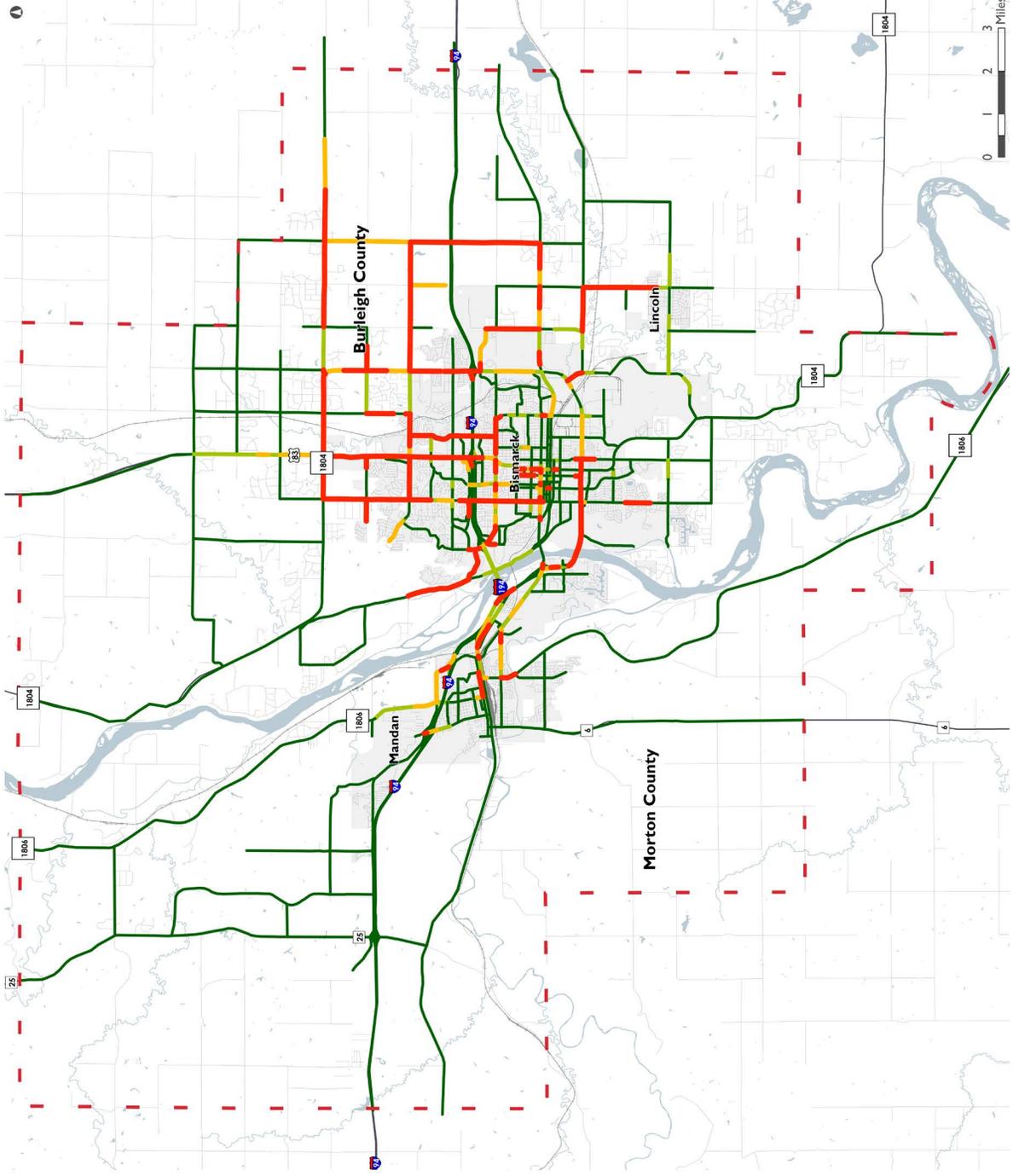
Level of Service 2045

LOS 2045

- F
- E
- D
- A - C

Metropolitan Planning Organization Boundary

- Boundary



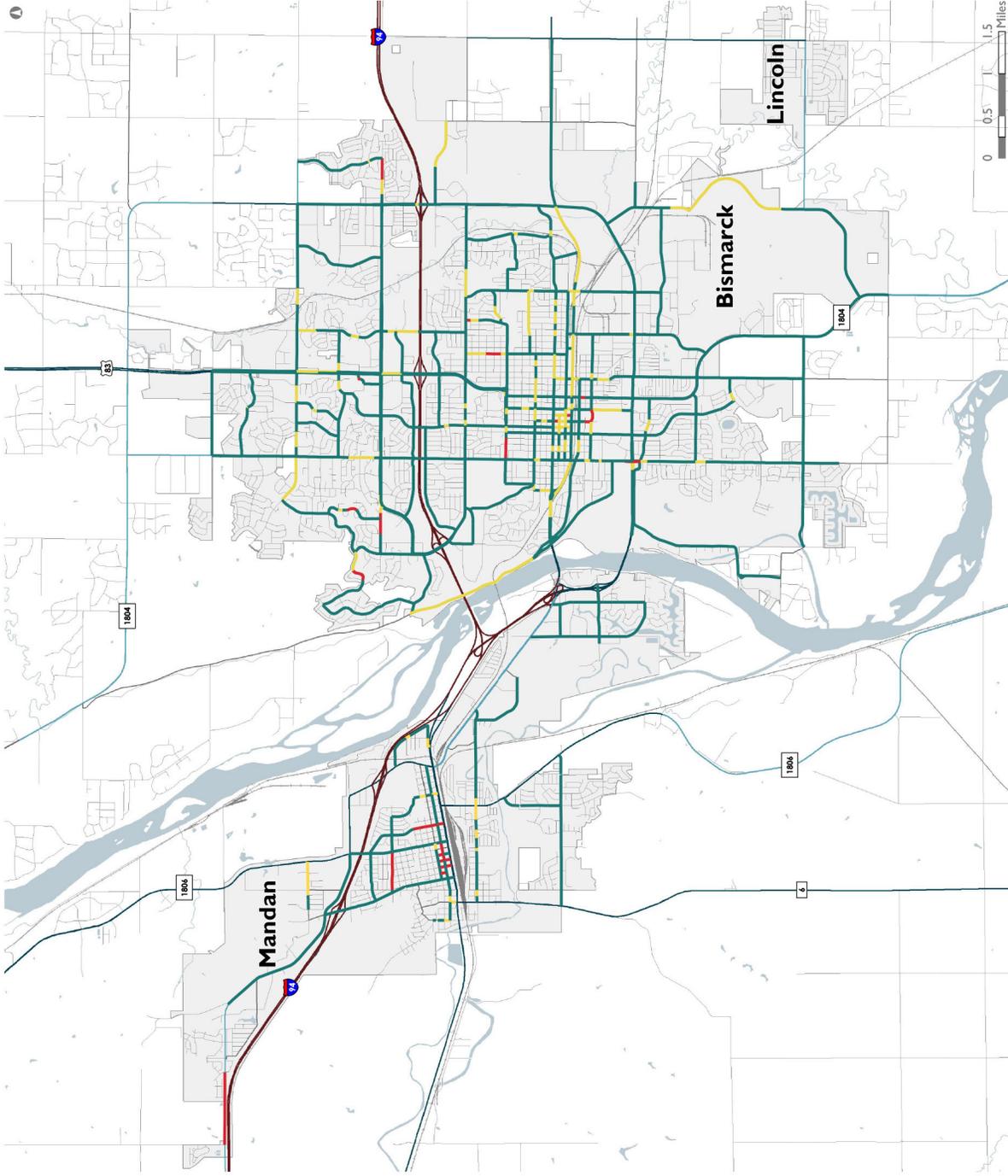
Pavement Conditions Index (PCI) Rating 2016 - 2018

PCI Rating

- Adequate
- Degraded
- Unsatisfactory

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector



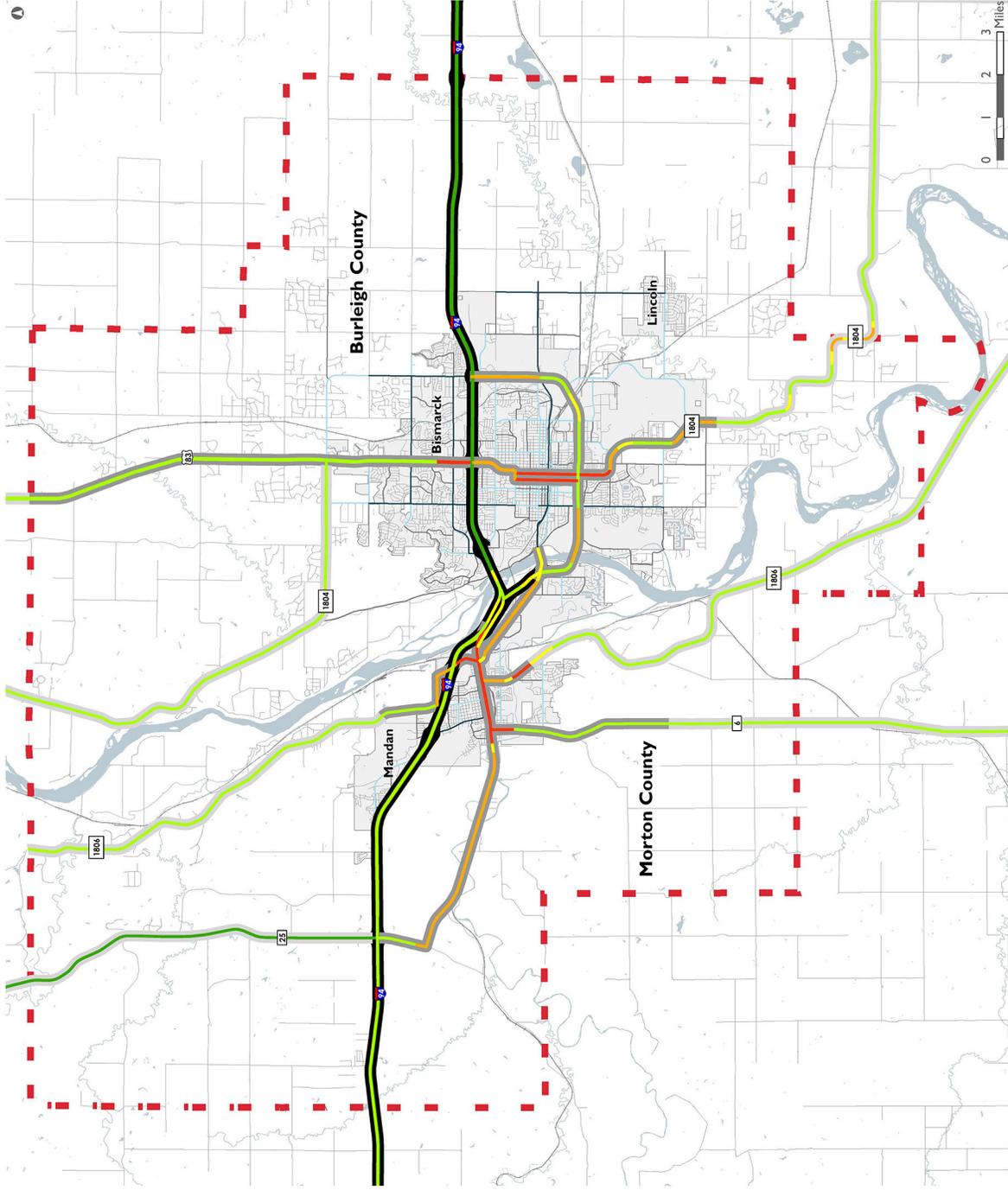
State Owned Roads International Roughness Index (IRI) Rating 2017

- IRI Rating**
- Excellent
 - Good
 - Fair
 - Poor
 - No Data

- NHS Classification**
- Interstate
 - Principal Arterial
 - State Non-NHS

- Metropolitan Planning Organization Boundary**
- Boundary

- Roadway by Functional Classification**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector



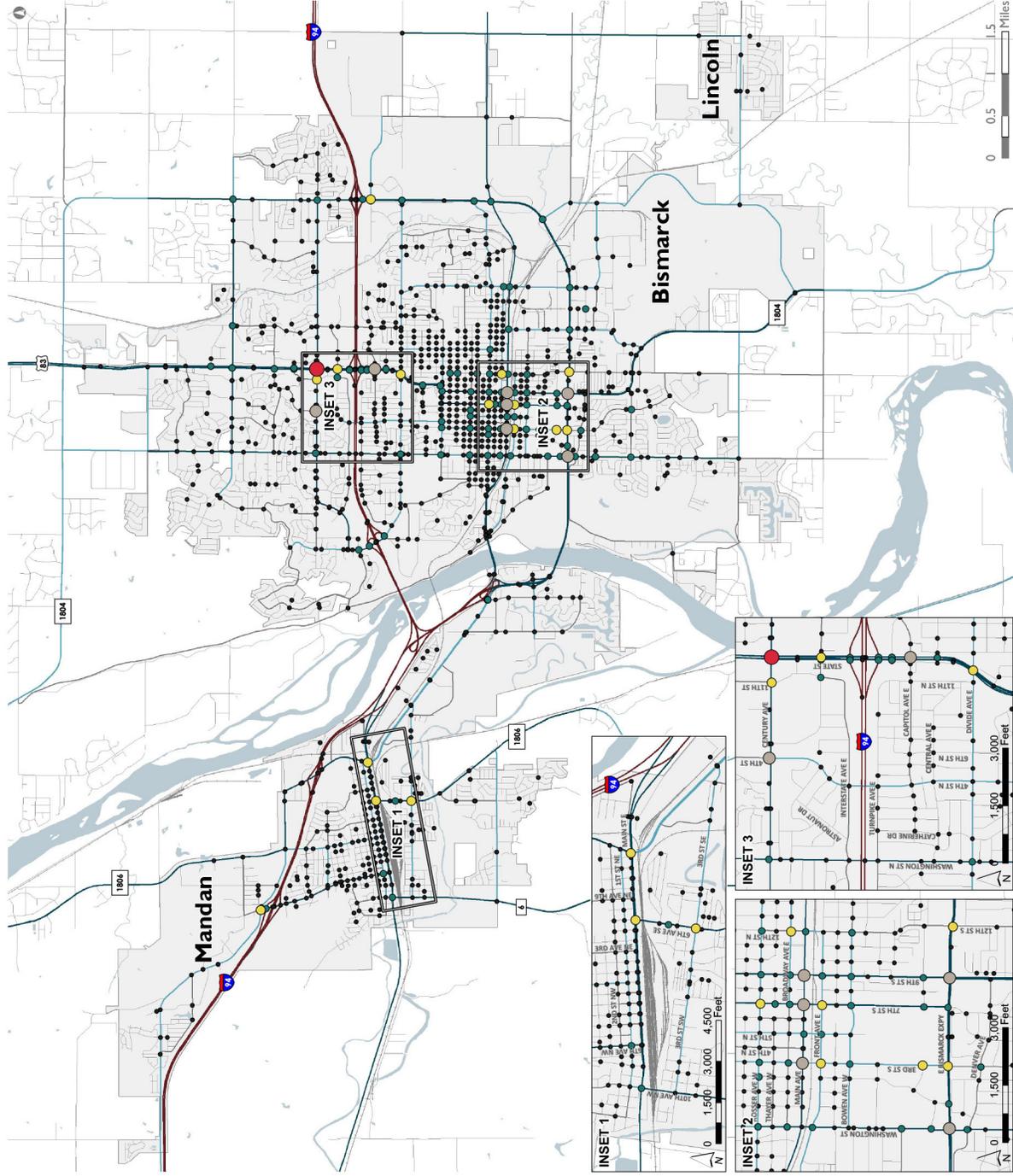
Urban Intersection Crashes 2013 - 2017

Crash Count

- 70+
- 51 - 70
- 31 - 50
- 11 - 30
- 1 - 10

Roadway by Functional Classification

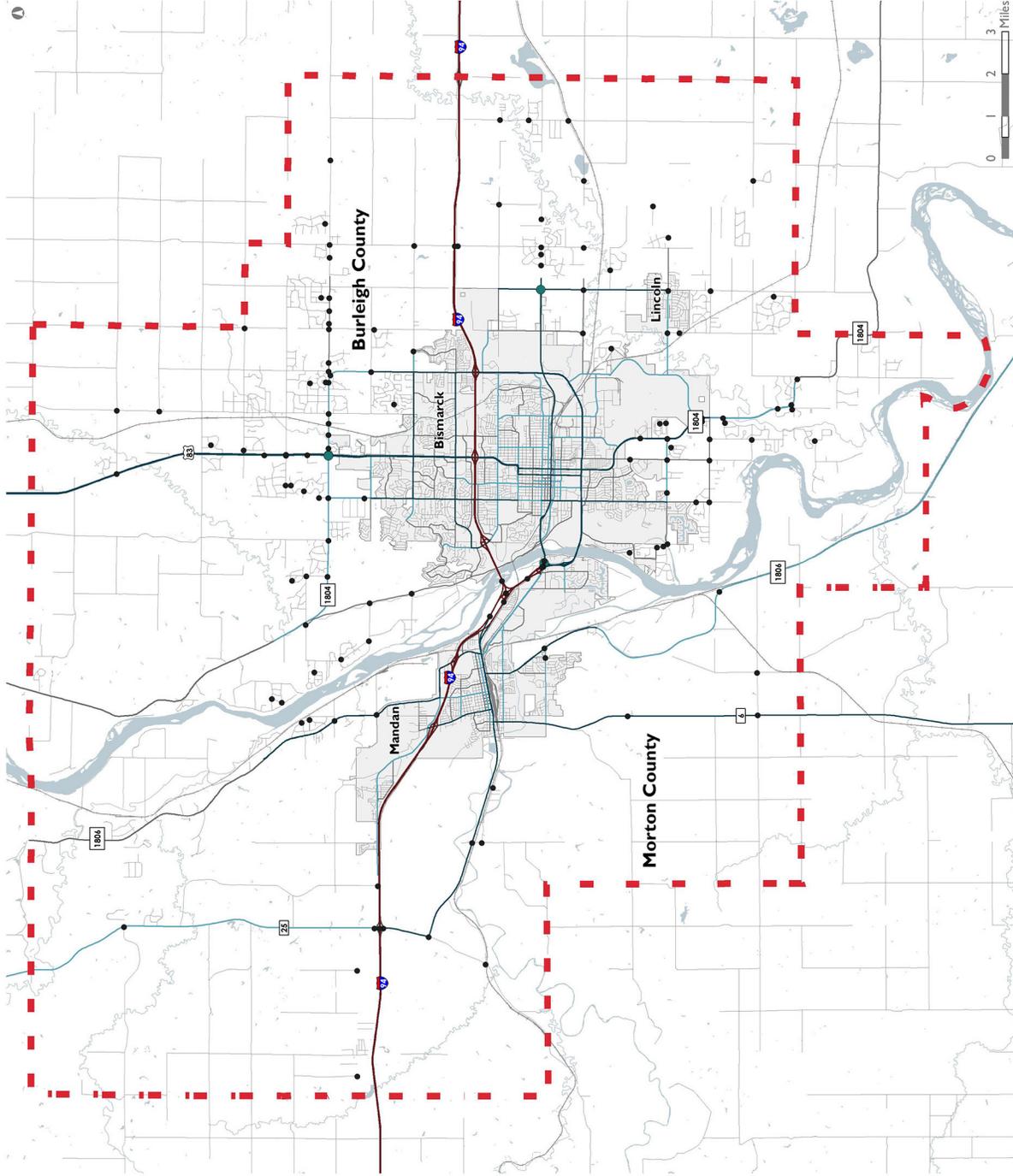
- Interstate
- Principal Arterial
- Minor Arterial
- Collector



Rural Intersection Crashes 2013 - 2017

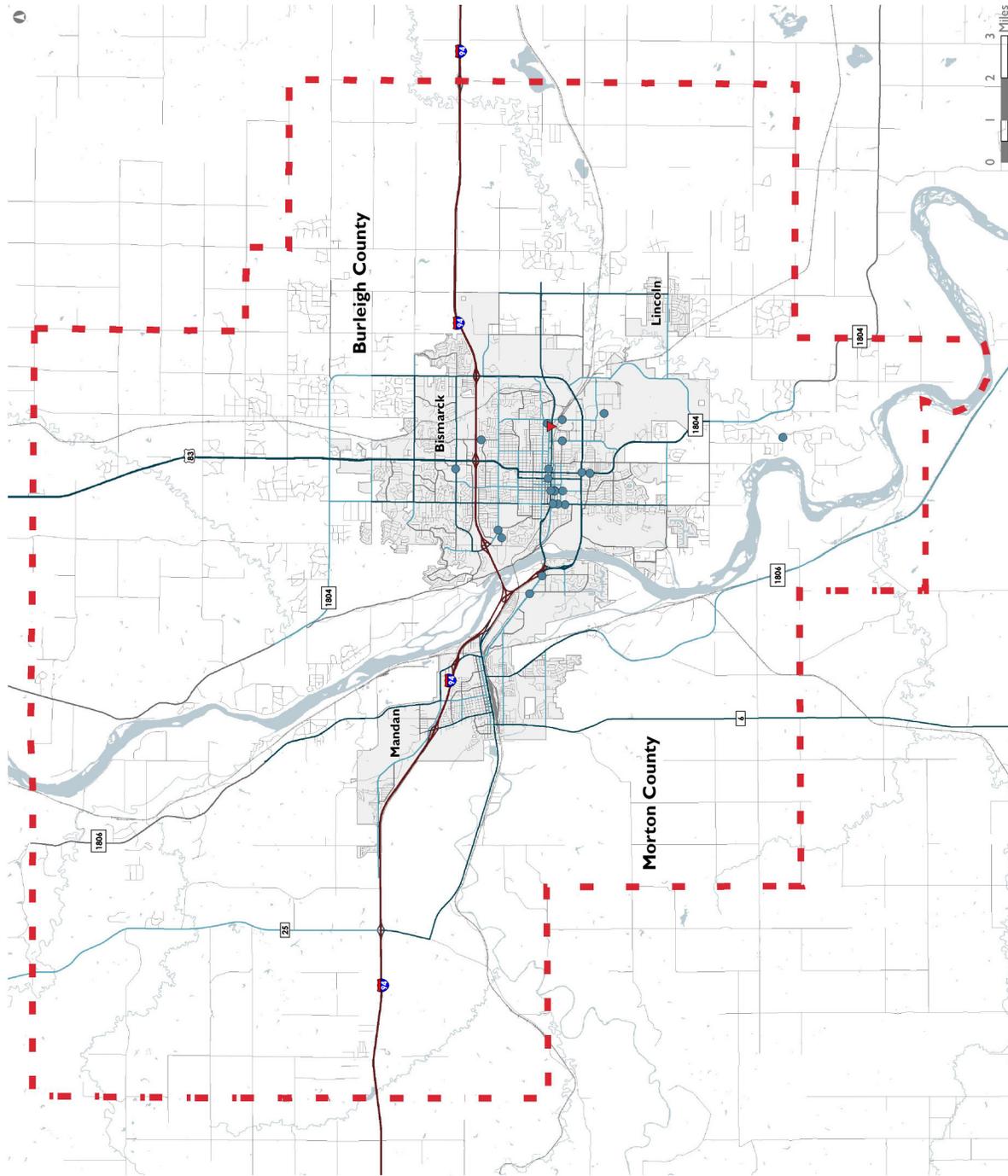
- Crash Counts**
- 11 - 15
 - 1 - 10
- Metropolitan Planning Organization Boundary**
- Boundary
- Roadway by Functional Classification**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector

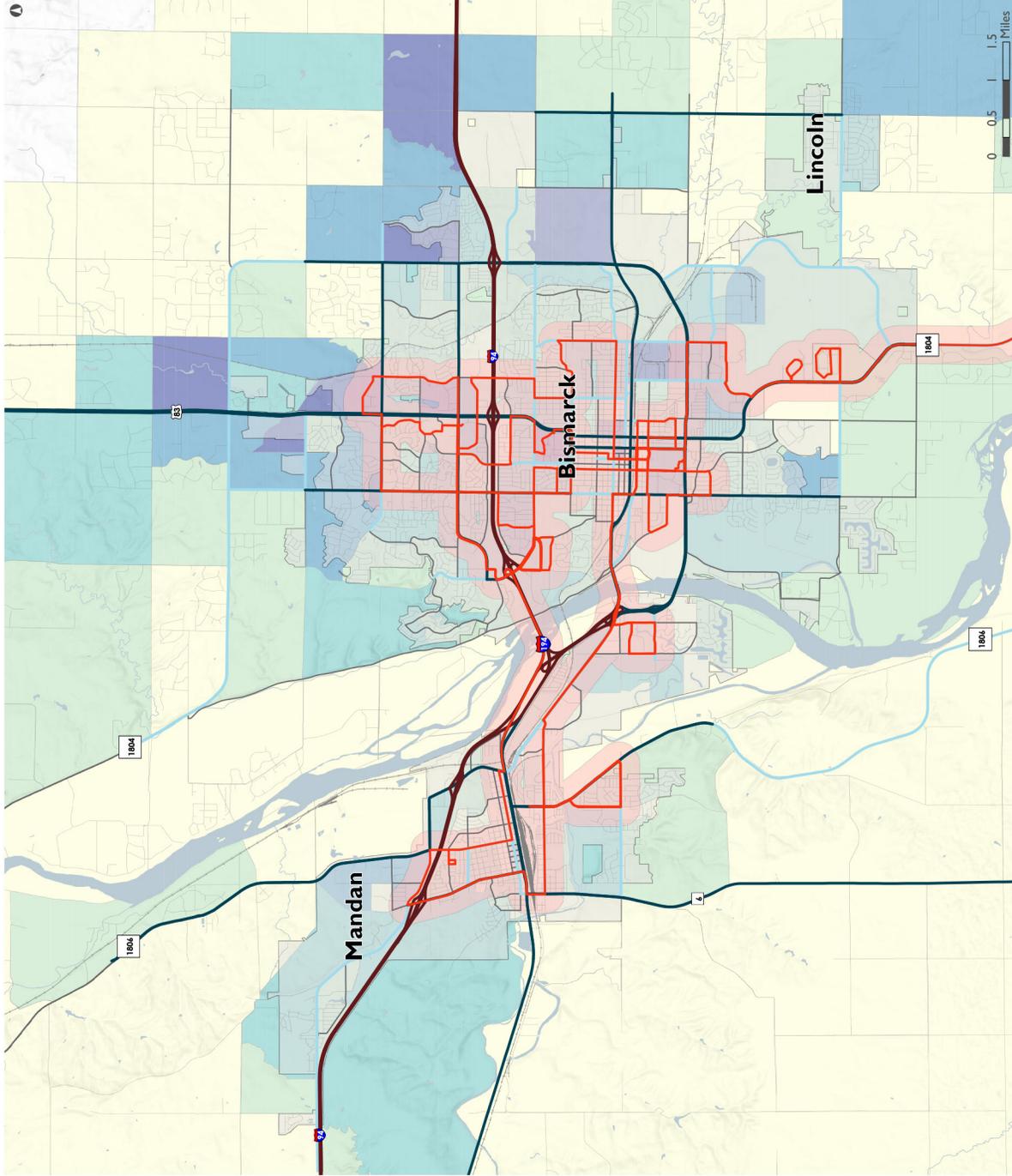
Note: Crashes inside city limits are mapped on map titled "City Limit Intersection Crashes 2013-2017".



Serious Non-Motorized Crashes Crashes 2013 - 2017

- Serious Non-Motorized Crashes**
- ▲ Fatal Crashes
 - Incapacitating Injury Crashes
- Metropolitan Planning Organization Boundary**
- ▬ Boundary
- Roadway by Functional Classification**
- ▬ Interstate
 - ▬ Principal Arterial
 - ▬ Minor Arterial
 - ▬ Collector





Transit Routes

- Bis-Man Transit Routes 2017
- Transit Routes 1/4 Mile Buffer

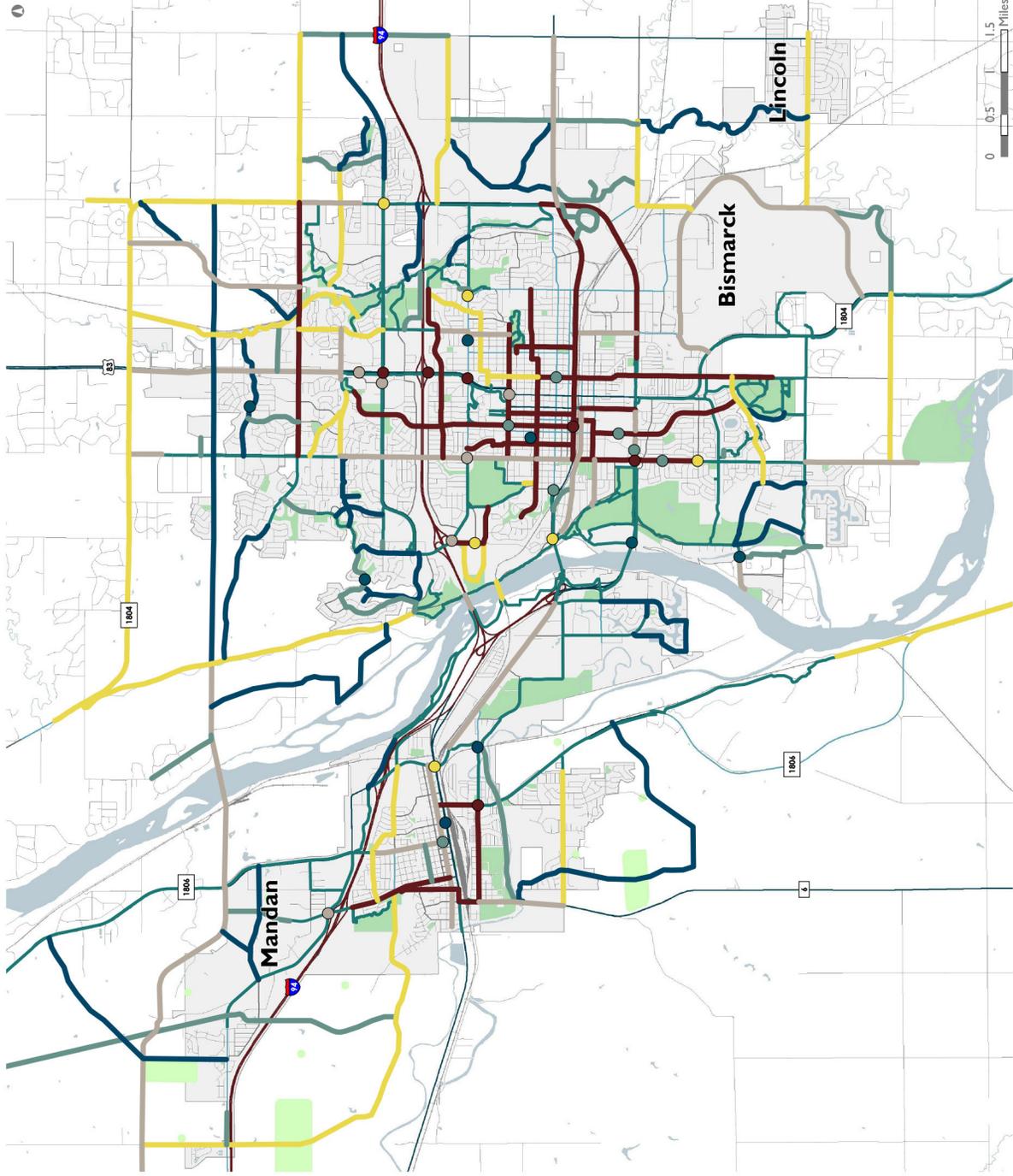
2045 TAZ Data

Additional HH + Jobs

- 0 - 250
- 250 - 750
- 750 - 1,250
- 1,250 - 2,500
- 2,500+



Intersection and Connection Analysis Scoring Bismarck-Mandan Bicycle and Pedestrian Plan



Intersection Scoring

- Top 20%
- Top 40%
- Mid 20%
- Lower 40%
- Lower 20%

Connection Scoring

- Top 20%
- Top 40%
- Mid 20%
- Lower 40%
- Lower 20%

Bicycle Facilities

- Existing Multi-Use Trails
- Existing Parks
- Planned Parks



Truck Routes

- Major Freight Generators
- Critical Urban Freight Corridors

Metropolitan Planning Organization Boundary

- Boundary

- State and Federal Truck Routes

Bismarck Local Routes

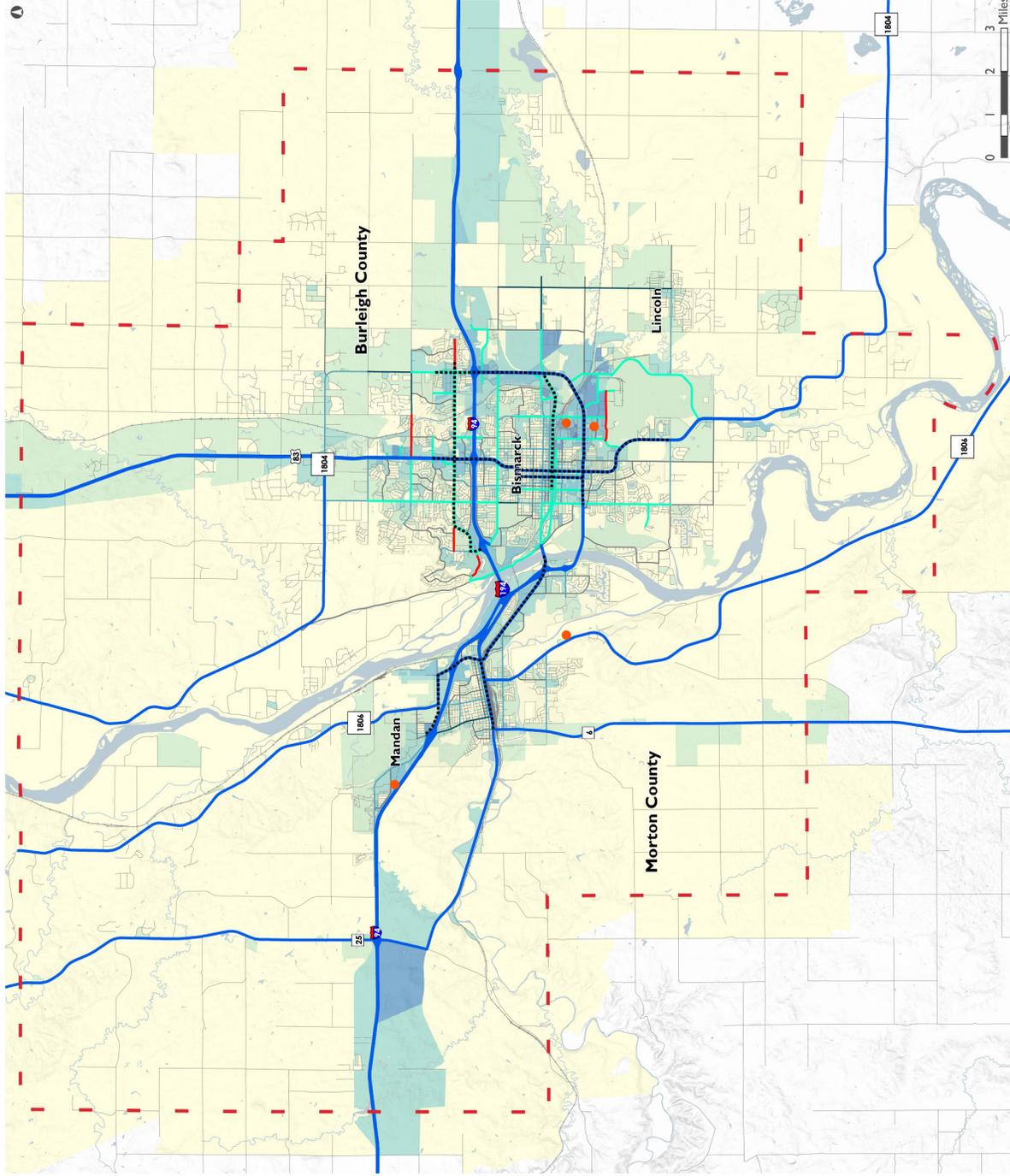
- Designated Truck Route
- 6-ton Limit

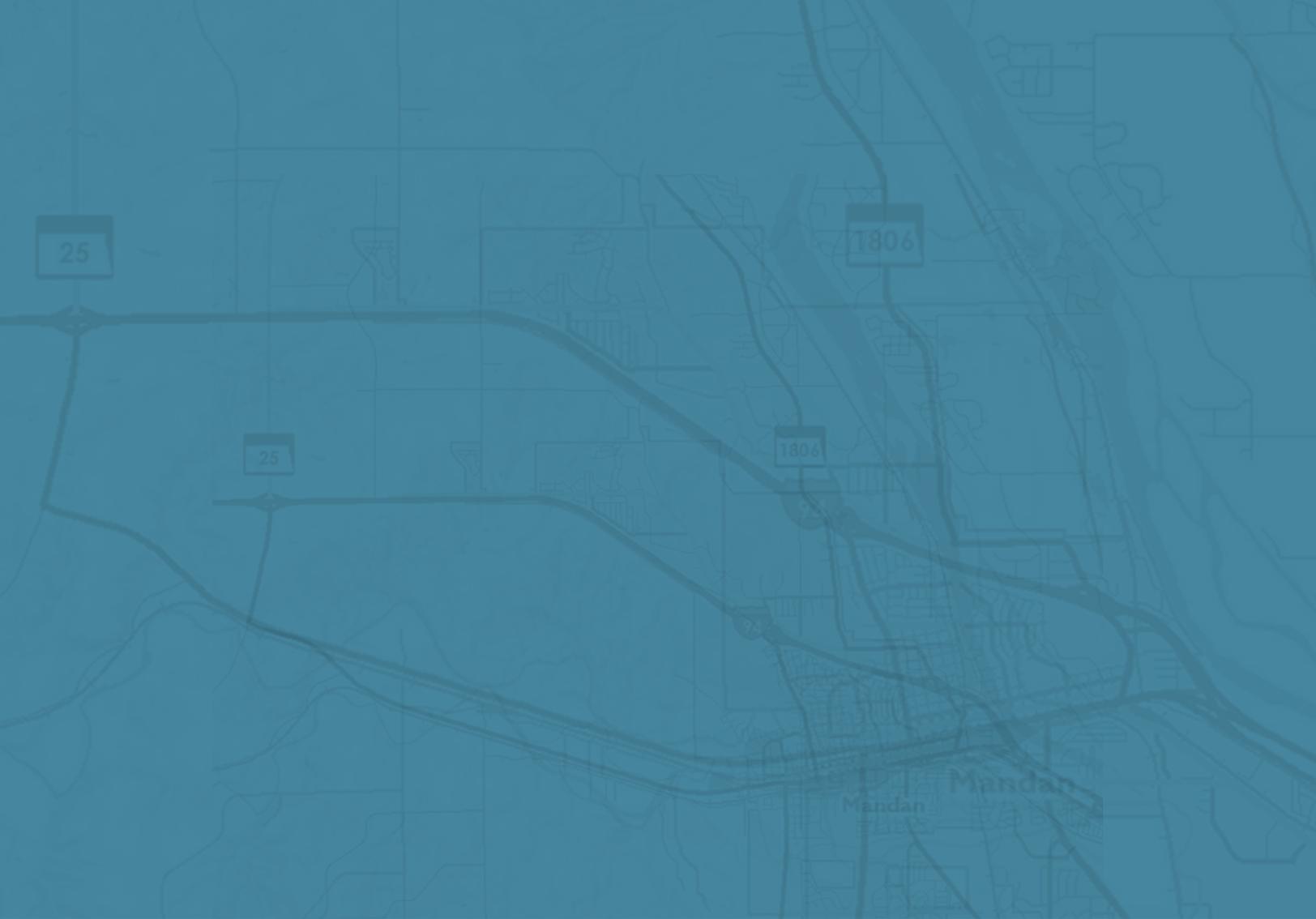
Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector
- Railroads

Truck Pings per Square Meter

- 0.00000 - 0.00004
- 0.00005 - 0.00043
- 0.00044 - 0.00433
- 0.00434 - 0.04333
- 0.04334 - 0.43338





ARRIVE  **2045**

Bismarck-Mandan MPO    Metropolitan Transportation Plan





Arrive 2045 Transportation Futures Summit



Agenda

- » Background on Arrive 2045 – 20 Minutes
- » Table Exercises – 60 Minutes
- » Wrap Up & Next Steps – 15 minutes



What is the MTP?

- » 20-year plan
- » Evaluates future transportation needs
- » Prioritizes transportation projects
- » Updated every 5 years

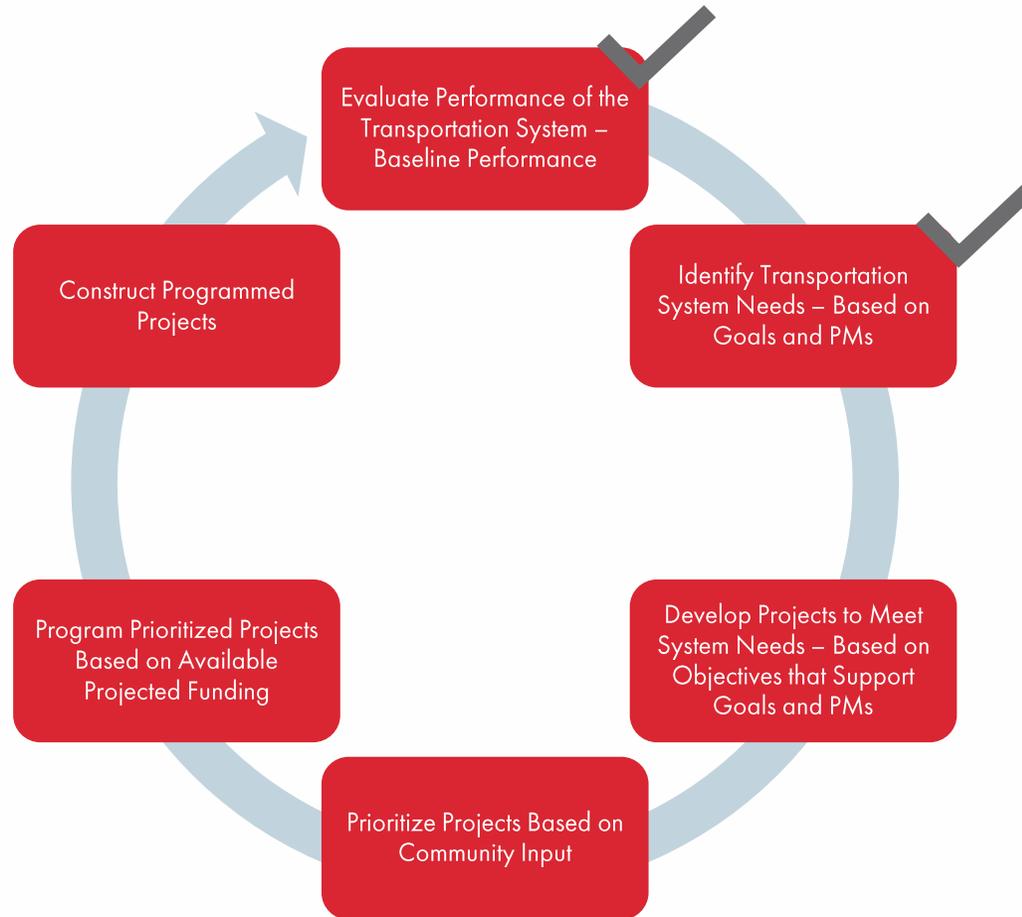


MTP – Vision, Goals, and Objectives



- » Based on transportation legislation guidance
- » Based on stakeholder and public input
- » Based on system needs

Performance Based Transportation Plan



» Continuous process

» Monitor consistency

» Revise strategies

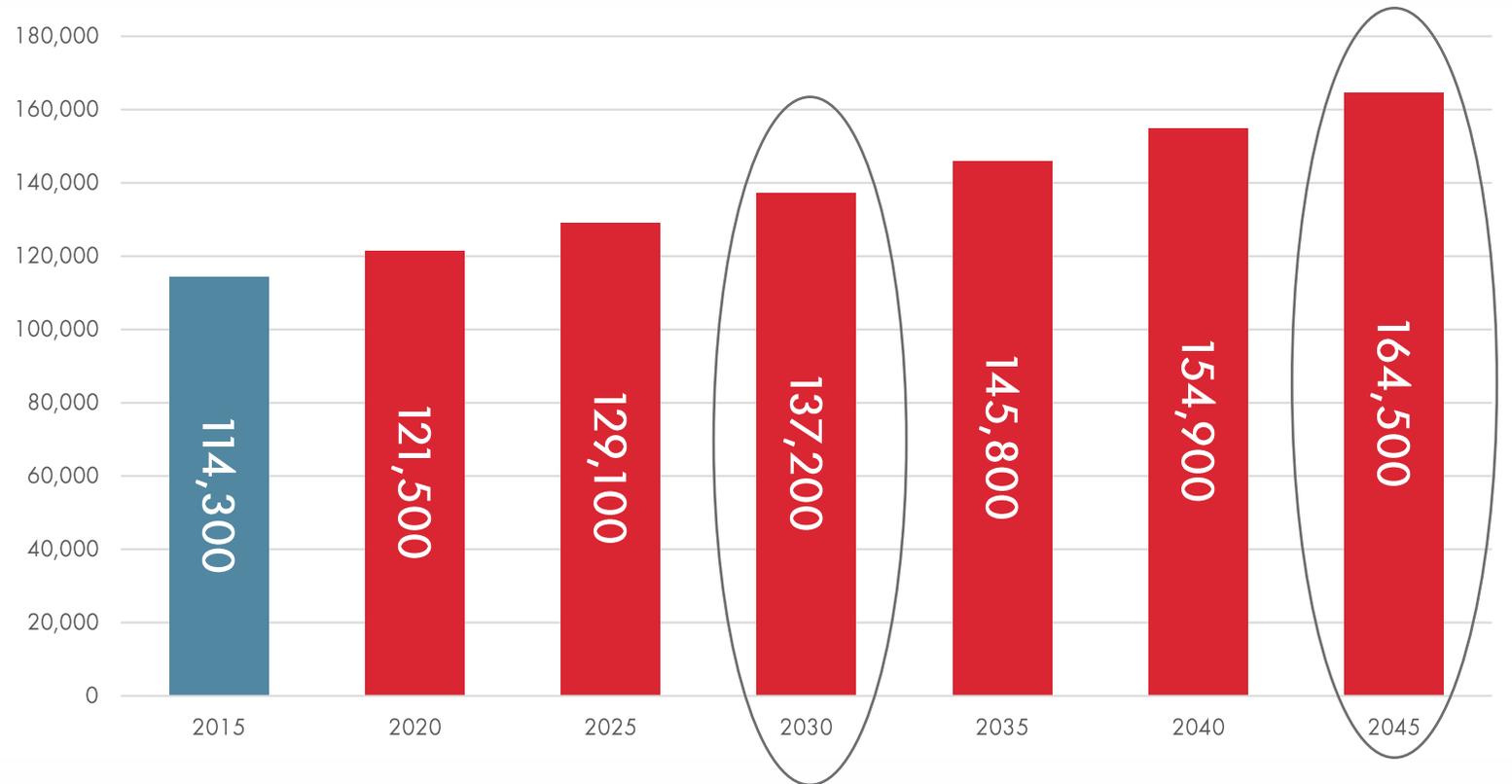
Demographic Growth & Forecasting

Demographics

» Population Forecasts

- + 22,900 by 2030
- + 50,200 by 2045

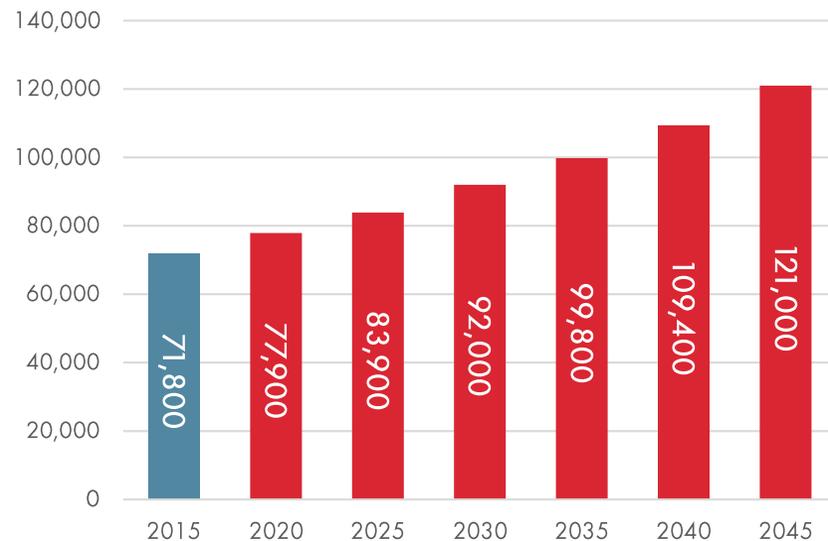
» Support Travel Demand Model



Demographics

» Job growth

- + 20,200 by 2030
- + 49,200 by 2045



Job growth is 2.6% lower than Envision 2040 (124,200)

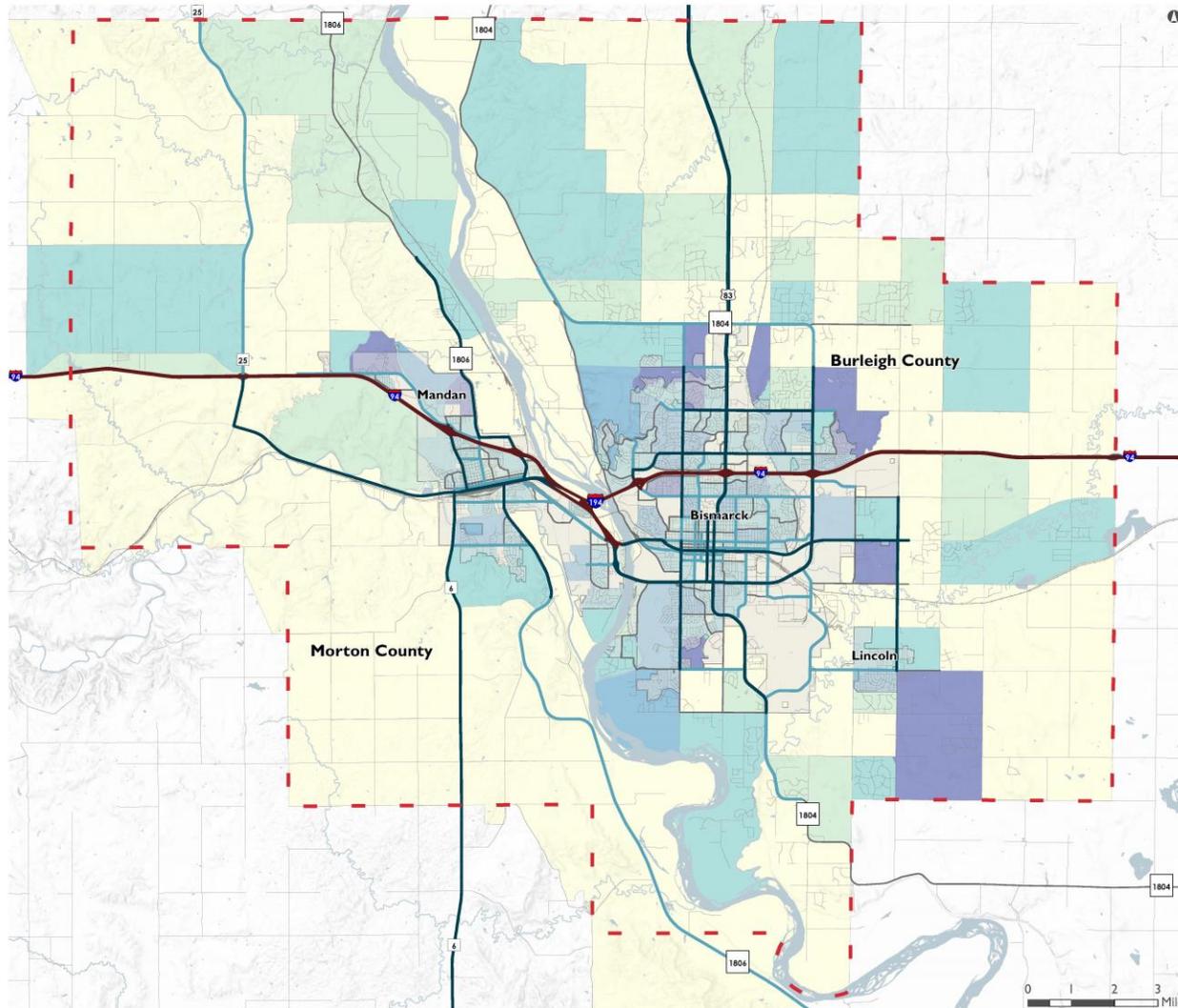
» Household growth

- + 9,500 by 2030
- + 19,100 by 2045



Household growth is 10.5% lower than Envision 2040 (73,100)

2045 Household Growth



2045 Household Growth

Metropolitan Planning Organization Boundary

Boundary

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

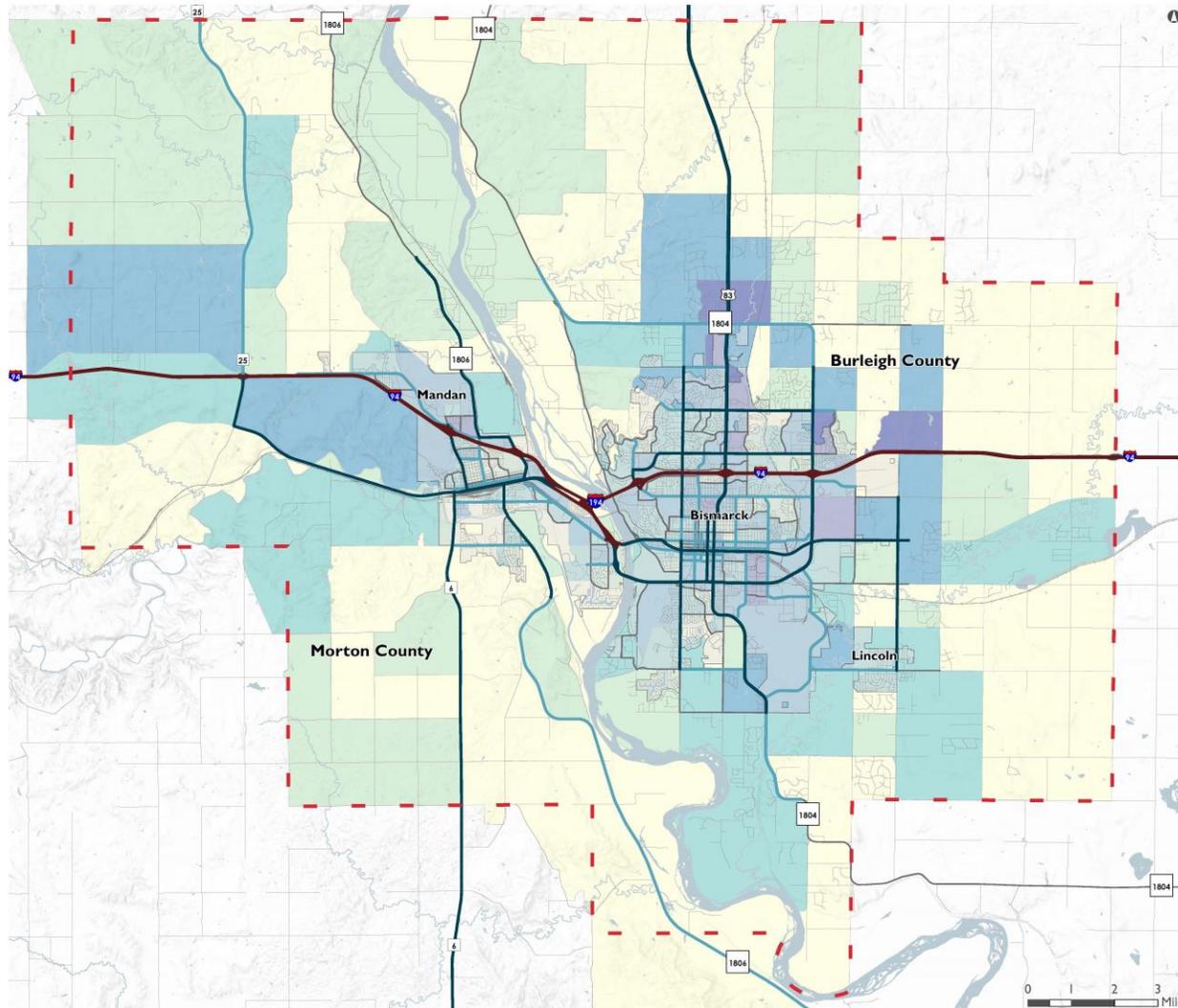
2045 TAZ Data

Additional Households

- 0 - 100
- 101 - 200
- 201 - 500
- 501 - 1000
- 1001 - 1564



2045 Employment Growth



2045 Jobs Growth

Metropolitan Planning Organization Boundary

Boundary

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

2045 TAZ Data

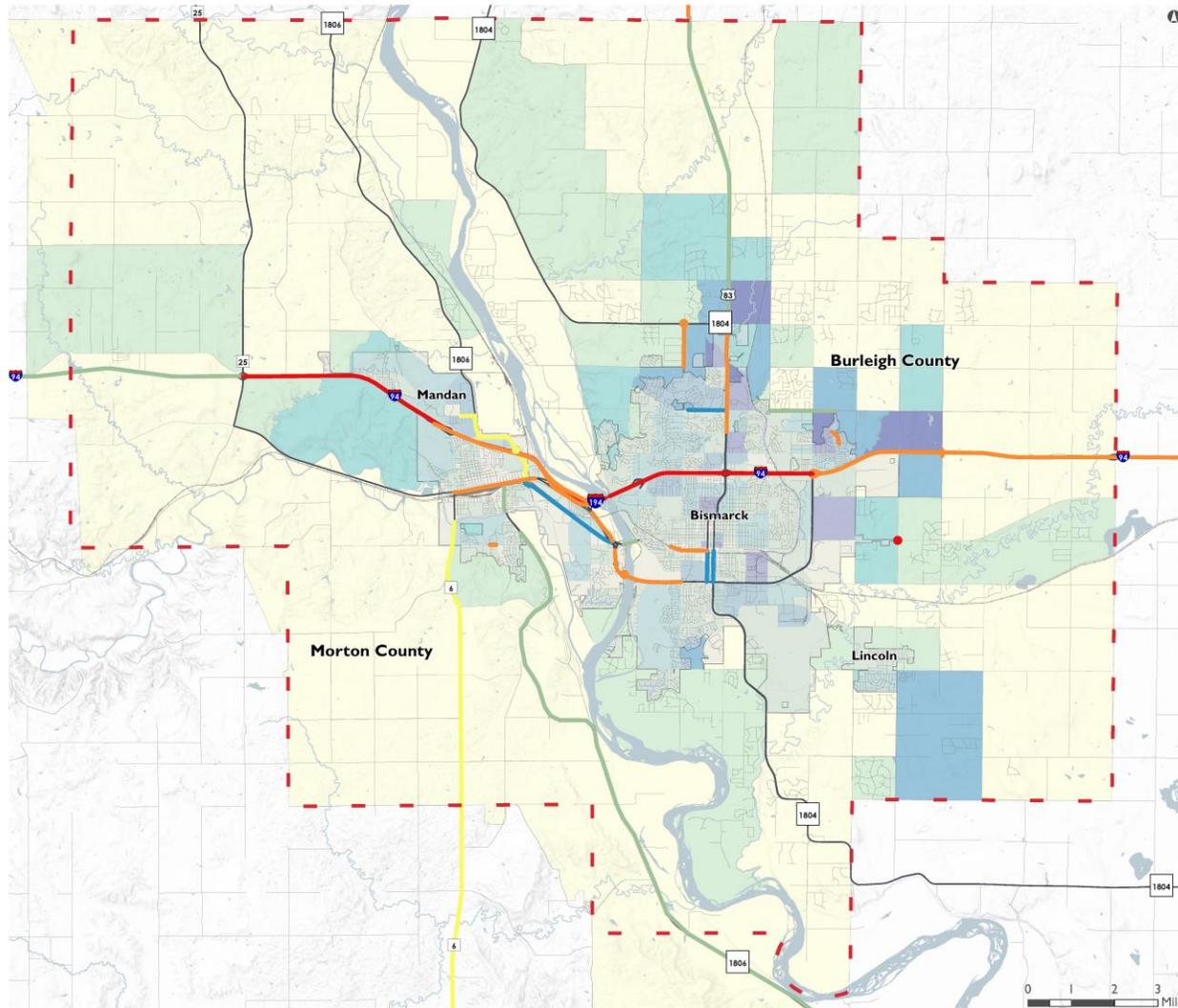
Additional Jobs

- 0 - 10
- 11 - 50
- 51 - 250
- 251 - 1500
- 1501 +



System Performance Overview

Future Network and Growth



2045 Household & Job Growth

Metropolitan Planning Organization Boundary

Boundary

TIP Projects By Year

- 2018
- 2019
- 2020
- 2021
- 2022

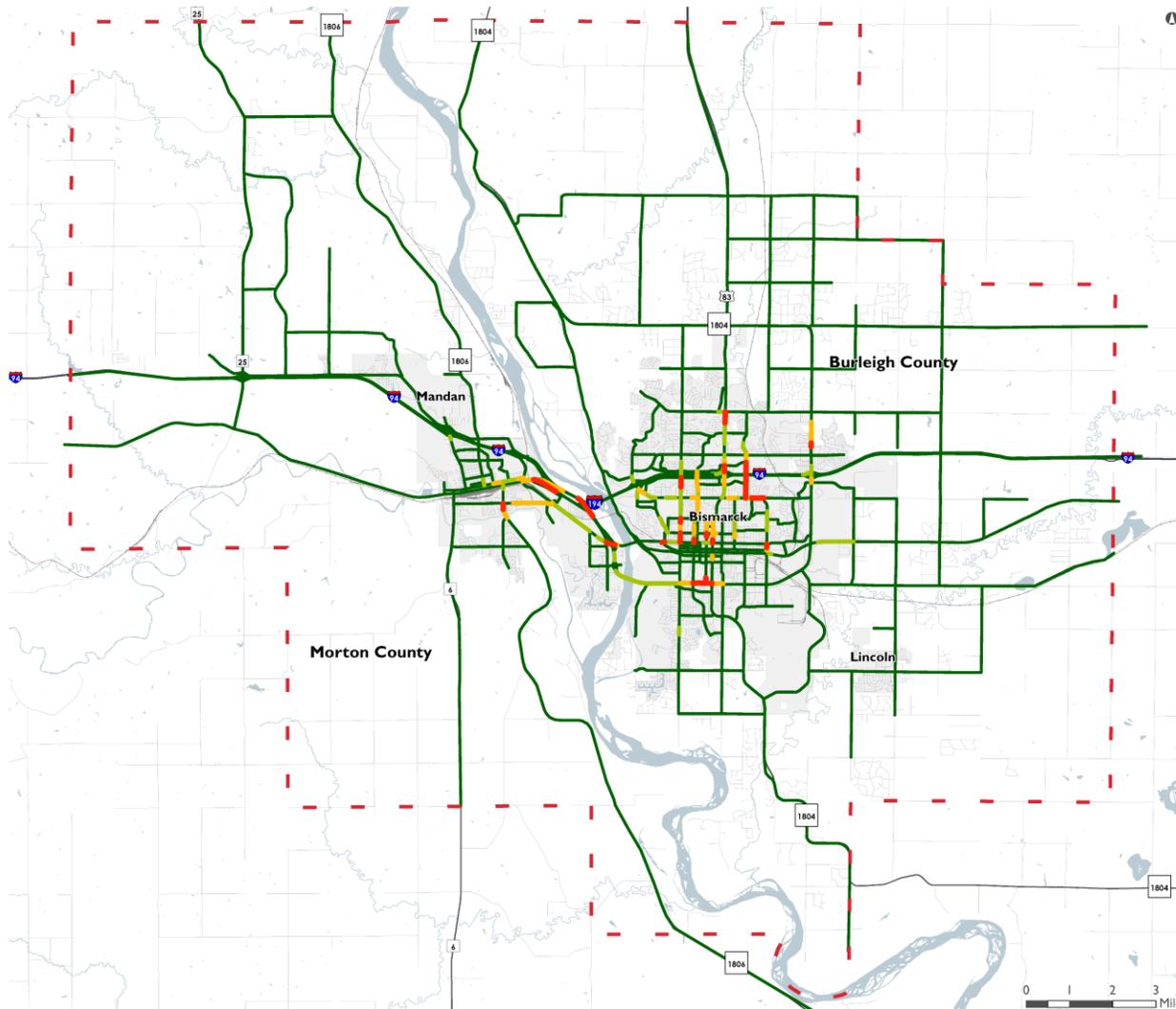
2045 TAZ Data

Additional Household + Jobs

- 0 - 250
- 250 - 750
- 750 - 1,250
- 1,250 - 2,500
- 2,500+



2015 Congestion



Level of Service 2015

LOS 2015

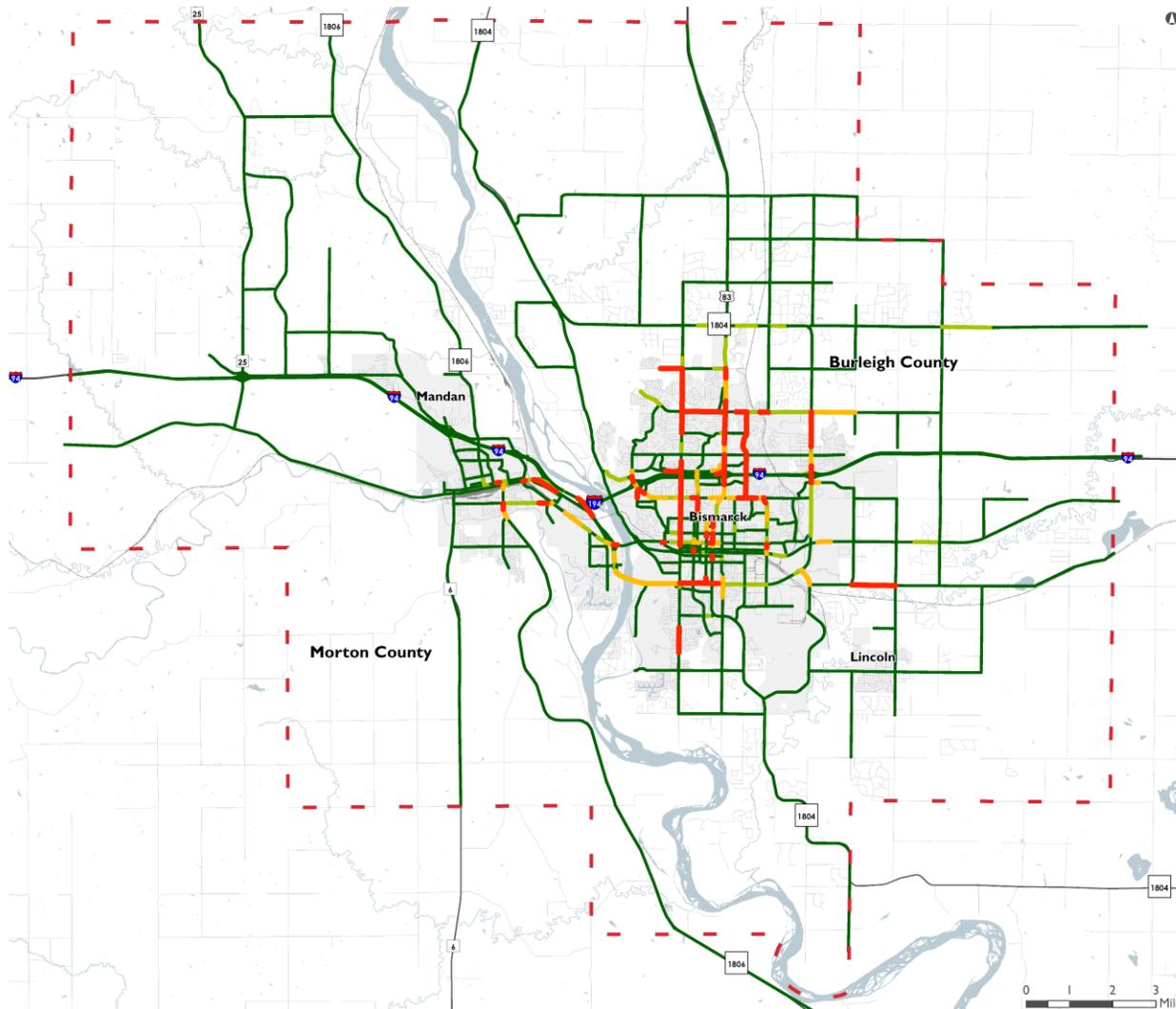
- F
- E
- D
- A - C

Metropolitan Planning Organization Boundary

- Boundary



2030 Congestion



Level of Service 2030

LOS 2030

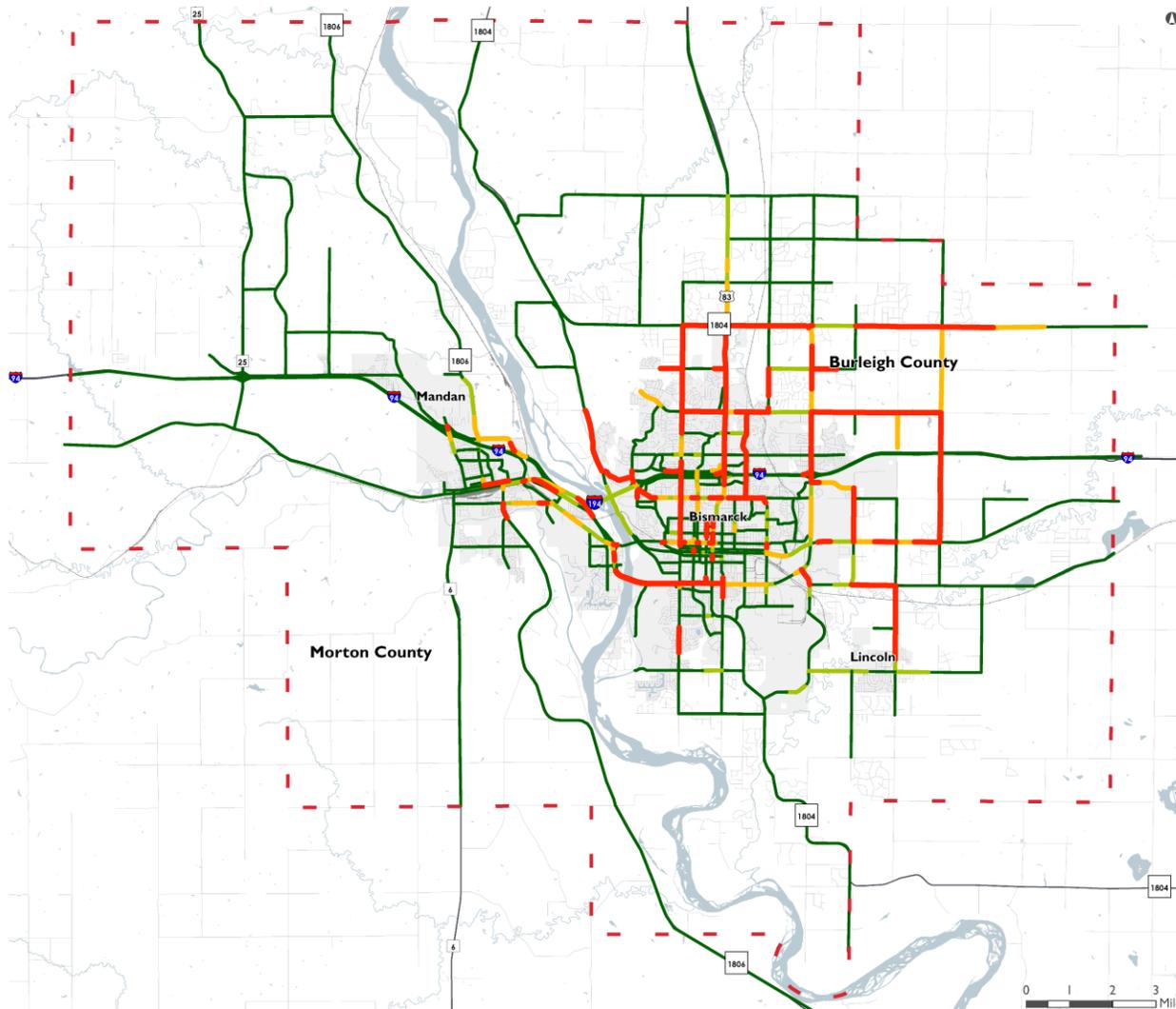
- F
- E
- D
- A - C

Metropolitan Planning Organization Boundary

- Boundary



2045 Congestion



Level of Service 2045

LOS 2045

- F
- E
- D
- A - C

Metropolitan Planning Organization Boundary

- Boundary



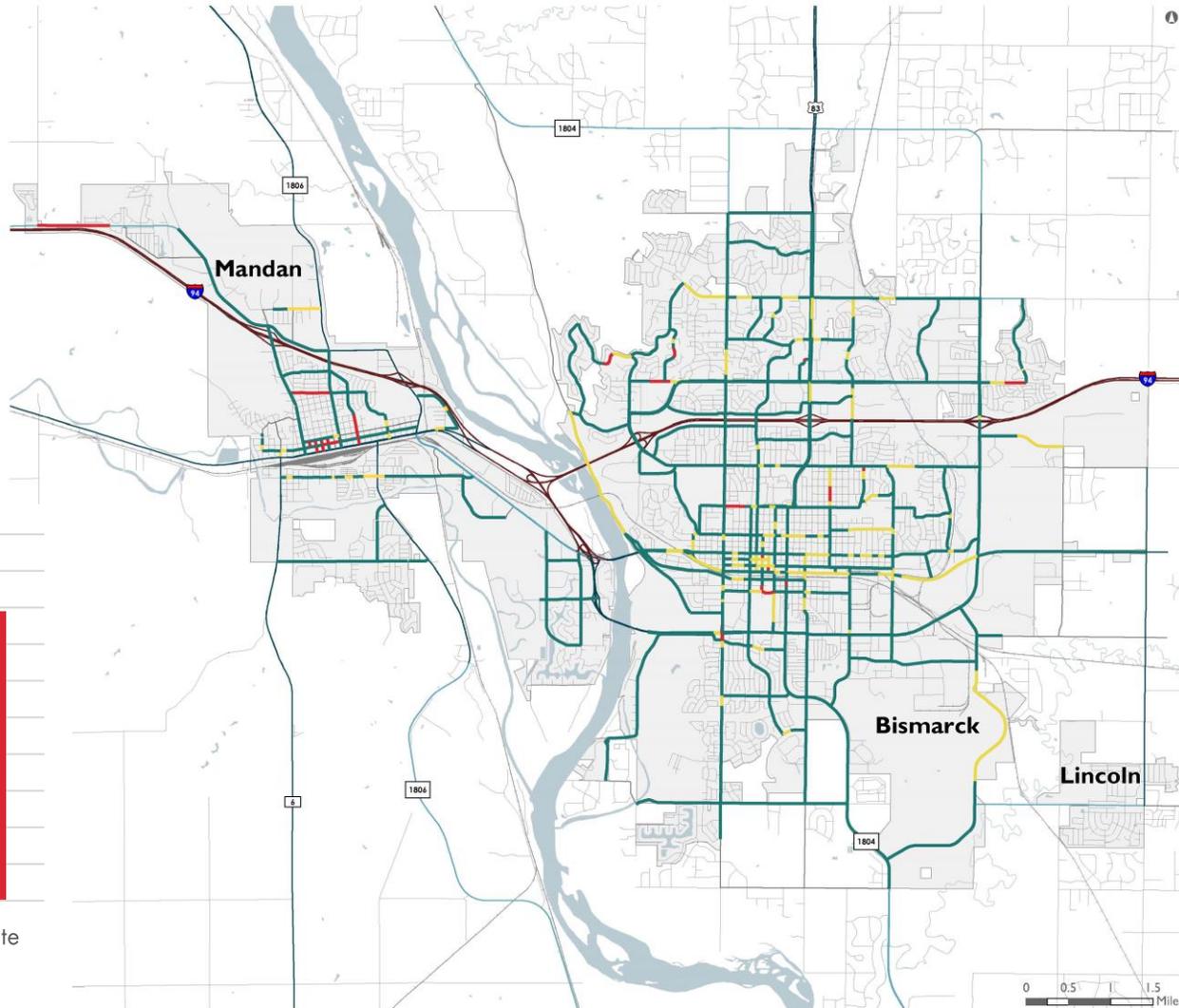
0 1 2 3 Miles

Mobility and Congestion

	2015	2045	Percent Change
Vehicle Miles Traveled	1,753,849	2,934,595	67%
Vehicle Hours Traveled	47,107	80,904	72%
Total Trips	545,249	809,957	49%
Average Miles per Trip	3.2 miles	3.6 miles	13%
Average Time per Trip	5 minutes	6 minutes	16%

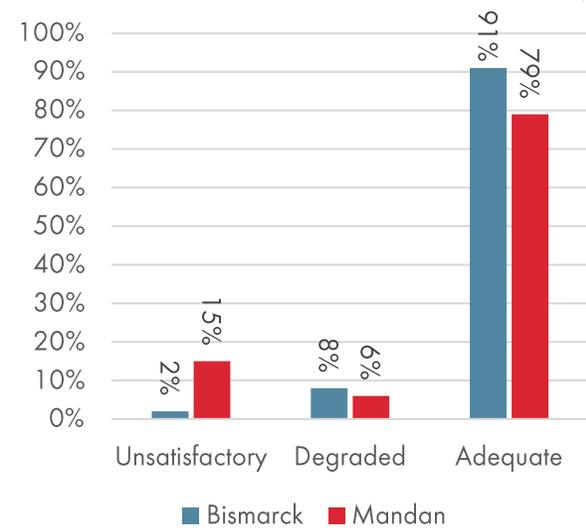
- » Average miles and minutes per trip to grow by 2045.
- » Total hours of travel time grows faster than total miles of travel (growing congestion).

City Pavement Condition

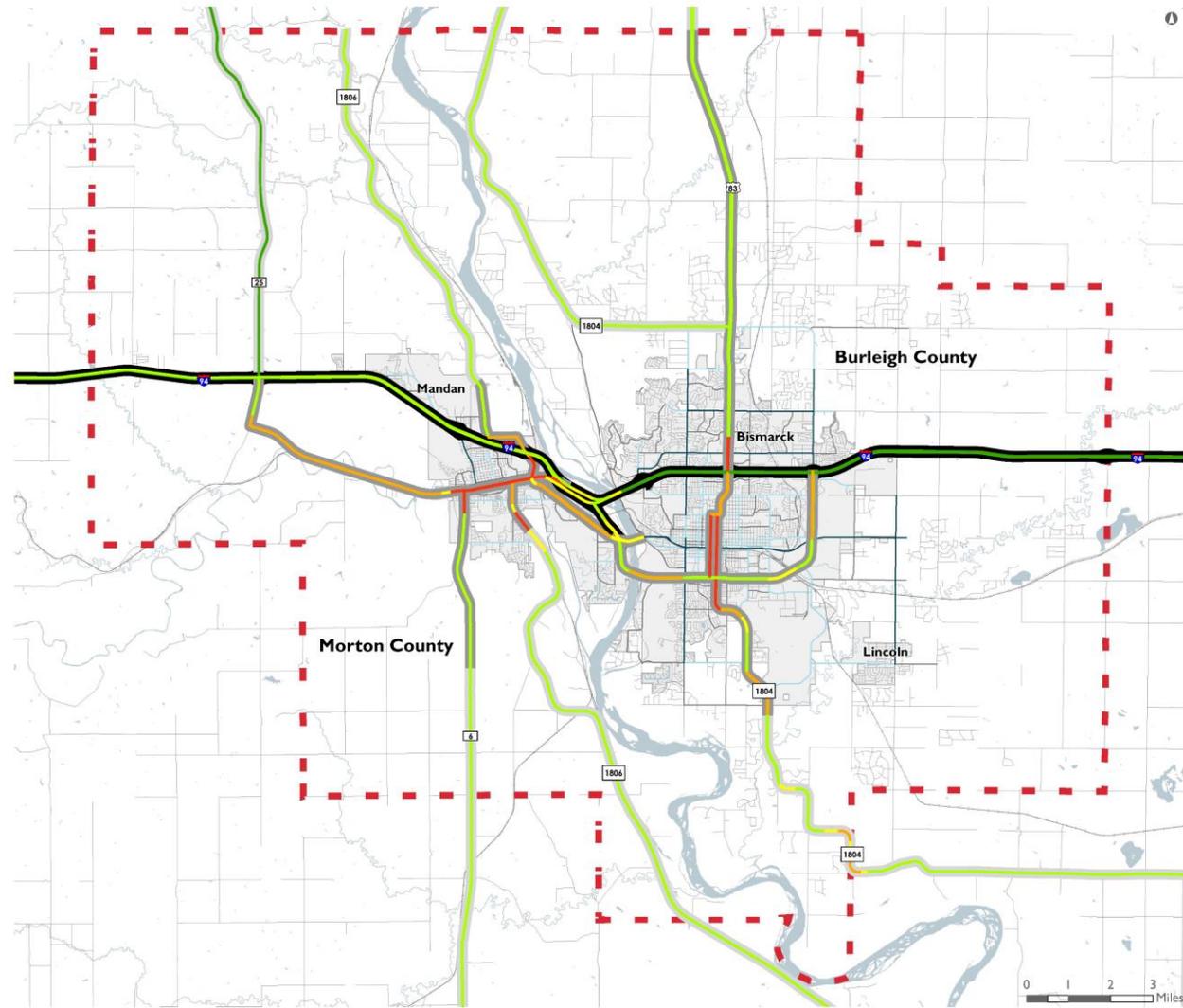


Pavement Conditions Index (PCI) Rating 2016 - 2018

- PCI Rating**
- Adequate
 - Degraded
 - Unsatisfactory
- Roadway by Functional Classification**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector

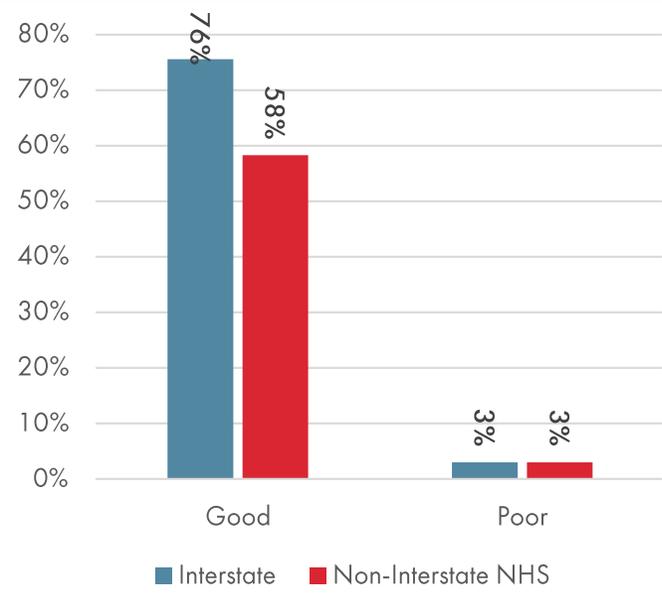


State Pavement Condition

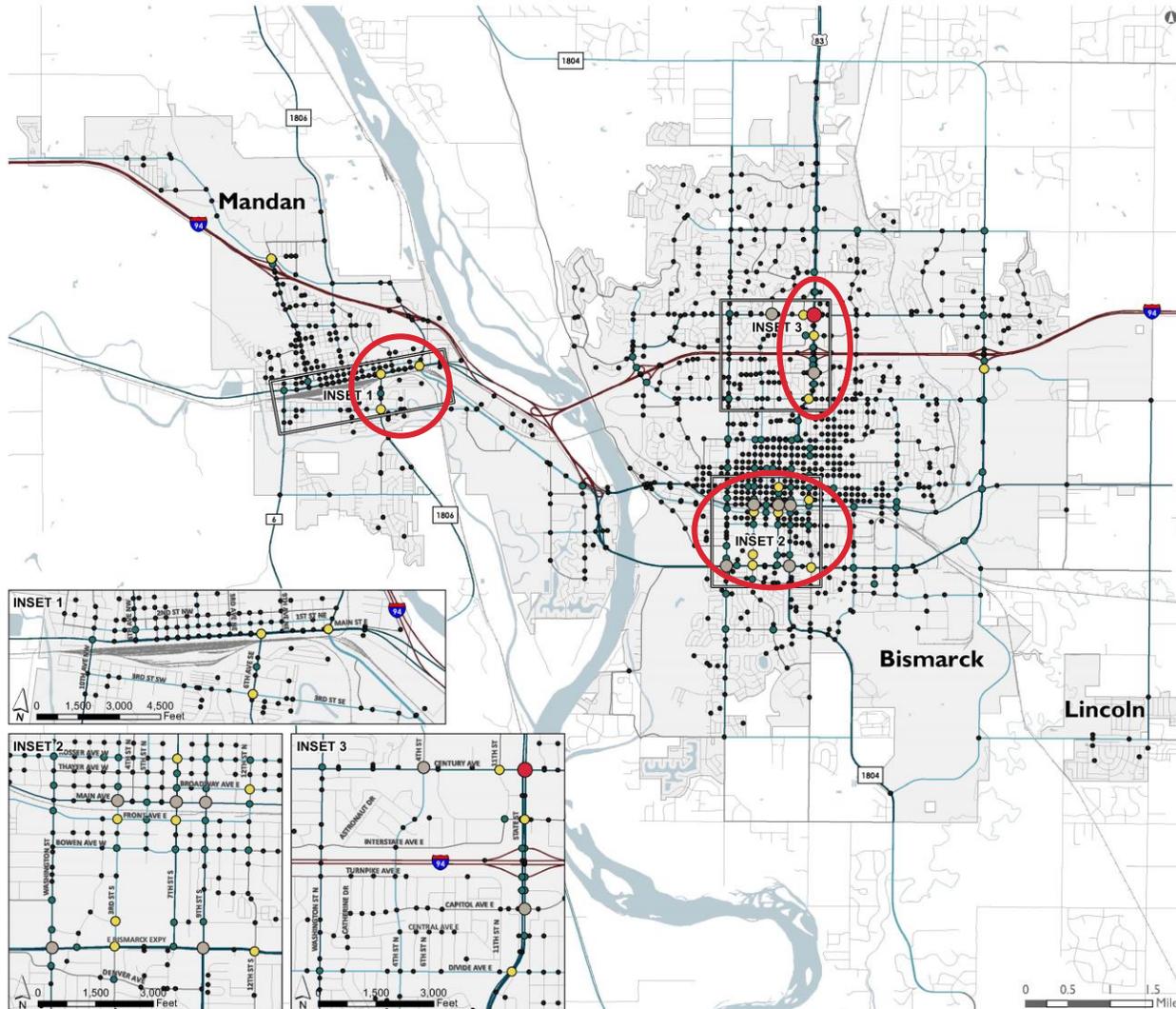


**State Owned Roads
International Roughness
Index (IRI) Rating 2017**

- IRI Rating**
 - Excellent
 - Good
 - Fair
 - Poor
 - No Data
- NHS Classification**
 - Interstate
 - Principal Arterial
 - State Non-NHS
- Metropolitan Planning Organization Boundary**
 - Boundary
- Roadway by Functional Classification**
 - Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector



City Limit Intersection Crashes



Urban Intersection Crashes 2013 - 2017

Crash Count

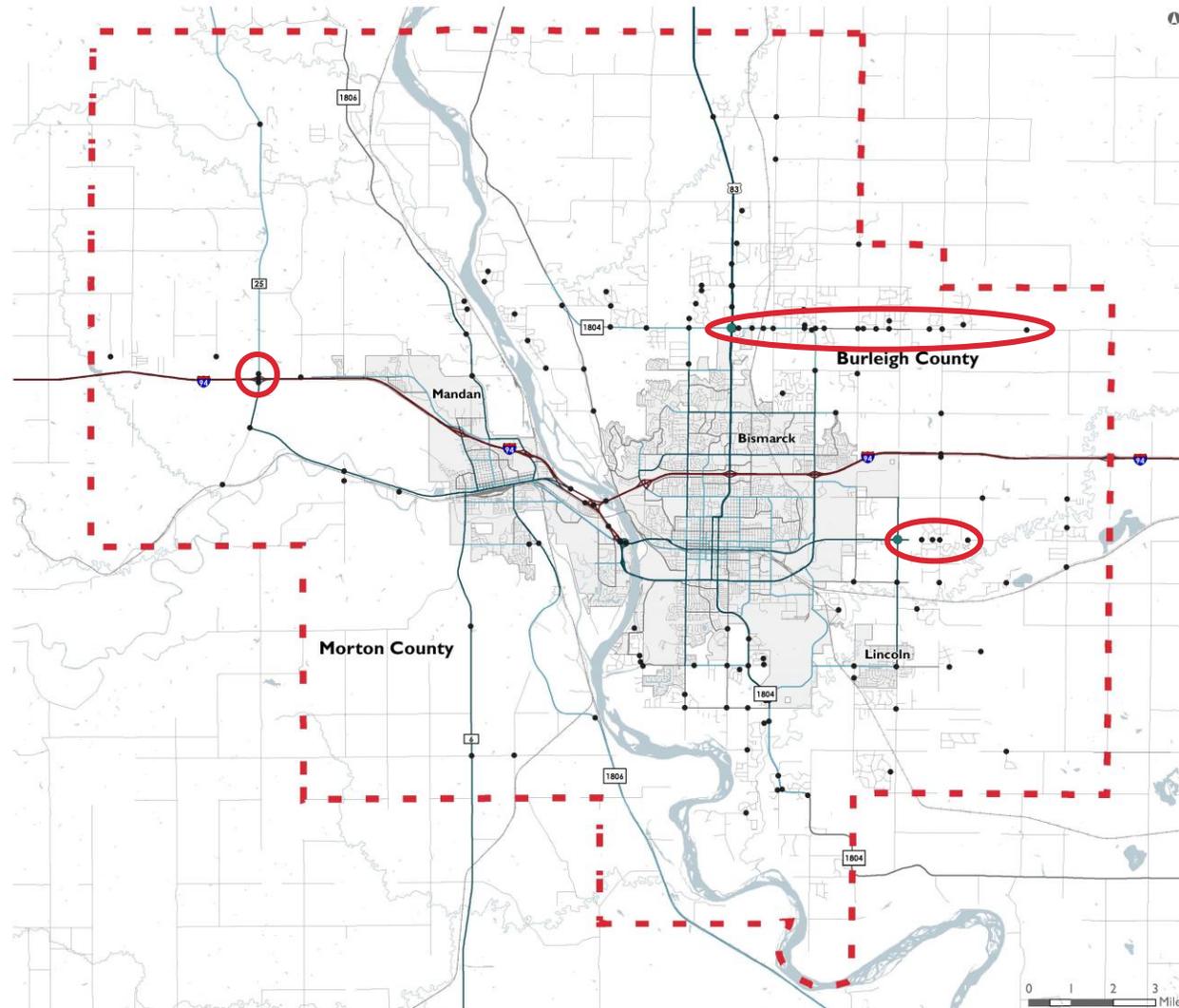
- 70+
- 51 - 70
- 31 - 50
- 11 - 30
- 1 - 10

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector



Rural Intersection Crashes



Rural Intersection Crashes 2013 - 2017

Crash Counts

- 11 - 15
- 1 - 10

Metropolitan Planning Organization Boundary

- Boundary

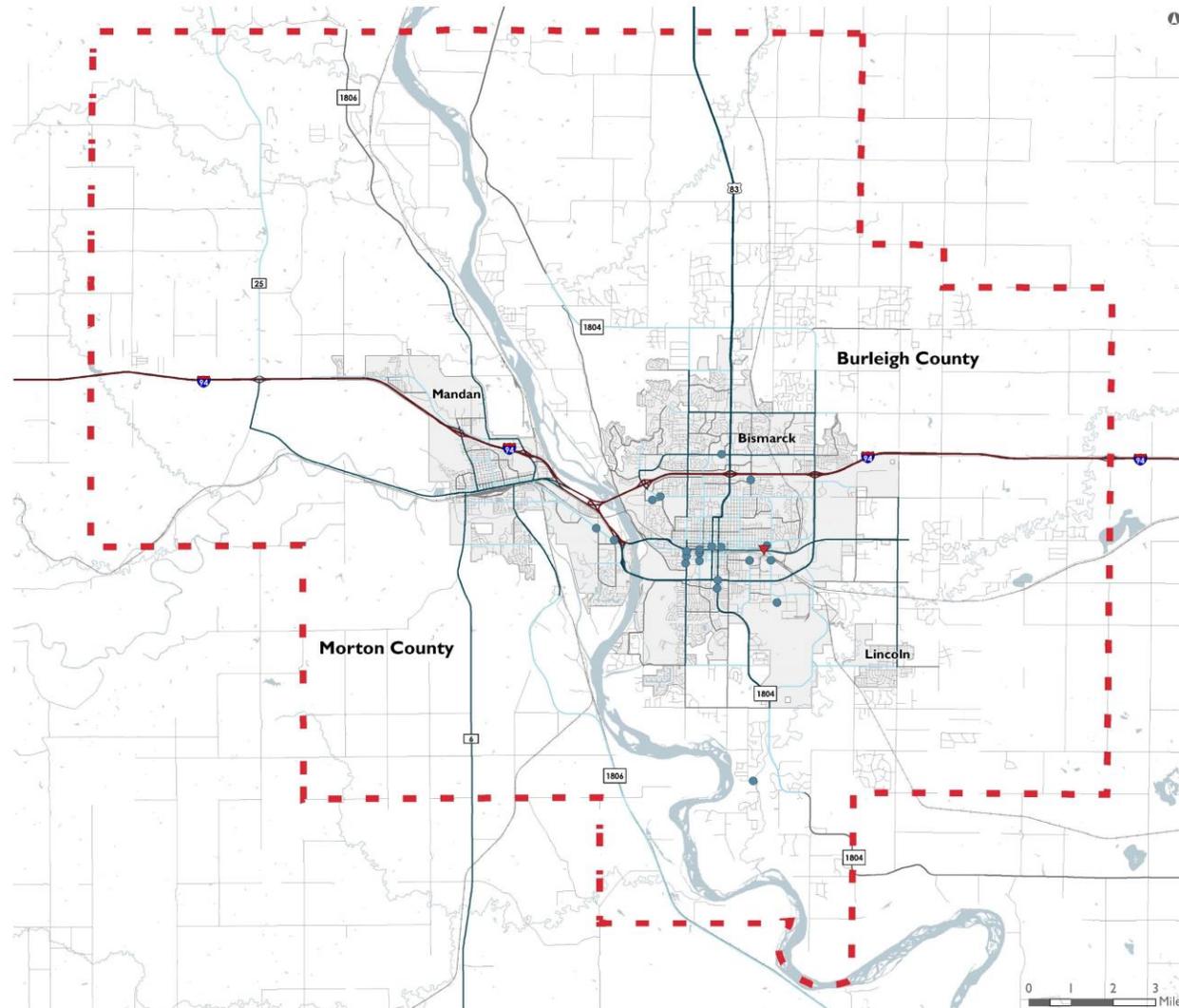
Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

Note: Crashes inside city limits are mapped on map titled "City Limit Intersection Crashes 2013-2017".



Serious Non-Motorized Crashes



Serious Non-Motorized Crashes 2013 - 2017

Serious Non-Motorized Crashes

- ▼ Fatal Crashes
- Incapacitating Injury Crashes

Metropolitan Planning Organization Boundary

- ▬ Boundary

Roadway by Functional Classification

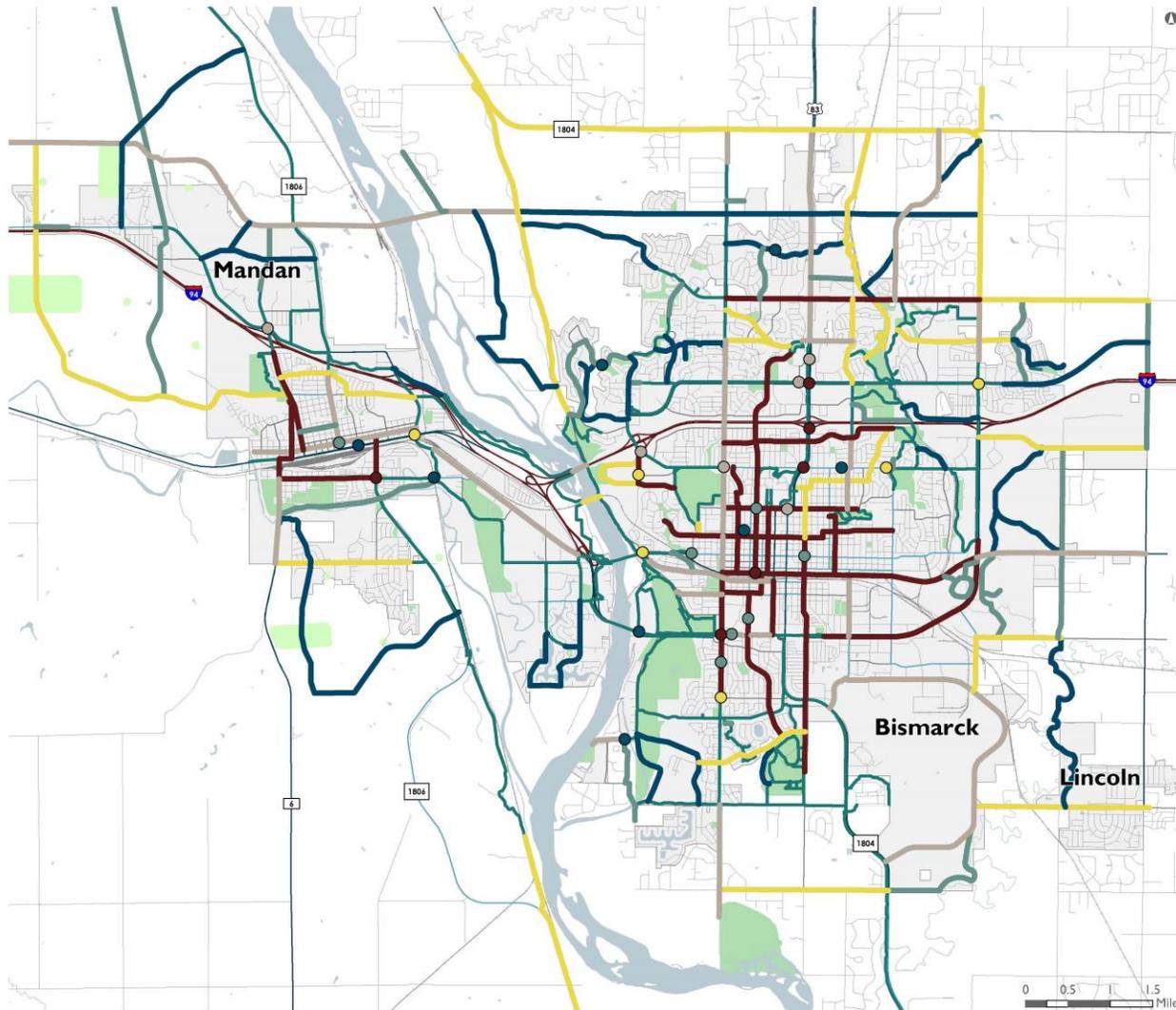
- Interstate
- Principal Arterial
- Minor Arterial
- Collector



Multimodal

Facility Type	Description	Inventory
<p>SIDEWALKS</p> 	<p>Sidewalks are located on most streets in Bismarck and are typically constructed once a property is developed</p>	<p>Bismarck: 437 miles Mandan: no data</p>
<p>MULTI-USE TRAILS</p> 	<p>These trails are separated from the roadway and used for bicycling, walking, running, or other non-motorized activities. There are multi-use trails in both Bismarck and Mandan. Many of these trails continue outside city limits in Morton and Burleigh County.</p>	<p>Bismarck: 52 miles Mandan: 18 miles</p>
<p>BICYCLE LANES</p> 	<p>Some roads in Bismarck include dedicated bicycle lanes, which are between 4 and 6 feet wide and marked with paint.</p>	<p>Bismarck: 4 miles Mandan: 0 miles</p>
<p>SHARED-USE ROUTES</p> 	<p>Some residential and collector roads in Bismarck are marked with Share the Road signs and/or street markings to encourage motorists to make space for bicyclists.</p>	<p>Bismarck: 5 miles Mandan: 0 miles</p>
<p>BIKE RACKS</p> 	<p>The Bismarck-Mandan MPO conducted a recent count of bicycle racks in the two cities.</p>	<p>136 Total Racks</p>

Bicycle and Pedestrian Facilities



Intersection and Connection Analysis Scoring Bismarck-Mandan Bicycle and Pedestrian Plan

Intersection Scoring

- Top 20%
- Top 40%
- Mid 20%
- Lower 40%
- Lower 20%

Connection Scoring

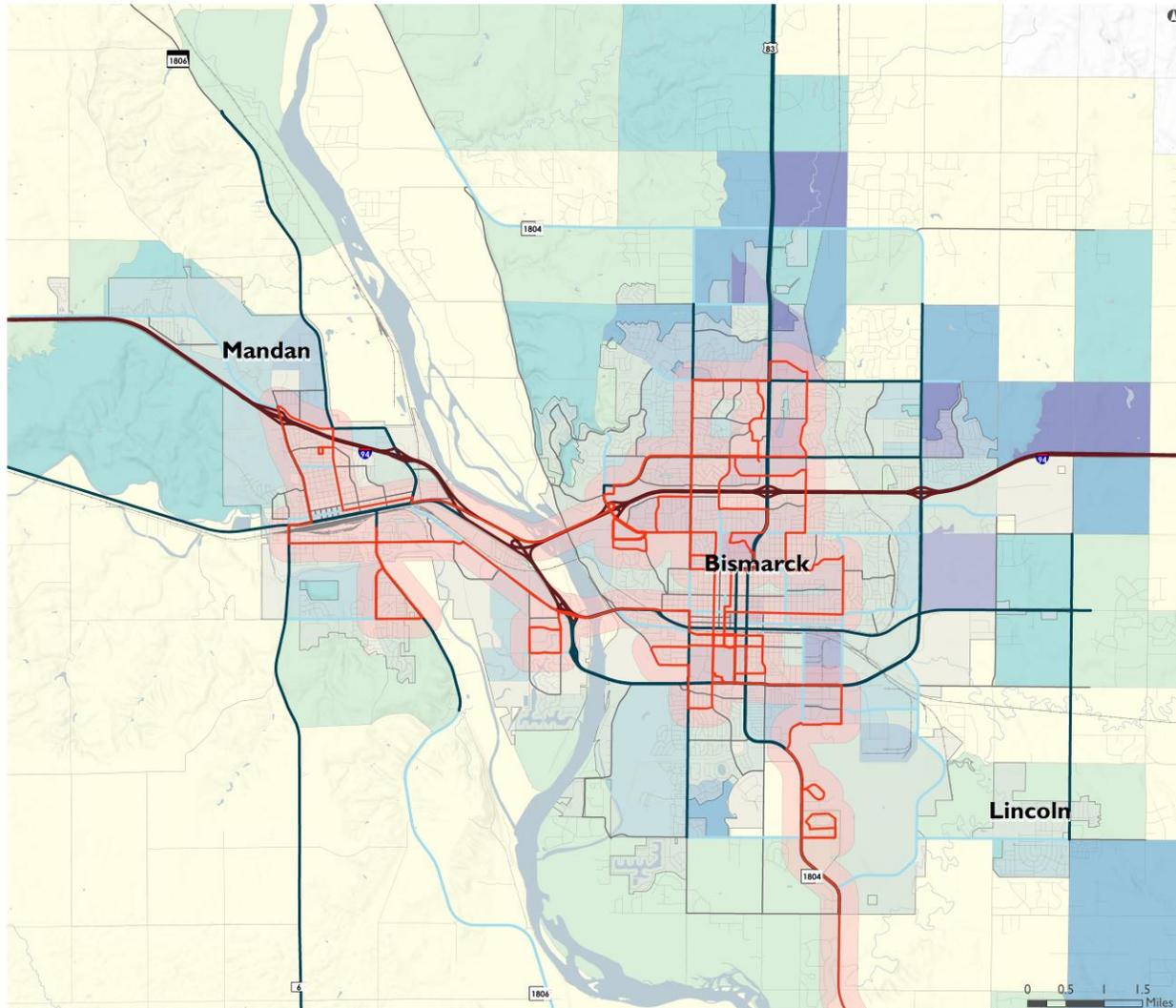
- Top 20%
- Top 40%
- Mid 20%
- Lower 40%
- Lower 20%

Bicycle Facilities

- Existing Multi-Use Trails
- Existing Parks
- Planned Parks



Transit



Transit Routes

- Bis-Man Transit Routes 2017
- Transit Routes 1/4 Mile Buffer

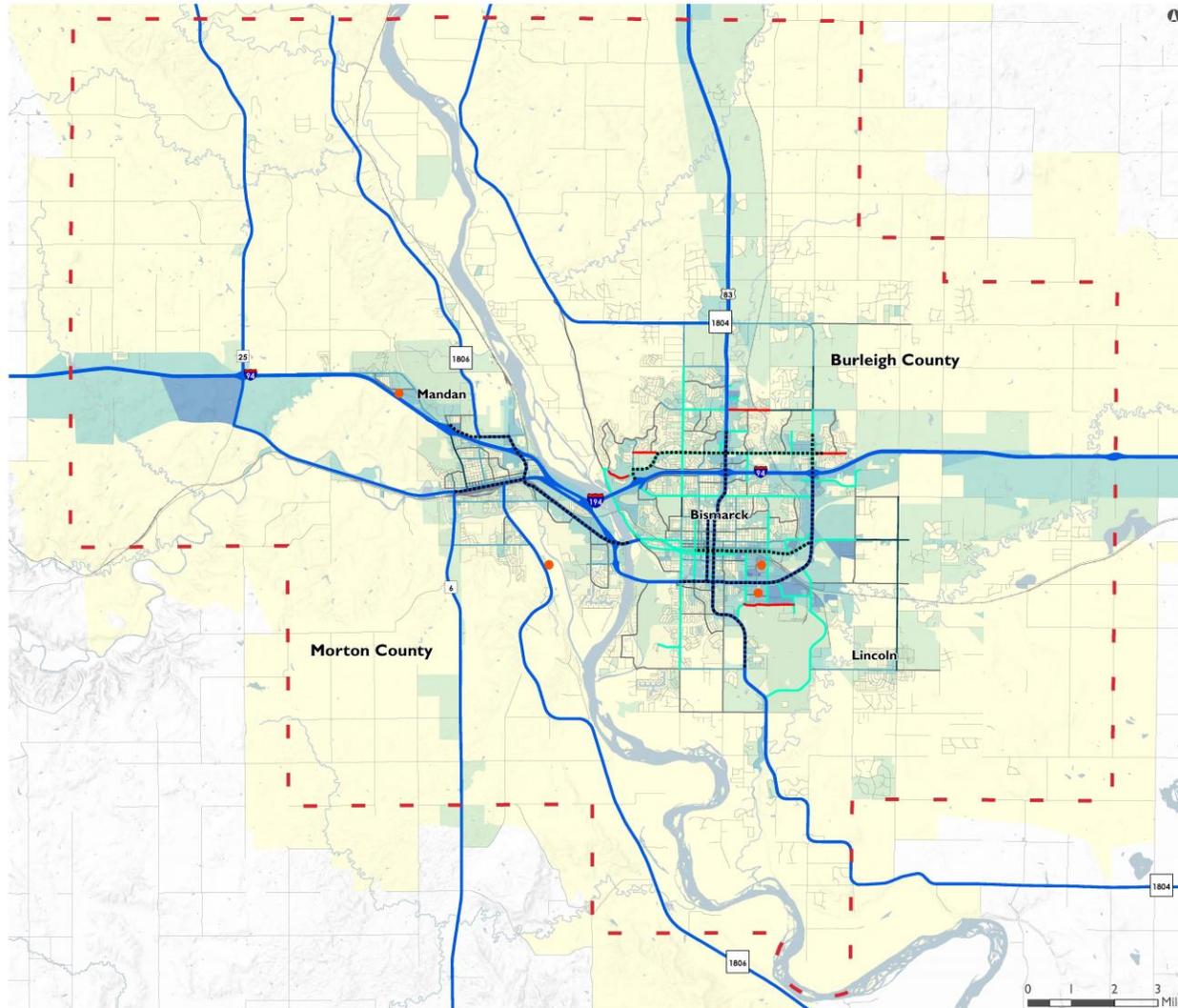
2045 TAZ Data

Additional HH + Jobs

- 0 - 250
- 250 - 750
- 750 - 1,250
- 1,250 - 2,500
- 2,500+



Freight



Truck Routes

- Major Freight Generators
- ⋯ Critical Urban Freight Corridors
- Metropolitan Planning Organization Boundary**
- └─ Boundary
- State and Federal Truck Routes
- Bismarck Local Routes**
- Designated Truck Route
- 6-ton Limit
- Roadway by Functional Classification**
- Interstate
- Principal Arterial
- Minor Arterial
- Collector
- Railroads
- Truck Pings per Square Meter**
- 0.00000 - 0.00004
- 0.00005 - 0.00043
- 0.00044 - 0.00433
- 0.00434 - 0.04333
- 0.04334 - 0.43338

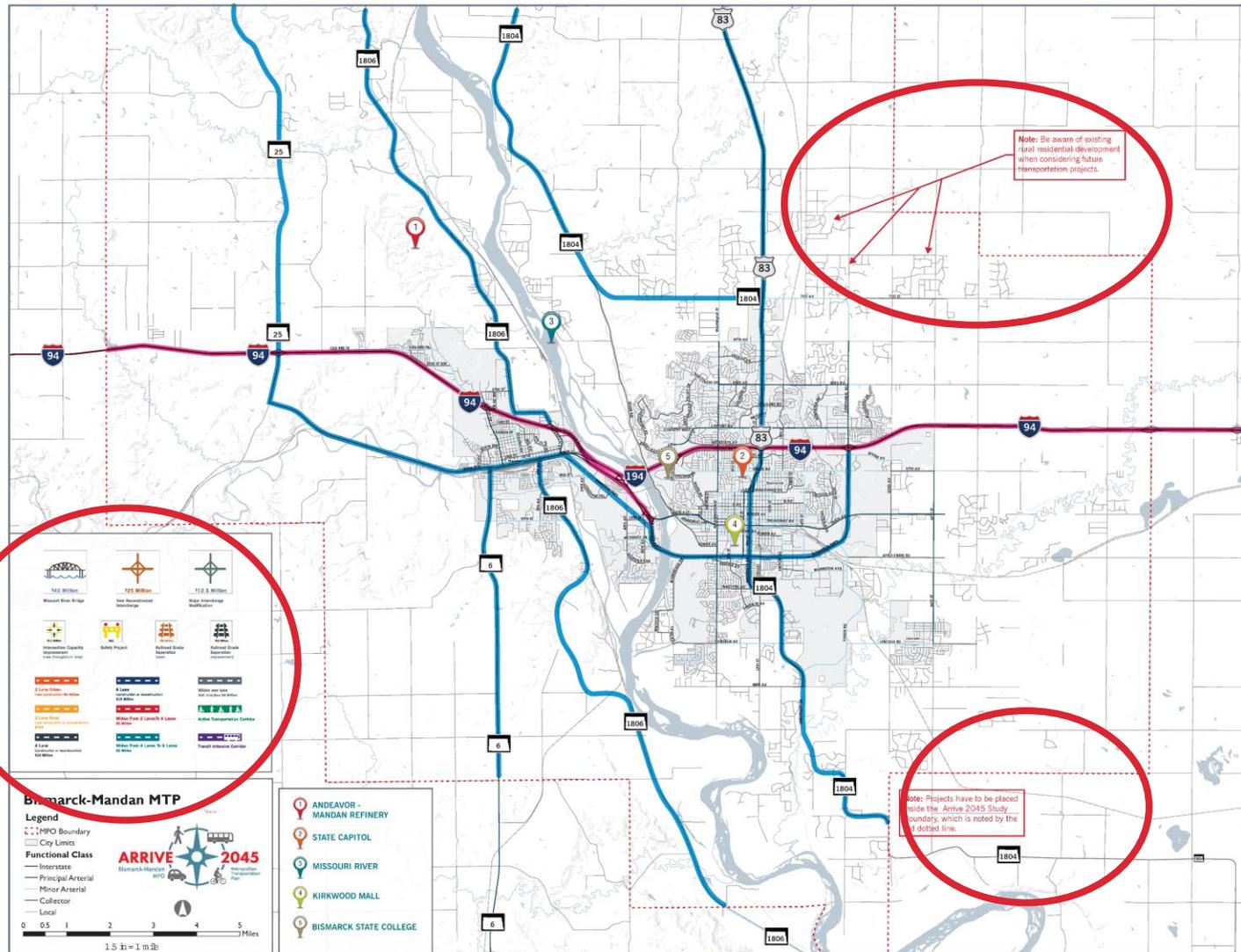




Arrive 2045 Transportation Futures Summit



Futures Summit – Table Map



» Mind your neighbors

» Follow directions

» Read the labels

» Ask questions

Project Stickers



Missouri River Bridge



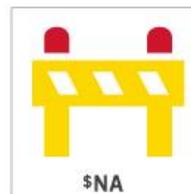
New Reconstructed Interchange



Major Interchange Modification



Intersection Capacity Improvement
(new through/turn lane)



Safety Project



Railroad Grade Separation
(new)



Railroad Grade Separation
(replacement)

Project Stickers



2 Lane Urban
(new construction) **\$6 Million**



2 Lane Rural
(new construction or reconstruction)
\$TBD



4 Lane
(construction or reconstruction)
\$10 Million



6 Lane
(construction or reconstruction)
\$15 Million



Widen From 2 Lanes To 4 Lanes
\$5 Million



Widen From 4 Lanes To 6 Lanes
\$5 Million



Widen one lane
Both directions **\$4 Million**



Active Transportation Corridor



Transit Intensive Corridor

Project Tally Sheet



FUTURES SUMMIT PROJECT TRACKING SHEET

INTERSTATE PROJECTS

These are projects on the Interstate System including interstate interchanges. These are the areas highlighted in **RED** on the table map. These will include improvements on the Interstate or to interchanges with the Interstate.

TOTAL BUDGET: \$56,000,000

REGIONAL/STATE PROJECTS

These are projects on roads which are maintained by NDDOT or for which there is shared responsibility for those roadways between NDDOT and a local city or county. These are roads highlighted in **BLUE** on the table map.

TOTAL BUDGET: \$65,000,000

LOCAL/URBAN PROJECTS

These are projects on roads maintained and operated by Bismarck, Mandan, or Lincoln, or by Morton or Burleigh County. These roads are noted as collector or above on the table map. Projects can be placed on "future" roads provided they are inside the Arrive 2045 Study Area.

A meeting facilitator can help you determine how and where to place these projects.

TOTAL BUDGET: \$80,000,000

» Mind your project budgets

» Keep track of your expenses by project type

» Ask questions



Goal Prioritization

Safety – Achieve reductions in traffic fatalities and serious injuries for transportation users.

Infrastructure Condition – Maintain the transportation system in a state of good repair. Preserve what we have before expanding the system.

Congestion Reduction – Reduce congestion, especially on corridors of regional and national significance.

System Reliability – Improve the efficiency of the transportation system through better accommodation for congestion, incidents, special events, weather, and construction.

Freight Movement/Economic Vitality – Improve access to regional, national and international markets and support economic development through improved freight networks.

Environmental Sustainability – Protect and enhance the natural environment.

Reduce Project Delays – Improve the delivery of transportation projects through reduced regulations, improved agency coordination and implementation of innovative delivery methods.

Performance Prioritization

Active Transportation – Improve the performance of bicycle and pedestrian systems through an expanded network of trails and pathways, and prioritize accommodations for bicycles and pedestrians within the transportation network.

Pavement Conditions & Preservation – Prioritize maintenance of the existing transportation systems.

Public Transportation - Improve the performance of public transit system through expanded service areas, more frequent routes and prioritize public transit systems within the transportation network.

Travel Time – Improve the travel time through improved capacity on transportation corridors.

Technology – Increase investments in technology to improve the operation and function of the surface transportation system.

Goal Prioritization

Funding – New funding sources and financing strategies are needed.

Regional Priorities – Address those projects and solutions which have the greatest benefit, regardless of geographic location.

Preservation & Management – The current transportation system needs more attention than efforts to expand and build new roads.

Growth & Development – There needs to be better linkages between future transportation projects and planned growth and development.

North-South Mobility – Improving movements along north-south roadways.

East-West Mobility – Improving movements along east-west roadways.

Expansion – More investment is needed to expand the transportation systems in place, and to serve projected new development.

Public Expectations – Education is needed to establish realistic expectations, so the public is more tolerant and understanding of the transportation challenges facing our communities.

Technology – More is needed in the way of technology improvements to address existing and future transportation needs.



Arrive 2045 Transportation Futures Summit



Next Steps

- » www.arrive2045.com
- » Like and follow the MPO's Facebook page for updates
- » Comments due by October 31st
- » Look for a survey to be posted online

Questions or comments? Send them to:

Wade Kline, Project Manager

728 East Beaton Drive

West Fargo, ND

Wade.kline@kljeng.com

701-271-5009





INTERSTATE PROJECTS

These are projects on the Interstate System including interstate interchanges. These are the areas highlighted in **RED** on the table map. These will include improvements on the Interstate or to interchanges with the Interstate.

TOTAL BUDGET: \$56,000,000

25
25

50

Railroad
south of
Lincoln has
been abandoned

PM #1 - LINCOLN

REGIONAL/STATE PROJECTS

These are projects on roads which are maintained by NDDOT or for which there is shared responsibility for those roadways between NDDOT and a local city or county. These are roads highlighted in **BLUE** on the table map.

TOTAL BUDGET: \$65,000,000

125 - grade sep
40 M - MR bridge

525

LOCAL/URBAN PROJECTS

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A meeting facilitator can help you determine how and where to place these projects.

TOTAL BUDGET: \$80,000,000

2.5 - rbt - 66th / AC
2.5 - rbt - Lincoln Rd

6
6
6

2.5 - rbt - River Rd
2.5 rbt - 1804
2.5 - - 1806

30.5

35 - 55

65.5

2x3 = 6

71.5

26th → 71st S
43rd
connected?



INTERSTATE PROJECTS

These are projects on the Interstate System including interstate interchanges. These are the areas highlighted in **RED** on the table map. These will include improvements on the Interstate or to interchanges with the Interstate.

TOTAL BUDGET: \$56,000,000

25M - 66th St interchange

12.5 - ~~Memorial~~ Memorial highway interchange widening/upgrading

12.5M - Centennial/Expressway Interchange

4 M - widen one lane I-94 Midway WB.

REGIONAL/STATE PROJECTS

These are projects on roads which are maintained by NDDOT or for which there is shared responsibility for those roadways between NDDOT and a local city or county. These are roads highlighted in **BLUE** on the table map.

TOTAL BUDGET: \$65,000,000

10 M - Memorial Hwy 3rd Phase

5 M - 4-6 lanes St Street Calgary

Safety Projects.

- Boulevard/st. street Curve - too dangerous
- Downtown Bismarck - one ways. - sight lines are difficult.
- Century & state St. intersection

LOCAL/URBAN PROJECTS

These are projects on roads maintained and operated by Bismarck, Mandan, or Lincoln, or by Morton or Burleigh County. These roads are noted as collector or above on the table map. Projects can be placed on "future" roads provided they are inside the Arrive 2045 Study Area.

A meeting facilitator can help you determine how and where to place these projects.

TOTAL BUDGET: \$80,000,000

35.4M - RR X @ 66th Lincoln.

4 M - Add shoulders to 71st street.

2.5M - 71st/Centennial Round-about

20 M - widen 66th @ RR crossing

20 M - 4 lanes for 66th interchange

INTERSTATE PROJECTS

These are projects on the Interstate System including interstate interchanges. These are the areas highlighted in **RED** on the table map. These will include improvements on the Interstate or to interchanges with the Interstate.

TOTAL BUDGET: \$56,000,000

- \$25m - 66th/1-94 Int.
- \$12.5m - State St/1-94 improvement
- \$12.5m - Mandan Int. - improve mt
- \$5.0mil - Expand 4 to 6 lane

Total = \$55.0m

REGIONAL/STATE PROJECTS

These are projects on roads which are maintained by NDDOT or for which there is shared responsibility for those roadways between NDDOT and a local city or county. These are roads highlighted in **BLUE** on the table map.

TOTAL BUDGET: \$65,000,000

- \$2.5 mil - Int. Imp @ Wash/Exp.
- \$2.5 mil - Cent Ave / State Street
- \$40mil - Missouri River Bridge - North Location
- \$18 mil - Connect to new Miss. River Bridge

Total = \$63.0m

LOCAL/URBAN PROJECTS

These are projects on roads maintained and operated by Bismarck, Mandan, or Lincoln, or by Morton or Burleigh County. These roads are noted as collector or above on the table map. Projects can be placed on "future" roads provided they are inside the Arrive 2045 Study Area.

A meeting facilitator can help you determine how and where to place these projects.

TOTAL BUDGET: \$80,000,000

- \$35m - New RR Grade Sep on 66th St
- \$6m - add 2-lane roadway to connect to the 1-94 & 66th St. Int.
- \$12m - Reconstruct 71st St.
- \$2.5m - Regan & Lincoln Rd Intersection Imp - Possible Reindabest
- \$6m - Lincoln Roadway Reconstruct ex. 2-lane roadway
- \$2.5m - Washington / Divide Int. Imp.
- \$20m - Expand 2-4 lane along Century & 71st Avenue (where 4-lane currently ends)

\$84.0m

Arrive 2045 Transportation Futures Summit

Have thoughts on the Bismarck-Mandan Transportation Plan?

WE'D LOVE TO HEAR THEM!

IDEAS/COMMENTS

I would like to propose to do the 83 bypass truck route study lines and move the lines to Hwy 35, since that road is already paved, widen, and all houses are already set back that nothing would have to be moved, no going thru neighborhoods with small children, and would not affect the city growth in the near future at any time. The proposed lines that you have goes thru wild life/grassland grounds.

CONTACT INFO

First Name Todd

Last Name Iszlen

Email iszlerranch@msn.com

Please add me to the contact list.



Sept 28,2018

OCT 01 2018

Steve Saunders

Rachel Drewlow

& Staff Committee

RE: 2045 Metropolitan Transportation Study

If you drive from Western North Dakota via the I 94 Interstate; you will see the Great VAST Open Spaces!! Our State will Never grow to be a Phoenix, AZ Metropolitan Area!! Just a given, we need to LOOK at what infrastructures we Have. What Lies Along Interstate I 94! Northern ND, also Widen there Hwys & Rural Roads, Maybe Blacktop Dirt Rural roads!!

1. WIDEN all Interstate I 94; Beach, ND to Fargo ND. with a 3 to 6 lanes Highway!
2. WE have Missouri River which divides the State; Building more Bridges in Rural Areas, Is a complete WASTE!!
3. How do you Expect Traveling & Investing in More Roads to Lead to these Rural New Bridges?
4. Widen the Grant Marsh Bridge, Between Mandan & Bismarck 1st, before New construction starts in Untraveled Rural areas of Burleigh & Morton Counties.
5. Can North Dakota Afford your Ideas of New Roads that Lead out of the way in Rural areas, when Most Commercial Truck Traffic, Delivers or Travels through our State.
6. CAN Taxes afford these Far Fetched 2045 Metro DREAM of your Organization??
7. AGAIN; we will never grow like other Huge Cities in this Country.
8. REIN in Your Ideas of this kinds of Big City Growth.
9. BUILD ON TO THE EXISTING HIGHWAYS & Roads OF North Dakota first!!

Concerned Citizen of North Dakota's Growth for 2045 Metro

Elaine Fried



BISMARCK ND 585

28 SEP 2018 PM 1 L



OCT 01 2018

2045 Metropolitan Study
Attn: Steve Saunders

221 - N. 5th St

Bismarck, ND
5850184028

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location	Mandan City Hall	Meeting Type		Meeting Date	10/10/2018
Project Number		PCN			
Project Description	Arrive 2045				

Name (Please print)		Title/Representing	
Steve Saunders		MPO SCM	
Address			
221 N 5th St			
City	State	Zip code	Email
Bismarck	ND	58501	ssaunders@bismarcknd.gov

Name (Please print)		Title/Representing	
JERONIA A FERNOW		Added to new and combined	
Address			
10800 Rushmore Rd			
City	State	Zip code	Email
Bismarck	ND	58503	ufernow@outlook.com

Name (Please print)		Title/Representing	
Ann Fritz		Added from website Added to Combined	
Address			
8030 Burnt Creek Ln			
City	State	Zip code	Email
Bismarck	ND	58503	amkfritz@gmail.com

Name (Please print)		Title/Representing	
Shannon Boehm		Added from website Mandan Planning Commission Updated combined sheet	
Address			
5400 Old Red Trail			
City	State	Zip code	Email
Mandan	ND	58554	thehagg501@gmail.com

Name (Please print)		Title/Representing	
Rose Laning		Self Vernon Laning is Bism Planning/Zoning same address as Rose	
Address			
4121 78th Ave NE			
City	State	Zip code	Email
Bismarck	ND	58503	

Name (Please print)		Title/Representing	
Nick P Renna		Manda P + Z Updated combined list	
Address			
710 3rd St N			
City	State	Zip code	Email
Manda	ND	58554	Nick BarMR @ AOL.com

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location	Mandan City Hall	Meeting Type		Meeting Date	10/10/2018
Project Number		PCN			
Project Description					
Amre 2015					

Name (Please print)		Title/Representing			
Jim Siirtola		added to new contacts added to combined			
Address					
5400 Highland Rd.					
City	State	Zip code	Email		
Mandan	ND	58554	JS2506@Hitma		

Name (Please print)		Title/Representing			
Lynn Kiny'schitzke		added to new contacts added to combined			
Address					
5751 Highland Rd					
City	State	Zip code	Email		
Mandan	ND	58554	l.kiny@bektel.com		

Name (Please print)		Title/Representing			
Cole Hygin		Director MPD on combined sheet			
Address					
City	State	Zip code	Email		
			chigin@mandpark.com		

Name (Please print)		Title/Representing			
Vernon Lanning		ND House listed as Bism Planing/Zoning			
Address					
4121 78th Ave NE					
City	State	Zip code	Email		
Bismarck	ND	58503	vrlanning@nd.gov		

Name (Please print)		Title/Representing			
Dave Hirsch		Added to new contacts added to combined			
Address					
5948 Lariat Loop					
City	State	Zip code	Email		
Bis	ND	58503			

Name (Please print)		Title/Representing			
Tim Frailer		SRIP Added to new contacts added to combined			
Address					
7415 Rongerosa					
City	State	Zip code	Email		
B.S		5880			

Name (Please print)		Title/Representing			
Jim Neubauer		City Administrator Mandan On List			
Address					
8205 2nd Ave NW					
City	State	Zip code	Email		
Mandan	ND	58554	jneubauer@cityofmandan.com		

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location	Murkin City Hall	Meeting Type	Meeting Date
Project Number		PCN	10/10/2018
Project Description	Amn 2015		

Name (Please print)	Tim HELBLING			Title/Representing	Added to new contacts added to combined
Address	3000 OLD RED TRAIL				
City	State	Zip code	Email		
MANDAN	ND				

Name (Please print)	JUSTIN FANSETH			Title/Representing	On list
Address					
City	State	Zip code	Email		

Name (Please print)				Title/Representing	
Address					
City	State	Zip code	Email		

Name (Please print)				Title/Representing	
Address					
City	State	Zip code	Email		

Name (Please print)				Title/Representing	
Address					
City	State	Zip code	Email		

Name (Please print)				Title/Representing	
Address					
City	State	Zip code	Email		

Name (Please print)				Title/Representing	
Address					
City	State	Zip code	Email		

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location Lincoln City Hall	Meeting Type PTM # 1	Meeting Date 10-9-18
Project Number	PCN	
Project Description 2020-2045 MTP		

Name (Please print) Justin Anderson	Title/Representing Added to new contact Added to combined		
Address 7390 71 AVE NE			
City Bismarck	State N.D	Zip code 58503	Email JTRAnderson@bdktd.com

Name (Please print) Susan Axvig	Title/Representing Updated address Bismarck Planning/Zoning		
Address 4550 Glenwood Drive			
City Bismarck	State ND	Zip code 58504	Email

Name (Please print) Sean M Johnson	Title/Representing Self Added from website added to combined		
Address 6405 Preston Loop			
City Bis	State ND	Zip code 58504	Email smj58501@yahoo.com

Name (Please print) Gerald D SE	Title/Representing L/MA/PT Listed		
Address 11 Benteen			
City	State	Zip code	Email

Name (Please print) Hayley Akne	Title/Representing updated information		
Address 79 Benteen			
City Lincoln	State ND	Zip code 58504	Email ahirehay@gmail.com

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Lincoln City Hall</i>	Meeting Type <i>PIM #1</i>	Meeting Date <i>10-9-18</i>
Project Number		PCN
Project Description <i>2020-2045 MTP</i>		

Name (Please print) <i>Terri Anderson</i>		Title/Representing <i>added to new contact added to combined</i>	
Address <i>7390 71st Ave NE</i>			
City <i>Bismarck</i>	State <i>ND</i>	Zip code <i>58503</i>	Email <i>jtranderson@bektel.com</i>

Name (Please print) <i>Steven Treiber</i>		Title/Representing <i>added to new contact added to combined</i>	
Address <i>7116 Quartz Ln</i>			
City <i>BISMARCK</i>	State <i>ND</i>	Zip code <i>58503</i>	Email <i>treibersa@msn.com</i>

Name (Please print) <i>Marcus Hall</i>		Title/Representing <i>Burleigh County Highway Dept</i>		<i>Listed</i>
Address				
City <i>Bismarck</i>	State <i>ND</i>	Zip code <i>58503</i>	Email <i>mahall@nd.gov</i>	

Name (Please print) <i>Todd Iszler</i>		Title/Representing <i>added to new contact added to combined</i>	
Address <i>5050 123rd Ave NE</i>			
City <i>Bismarck</i>	State <i>ND</i>	Zip code <i>58503</i>	Email <i>iszler ranch@msn.com</i>

Name (Please print) <i>Bob Volk</i>		Title/Representing <i>added to new contact added to combined</i>	
Address <i>10300 106 St NE</i>			
City <i>Bis</i>	State	Zip code	Email

Name (Please print) <i>Tami Iszler</i>		Title/Representing <i>Added as Todd Iszler</i>	
Address <i>5050 123 Ave NE</i>			
City <i>Bismarck</i>	State <i>ND</i>	Zip code <i>58503</i>	Email

Name (Please print) <i>Sarah Maenza</i>		Title/Representing <i>Deputy Auditor</i>		<i>added to new contact added to combined</i>
Address <i>74 Santee Rd</i>				
City <i>Lincoln</i>	State <i>ND</i>	Zip code <i>58504</i>	Email <i>sarahm@cityoflincolnd.com</i>	

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Lincoln City Hall</i>	Meeting Type <i>PIM # 1</i>	Meeting Date <i>10-9-18</i>
Project Number		PCN
Project Description <i>2020-2045 MTP</i>		

Name (Please print) <i>Cammi Schack</i>		Title/Representing	
Address <i>2959 Majestic St</i>			
City <i>Lincoln</i>	State <i>ND</i>	Zip code <i>58504</i>	Email <i>cammi.schack@gmail.com</i>

Name (Please print) <i>Barnden Schock</i>		Title/Representing <i>Lincoln City Council</i>		<i>Updated email address already listed</i>
Address <i>2959 Majestic St</i>				
City <i>Lincoln</i>	State <i>ND</i>	Zip code <i>58504</i>	Email <i>4719553@gmail.com</i>	

Name (Please print) <i>TOPD MARSCHALL</i>		Title/Representing		<i>added to new contact added to combined</i>
Address <i>88 McDougall DR</i>				
City <i>LINCOLN</i>	State <i>ND</i>	Zip code <i>58509</i>	Email <i>tmarschall@houstoneng.com</i>	

Name (Please print) <i>Bill Wocken</i>		Title/Representing <i>Houston Engineering</i>		<i>added to new contact added to combined</i>
Address <i>2627 Astronaut DR</i>				
City <i>BISMARCK</i>	State <i>ND</i>	Zip code <i>58503</i>	Email <i>wocken@br.midea.net</i>	

Name (Please print)		Title/Representing		
Address				
City	State	Zip code	Email	

Name (Please print)		Title/Representing		
Address				
City	State	Zip code	Email	

Name (Please print)		Title/Representing		
Address				
City	State	Zip code	Email	

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC - UECE #431	Meeting Type Public Input Meeting #1	Meeting Date 10-10-18
Project Number	PCN	
Project Description 2020-2045 Metropolitan Transportation Plan		

Name (Please print) Michael Dukart	Title/Representing added to new contacts added to combined		
Address			
City Bismarck	State ND	Zip code	Email

Name (Please print) DENNIS AGNEW	Title/Representing added to new contacts added to combined		
Address 27901 MOFFIT RD			
City MOFFIT	State ND	Zip code 58560	Email

Name (Please print) Melissa Miller	Title/Representing added to new contacts added to combined		
Address 3818 110th Ave NE			
City Bismarck	State ND	Zip code 58503	Email mkrdmiller@gmail.com

Name (Please print) Troy Ripplinger	Title/Representing added to new contacts added to combined		
Address 3535 Foxden Loop			
City Bismarck	State ND	Zip code 58503	Email troy.ripplinger@klveng.com

Name (Please print) Aiton NITSEHKE	Title/Representing Self added to new contacts added to combined		
Address 2160 84th Ave NE			
City BIS	State ND	Zip code 58503	Email aan1860@outlook.com

Name (Please print) Dan Schriock	Title/Representing Sr Assistant County Engineer / Burleigh County added to new contacts added to combined		
Address 3302 Butterfield Dr			
City Bismarck	State ND	Zip code 58508	Email dschriock@nd.gov

Name (Please print) Pam Schonert	Title/Representing added to new contacts added to combined		
Address 825 N. 1st St			
City Bismarck	State ND	Zip code 58501	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC - NECE # 431	Meeting Type Public Input Meeting # 1	Meeting Date 10-10-18
Project Number	PCN	
Project Description 2020-2045 Metropolitan Transportation Plan		

Name (Please print) Tyler Olson	Title/Representing		
Address			
City Bismarck	State ND	Zip code 58503	Email

Name (Please print) Nancy Deichert	Title/Representing Bismarck-Mandan Board of Realtors		
Address 318 W Apollo Ave			
City Bis	State	Zip code 58503	Email nancy@bmbor.org

added to new contacts
added to combined

Name (Please print) Susan Dmydo	Title/Representing self		
Address 700 W Mandan			
City Bismarck	State ND	Zip code 58501	Email suzsaid@hotmail.com

added from website
added to combined

Name (Please print) Bill Dean	Title/Representing Realtor		
Address 716 N 21st St			
City Bismarck	State ND	Zip code 58501	Email billdean@alliancere.net

added to new contacts
added to combined

Name (Please print) Arlene Nitschke	Title/Representing		
Address 2160 - 84th Ave. NE			
City Bis.	State ND	Zip code 58503	Email

added to new contacts
added to combined

Name (Please print) Gabe Schell	Title/Representing City of Bismarck		
Address 221 USB St			
City Bismarck	State ND	Zip code 58501	Email gschell@bismarck.nd.gov

Listed

Name (Please print) Jeff Solemsee	Title/Representing City of Bismarck P.O.		
Address			
City	State	Zip code	Email jsolemsee@bismarck.nd.gov

Listed

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC-NECE # 431	Meeting Type Public Input Meeting #1	Meeting Date 10-10-18
Project Number	PCN	
Project Description 2020-2045 Metropolitan Transportation Plan		

Name (Please print) Mike Connelly	Title/Representing Myself	added to new contacts added to combined	
Address 1821 East Ave E			
City Bismarck	State ND	Zip code 58501	Email mandwconnelly@msa.com

Name (Please print) Bea Streifel	Title/Representing	added to new contacts added to combined	
Address			
City	State	Zip code	Email beasdreamjob@bektel.com

Name (Please print) GEORGE GETRIG	Title/Representing		
Address			
City	State	Zip code	Email

Name (Please print) WAYNE MARTINESON	Title/Representing	added to new contacts added to combined	
Address 7151 123 AV NE			
City Bis	State	Zip code	Email

Name (Please print) BRAD BALLWEBER	Title/Representing NORTHSTAR IMPROVEMENT PARTNER		
Address 1721 BURLINGTON DR			
City Bismarck	State ND	Zip code 58504	Email bballweber@nicnd.com

Name (Please print) Travis Johnson	Title/Representing Houston Engineering	added to new contacts added to combined	
Address 5731 Magnolia Dr.			
City Bismarck	State ND	Zip code 58503	Email tjohnson@houstoneng.com

Name (Please print)	Title/Representing		
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <u>BSC- NECE #431</u>	Meeting Type <u>Public Input Mtg #1</u>	Meeting Date <u>10/10/18</u>
Project Number	PCN	
Project Description <u>2020-2045 Metropolitan Transportation Plan</u>		

Name (Please print) <u>Marcus J. Hall</u>	Title/Representing <u>Burleigh County</u>			Listed
Address				
City <u>Bismarck</u>	State	Zip code	Email <u>mahall@nd.gov</u>	

Name (Please print) <u>Steve Wraglish</u>	Title/Representing <u>self</u>			added to new contacts added to combined
Address				
City <u>Bismarck</u>	State	Zip code	Email <u>swindish1@hotmail.com</u>	

Name (Please print) <u>Molly Herrington</u>	Title/Representing <u>Citizen, Bismarck</u>			added to new contacts added to combined
Address <u>702 N 7th St</u>				
City <u>Bismarck</u>	State <u>ND</u>	Zip code <u>58501</u>	Email <u>molly.j.sullivan@gmail.com</u>	

Name (Please print) <u>Natalie Pierce</u>	Title/Representing <u>Morton County P+Z</u>			Listed
Address				
City	State	Zip code	Email	

Name (Please print) <u>DAWN KOPP</u>	Title/Representing <u>Downtowners</u>			Listed
Address <u>407 E. MAIN AVE</u>				
City <u>BISMARCK</u>	State <u>ND</u>	Zip code <u>58501</u>	Email <u>getit@downtownbismarck.com</u>	

Name (Please print)	Title/Representing			
Address				
City	State	Zip code	Email	

Name (Please print)	Title/Representing			
Address				
City	State	Zip code	Email	

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC-NECE #431	Meeting Type Public Input Mtng #1	Meeting Date 10/10/18
Project Number	PCN	
Project Description 2020-2045 Metropolitan Transportation Plan		

Name (Please print) ERIK SAKARIASSON		Title/Representing FT LINCOLN FOUNDATION	
Address 431 W MAIN ST			
City MANDAN	State ND	Zip code 58554	Email eriks@fortlincoln.org

added to new contacts
added to combined

Name (Please print) David Lehman		Title/Representing Alliance Commercial Agent / Bmpor	
Address 2102 Bridgeview Ct SE			
City Mandan	State ND	Zip code 58554	Email dave@alliance.com

added to new contacts
added to combined

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC-NECE #431	Meeting Type Public Input Mtng #1	Meeting Date 10/10/18
Project Number	PCN	
Project Description 2020-2045 Metropolitan Transportation Plan		

Name (Please print) Tim Mattson		Title/Representing		added to new contacts added to combined
Address 2318 E Blvd Ave				
City Bismarck ND	State ND	Zip code 58501	Email Timothy.mattson@gmail.com	

Name (Please print) Shawn Mistelki		Title/Representing		download from website added to combined
Address 3712 Lockport St.				
City Bismarck	State ND	Zip code 58503	Email smistelki@houstoneing.com	

Name (Please print) John Van Dyle		Title/Representing			Principal Planner, City of Mandan
Address					Listed
City	State	Zip code	Email		

Name (Please print)		Title/Representing		
Address				
City	State	Zip code	Email	

Name (Please print)		Title/Representing		
Address				
City	State	Zip code	Email	

Name (Please print)		Title/Representing		
Address				
City	State	Zip code	Email	

Name (Please print)		Title/Representing		
Address				
City	State	Zip code	Email	

Bismarck-Mandan

METROPOLITAN PLANNING ORGANIZATION

PLEASE USE DARK INK AND PRINT CLEARLY

The Civil Rights Act of 1964 and related nondiscrimination authorities require the North Dakota Department of Transportation to ensure everyone has the opportunity to comment on the transportation programs and activities that may affect their community.

To help with that, we ask that you respond to the following questions. You are not required to disclose the information requested in order to participate. Any information provided to the NDDOT will be retained solely for the purpose of collecting statistical data to ensure inclusion of all segments of the population affected by transportation programs and activities.

Sex: <input type="checkbox"/> Female <input checked="" type="checkbox"/> Male	Disability: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Age: <input type="checkbox"/> 34 and younger <input type="checkbox"/> 35-54 <input checked="" type="checkbox"/> 55 and older			
Race:			
<input type="checkbox"/> American Indian/Alaskan Native	<input type="checkbox"/> Native Hawaiian/Other Pacific Islander		
<input type="checkbox"/> Asian	<input checked="" type="checkbox"/> White		
<input type="checkbox"/> Black	<input type="checkbox"/> Other _____		
<input type="checkbox"/> Hispanic			
Language most frequently spoken in your home:			
<input type="checkbox"/> Arabic	<input type="checkbox"/> German	<input type="checkbox"/> Somali	<input type="checkbox"/> Vietnamese
<input type="checkbox"/> Bosnian	<input type="checkbox"/> Nepali	<input type="checkbox"/> Spanish	<input type="checkbox"/> Other _____
<input type="checkbox"/> Croatian	<input type="checkbox"/> Russian	<input type="checkbox"/> Swahili	
<input checked="" type="checkbox"/> English	<input type="checkbox"/> Serbian	<input type="checkbox"/> Turkish	
Do you receive public assistance? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Indicate how you heard about the event:			
<input checked="" type="checkbox"/> Internet	<input type="checkbox"/> Mailing	<input type="checkbox"/> NDDOT Contact	<input type="checkbox"/> Newspaper
<input type="checkbox"/> Radio	<input type="checkbox"/> Social Service Agency	<input type="checkbox"/> Television	
<input type="checkbox"/> Advocacy Group (which group)	_____		
<input type="checkbox"/> Other	_____		

For Office Use

Event Date	City	County	MPO
<input style="width:20px; height:20px; border: 1px solid black;" type="text"/> / <input style="width:20px; height:20px; border: 1px solid black;" type="text"/> / <input style="width:40px; height:20px; border: 1px solid black;" type="text"/>	<input style="width:40px; height:20px; border: 1px solid black;" type="text"/>	<input style="width:40px; height:20px; border: 1px solid black;" type="text"/>	<input type="checkbox"/> Bismarck-Mandan
			<input type="checkbox"/> Fargo-Moorhead Metro COG
			<input type="checkbox"/> Grand Forks-East Grand Forks
Div/Dist Number	PCN	ROW	Consultant
<input style="width:20px; height:20px; border: 1px solid black;" type="text"/>	<input style="width:40px; height:20px; border: 1px solid black;" type="text"/>	<input type="checkbox"/> Negotiation	<input style="width:40px; height:20px; border: 1px solid black;" type="text"/>
		<input type="checkbox"/> Relocation	
			Subrecipient
			<input type="checkbox"/> Yes
			<input type="checkbox"/> No

After you have completed this form, please place it in the designated location.

RECEIVED

February 13, 2020

FEB 18 2020

Rachel Drewlow
Bismarck Mandan MPO
221 N 5th Street
Bismarck ND 58501

RE: Draft Arrive 2045 MTP

This may be late to the recent discussions, but I appreciate that the MPO committee asks for public input and that community leaders continue to look into the future as our city continues to grow.

I am offering suggestions that pertain to a growing residential area defined by Riverwood Drive on the north, the Missouri River on the west, and South Washington Street on the east and extending as far south as 48th Avenue.

The enclosed maps show two proposed roadways in red dash lines to improve traffic flow coming off Bismarck Expressway bridge onto South Washington Street and into the busy intersection of Riverwood Drive and Denver Avenue.

The first map suggests an east bound Exit Ramp off of the Expressway Bridge onto Riverwood Drive for travelers to the south part of the area described above. This would relieve the congestion and high traffic negotiating the stop light at the intersection of Riverwood Drive, Denver and South Washington.

The second map shows a new street (Atkinson Way would be a nice name) to redirect traffic that currently snakes through Fox Island area residential streets. It would cut across the Bismarck Park District's Atkinson Nature Park acreage southeasterly and passing along the north side of the city wastewater ponds and then connecting to London Avenue, which connects to South Washington Street. Or to continue this new street directly south from London Avenue and connect with West Burleigh Avenue near the intersection where Downing Street enters and passes through the South Bay neighborhood to 48th Avenue.

Thanks for the opportunity to express my ideas,



Cody Kay Strothman
2301 Langer Way
Bismarck ND 58504
codykstrothman@bis.midco.net

Expressway off ramp proposal
"RIVERWOOD DR" EXIT

Legend



1000 ft



725 Riverwood Dr

Riverfront Trail

W Bismarck Expy
194

Riverwood Dr

Southport Loop

Google Earth

© 2019 Google



S 9th S

Richmond Dr

Columbia Dr

Omaha Dr

E Reno Ave

Pocatello Dr

Portland Dr

E Wachter Ave

Second St

Grand Dr

Boston Dr

Napa Loop

Colton Loop

Irvine Loop

Dortmund Dr

Food St

East St

Colorado Dr

Hamburg Dr

Stuttgart Dr

Bonn Blvd

W Wachter Ave

Wachter Dr

Yorkshire Ln

Woodstock St

Victoria St

Sussex St

London Ave

Sex Loop

Manchester St

Washington St

Dew Dr

Nautilus Dr

Sauvignon Loop

Riverwood Dr

Mills Ave

Harbor Dr

Smokey Ln

Larson Rd

Tavis Rd

Burlingame Ave Trail

Langer Ln

Far W Dr

Harbor Dr

SE Sliver

Jelly Beach Dr S

N

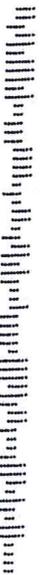
Cody K Strothman
2301 Langer Way
Bismarck ND 58504

Rachel Drewlow
Bismarck Mandan MPO
221 N 5th Street
Bismarck ND 58501

BISMARCK ND 58504
13 FEB 2020 PM 2 T



5850184079



Arrive45/Pedestrian Needs

This morning's session at BSC was informative and a good exercise for everyone. Thank you for designing it, sponsoring it, and being able to commit time to it. My concerns are more as a pedestrian and sometime bus rider. My walking is done on city and residential streets and sometimes alongside highways. More city areas need to be walkable and to have safe pedestrian crossings. I use the pedestrian walkway on Turner Parkway near Burnt Boat Drive and over the interstate. Much less often, I have used the pedway on State Street. Of more interest to me would be three pedestrian walkways over State Street: one at State Street and 43rd Avenue, one at State Street and Century Avenue, and one at State Street and Interchange Avenue. Two walkways over Bismarck Expressway also would be useful: one at Bismarck Expressway and 12th Street, and one at Bismarck Expressway and 26th Street. As currently offered, each of the bus routes goes by one or more grocery stores. This needs to continue. If, for example, the Green Route is changed, as the route extending the furthest south, it still needs to be able to take people on the far south side to their nearest grocery store, which is Cashwise. The green Route needs to be able to do this directly and without needing to go north, transfer, and then go back again partway south to get there--adding 10 to 20 minutes of extra travel time. This route entailing additional travel time was the proposed change to the Green Route if service to U Mary was dropped. In designing bus routes, where the riders want to go and how many such places (grocery stores, hospitals, schools/colleges, senior living and disabled living centers, shopping centers/strip malls) can be featured need to be key factors in the design and stops along the routes.



Sean Johnson

9/18/2018, 10:42 PM



SUBSCRIBED TO MAILING LIST

6/25/2019, 1:14 PM

Arrive2045 Input

I will be unable to make any of the July Public Meetings and read that I can still provide input on Arrive2045 on the website. When will the information that will be covered in the public meetings be posted, and how can I provide the input on the site?

Also, will you be streaming the meetings on your Facebook page via Facebook Live? I would have attended the one in Lincoln. It would be great if you did because then we could see the actual presentation, even if we have to view it after the fact. Thank you!

NAME

Sean Johnson

EMAIL

Smj58501@yahoo.com

SUBJECT

Arrive2045 Input



Mike Connelly

Feb 24, 12:06 PM

Signal lights at intersections

I brought up a map detailing all of the intersections you have listed on my phone. I could not use my phone effectively to respond. I am finally at a computer and now I cannot find the map or a link as such. Without knowing the intersections these are the only insights I can provide.

- 1) There needs to be a light put back up on the corner of Thayer and 9th st. I know Gabe said it is not warranted since 9th is no longer the main entrance to St. Alexis. But if Gabe is going to suggest road diets and roundabouts due to safety and saving lives then this light should be a consideration. During pick up and drop off times backed up traffic is causing drive around behavior that will lead to someone getting run over. I can give you examples including one where I had to turn my car sideways to prevent a car from behind me going around and would have potentially hit a father and his 3 kids.
- 2) 3rd street light the yellow is too fast and have witnessed many near misses.
- 3) Something along Nebraska, with the new school speeds are going to lead to a bad ending. More than the one death up there already.

NAME

Mike Connelly

EMAIL

mandwconnelly@msn.com



Ben Smith

Thank you for listening.

NAME

Ben Smith

EMAIL

Bcsmit909@gmail.com

SUBJECT

Arrive 2045 comments

MESSAGE

I didn't get a chance to complete the survey before it closed, but if I was, I would have said the following:

1 - We need more bike lanes in Bismarck. There are some beautiful routes throughout the city, but cars just seem to take over. And since there are few lane designations, motorists can be aggressive towards cyclists riding in the streets. Also, I believe Bismarck should be more lenient with bicycles riding on sidewalks in certain areas.

2 - I believe in roundabouts. I think it's a safer, more efficient, and quicker alternative to 4-way stop intersections. I hope Bismarck will see these considered in the future.

3 - I loved the pop-up pathways! I hope to see more colors downtown, and I think it really made pedestrians feel safer.

Thank you for listening.

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Wade Kline, KLJ
Date: December 5, 2018
Re: Public Input Meeting #1 Summary

Summary

On October 9th and 10th, 2018, the Bismarck-Mandan MPO held the first round of public engagement for the Bismarck – Mandan Metropolitan Transportation Plan (MTP). These were advertised as the Arrive 2045 Futures Summit meetings. The first round included three meetings located across the MPO Planning area:

- » Lincoln City Hall on October 9th – 16 attendees
- » Bismarck State College on October 10th – 30 attendees
- » Mandan City Hall on October 10th – 15 attendees

At each meeting there were three activities:

- » Brief presentation on the issues identified through the technical analysis
- » Small group prioritization exercise for goals, performance areas, and emerging issues
- » A table top exercise to identify future transportation improvements to the transportation network

A significant marketing campaign was undertaken to notify the public of the first round of public meetings:

- » Regular posts on the MPO's Facebook and member jurisdictions' social media sites
- » Event notification on the MPO's Facebook and shared by the member jurisdictions' social media sites
 - The event was "boosted" as a paid advertisement.
- » Notifications through the Bismarck-Mandan Development Association, Chamber of Commerce newsletters
- » Newspaper ad in the Bismarck Tribune
- » Email blasts to the MPO's email database
- » Newsletters sent to the MPO's stakeholder list

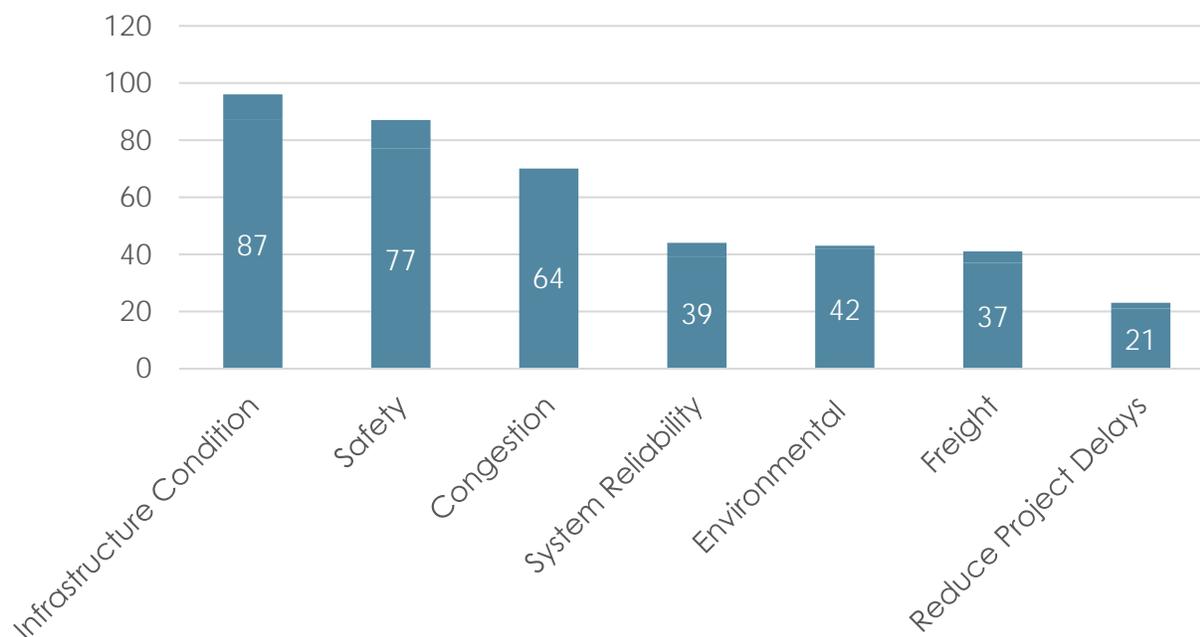
As part of the first round of public input meetings a survey was marketed to the public. There were nearly 140 participants in the initial survey released by the Bismarck-Mandan MPO. To ensure the survey was geographically and demographically weighting, a random sample of households was developed. Postcards were then distributed proportionally across Bismarck, Mandan, Lincoln, and the rural areas of Morton and Burleigh counties notifying households of the survey. The full results of this survey effort will be added to this memo upon its completion.

Futures Summit Prioritization Exercise

Goals

Arrive 2045 will be a performance-based transportation plan and will be built upon a range of goals established for the transportation system. The public was asked to vote among a range of goal areas. Meeting participants were able to distribute (or weight) up to 7 votes among all goal areas or place more emphasis on those goal areas they felt were most important.

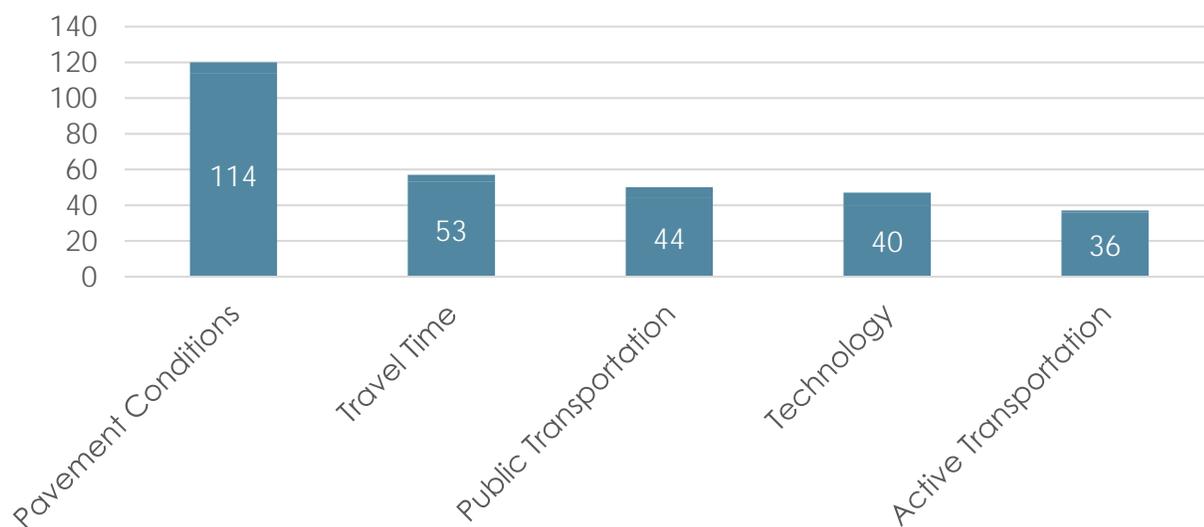
Infrastructure condition, safety, and congestion were the most important goals identified by the public. The public prioritized the goals Infrastructure (23.7 percent), Safety (21.0 percent), and Congestion (17.4 percent).



Performance Areas

Arrive 2045 will target investments to improve the performance of the Bismarck-Mandan Metropolitan Area's transportation system. To help understand priorities for future investment, the public was asked to choose among a range of system performance areas. Each meeting participant was able to allocate up to 5 votes among various performance areas. Participants were given the ability to weight their votes based on the relative importance of each performance area.

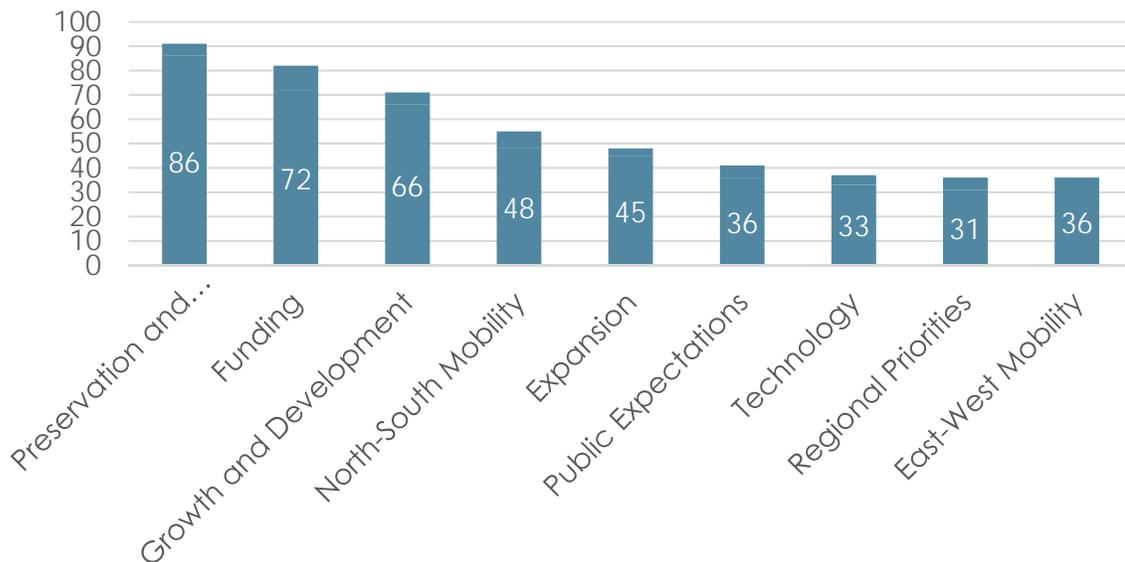
Pavement conditions were by far the highest priority for the public (40 percent). The remaining four performance areas received between twelve and nineteen percent of selections.



Emerging Issues

Arrive 2045 will focus on addressing a range of issue areas facing the Bismarck-Mandan Metropolitan area. To help add clarity to a preexisting list of issues, the public was given the ability to select among a range of issue areas. Meeting participants were given nine votes to allocate among a range of issue areas, and each participant weighted their votes based on the importance of each issue.

Of the emerging issues, preservation and management were a top focus area (19.0 percent), followed by funding (15.9 percent), and growth and development (14.6 percent).



Future Summit Investment Maps

As part of the first round of public input meetings, participants were given an opportunity to allocate projected future transportation resources to address existing and future transportation conditions in the Bismarck-Mandan area. As part of a table top exercise, meeting participants worked as a group to allocate projected available funding for the Bismarck-Mandan MPO Area. Projects were identified for three tiers of systems: 1) Interstate projects, 2) Regional/State projects, and 3) Local/Urban projects. Available revenue types for each component of the Bismarck-Mandan transportation system had been previously consented to for use in the meetings by the project Steering Committee.

Project types and costs were developed in advance so that meeting participants were only required to select among a range of possible improvements. Project costs and project types are generalized to ensure the ability of the public to easily work within the parameters of the exercise. Meeting participants were guided in their choices by an available set of system performance data showing existing and projected conditions from throughout the MPO planning area. Each table was led by a local technical facilitator who was able to assist with answering questions and ensuring participants were able to appropriately complete the meeting exercise.

The results of these exercises are shown on the following pages. The results are public perception (desire lines) for where future transportation investment is needed. These maps assist the Bismarck-Mandan MPO in understanding a generalized type of improvement perceived as needed by the public. The outcome is most helpful in understanding the geographic distribution of macro level improvement preferences of the public. While these outputs assist in guiding future investment "areas", they are not useful in specifically determining project level details.

Figure 1

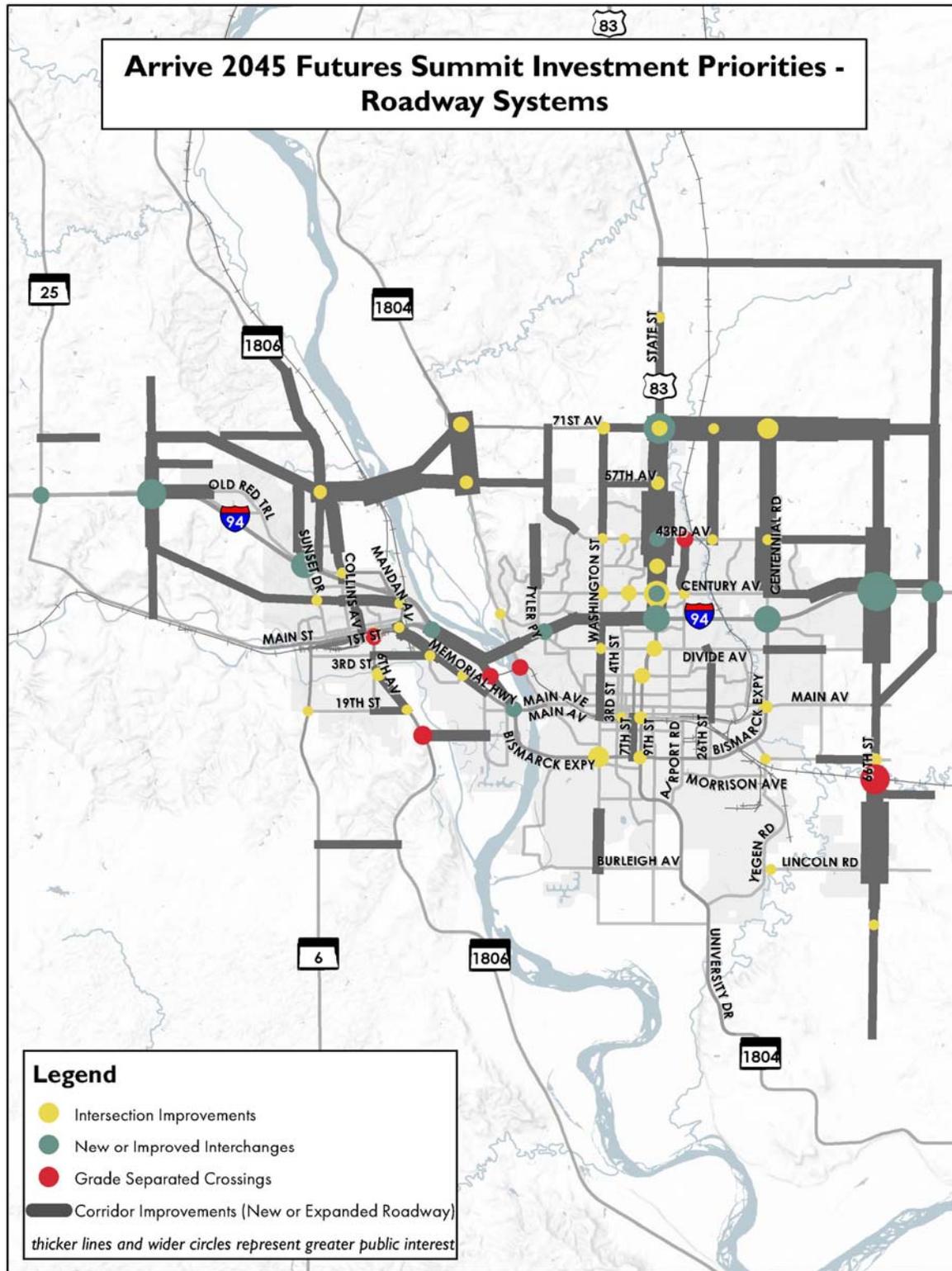


Figure 2

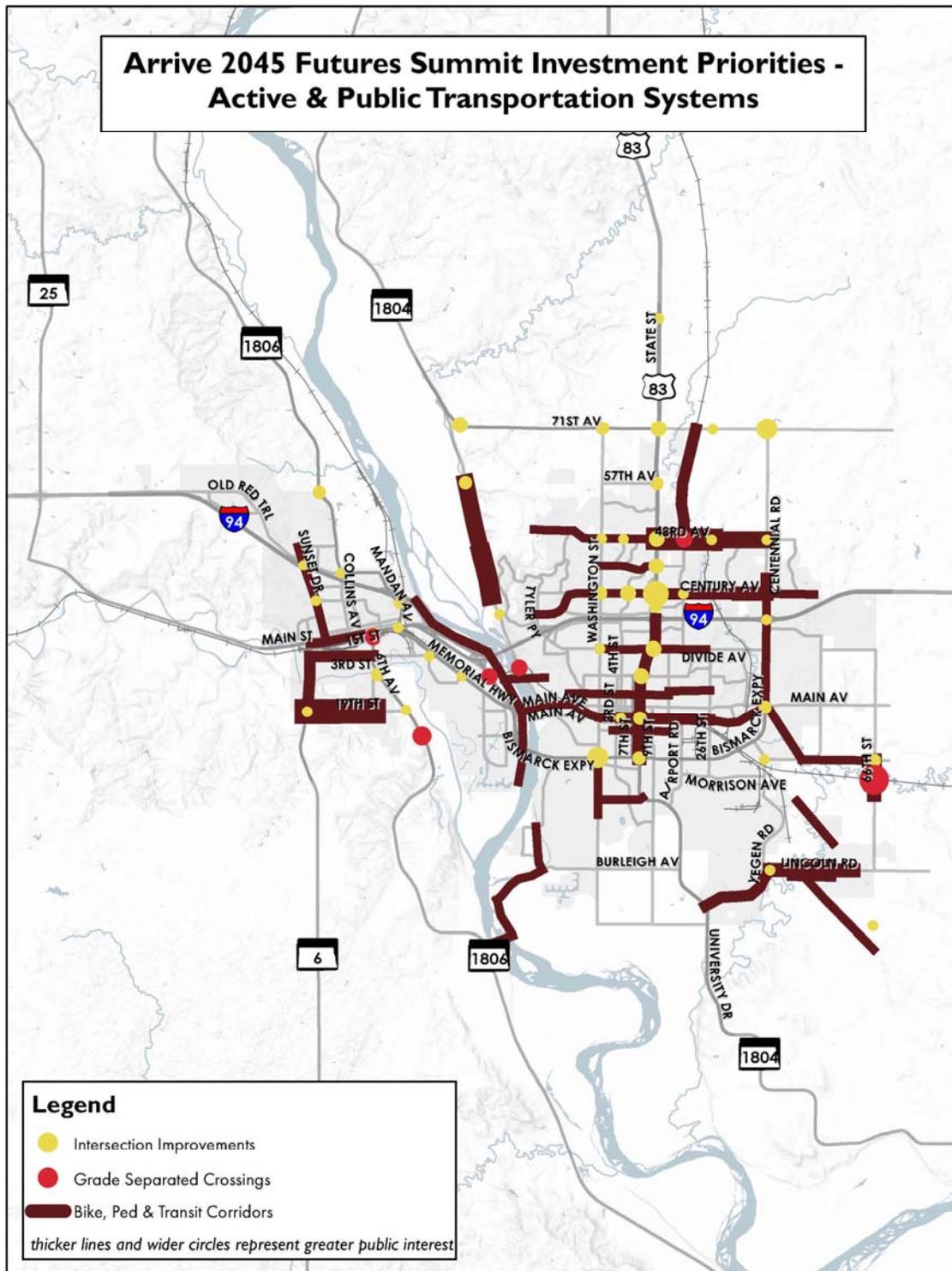
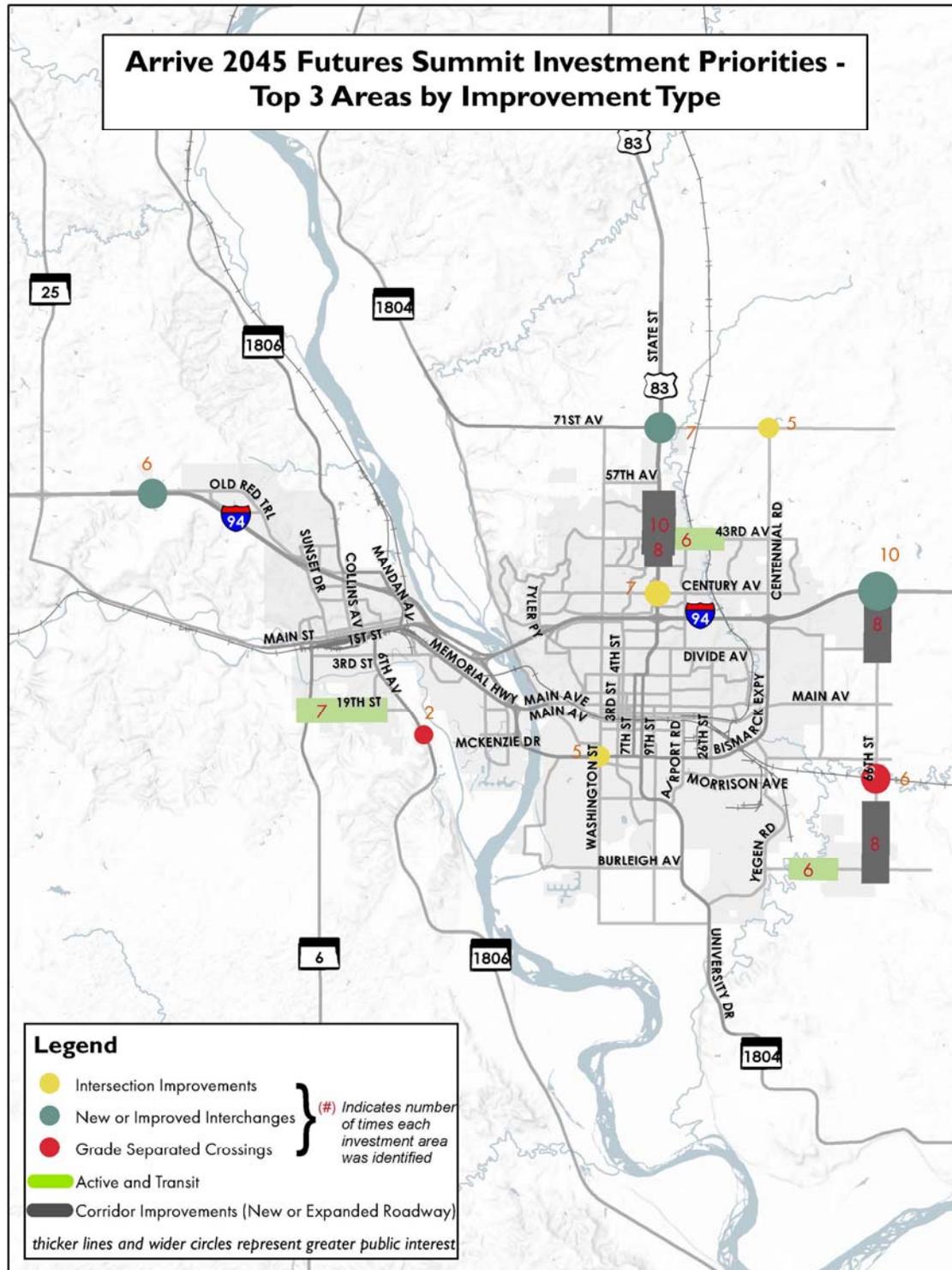


Figure 3

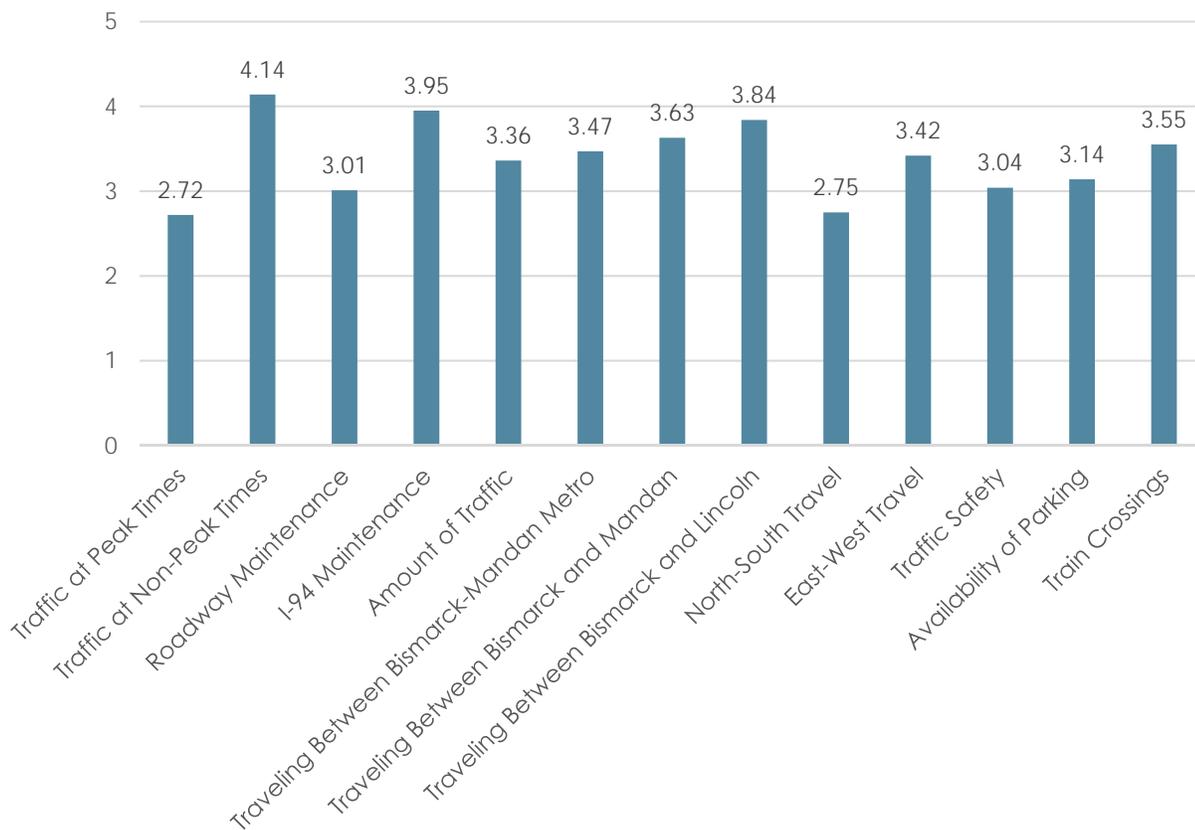


Transportation Survey (Preliminary Evaluation)

The transportation survey included 34 questions, including demographic questions. There were 142 public survey responses received. What follows is a general summary of only those questions which matched similar information gathered as part of the Arrive 2045 early input meetings. Upon completion of the full random sample element of the Transportation Survey, a more detailed cross reference will be completed between survey responses and information collected through the early input meetings.

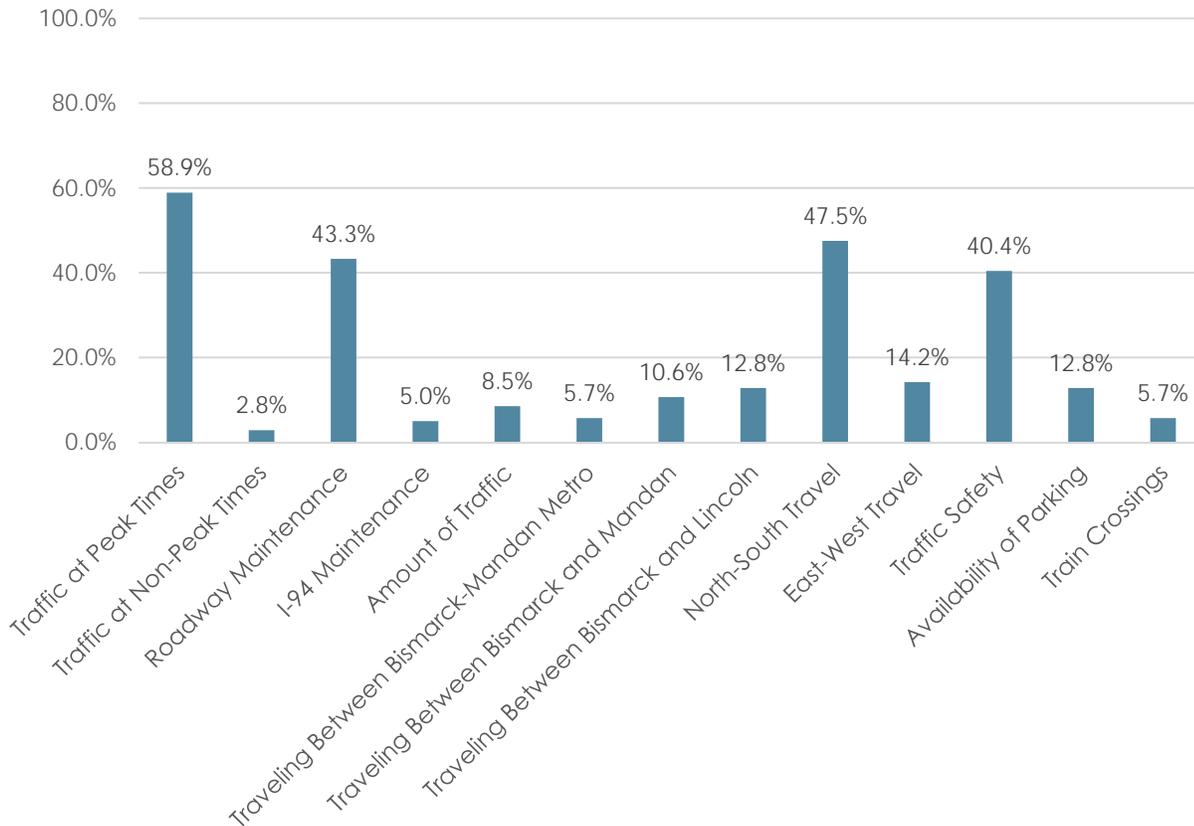
Perceptions of Current Transportation Issues

The public rated current transportation issues in the Bismarck-Mandan area from Very Satisfied (5) to Very Dissatisfied (1). The issues survey respondents were most dissatisfied with were north-south travel (2.75) and traffic flow at peak times (2.72). The issue which survey respondents were most satisfied with were traffic flow at non-peak times (4.14), maintenance of I-94 (3.95), and ease of traveling between Bismarck and Lincoln (3.84).



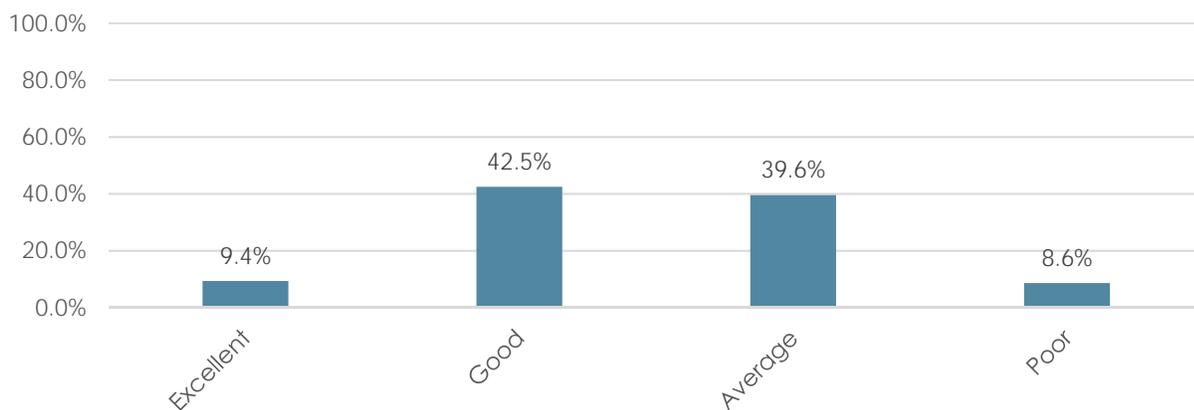
Which Three Items Are the Most Important to Address

Survey respondents were then asked to pick the three items which are most important to address. Peak hour traffic congestion received support from 59 percent of survey respondents, north-south travel received 48 percent, maintenance of current roads received 43 percent and traffic safety received 40%.



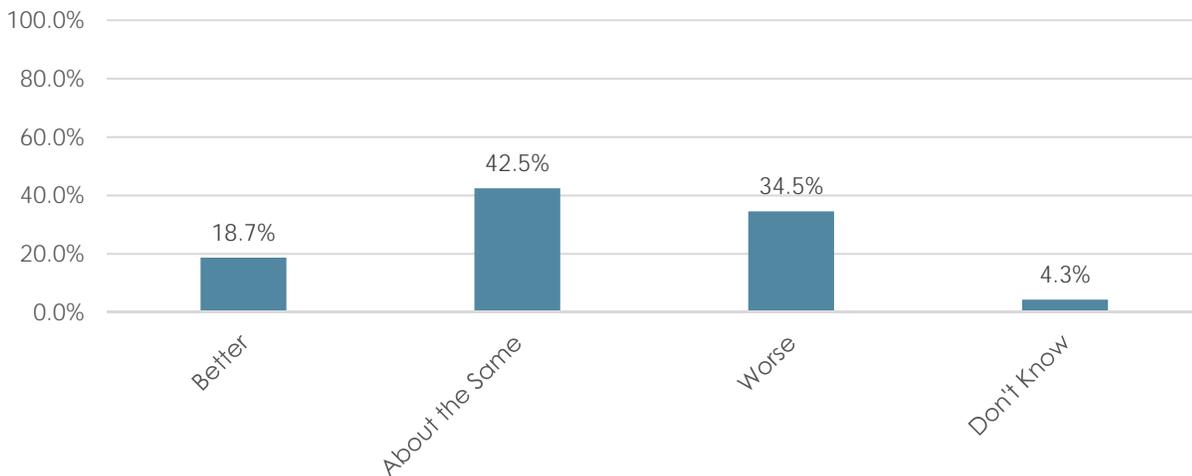
How Would You Rate the Bismarck-Mandan Area Roadway and Street System?

Nearly 52 percent rated the Bismarck-Mandan area roadway and street system as either excellent or good. Forty percent rated as average. Only 9 percent rated the system as poor.



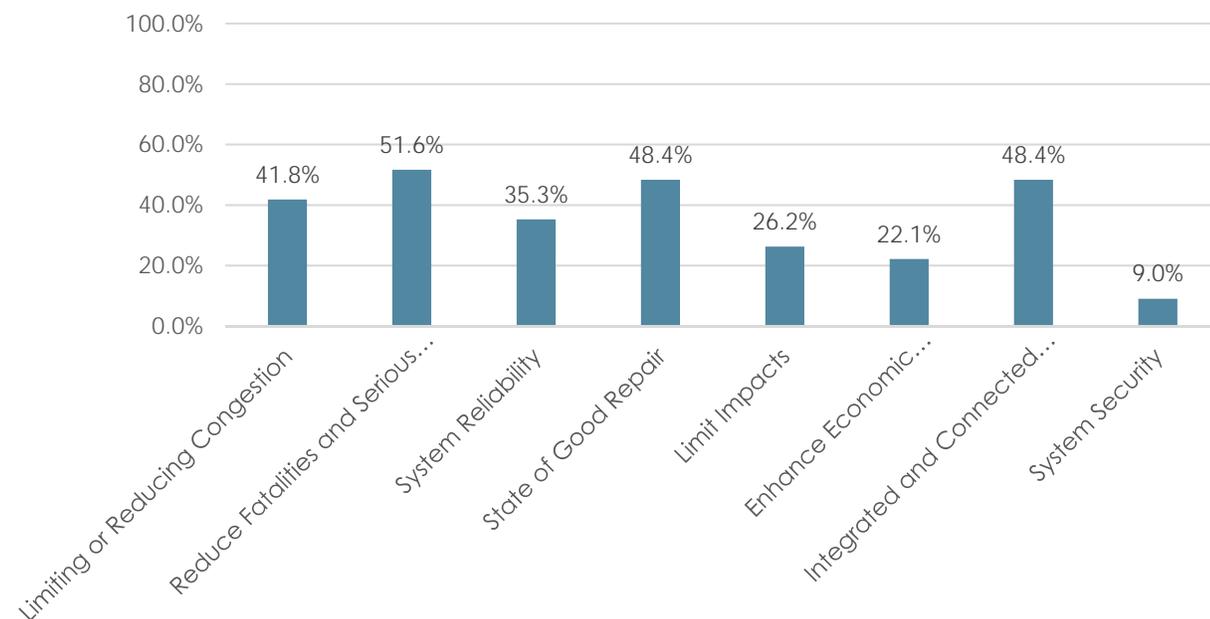
How do you Feel Peak Hour Congestion in the Bismarck-Mandan Area Compares to Cities of the Same Size?

More than 61 percent of survey respondents felt peak-hour congestion in Bismarck-Mandan is better or about the same as cities of the same size. Nearly 35 percent felt it was worse.



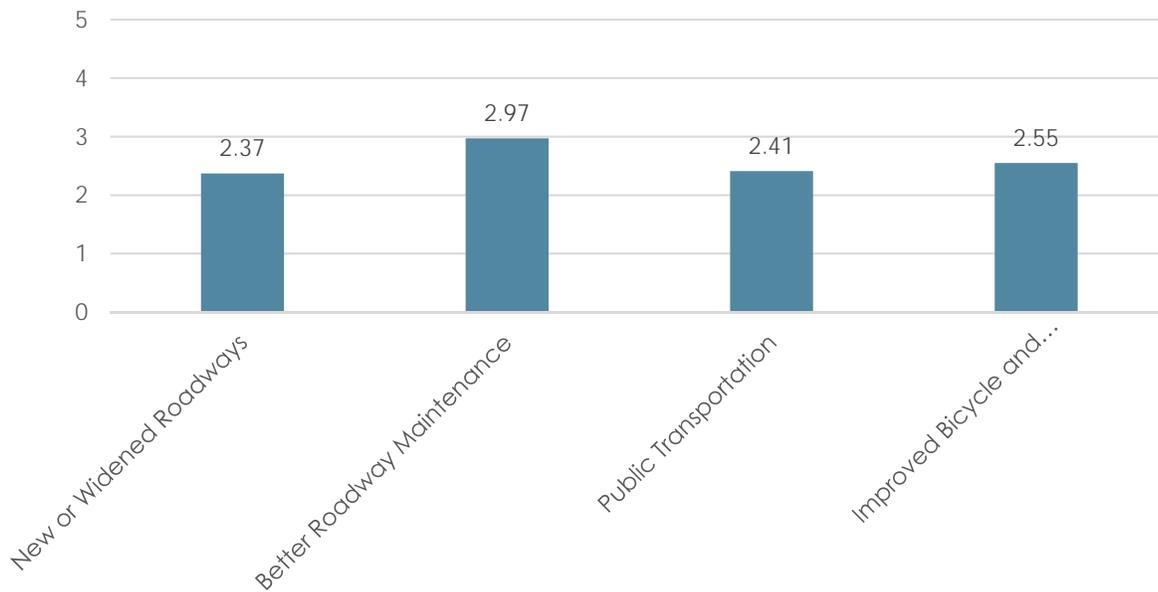
Which of the Following Transportation Goals Should Be Most Important to the Bismarck-Mandan Area?

Safety, system integration, maintenance and limiting/reducing congestion were the goals that scored highest based on surveys received. Limiting impacts, supporting economic development, and system security scored lowest.



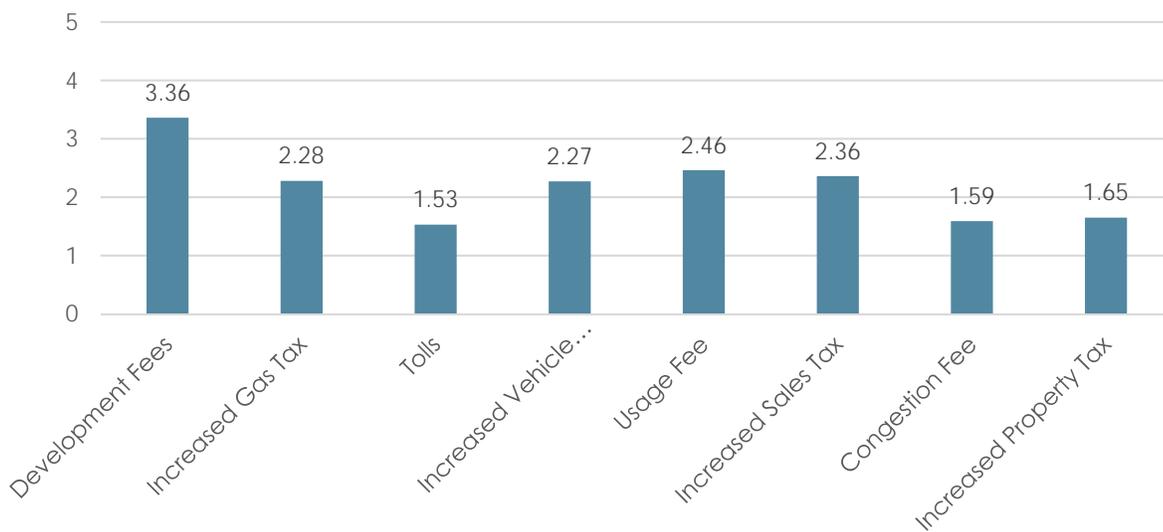
How Supportive Are You of Providing Additional Funding for the Following Transportation Issues?

Of the responses received, most were supportive of increasing funding for better roadway maintenance but not to widen roadways.



Which of the Following Sources of Funding Would You Most Support?

Of the responses received, most supported new land developments paying for related transportation improvement needs and least supported the use of tolls and congestion fees.



Arrive 2045 Public Input Meetings



The Bismarck-Mandan Metropolitan Planning Organization is in the process of updating its Metropolitan Transportation Plan, called Arrive 2045, which will establish a long-range vision and strategy to shape the region's transportation systems. Last fall, the Futures Summits meetings gathered input and guidance on system needs. Now, the public again has the chance to guide the development of Arrive 2045 at the second round of public meetings.

The second round of public meetings are developed to gather input and guidance on project level prioritization and system investments in the Bismarck-Mandan-Lincoln metro area. These meetings will be an open house and the public will have multiple opportunities to engage with the project team to support project prioritization efforts.

July 9, 2019

6:00 to 8:00 PM
Lincoln City Hall
74 Santee Road
Lincoln, ND

July 10, 2019

9:00 to 11:00 AM
Bismarck State College
National Energy Center
for Excellence, Room #433
1200 Schafer Street
Bismarck, ND

July 10th, 2019

6:00 to 8:00 PM
Mandan City Hall
205 2nd Avenue NW
Mandan, ND

Arrive 2045 focuses on the following key outcomes:

- Establish needs for transportation investments covering multiple modes of travel - Including roads, public transit, bicycle, pedestrian, and freight;
- Directly impact how transportation projects are prioritized;
- Guide decision making of future transportation funding;
- Influence the physical environment, policies, and planning for the transportation network in the Bismarck-Mandan MPO area.

All meetings are open to the public and will provide residents an opportunity to discuss and share ideas and feedback on issues throughout the Bismarck-Mandan MPO area. More information is available at www.arrive2045.com

If unable to attend, written comments can be submitted through the project webpage or mailed by July 17, 2019, to Rachel Drewlow, Bismarck-Mandan MPO, 221 North 5th Street, Bismarck, ND, 58501. To request accommodations for disabilities and/or language assistance, contact Title VI/ADA Coordinator at 701-355-1332, MPO@bismarcknd.gov, TTY 711, or 1-800-366-6888 at least five (5) days in advance of the meeting.



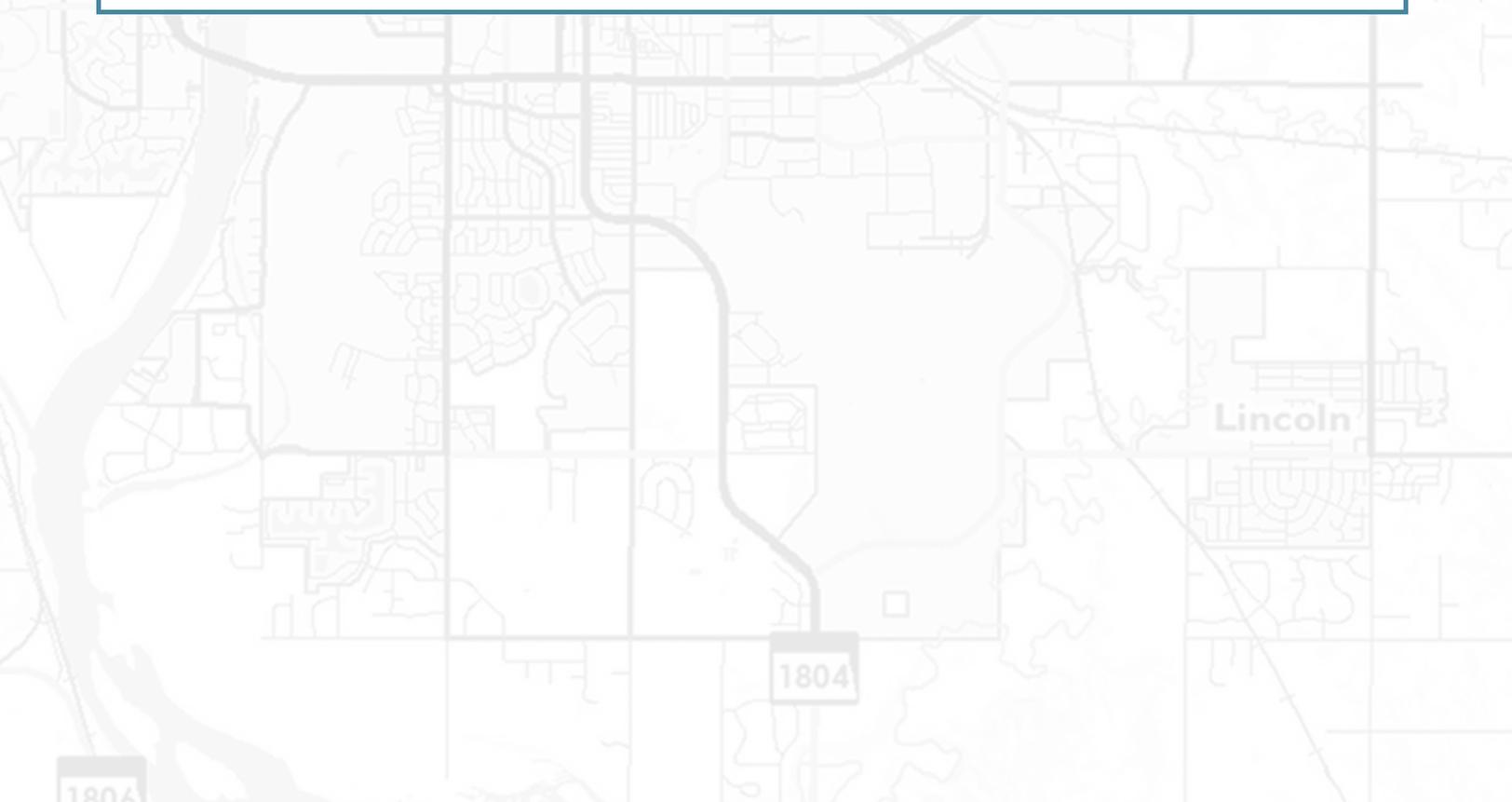
ARRIVE 2045

Bismarck-Mandan
MPO

Metropolitan
Transportation
Plan

ARRIVE 2045

PROJECT TALLY SHEET & COMMENT FORM



Project ID	Location	Termini	Termini	Description	Project Score	Project Priority (Public Choice)
B1a	State St	57th Ave	71st Ave	Intergrate recommendations from US 83 Study	78.35	
B1b	State St	43rd Ave	57th Ave		124.70	
B1c	State St	Calgary	43rd Ave		140.60	
B1d	State St	Interstate Blvd	Calgary		127.75	
B2	57th Ave	State St	26th St	Extend 57th Ave as Arterial Roadway between US 83/State St. Likley 3 section	47.70	
B3	66th St	71st Ave	43rd Ave	Improve 66th St from 43rd Ave to 71st Ave	81.00	
B3b	71st St	Centennial Rd	66th St	Reconstruct 71st Ave from Centennial to 66th St	91.80	
B3c	71st/1804	State St	Washington St	Improve section	86.45	
B4a	66th St	43rd Ave	Century	Construct as three lane urban section	84.60	
B4b	66th St	Century Ave	Highway 10/ Main Ave	Construct as three lane urban section (tied with Project B8)	110.25	
B5a	66th St	HWY10/Main	Apple Creek	Widened to three lane section	66.15	
B5b	66th St	Northgate	Lincoln Road	Wident to three lane seection	86.40	
B6	66th St	Lincoln Rd	48th Ave S	Reconstruct 66th as urban section	64.35	
B7	48th Ave S	University Dr	66th St	Construct rural section between 66th St and University Dr.	51.30	
B8	I-94	66th St		Construct new interchange at I-94	114.35	
B9	Divide Ave	Bismarck Expwy	66th St	Extend Divide Ave	73.35	
B10	Main Ave	Bismarck Expwy	66th St	Widen Main Ave	84.70	
B11	52nd St	Century Ave	43rd Ave	Extend 52nd St	47.70	
B12	Hamilton St/ Channel	Century Ave	Divide Ave	Exetend as grade seperation of I-94	33.30	
B14a	Century Ave	Centennial Rd	52nd St	Five lane urban section	107.30	
B14b	Century Ave	52nd St	66th St	Three lane urban section	66.60	
B15	43rd Ave	State	19th	Urban 3 or 5 lane section	87.80	
B18a	43rd Ave	Roosevelt	52nd St	Improve to Urban 3 or 5 Lane	91.80	
B18b	43rd Ave	52nd St	66th St	Improve to Urban 3 or 5 lane	91.80	
B19	Ash Coulee Dr	Washington St	Tyler Parkway	Widened to three lane urban arterial	99.95	
B20	Washington St	Drainage Channel	Burleigh Ave	Reconstruct as three lane urban arterial	99.55	
B21	Tyler Parkway	Valley Dr	43rd Ave	Imrpove to paved section	49.95	
B21a	Tyler Parkway	43rd	57th Ave		64.35	
B21b	Tyler Parkway	57th Ave	1804/71st		33.30	
B22a	19th St	North Valley Lane/Lp	43rd Ave	Reconstruct to 3-lane urban section	89.35	
B22b		Skyline	71st Ave	Urban 3 lane section	45.00	
B23a	57th Ave	Tyler Parkway	River Rd	Improve to 3 lane rural section	64.35	
B23b	57th Ave	Tyler Parkway	Crested Butte		47.70	

Project ID	Location	Termini	Termini	Description	Project Score	Project Priority (Public Choice)
B23c	57th Ave	Crested Butte	Washington St		58.50	
B23d	57th Ave	Washington St	State St		60.75	
B25	Bismarck Expwy	12th St	Yegen Rd	Implement 3/4 access control; add right turn at Airport Rd.	99.70	
B26	Bismarck Expwy	Washington St	12th St	Widen Expy to 6-lane divided	106.40	
B28	Divide Ave	Turnpike Ave	26th St	Restripe Divide as 3-lane	99.60	
B30	Main Ave	Hay Creek Crossing	Hay Creek Crossing	Improve Crossing (per NDDOT)	73.70	
B32	Yegen Rd	Lincoln Rd	Morrison Ave	add turn lanes in key locations	81.60	
B33	Yegen Rd	Bismarck Expwy	Apple Creek Rd	Improve section	67.10	
B36	Rosser Ave	Main Ave	Washington St	Restrip as 3 lane	91.50	
B37a	4th St	Century Ave	10th	4th St signal timing Improvements, stripe turn lanes at key intersections, potential new signal at Turnpike	65.70	
B37b		Divide Ave	Century Ave		102.50	
B37c		Boulevard	Divide Ave		84.00	
B38	26th St	43rd Ave	71st Ave	Construct as 3 lane rural	78.75	
B44	Ave C	Ward Rd	3rd St	Restripe Ave C for left turns at major intersections including Ward Rd and EB 3rd St	94.10	
B45	Interstate Ave	Country West Road	Country West Road	Extend Interstate Ave	33.30	
B46	London Ave	Riverwood Rd	Washington St	Extend London Ave	33.30	
B47	12th St	Santa Fe Ave	Burleigh Ave	add turn lanes at Santa Fe and Burliegh Ave	62.10	
B48	Washington St	Denver Ave	Drainage Channel	Restripe south of Reno as 3-lane + turn lane improvements	89.20	
B49	Wachter Ave	Washington St	University Ave	Add left turn lanes on Wachter at collector inresections.	50.40	
B51a	Ash Coulee Dr	Fernwood Dr	River Rd	Extend 43rd Ave	47.70	
B51b	Ash Coulee Dr	River Rd	Tyler Parkway	Extend 43rd Ave	47.70	
B52	Apple Creek Rd	Yegen Rd	66th St	Turn lane and intersection improvements at 66th, 55th, 52nd and Yegen	82.35	
B54	Bismarck Expwy	Century Ave	Divide Ave	widen to 6 lane section	101.10	
B57	71st Ave	State St	Centennial Rd	Widening to three-lane rural section	100.80	
B57b	Centennial Rd	43rd Ave	71st Ave	Widened to three lane rural section	100.80	
B59	Tyler Parkway	Century Ave	Schafer Rd	Turn lane additions + Safety Improvements.	86.60	
B61	Centennial Rd	Jericho Rd	43rd Ave	Extend 5 lane urban section	95.95	
B63	Calgary Ave	Railroad	Hay Creek	Extend Calgary Across DMVW RR + Grade Seperation	40.50	

Project ID	Location	Termini	Termini	Description	Project Score	Project Priority (Public Choice)
B64	Burnt Boat	River Rd		Intersection Improvement	74.85	
B65	Burnt Creek Lp S (57th Ave)	River Rd		Intersection Improvement	66.60	
B66	Burnt Creek Lp N/River Rd	ND 1804		Intersection Improvement	42.80	
B68	Century Ave	Tyler Parkway		Intersection Improvement	78.50	
B71	Highway 10	52nd St		Intersection Improvement	70.30	
B72	Lincoln Rd	Yegen Rd		Intersection improvements	77.45	
B74	Apple Creek Rd/ Yegen Rd Intersection	Yegen Rd		Intersection Improvement	79.25	
B75	Bismarck Expwy/ State St	Centennial Rd	I-94	Reconstruct interchange	107.75	
B76		I-94		Reconstruct Interchange	147.15	
B77	71st Ave	Centennial Rd		Intersection Improvement	101.25	
B78	Tyler Parkway/ Divide Ave	I-94		Reconstruct Interchange	118.55	
B80	71st St	State St		Intersection improvement (at grade or grade seperation) TBD	91.40	
M1	Sunset Dr	Middle School	38th St	Extend Sunset Dr. to 38th St	53.55	
M2	37th St NW	ND 1806	56th Ave	2 lane urban section along 37th St between ND 25 and ND 1806	91.80	
M2b	37th St NW	56th Ave	ND 25	2 lane urban section along 37th	91.80	
M3	38th St NW	Collins/ Highway 1806		Old Red Trail Connection between Old Red Tr. And ND 1806	47.70	
M4	Boundary Rd	End of Existing Roadway	56th Ave/I-94 Interchange	Extend Boundary Rd. as a three lane urban section	33.30	
M5	56th Ave NW Interchange	I-94	I-94	Construct new interchange at I-94.	88.20	
M6	32nd Ave NW Interchange	Old Red Trail	Extended New Boundary Rd	Interchange or Grade Separation	67.95	
M7	Highway 1806	37th St	Old Red Trail	Add turn lanes at key intersections (eg. 27th Beretta, 39th, 38th, Sioud and 37th. Assume minor intersection improvements to match M2.	73.25	
M8a	56th Ave	37th St	Old Red Trail	Construct new 3 lane urban section	89.55	
M8b	56th Ave NW	Old Red Trail	I-94 Business Lp (Main)	Construction of new three lane urban roadway from I-94 to Main (94B).	88.20	
M9	Division St	Lohstreter Rd	Schools Building/Park	Extend Division St	40.50	
M10	Division St	8th Ave E	Mandan Ave	Extend Division St	57.15	
M11	8th Ave NW	27th St	38th St	Construct new urban roadway	64.35	

Project ID	Location	Termini	Termini	Description	Project Score	Project Priority (Public Choice)
M12	McKenzie Rd	39th Ave E	HWY 1806	Extend McKensie across Heart River to ND 1806 as rural 2 lane. New Bridge across Heart River. Add signals at McKenzie/Expressway ramps and at McKenzie/40th Ave	66.60	
M13a	31st St	Old Red Trail	I-94 Business Lp (Main)	New Corridor	47.70	
M13b	31st St	I-94		Grade Separation	42.80	
M14	McKenzie Rd	46th Ave SE		Intersection Improvement	69.50	
M16a	HWY 1806	3rd St N	Main St	Add turn lanes and signals at 8th Ave and 19th St. Potential reconstruct for northern portion.	119.90	
M16b		19th St	3rd St		135.75	
M18	33rd Ave W	Boundary Rd (Future) I-94	Business Lp (Main)	Construct new roadway between Boundary Rd (future) and Main Ave.	36.90	
M18b	33rd Ave	I-94		Grade Separation	42.80	
M20	6th Ave W	3rd St N	Main St	Corridor Modifications	81.00	
M21	Collins Ave	1st St	Main St	Corridor modifications + Intersection modiciations at 1st/Collins	81.30	
M22a	Old Red Trail	1806/Collins	Sunset Dr.	Restripe for 3-lane between Sunset and Collins.	92.70	
M22c	Old Red Trail	40th Ave NW	56th Ave	Reconstruct 3 lane urban	98.75	
M23	19th St SE	6th St	ND 6	Reconstruct 3 lane urban	83.55	
M24	3rd St	Memorial HWY	6th Ave/ ND1806	Restripe with center turn lane + Misc. corridor improvements	117.35	
M26	I-94	Main St	I-194	Reconstruct I-94 between Main St and I-194. Consider interchange improvements	142.95	
M27	McKenzie Rd	Highway 1806	Highway 6	Extend McKenzie Rd. as two lane rural section	49.95	
M29	Sunset Dr Interchange	I-94		Reconstruct interchange	127.75	
M30	Boundary Rd	Sunset Dr	Sunset Dr	Signalize and stripe turn lanes on all approaches	74.80	
M31	27th St N/Sunset Dr Intersection	Sunset Dr	Sunset Dr	Intersection Improvement	58.95	
M33	Mandan Ave	I-94		Reconstruct bridge to add left turn lane	86.30	
R1	Northern Bridge	38th St Mandan	57th Ave Bismarck	Corridor between 38th St (Mandan) and 28th St (Bismarck) and River Crossing	100.80	

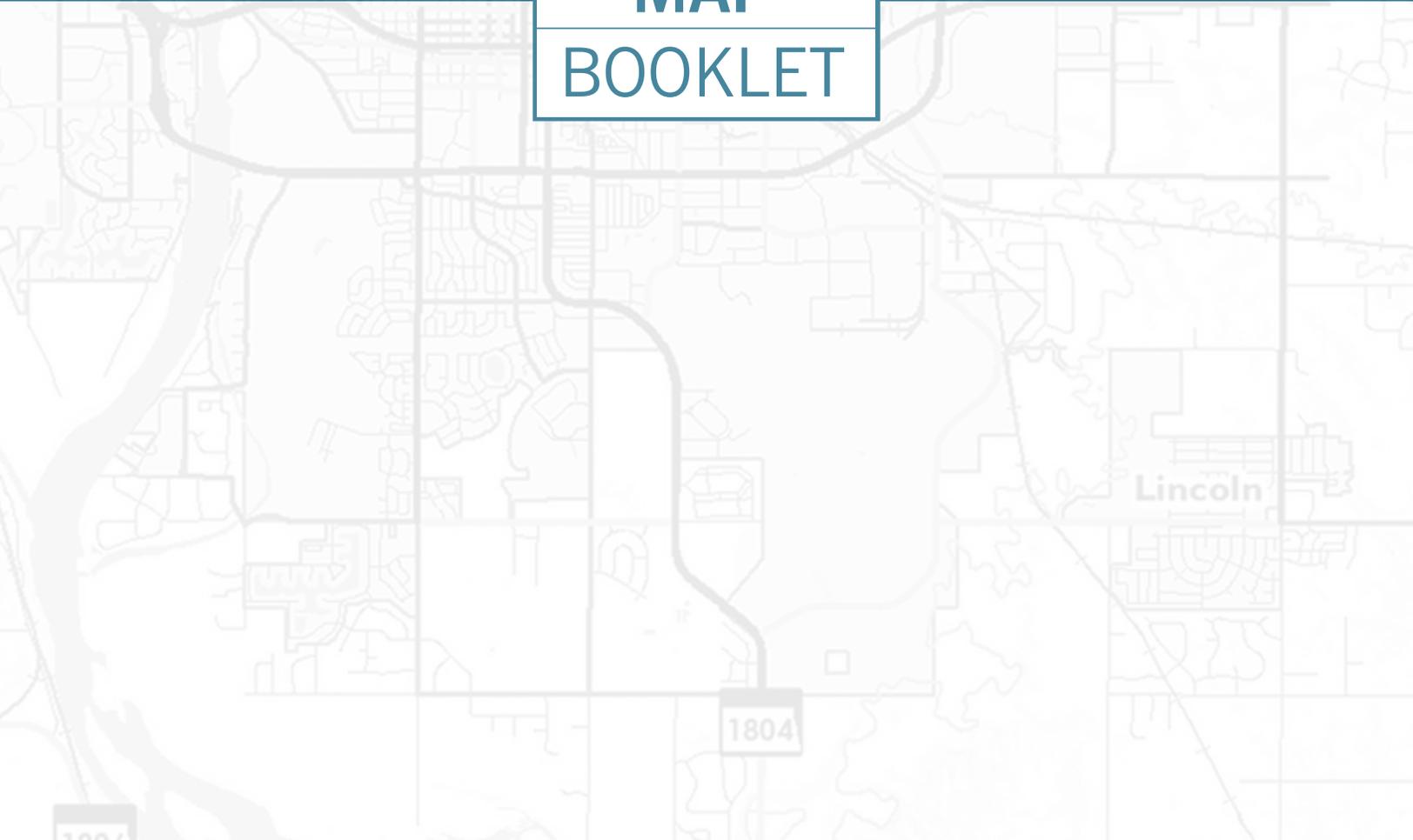
ARRIVE 2045

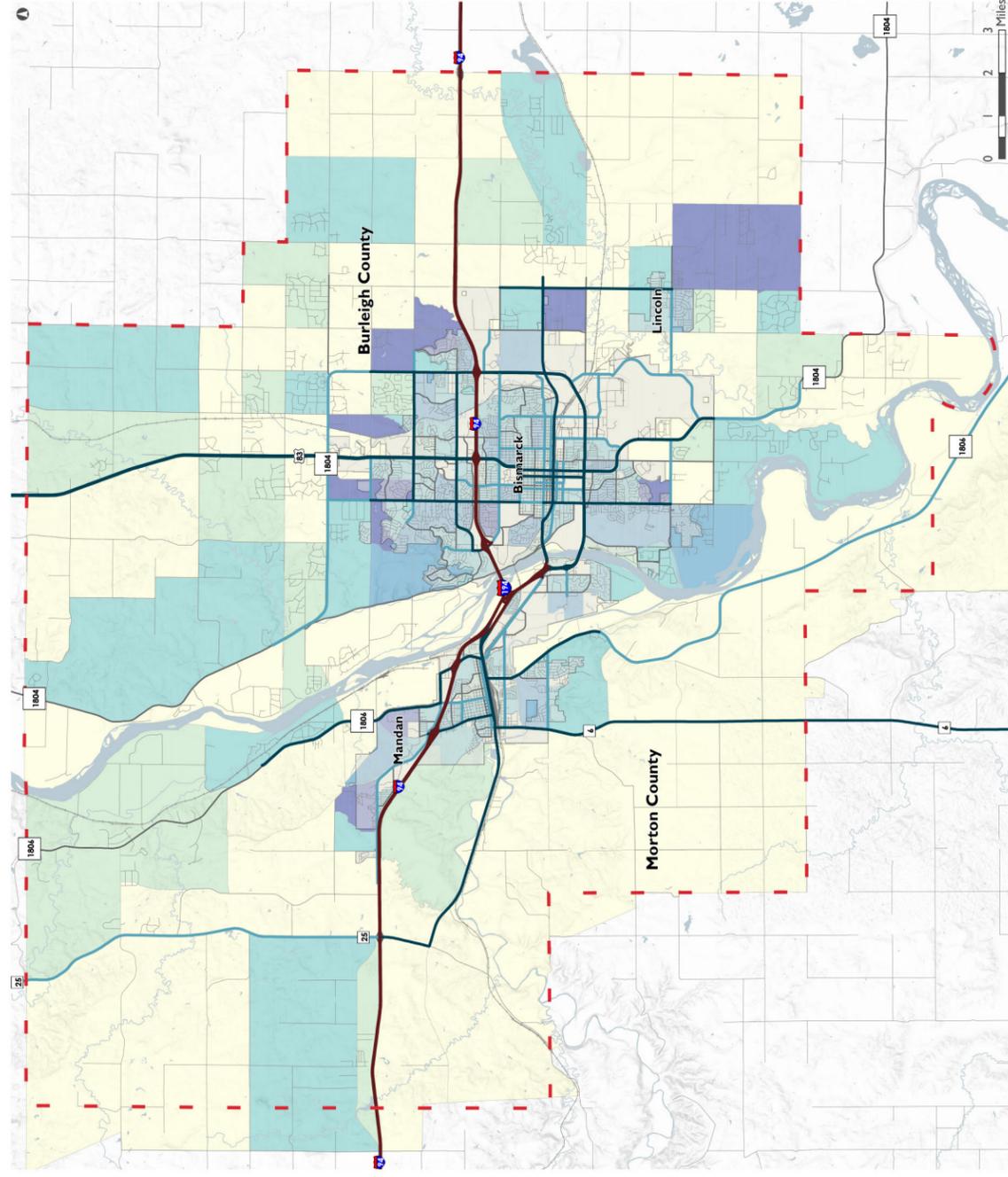
Bismarck-Mandan
MPO

Metropolitan
Transportation
Plan



MAP
BOOKLET





2045 Household Growth

Metropolitan Planning Organization Boundary

Boundary

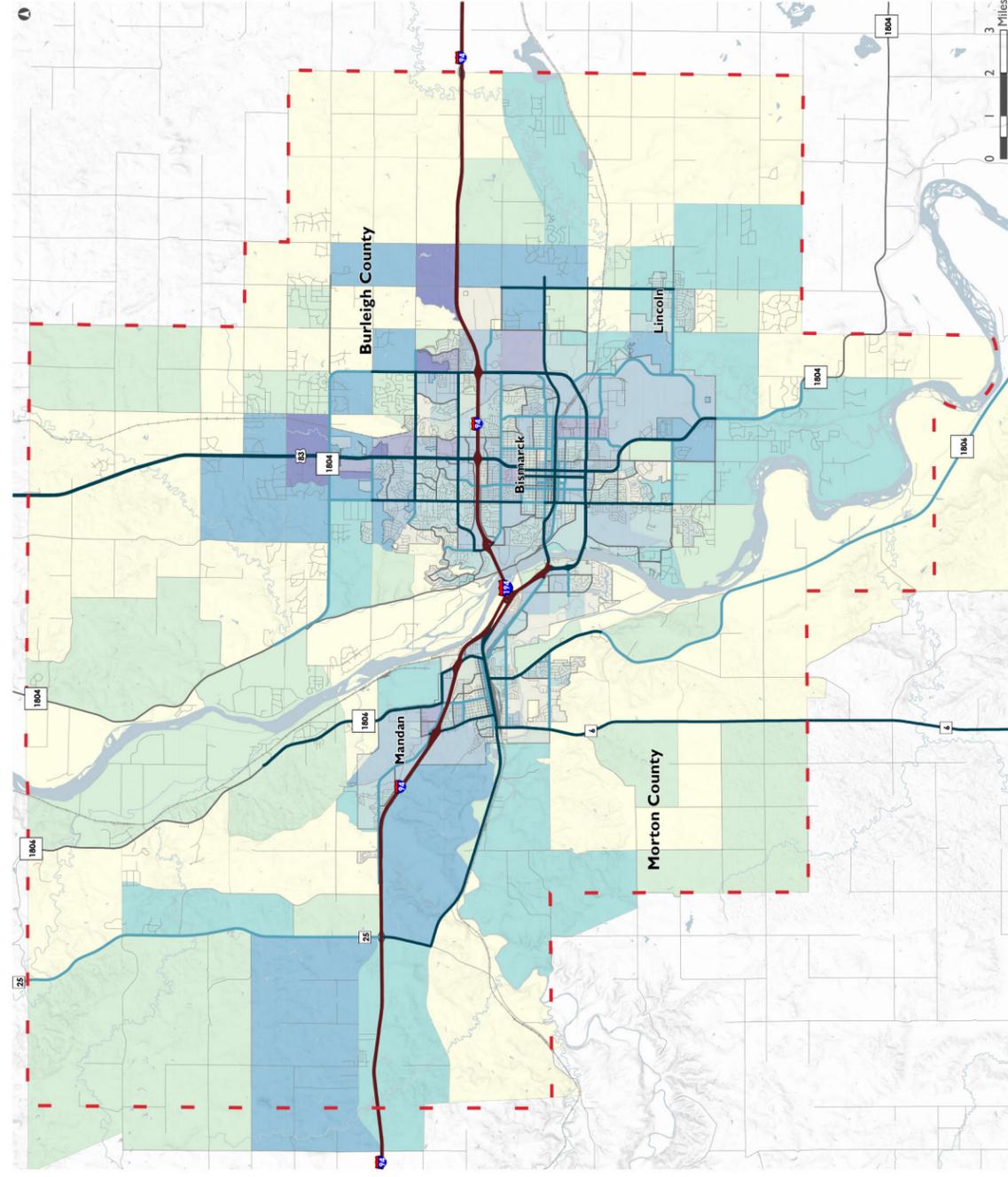
Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

2045 TAZ Data

Additional Households

- 0 - 100
- 101 - 200
- 201 - 500
- 501 - 1000
- 1001 - 1564



2045 Jobs Growth

Metropolitan Planning Organization Boundary

Boundary

Roadway by Functional Classification

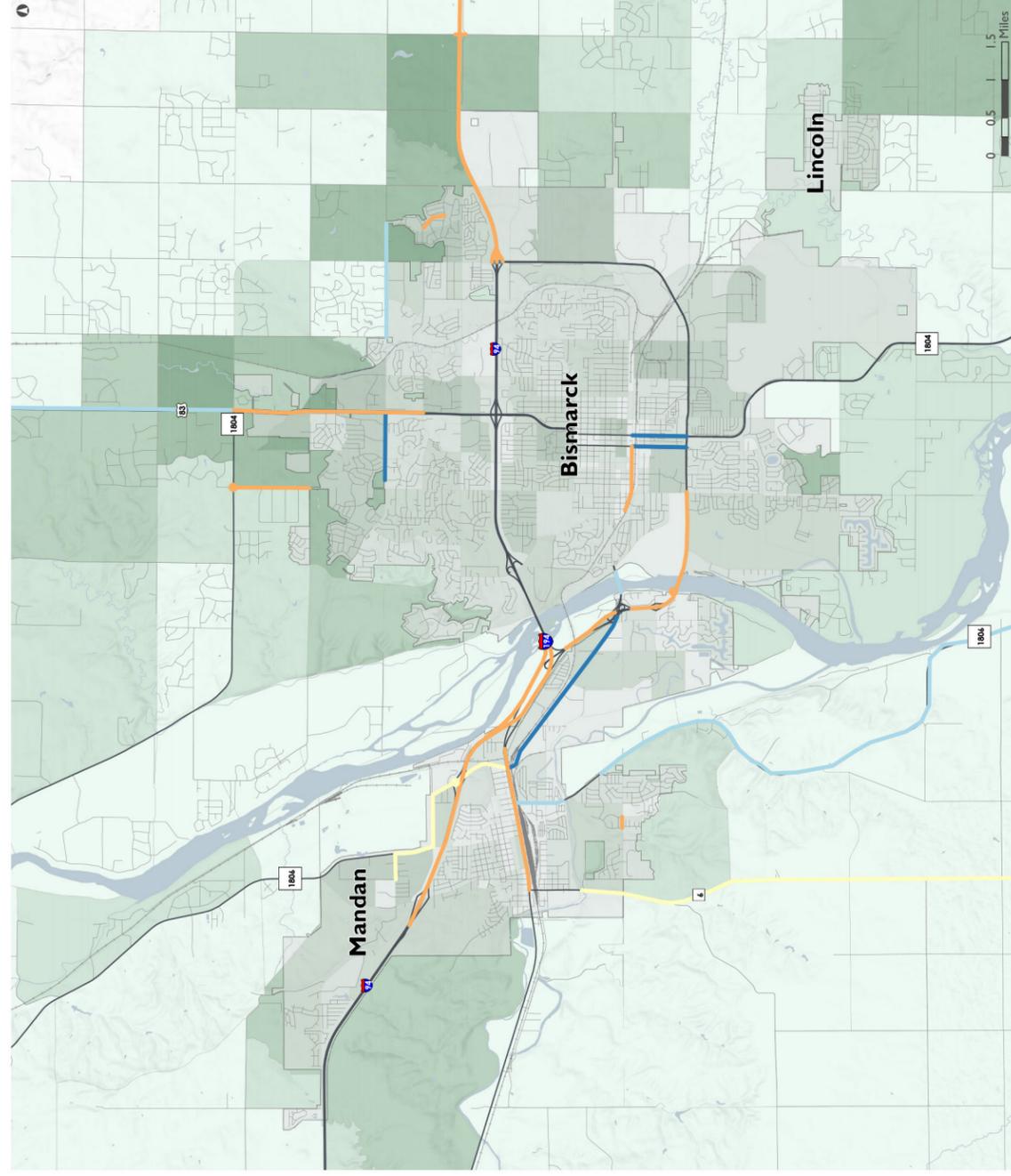
- Interstate
- Principal Arterial
- Minor Arterial
- Collector

2045 TAZ Data

Additional Jobs

- 0 - 10
- 11 - 50
- 51 - 250
- 251 - 1500
- 1501 +

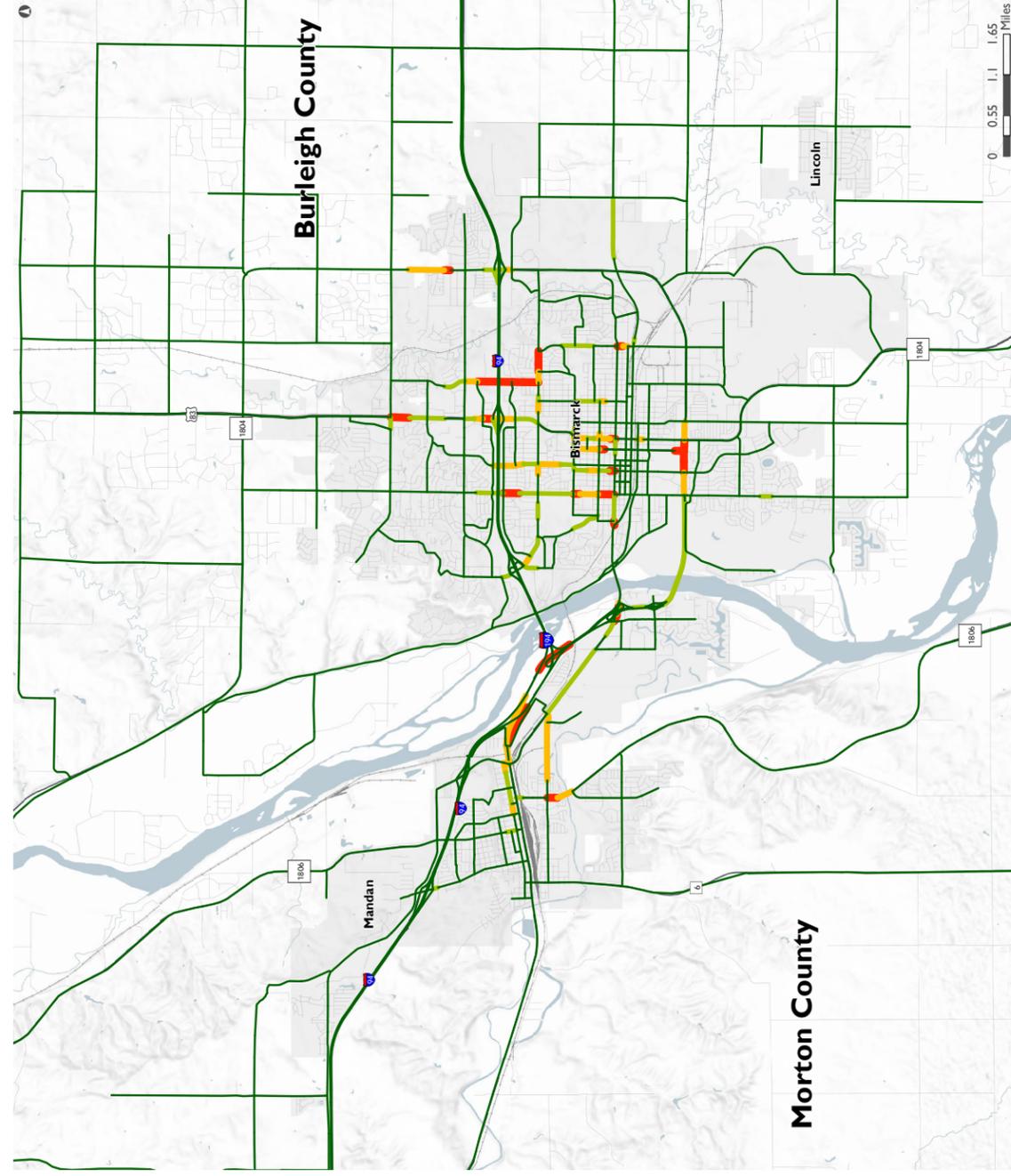




TIP Projects

- Projects By Year
- 2019
 - 2020
 - 2021
 - 2022

- 2045 TAZ Data
Additional HH + Jobs
- 0 - 250
 - 250 - 750
 - 750 - 1,250
 - 1,250 - 2,500
 - 2,500+

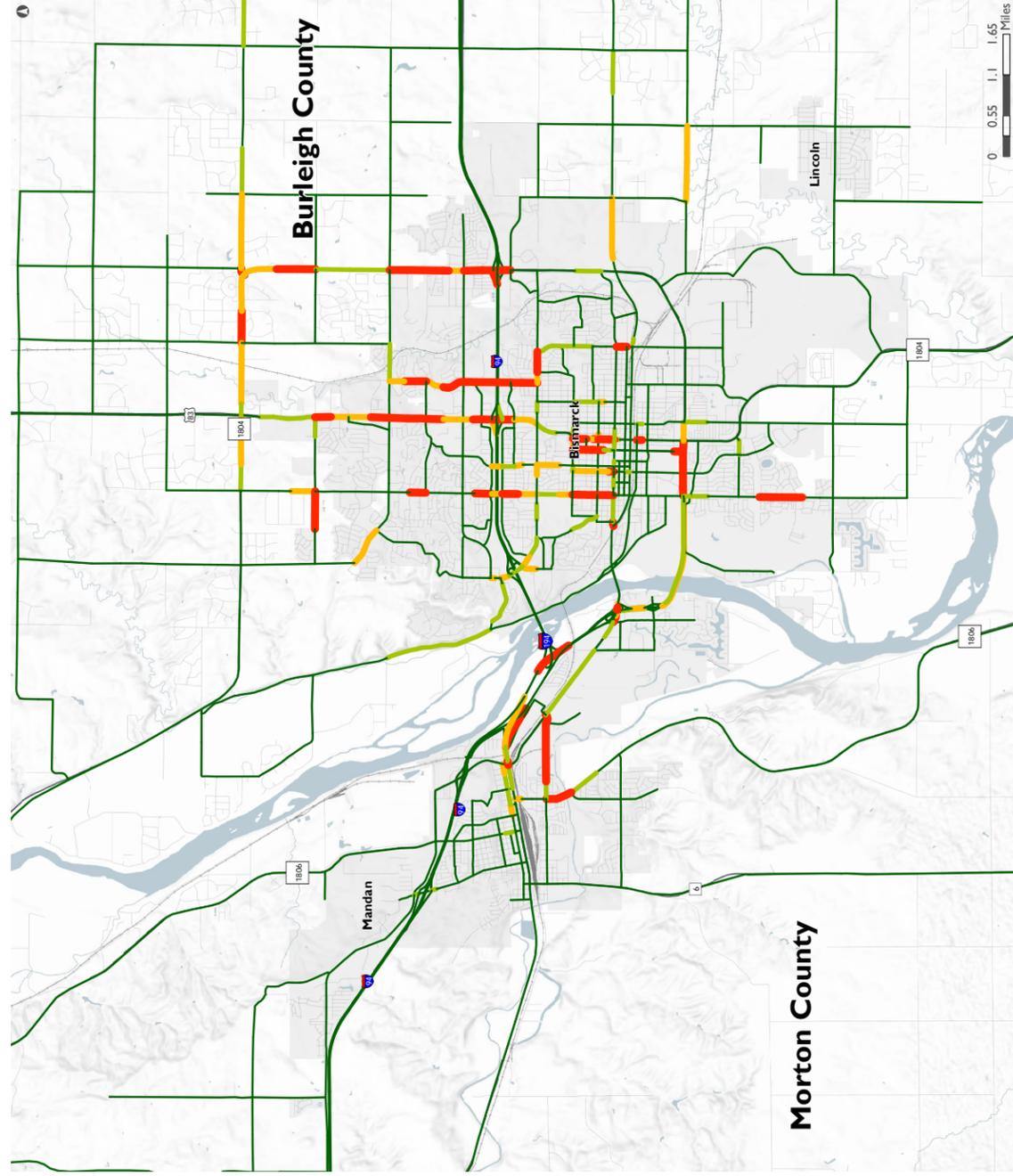


Level of Service 2015

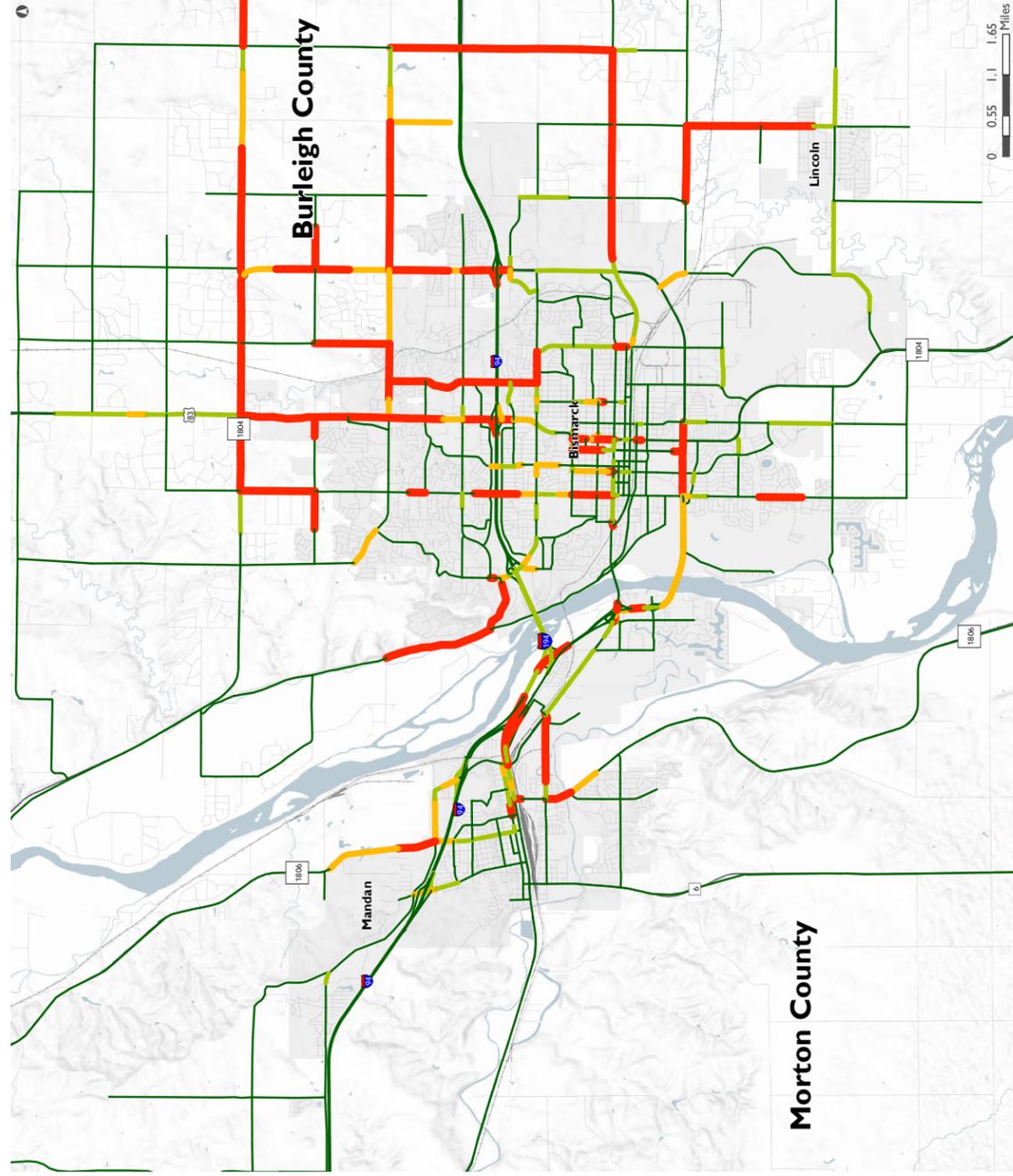
- LOS 2015
- F
 - E
 - D
 - A - C



Level of Service 2030

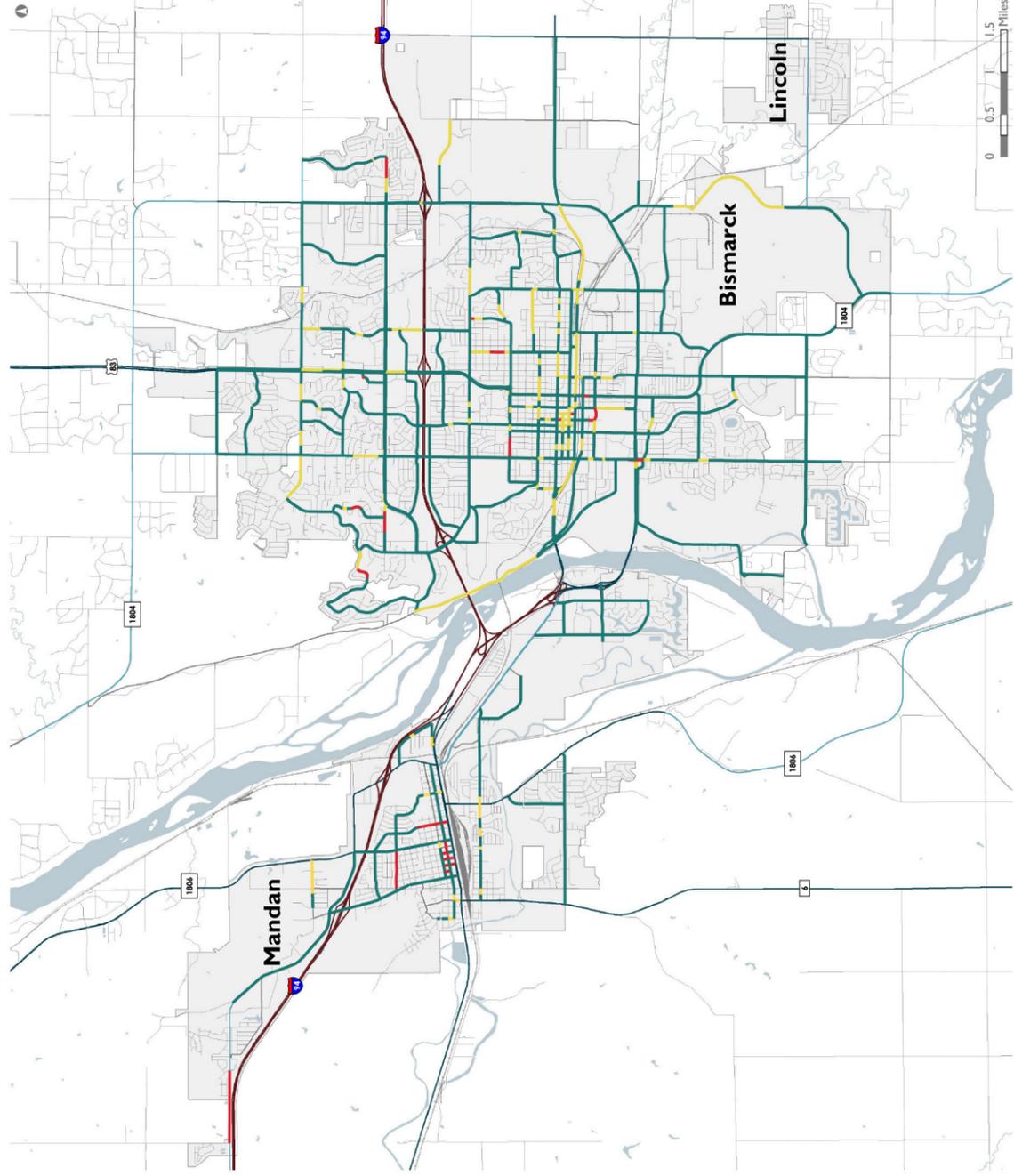


Level of Service 2045



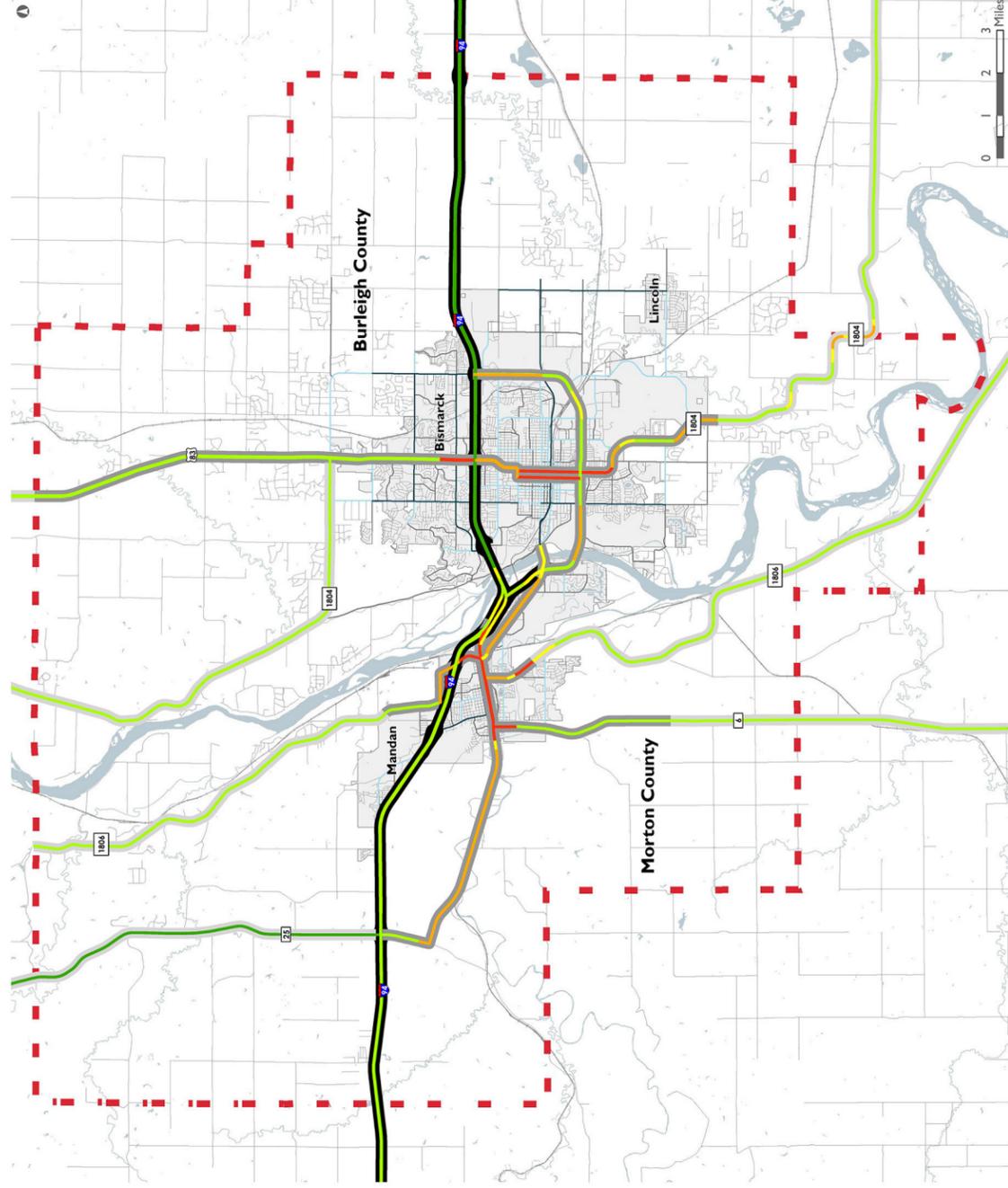
Pavement Conditions Index (PCI) Rating 2016 - 2018

- PCI Rating**
- Adequate
 - Degraded
 - Unsatisfactory
- Roadway by Functional Classification**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector

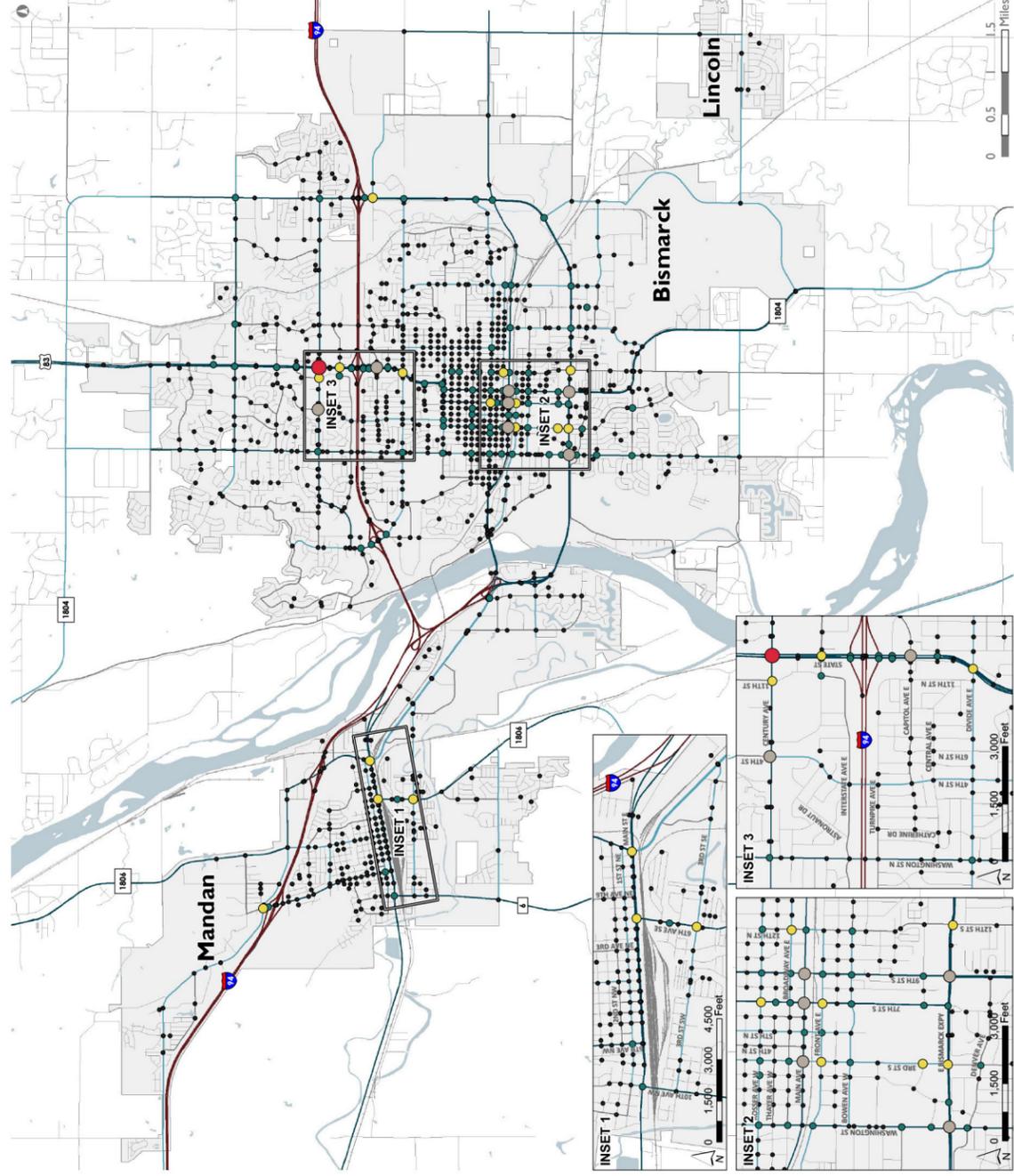


State Owned Roads International Roughness Index (IRI) Rating 2017

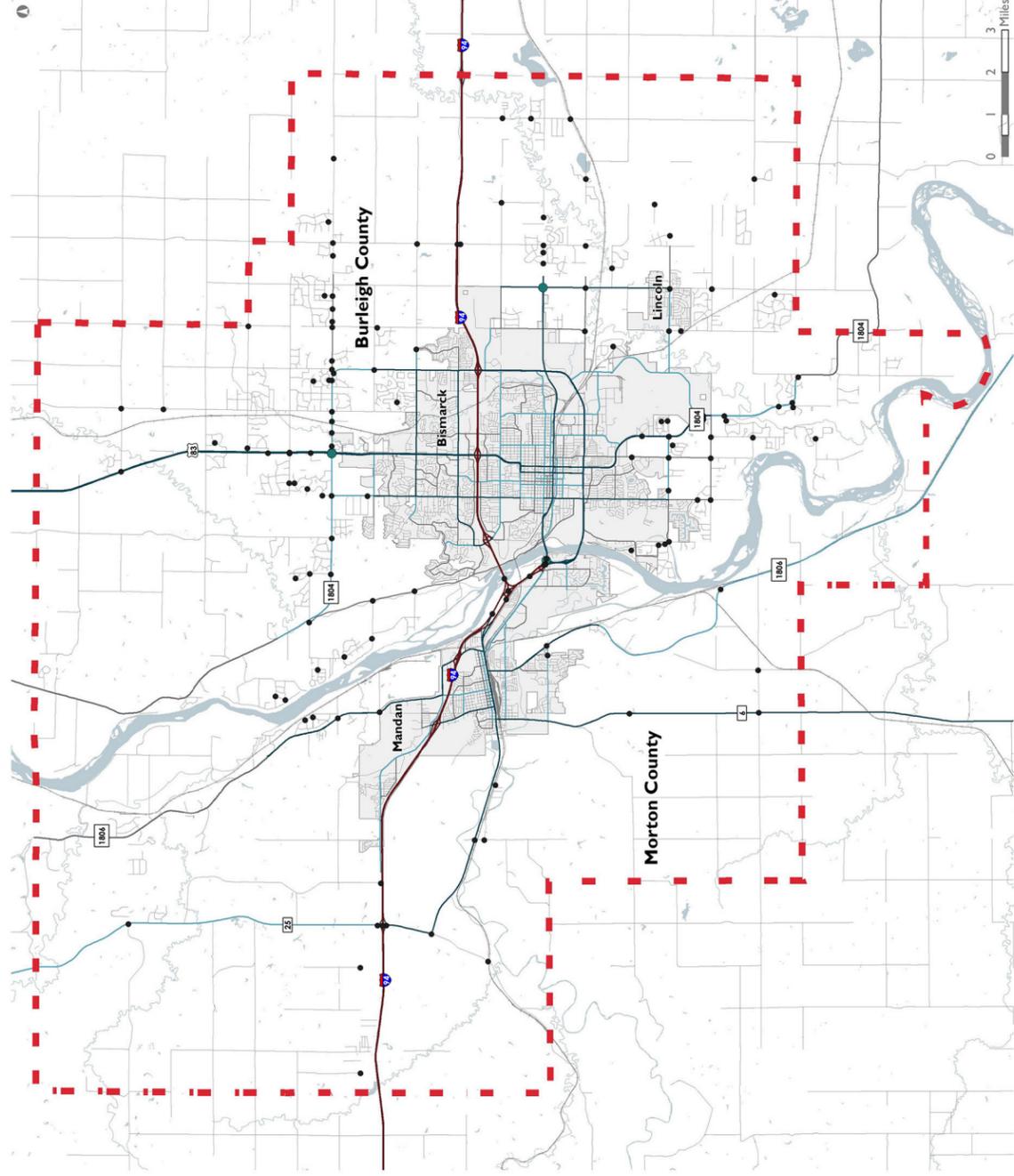
- IRI Rating**
- Excellent
 - Good
 - Fair
 - Poor
 - No Data
- NHS Classification**
- Interstate
 - Principal Arterial
 - State Non-NHS
- Metropolitan Planning Organization Boundary**
- - - Boundary
- Roadway by Functional Classification**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector



Urban Intersection Crashes 2013 - 2017

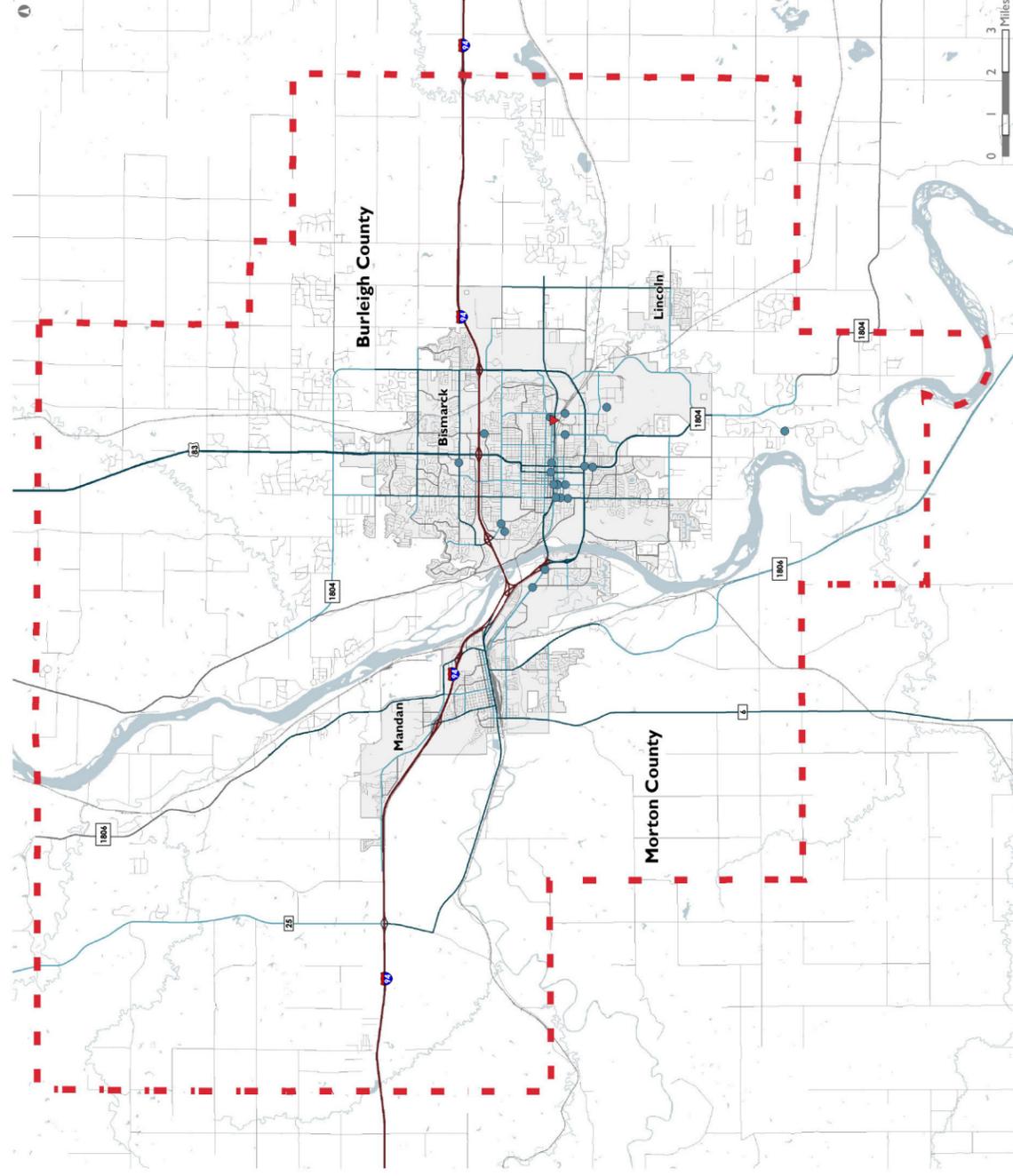


Rural Intersection Crashes 2013 - 2017



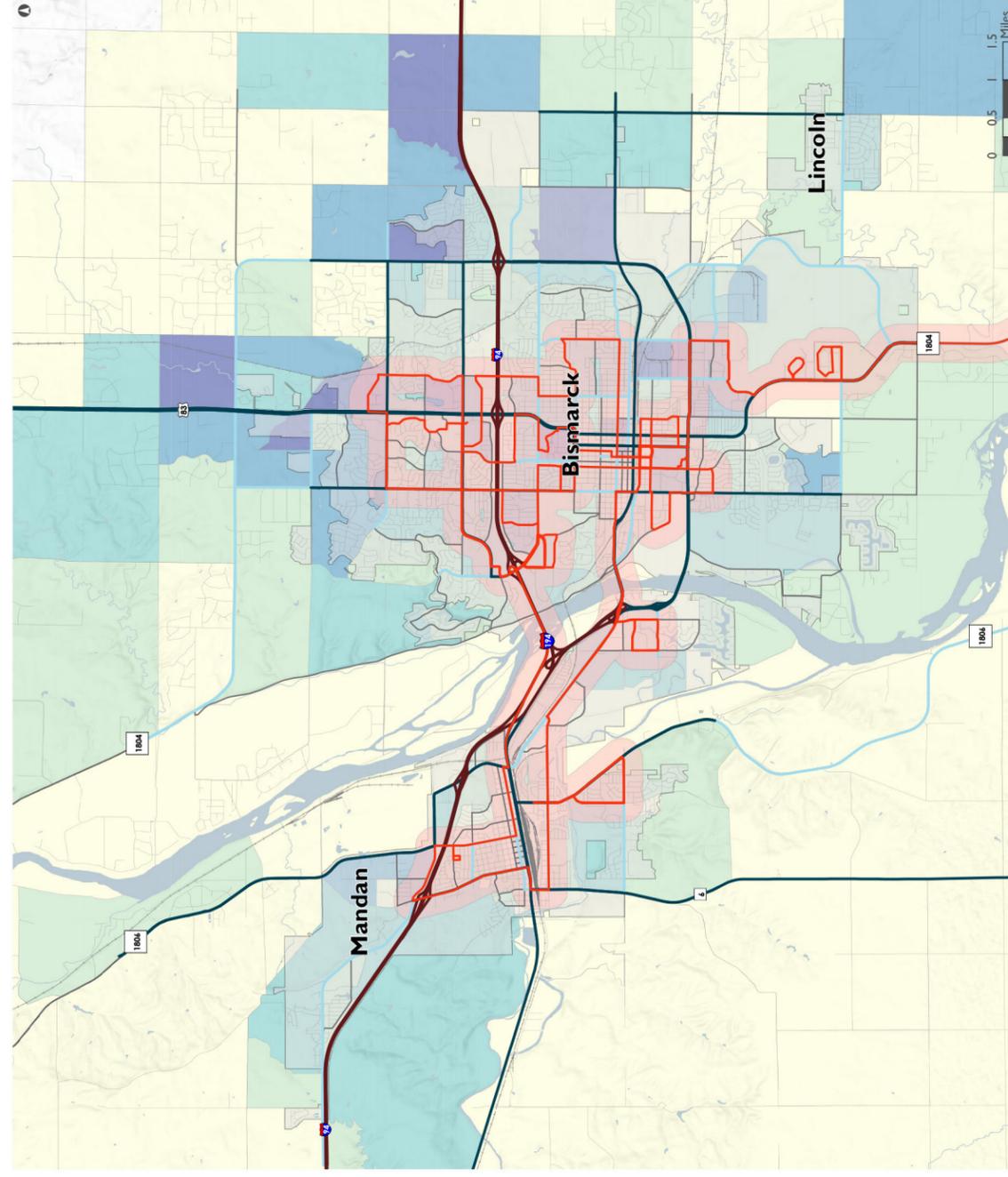
Serious Non-Motorized Crashes 2013 - 2017

- Serious Non-Motorized Crashes**
- Fatal Crashes
- Incapacitating Injury Crashes
- Metropolitan Planning Organization Boundary**
- Boundary
- Roadway by Functional Classification**
- Interstate
- Principal Arterial
- Minor Arterial
- Collector

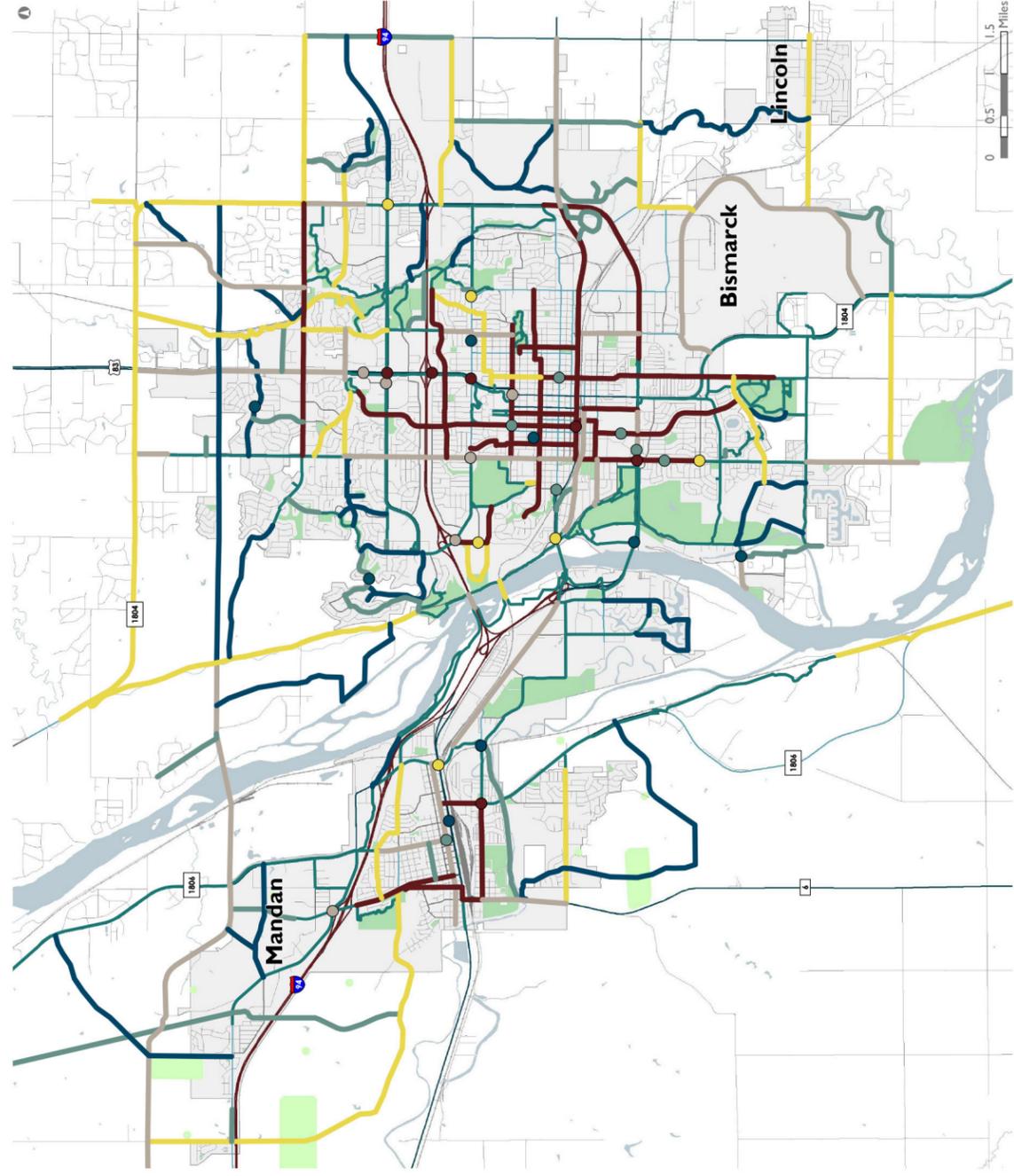


Transit Routes

- Bis-Man Transit Routes 2017
- Transit Routes 1/4 Mile Buffer
- 2045 TAZ Data**
- Additional HH + Jobs**
- 0 - 250
- 250 - 750
- 750 - 1,250
- 1,250 - 2,500
- 2,500+



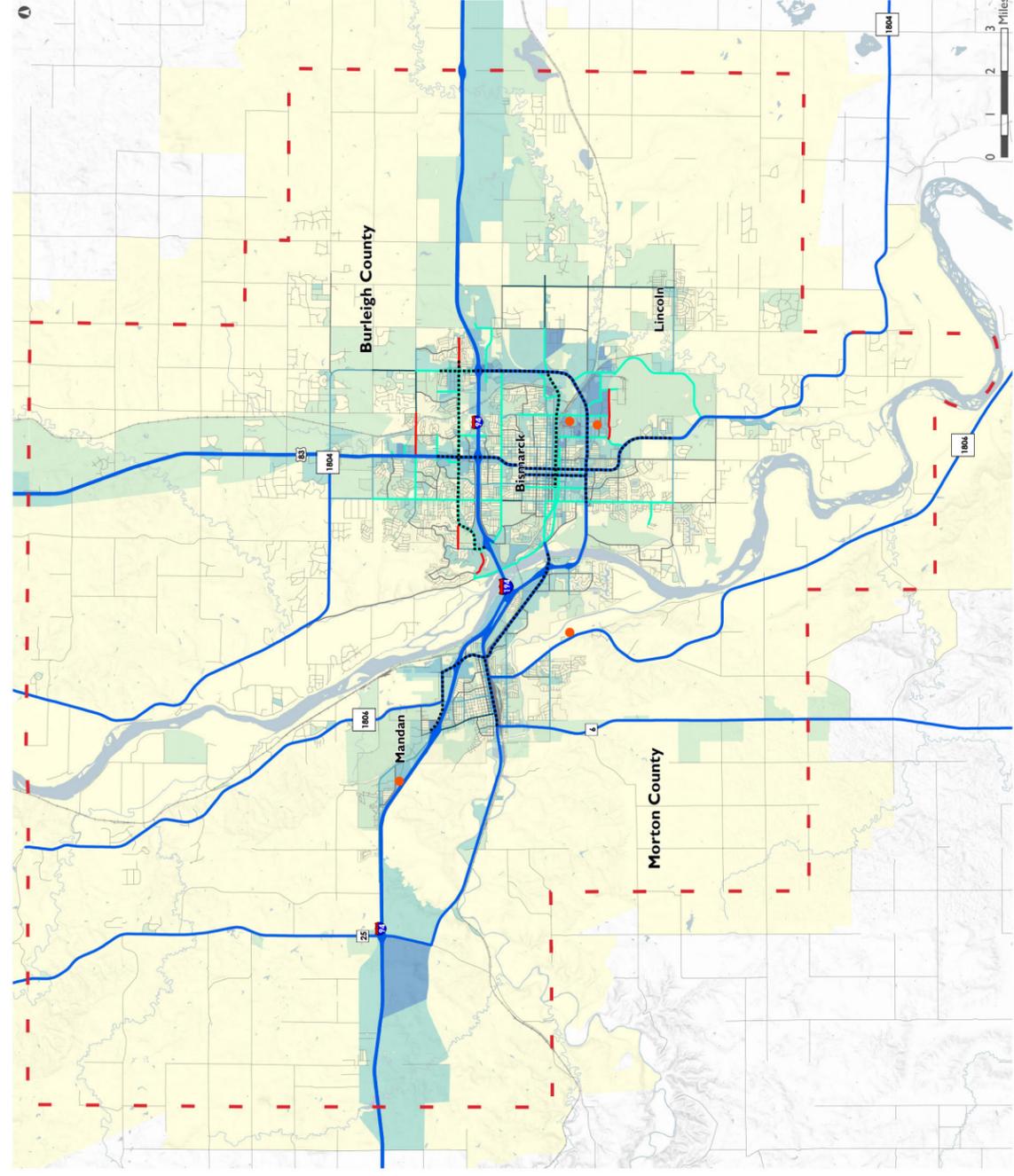
Intersection and Connection Analysis Scoring Bismarck-Mandan Bicycle and Pedestrian Plan



- Intersection Scoring**
 - Top 20%
 - Top 40%
 - Mid 20%
 - Lower 40%
 - Lower 20%
- Connection Scoring**
 - Top 20%
 - Top 40%
 - Mid 20%
 - Lower 40%
 - Lower 20%
- Bicycle Facilities**
 - Existing Multi-Use Trails
 - Existing Parks
 - Planned Parks

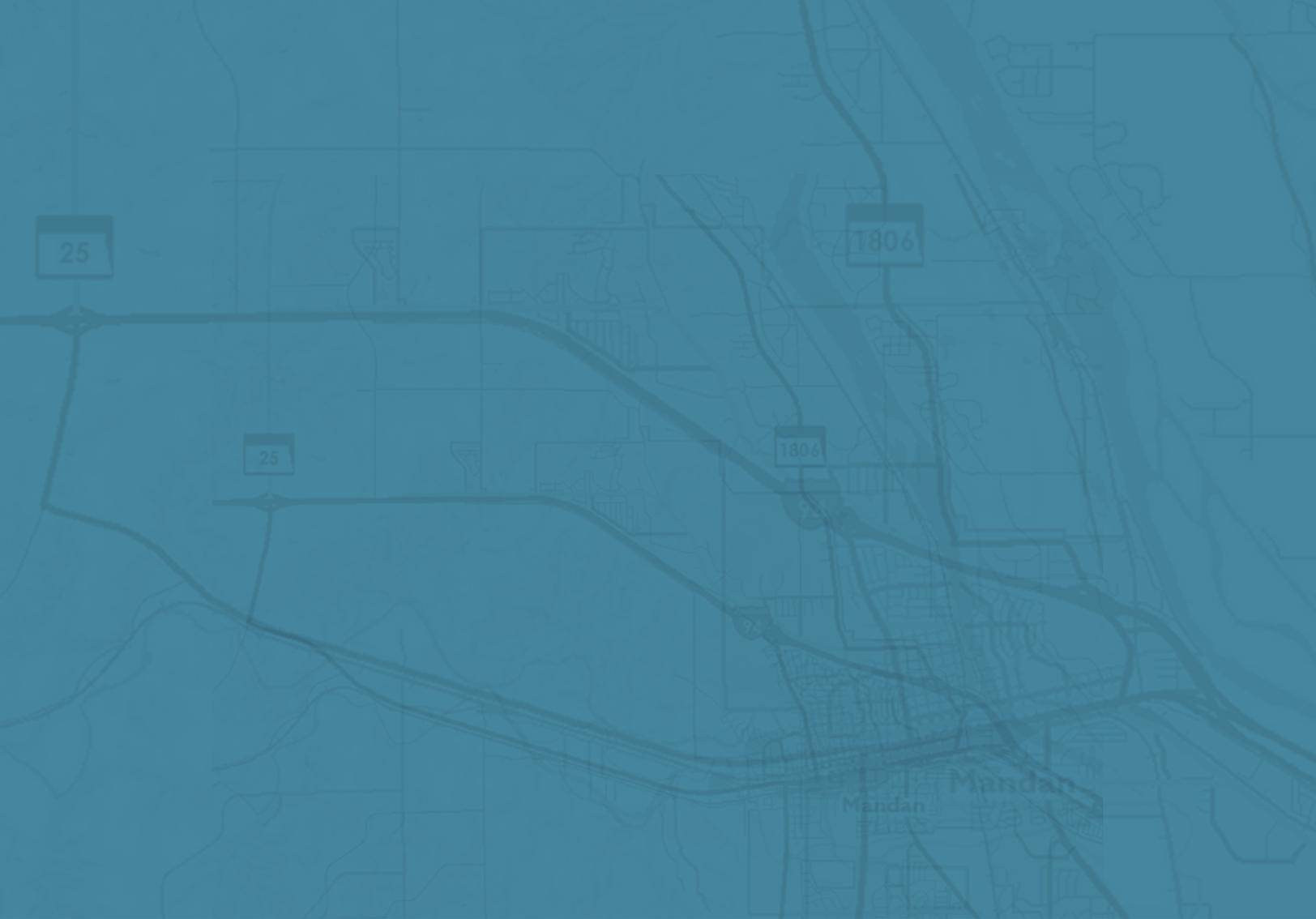


Truck Routes



- Major Freight Generators
- Critical Urban Freight Corridors
- Metropolitan Planning Organization Boundary**
- State and Federal Truck Routes
- Bismarck Local Routes**
 - Designated Truck Route
 - 6-ton Limit
- Roadway by Functional Classification**
 - Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector
 - Railroads
- Truck Pings per Square Meter**
 - 0.00000 - 0.00004
 - 0.00005 - 0.00043
 - 0.00044 - 0.00433
 - 0.00434 - 0.04333
 - 0.04334 - 0.43338





ARRIVE  **2045**

Bismarck-Mandan
MPO

Metropolitan
Transportation
Plan



ARRIVE 2045

Arrive 2045 Public Input Meeting

Options & Alternatives

Agenda

- » Update on Arrive 2045 – 15 Minutes
- » Table Exercises – 40 Minutes
- » Wrap Up & Next Steps – 5 minutes

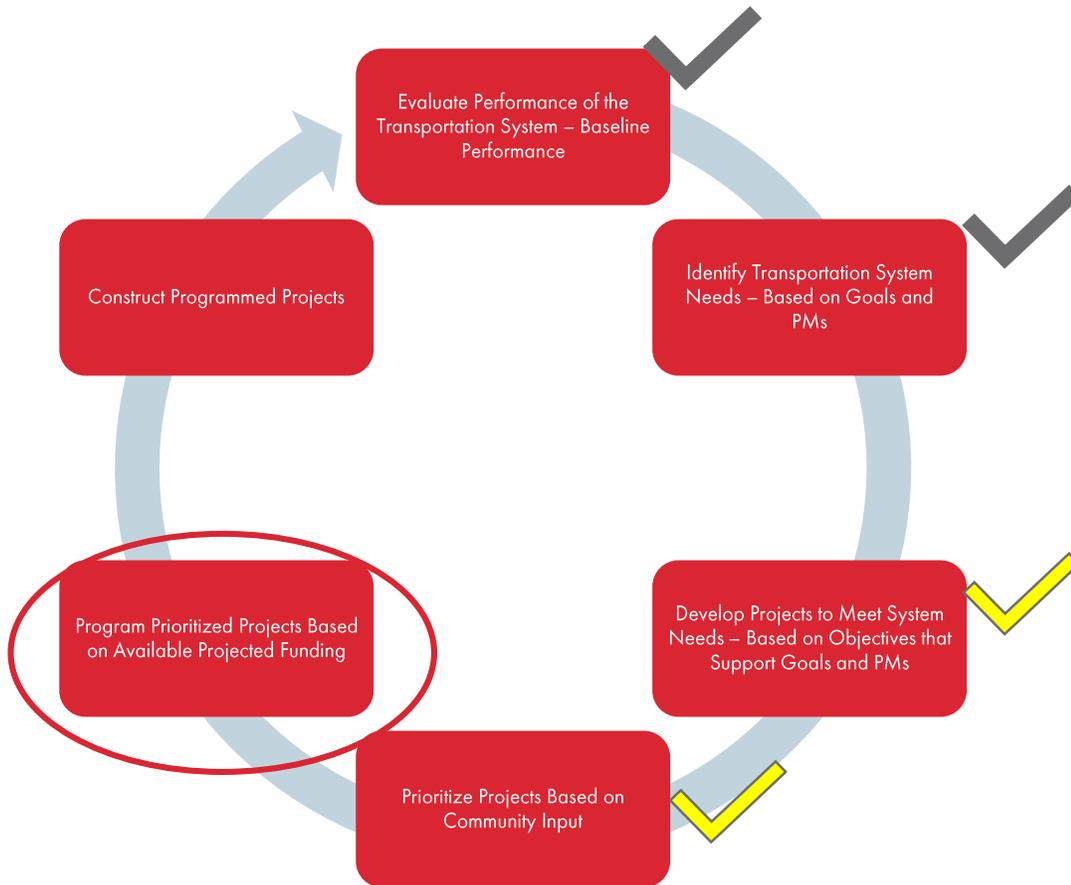


What is the MTP?

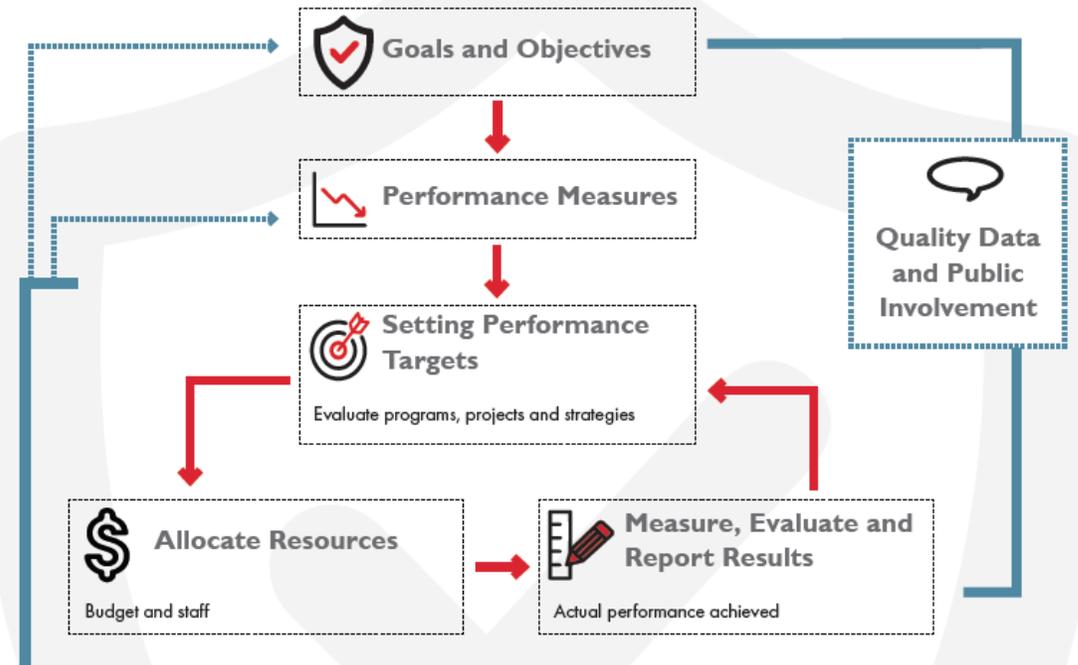
- » 20-year plan
- » Evaluates future transportation needs
- » Prioritizes transportation projects
- » Updated every 5 years



Performance Based Transportation Plan



GOALS, OBJECTIVES, AND PERFORMANCE MEASURES



Background Data



- » Each table has a map book
- » Background data
- » Support materials

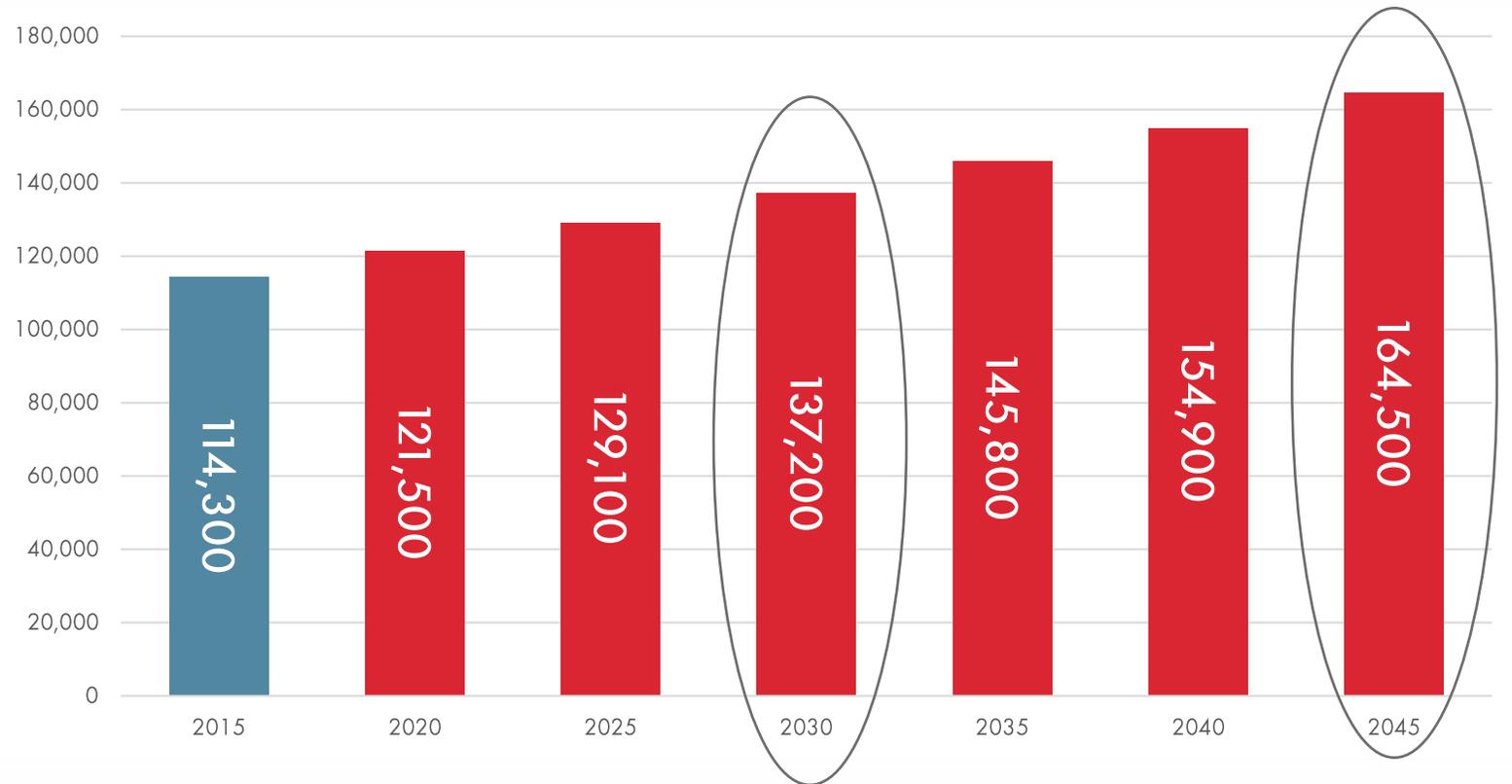


Demographics

» Population Forecasts

- + 22,900 by 2030
- + 50,200 by 2045

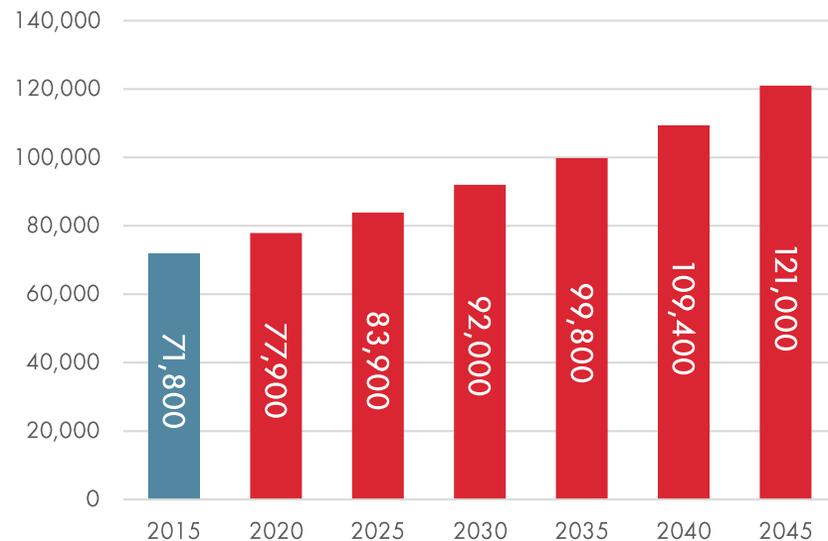
» Support Travel Demand Model



Demographics

» Job growth

- + 20,200 by 2030
- + 49,200 by 2045



Job growth is 2.6% lower than Envision 2040 (124,200)

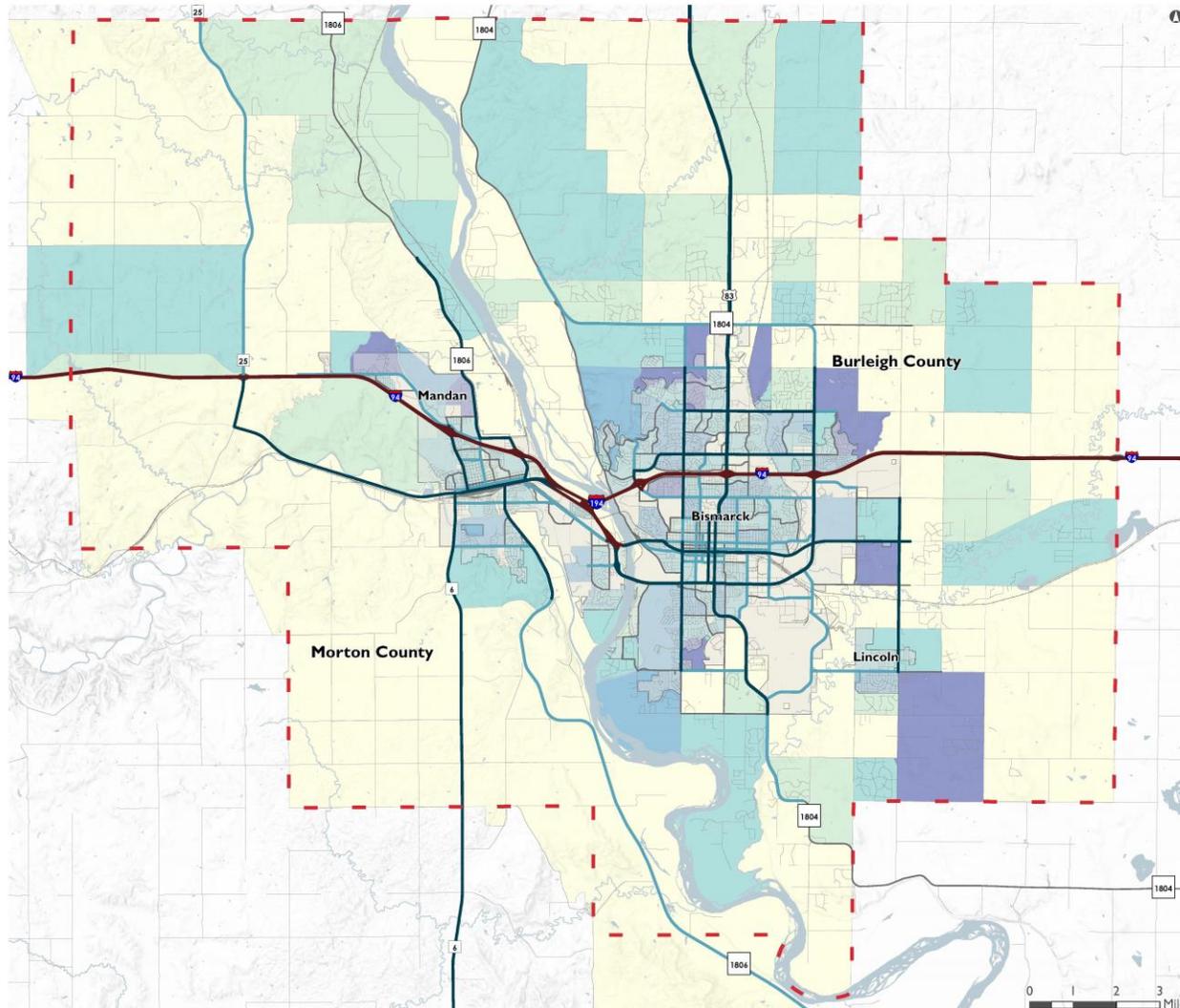
» Household growth

- + 9,500 by 2030
- + 19,100 by 2045



Household growth is 10.5% lower than Envision 2040 (73,100)

2045 Household Growth



2045 Household Growth

Metropolitan Planning Organization Boundary

Boundary

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

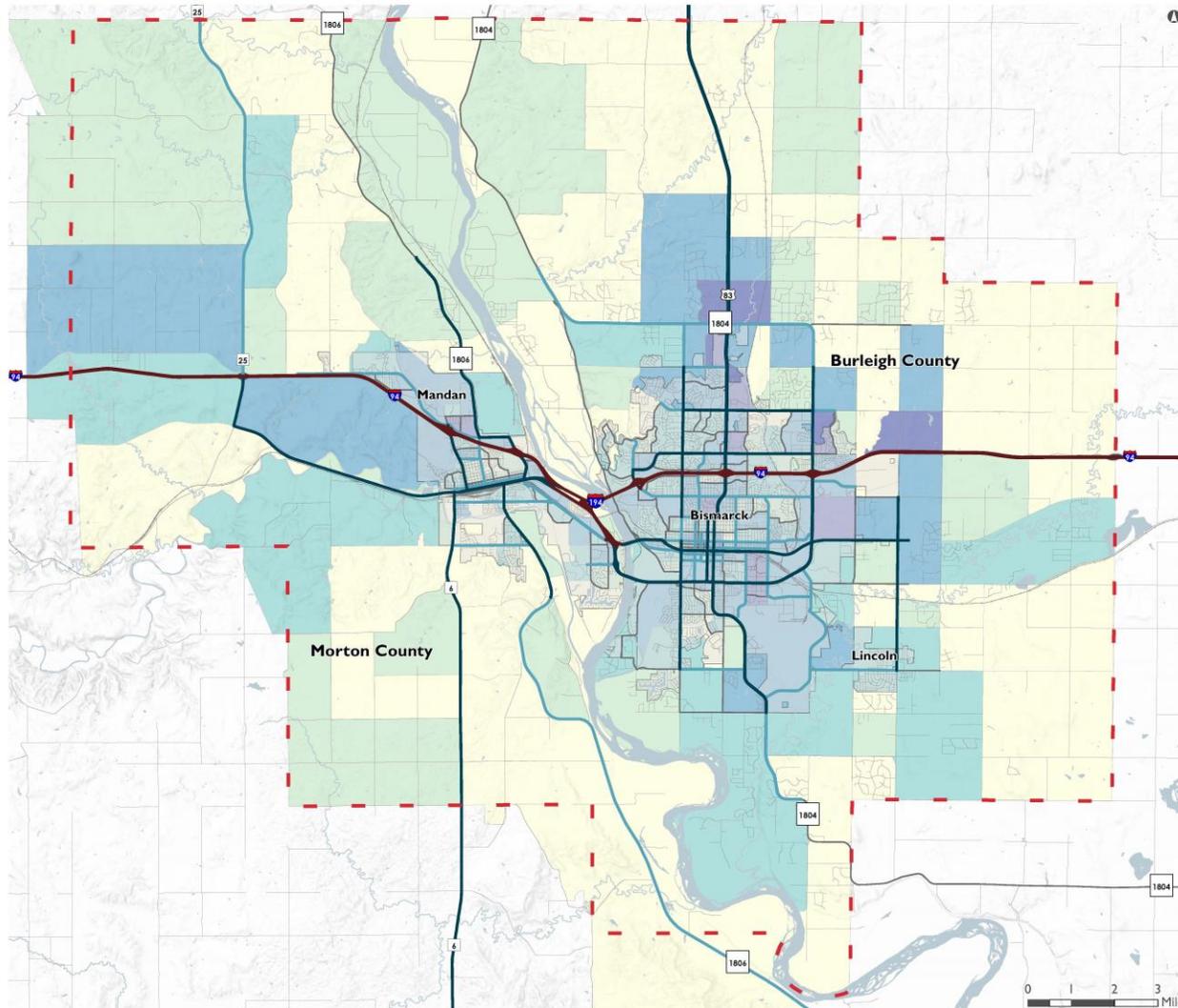
2045 TAZ Data

Additional Households

- 0 - 100
- 101 - 200
- 201 - 500
- 501 - 1000
- 1001 - 1564



2045 Employment Growth



2045 Jobs Growth

Metropolitan Planning Organization Boundary

Boundary

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

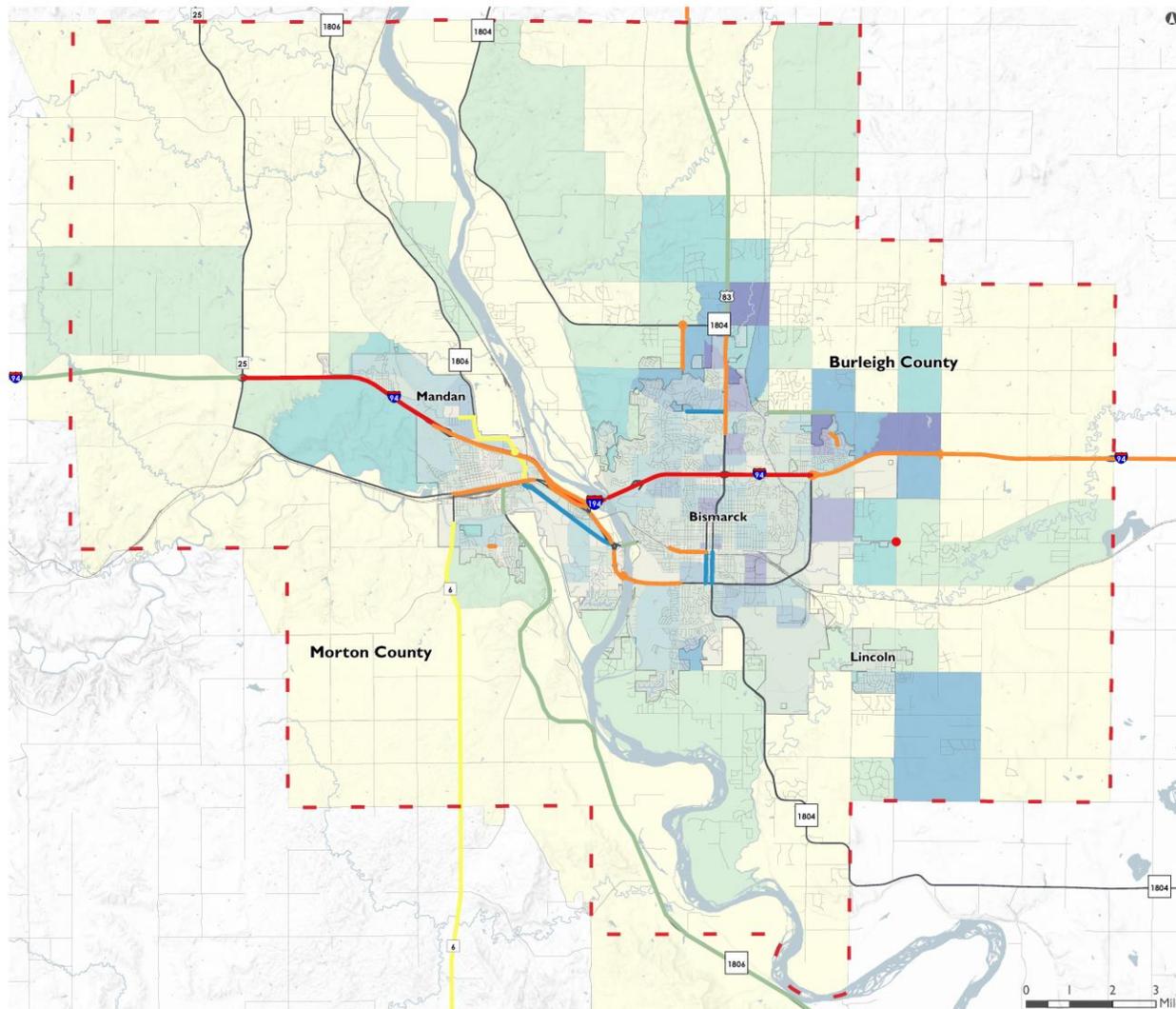
2045 TAZ Data

Additional Jobs

- 0 - 10
- 11 - 50
- 51 - 250
- 251 - 1500
- 1501 +



Future Network and Growth



2045 Household & Job Growth

Metropolitan Planning Organization Boundary

Boundary

TIP Projects By Year

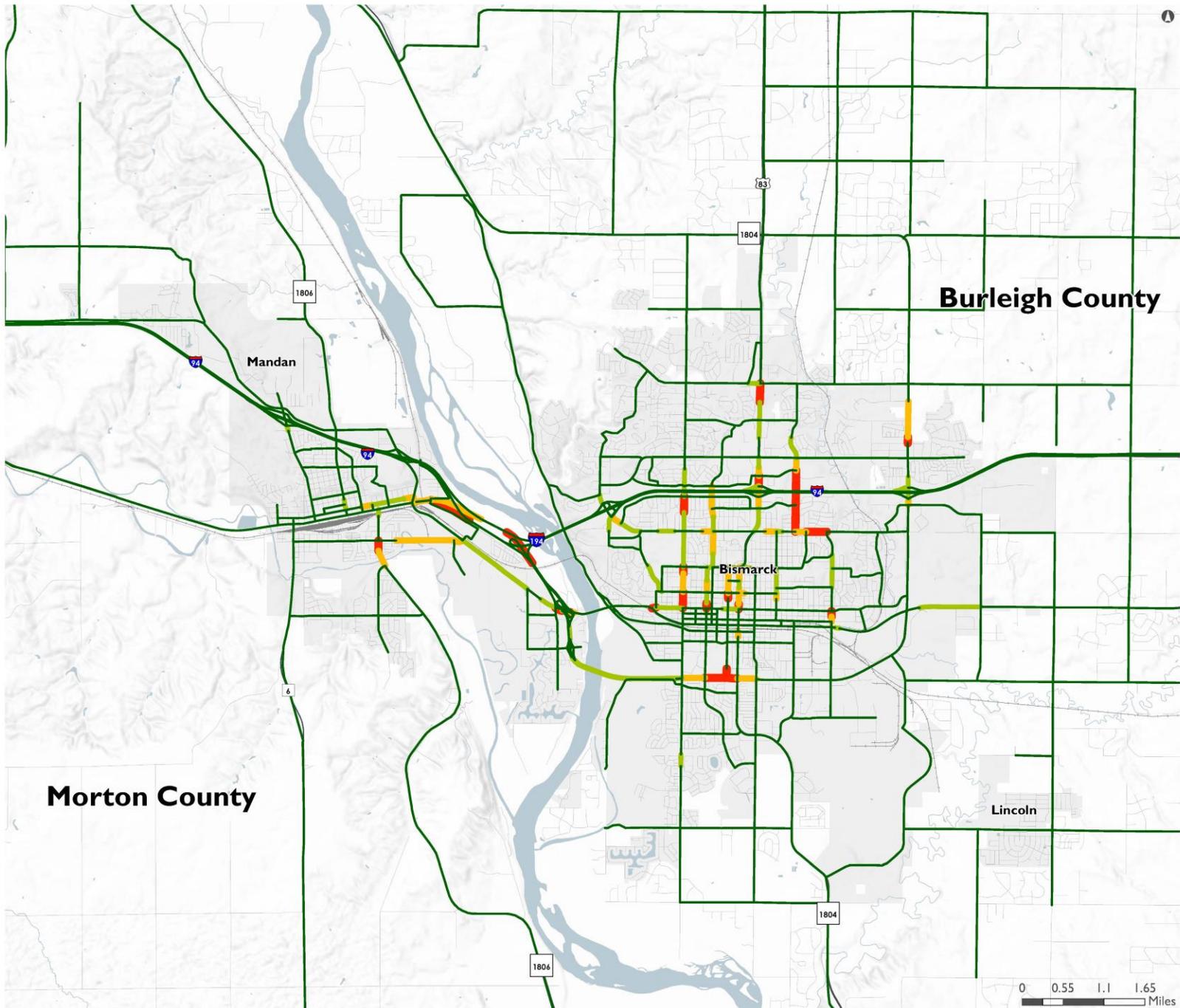
- 2018
- 2019
- 2020
- 2021
- 2022

2045 TAZ Data

Additional Household + Jobs

- 0 - 250
- 250 - 750
- 750 - 1,250
- 1,250 - 2,500
- 2,500+



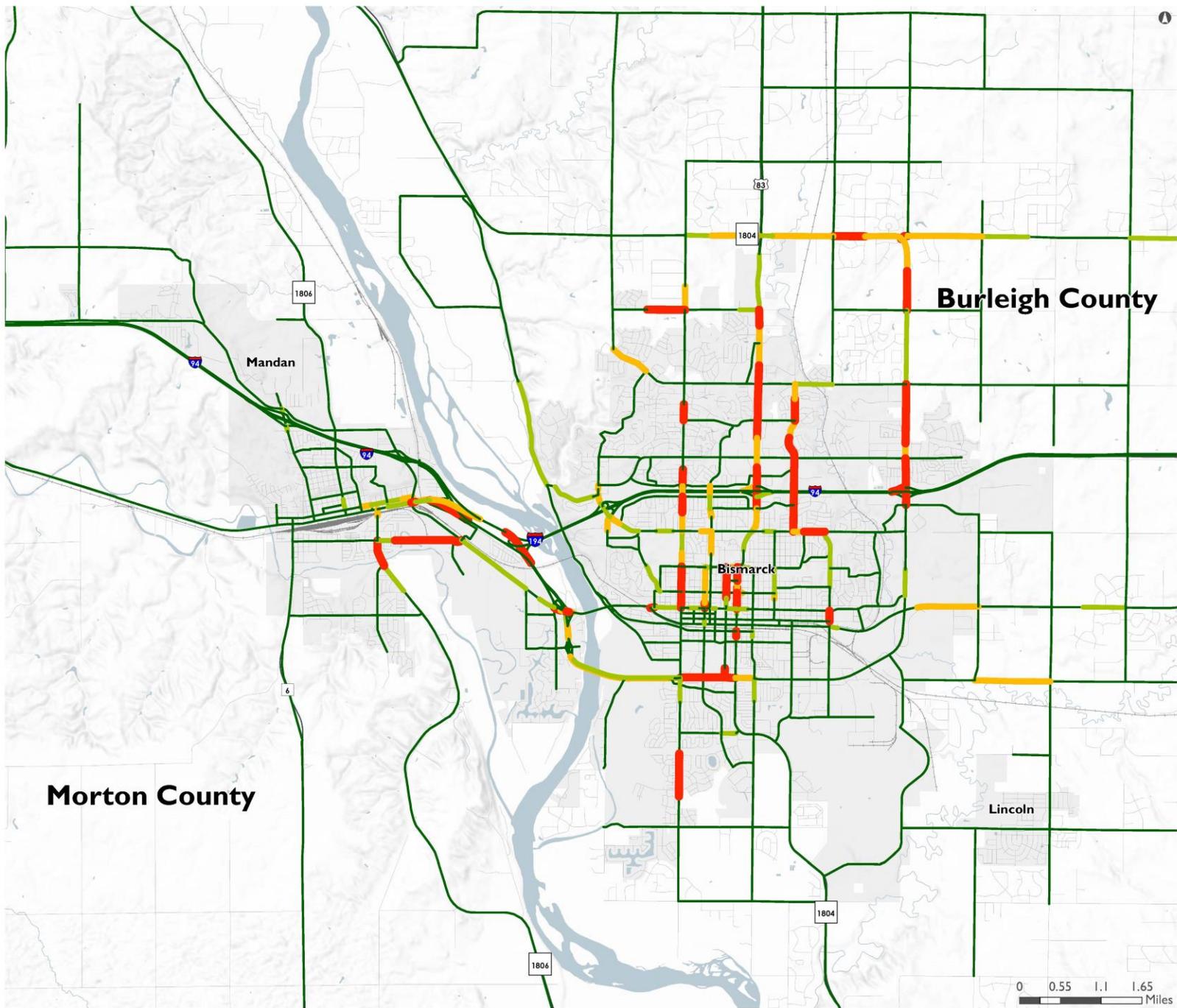


Level of Service 2015

LOS 2015

- █ F
- █ E
- █ D
- █ A - C



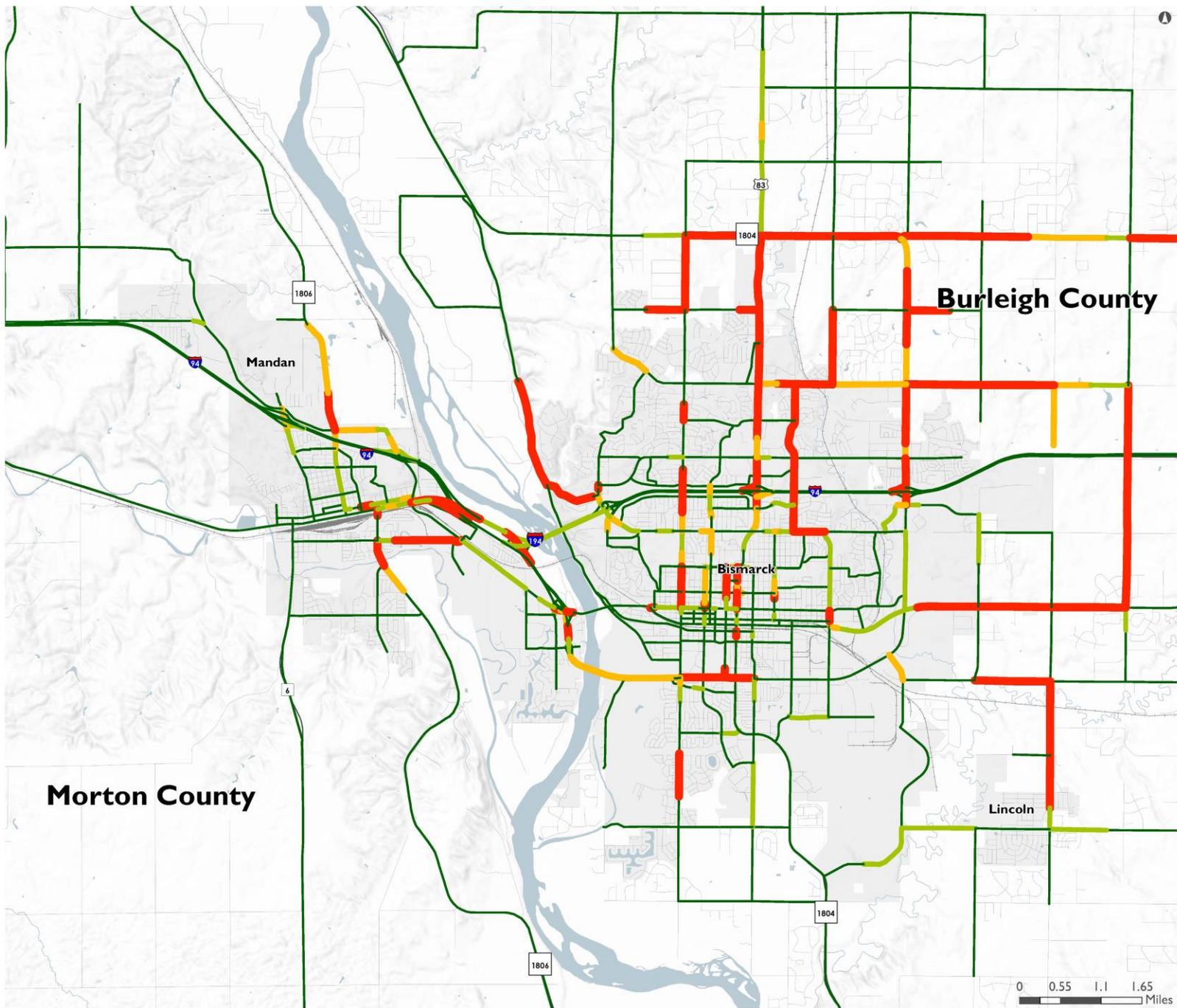


Level of Service 2030

LOS 2030

- █ F
- █ E
- █ D
- █ A - C





Level of Service 2045

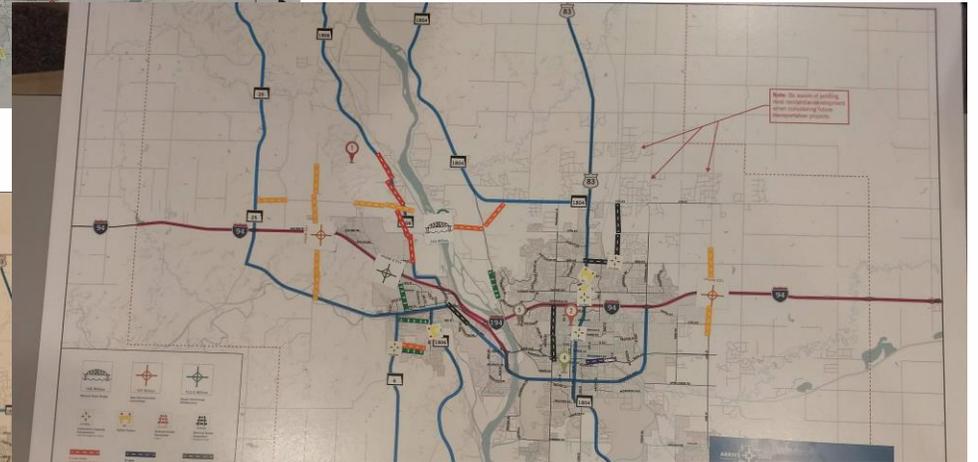
LOS 2045

- F
- E
- D
- A - C



0 0.55 1.1 1.65 Miles

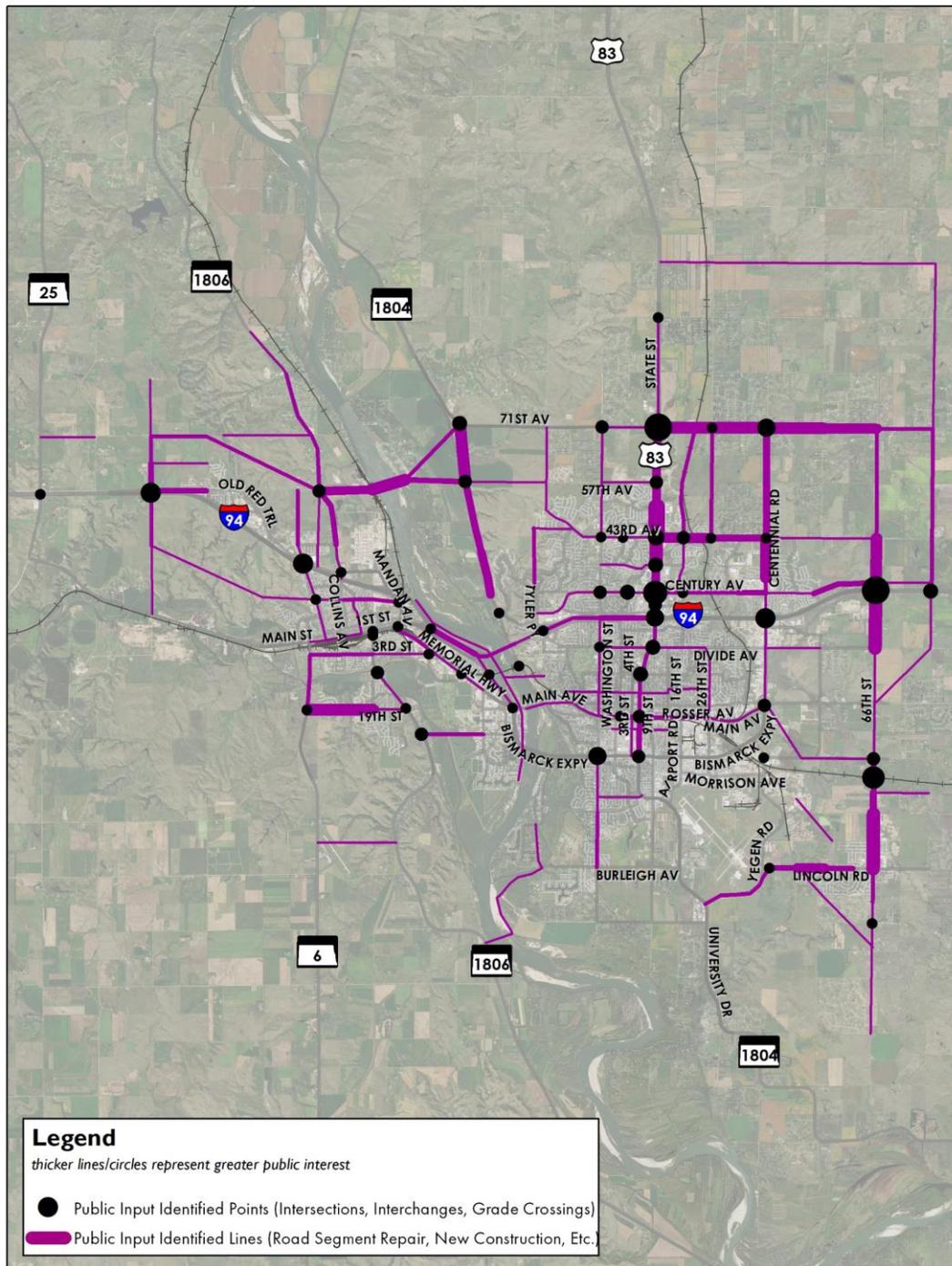
Recap on October Summit



Summit Priorities

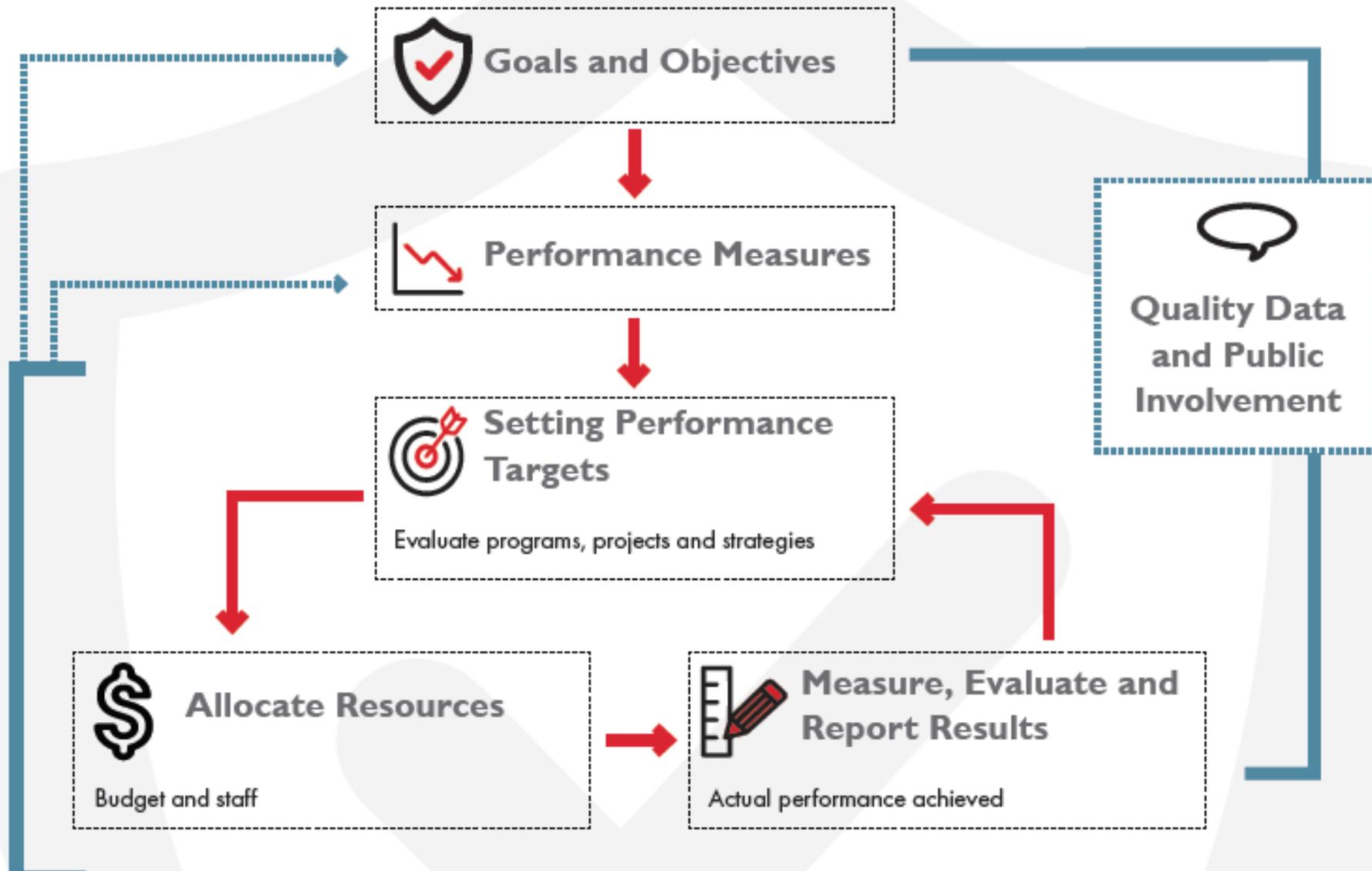
» Patched together output from all meeting maps

» Assist in understanding Priorities

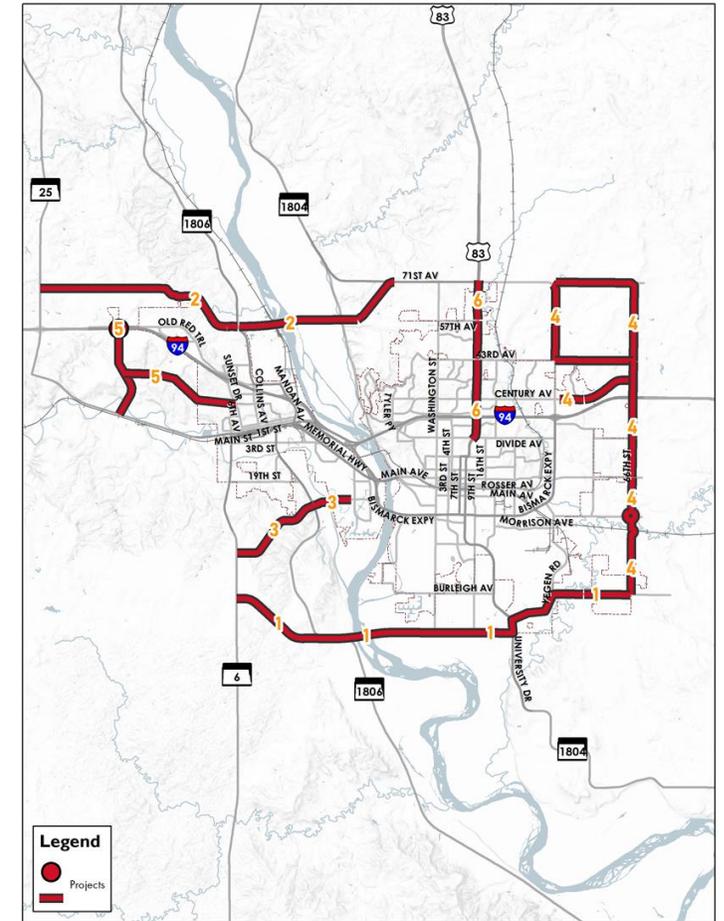
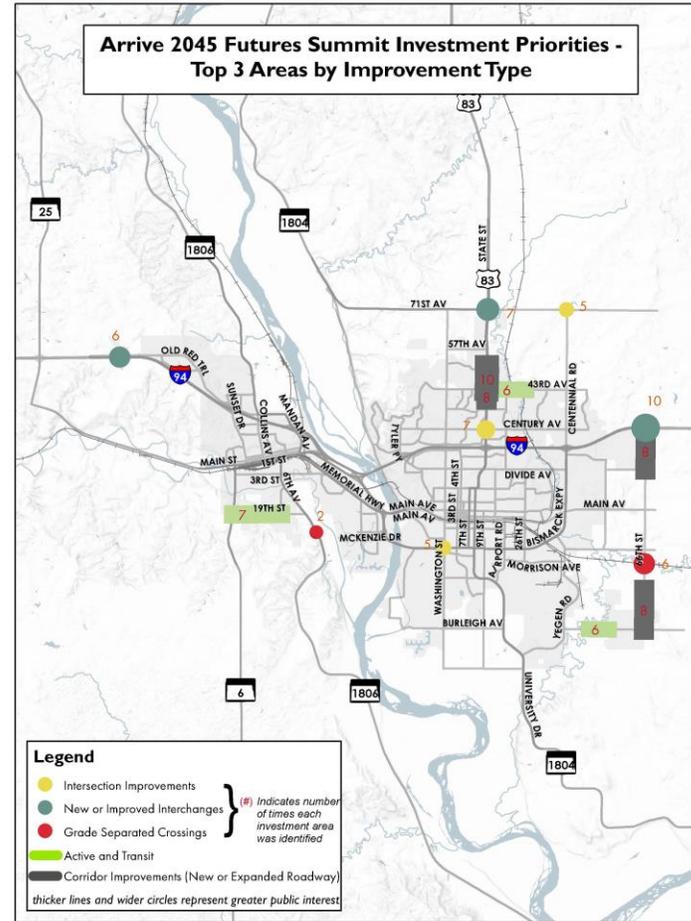
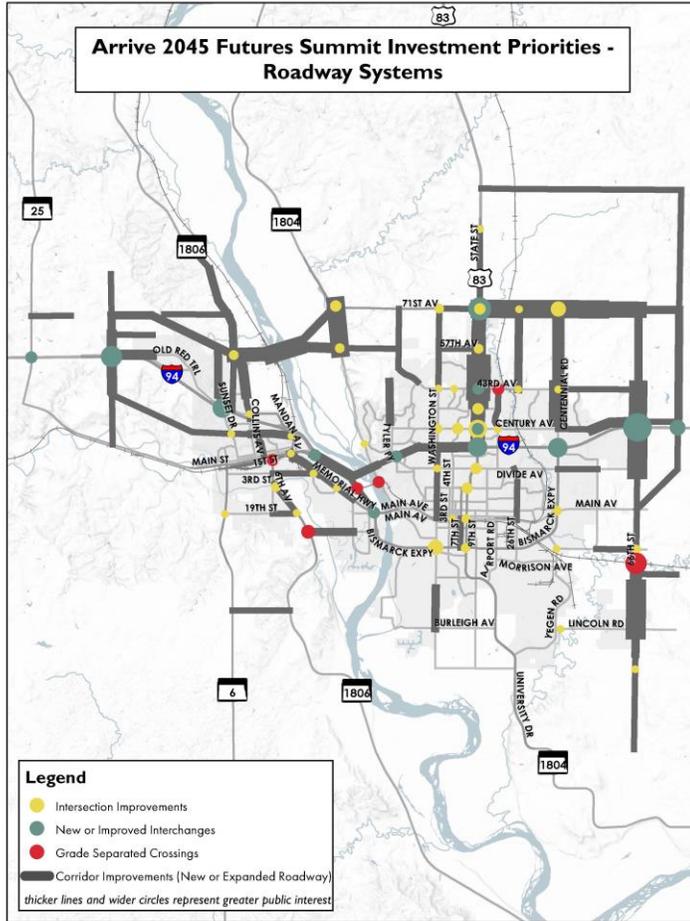


Arrive 2045 Goals and Objectives	Total Votes	Goal Ranking	Prioritization Weight
Goal 1: Safety & Security	87	#2	4.5
Goal 2: Infrastructure Condition	96	#1	5
Goal 3: Congestion Reduction	70	#3	3.6
Goal 4: System Reliability for Freight Movement & Economic Vitality	44	#4	2.3
Goal 5: Alternative Transportation Modes to Automobile Travel	41	#6	2.1
Goal 6: Environmental Sustainability	43	#5	2.2
Goal 7: Reduced Project Delays	23	#7	1.2

GOALS, OBJECTIVES, AND PERFORMANCE MEASURES



Integrating Public Input



GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

ARRIVE 2045 GOAL 1: SAFETY & SECURITY

All transportation improvements should be developed with safety of the traveling public in mind. Safety should be considered when developing transportation projects for all modes of motorized and non-motorized transportation. These improvements should consider reducing both the severity and overall number of crashes.

Security of the transportation system includes ensuring users of the transportation system are protected from natural or human disaster (ie flooding, acts of terrorism). Security measures for transportation system users are often considered for public transit riders and non-motorized users of the trail systems. Security of our transportation system also considers the mobility of our emergency service vehicles.

PERFORMANCE MEASURES Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Safety Performance Measure	NDDOT 5-Year Average (2013 - 2017)	2019 NDDOT 5-Year Average Target
Number of Motorized Fatalities	128.6	127.3
Rate of Fatalities per 100 million VMT	1.283	1.271
Number of Motorized Serious Injuries	486.8	486.2
Rate of Serious Injuries per 100 million VMT	4.801	4.848
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	35.6	34.6

*The MPO will adopt current NDDOT target for rate calculated goals

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Safety Performance Measure	MPO 5-Year Average (2013 - 2017)	Desired Target: Reduction in crashes
Number of Motorized Fatalities	4.4	
Rate of Fatalities per 100 million VMT	0.619	
Number of Motorized Serious Injuries	32.8	
Rate of Serious Injuries per 100 million VMT	4.643	
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	4.6	

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- 1A Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes.
- 1B Provide a safe and secure environment for transit system riders.
- 1C Enhance transportation security and reliability by developing strategies to address critical transportation assets identified that will facilitate the rapid movement of first responders and support incident management during times of emergency.
- 1D Support North Dakota's State Highway Safety Plan (SHSP) "Vision Zero" as a goal to move toward zero fatal road crashes.

ARRIVE 2045 GOAL 2: INFRASTRUCTURE CONDITION

As our transportation system ages, maintenance of our existing system is continuously needed to ensure that the condition of our pavements, bridges, bicycle and pedestrian facilities, transit facilities, and any other components of our existing transportation system are maintained and repaired to serve our traveling public. The challenges with maintaining our existing transportation system typically revolve around funding. The cost of transportation maintenance is continuously rising and there is often a competition between maintenance and operations costs of our existing system versus new facilities.

PERFORMANCE MEASURES Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Pavement Conditions Performance Measure	Existing Condition	Target Condition
Interstate Good	80.2%	75.6%
Interstate Fair	0.1%	3%
Non-Interstate Good	62.8%	58.3%
Non-Interstate Fair	0.3%	3%

Conditions Performance Measure	Structures Good	Structures Fair
Target Condition (NDDOT)	60%	4%
Existing Condition (NDDOT)	44.44%	3.67%

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Pavement Conditions Performance Measure	Desired Target: Increase Percent of Intersecting/Dependent Pavement
Structures Good	77.8%
Structures Fair	5.6%

Bridge Conditions Measures

Bridge Conditions Measures	Desired Target: Increase Percent of Intersecting/Dependent Pavement
Structures Good	77.8%
Structures Fair	5.6%



Bridge Conditions Measures

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- 2A Maintain pavement quality and bridges at acceptable levels.
- 2B Maintain street signage and visibility.
- 2C Maintain the current bicycle & pedestrian system.
- 2D Maintain transit fleet, equipment, and facilities in a state of good repair as identified within the Transit Development Plan (TDP).
- 2E Maintain traffic signals and other transportation assets at acceptable levels.
- 2F All MPO participating jurisdictions should contribute in the data collection of pavement system condition on a 5-year cycle.

ARRIVE 2045 GOAL 3: CONGESTION REDUCTION

Mobility and connectivity of the transportation system allows users to move from one place to another in a direct route with reduced travel times and reduced delays. Connectivity allows people to make decisions based on traffic conditions, access, and desired trip destinations. Connectivity is not only about a direct route from an origin to a destination, it should also allow users to choose multiple transportation modes and to interchange between the modes in a safe and efficient manner.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Vehicle Miles Traveled (VMT) Per Capita

County	Population*	2017 Annual VMT†	Per-Capita Annual VMT per Capita
Burleigh	95,275	729,236,000	7,800
Morton	21,095	446,409,000	14,500

* Data Source: American Community Survey (ACS) 2016 Population Estimates

† Data Source: 2017 NDDOT Annual Traffic Report per County

* Rounded to the nearest 500 miles

Desired Target: Reduction of VMT per Capita



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- 3A Implement projects and programs that will reduce travel delays.
- 3B Provide and maintain corridors functionally classified as minor arterials and above that facilitate longer-distance travel within the region.
- 3C Improve the continuity of the multimodal systems for pedestrians, cyclists, or transit riders, through improved network connections and reduction of system gaps.
- 3D Support future development that would result in reduced motor vehicle trips.

Desired Target: Reduction of VHT per Capita



Vehicle Hours Traveled (VHT) Per Capita

MPO Population*	VHT†	VHT per Capita
100,306	47100	0.47 hours 28.2 minutes

* Data Source: Bismarck-Mandan MPO Monitoring Report - US Census, 2010

† Data Source: 2015 Travel Demand Model

GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

ARRIVE 2045 GOAL 4: SYSTEM RELIABILITY FOR FREIGHT MOVEMENT AND ECONOMIC VITALITY

A transportation system that provides good access for all modes of transportation can promote future development and employment opportunities which will in return stimulate the region's local economy.

A well connected and efficient transportation system that facilitates the movement of goods between freight modes and facilitates the movement of goods and freight to commercial and industrial centers can lower the cost of doing business. This can both support existing business and attract new business to support and enhance the local economy.

PERFORMANCE MEASURES Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Conditions Performance Measure	Travel Time Reliability Non-Interstate National Highway System (NHS)	Travel Time Reliability Interstate	Freight Reliability Index
Target Condition	85%	85%	3.0
Existing Condition (NDDOT - 2017)	91.6%	99.4%	1.15

System Performance for the Interstate and Non-Interstate NHS

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- 4A Enhance the efficient and safe movement of freight and goods including investments in congestion reduction and safety improvements on the critical urban freight corridors and other designated freight corridors.
- 4B Support transportation investments as identified in the most recent Bismarck-Mandan MPO Regional Freight Study.
- 4C Prioritize transportation investments that enhance the local economy.

ARRIVE 2045 GOAL 5: ALTERNATIVE TRANSPORTATION MODES TO AUTOMOBILE TRAVEL

More people are choosing to use alternate modes of transportation to live a healthier lifestyle, reduce their environmental footprint, or spend less money out of their budget on transportation costs. Also, due to various social justice issues, certain portions of the population also are dependent on public transportation or non-motorized transportation. Regardless of the reason, it is important to provide a well-balanced transportation system that supports modes other than a single occupancy motor vehicle. This includes supporting alternative modes of transportation for users of all ages and all abilities.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Miles of Facilities

Facility Type	Bismarck	Mandan
Multi-use Trails	52 miles	18 miles
Bicycle Lanes	4 miles	0 miles
Shared-Use Routes	5 miles	0 miles

Desired Target: Increase fixed route transit ridership



Desired Target: Increase miles of bicycle facilities



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- 5A Improve transit route efficiency, system productivity, and community awareness by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Transit Development Plan (TDP).
- 5B Improve transit and ride-along opportunities for travelers commuting into Bismarck-Mandan from outside the urban area.
- 5C Improve bicycle and pedestrian system accessibility and connectivity opportunities while maintaining safety by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Bicycle and Pedestrian Plan.
- 5D Improve the awareness and safety of bicycling, and educate both bicyclists and motorists on rules and responsibilities.

ARRIVE 2045 GOAL 6: ENVIRONMENTAL SUSTAINABILITY

Air quality is affected by mobile source emissions resulting from vehicle miles traveled (VMT). Air quality impacts can be reduced through roadway improvements that reduce VMT or provide for transportation modes other than single occupancy vehicles. New and expanded transportation facilities can also negatively impact the environment such as impacting wetlands, historical and cultural resources, existing neighborhoods or properties, and many other potential environmental impacts.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

The performance measures and targets for reduction in VMT/Capita and VHT/Capita as identified in Goal 3 Congestion Reduction, will also support environmental sustainability through reduced on-road mobile source emissions. Please see Goal 3 Congestion Reduction for the performance measures, current system performance, and targets.

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- 6A Minimize the transportation system's impacts on the natural and built environment.
- 6B Ensure that projects located within Environmental Justice (EJ) areas have no negative impacts or have identified mitigation measures.
- 6C Promote transportation investments that support SBIF, mixed use development patterns.
- 6D Provide transportation infrastructure design guidance that fits within the context of the built environment.
- 6E Plan for and address multimodal transportation system impacts/sufficiency when planning new developments.

ARRIVE 2045 GOAL 7: REDUCED PROJECT DELIVERY

A well developed MTP will consider fiscal constraint and develop, prioritize, and program projects to ensure they are within the means of each jurisdiction's transportation budget. This first includes consideration of maintenance and operation costs of the existing transportation system.

Secondly, lower cost alternatives should be considered to improve the performance of the transportation system before more expensive projects such as extending and widening the system are considered.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

There is currently no data available for this performance measure. The MPO, when able, will commit to collecting these data following the completion of this plan. Baseline data will be available in 2020.

Possible Performance Measures:

- Track the number of projects that are delivered on time (as scheduled).

Possible Desired Target: Reduction of the number of delayed projects

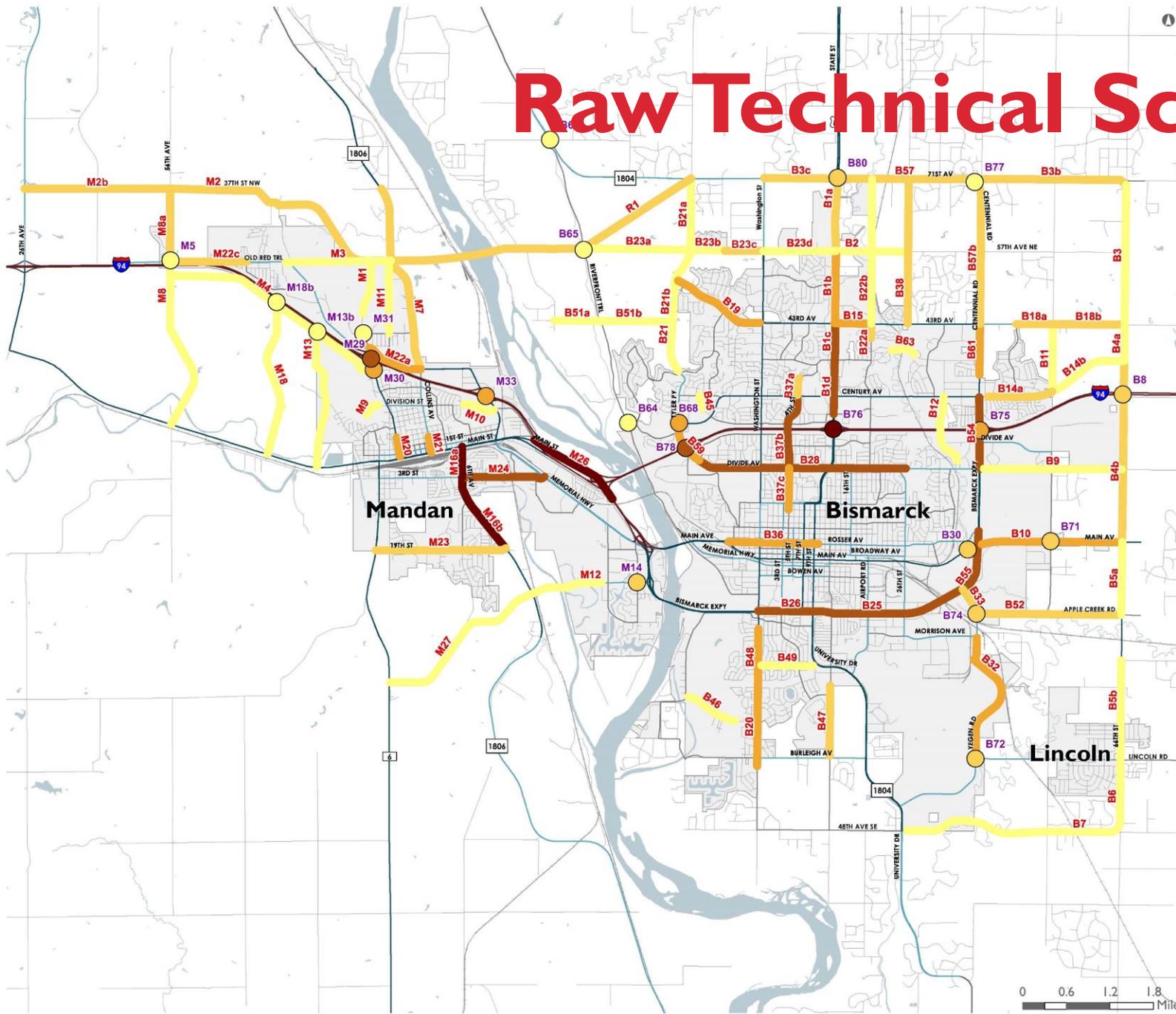


HOW WILL WE ACHIEVE OUR GOAL?

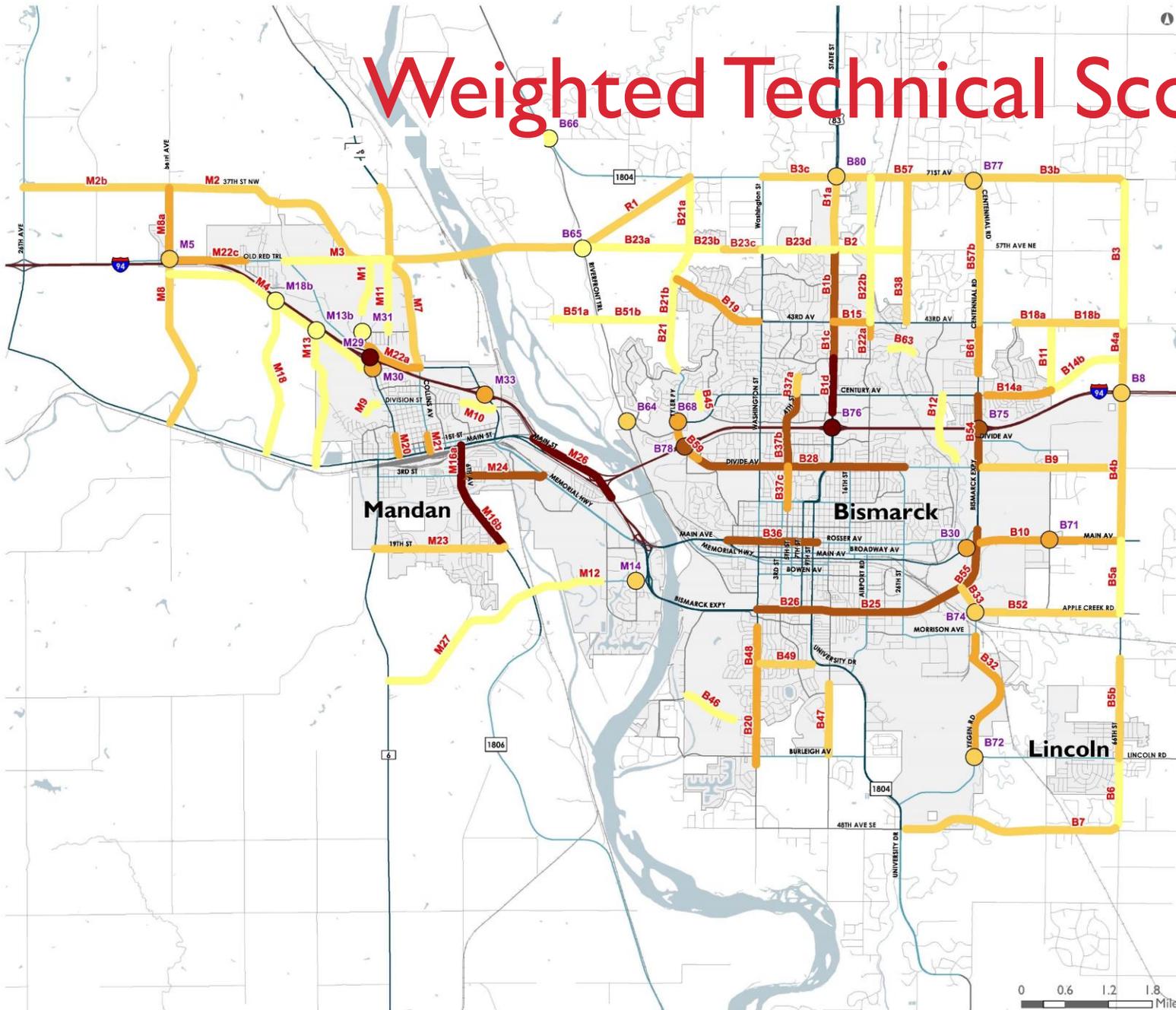
Objectives:

- 7A Identify Non-Federal funding opportunities (public or private) to support transportation needs to fund entire projects or greater than the required federal project match.
- 7B Leverage the existing transportation system by emphasizing low-cost, high impact solutions that may include incremental system improvements, system preservation, and technology applications to achieve congestion in lieu of more expensive projects such as roadway widening.
- 7C Develop policies to support consistent application of development-related improvement requirements and streamlined project development.

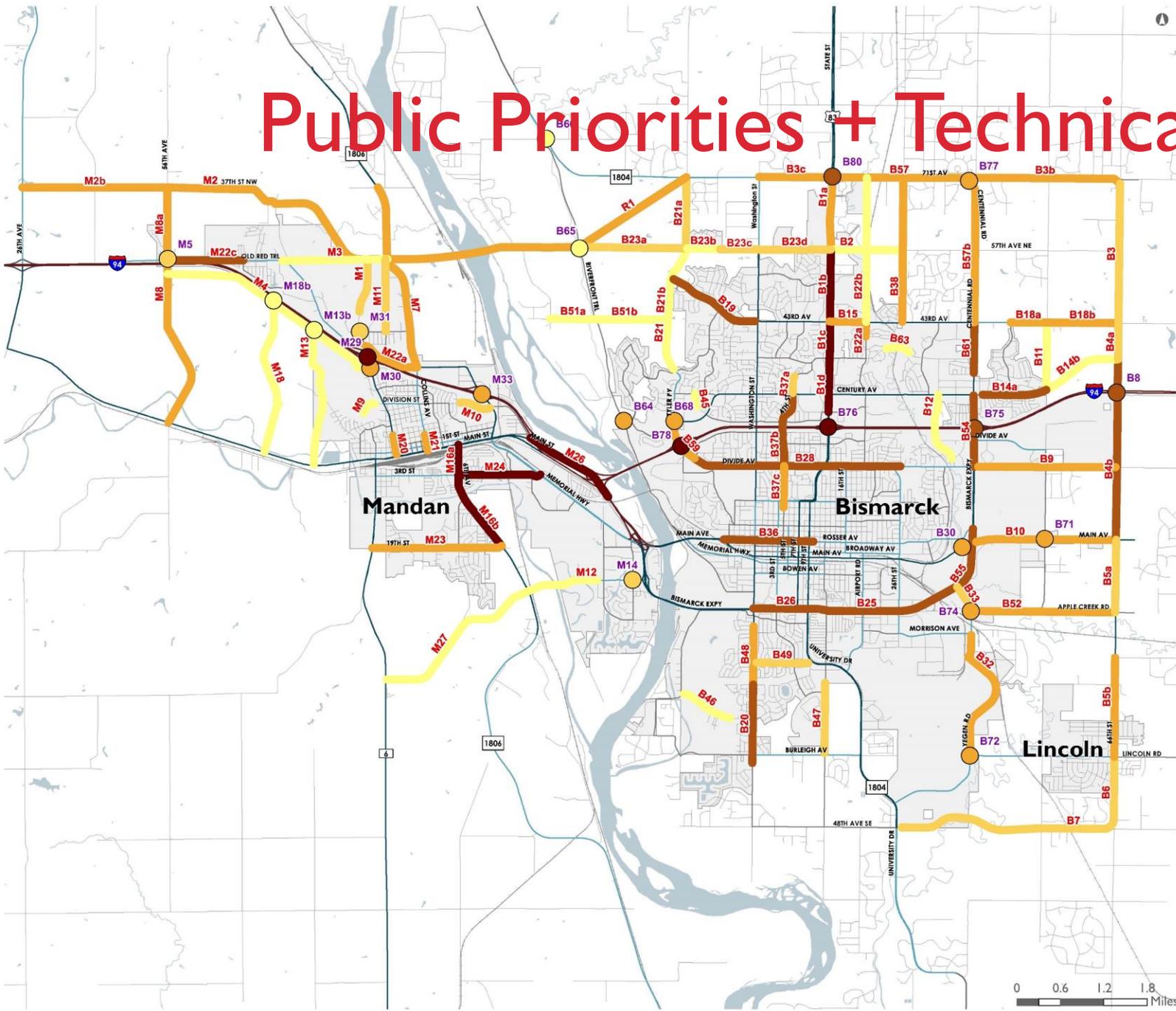
Raw Technical Scores



Weighted Technical Scores



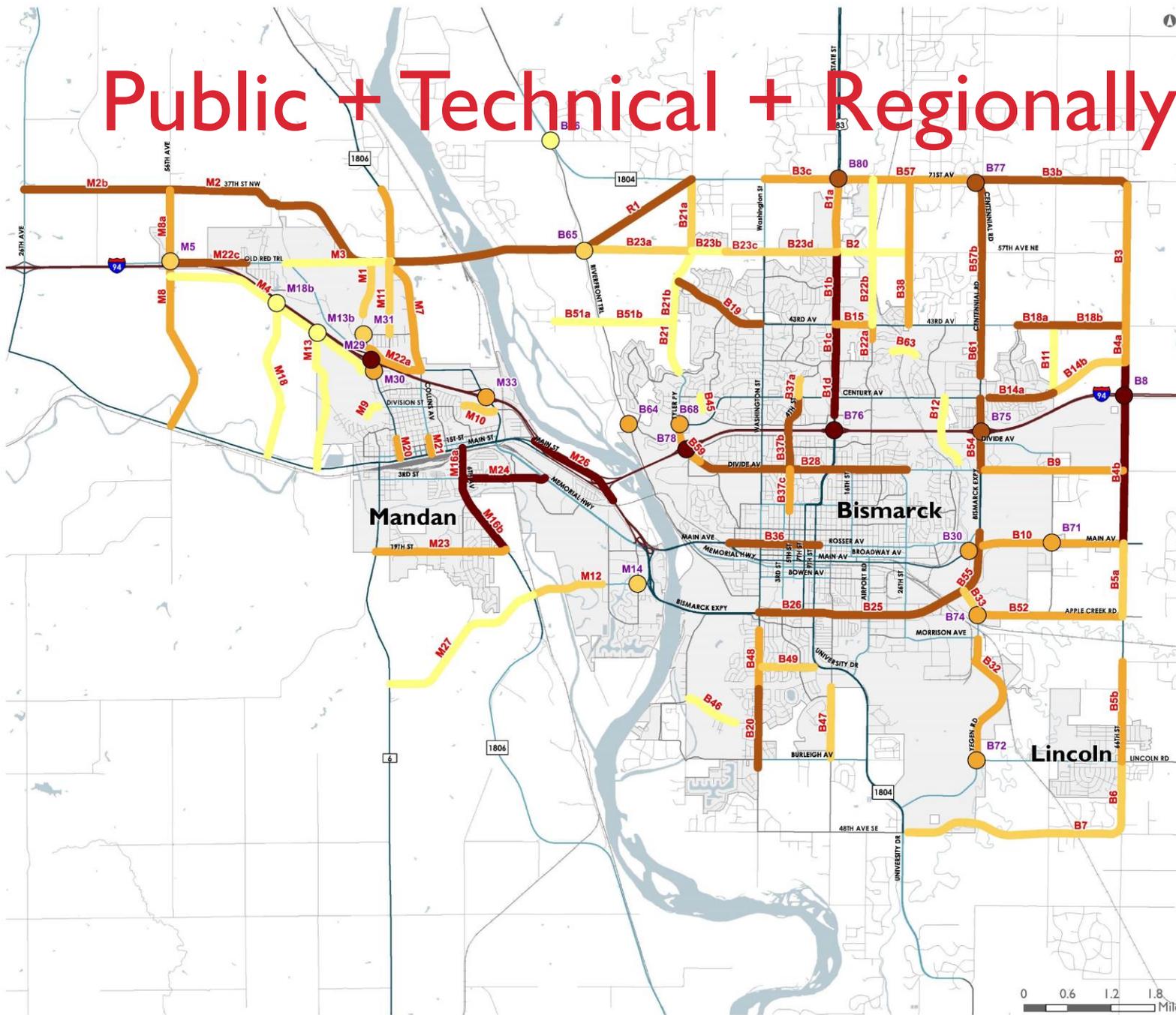
Public Priorities + Technical Scores



- Up to 50.00
- 50.01 - 70.00
- 70.01 - 90.00
- 90.01 - 110.00
- 110.01 +



Public + Technical + Regionally Significance



Project Priorities

ARRIVE 2045
Bismarck-Mandan MPO Metropolitan Transportation Plan

ARRIVE 2045
PROJECT TALLY SHEET & COMMENT FORM

Project ID	Location	Termini	Termini	Description	Project Score	Project Priority (Public Choice)
------------	----------	---------	---------	-------------	---------------	----------------------------------

M12	McKenzie Rd	39th Ave E	HWY 1806	Extend McKensie across Heart River to ND 1806 as rural 2 lane. New Bridge across Heart River. Add signals at McKenzie/Expressway ramps and at McKenzie/40th Ave	66.60	
M13a	31st St	Old Red Trail	I-94 Business Lp (Main)	New Corridor	47.70	
M13b	31st St	I-94		Grade Separation	42.80	
M14	McKenzie Rd	46th Ave SE		Intersection Improvement	69.50	



Stay Connected & Next Steps

» www.arrive2045.com

» Wade Kline, KLJ

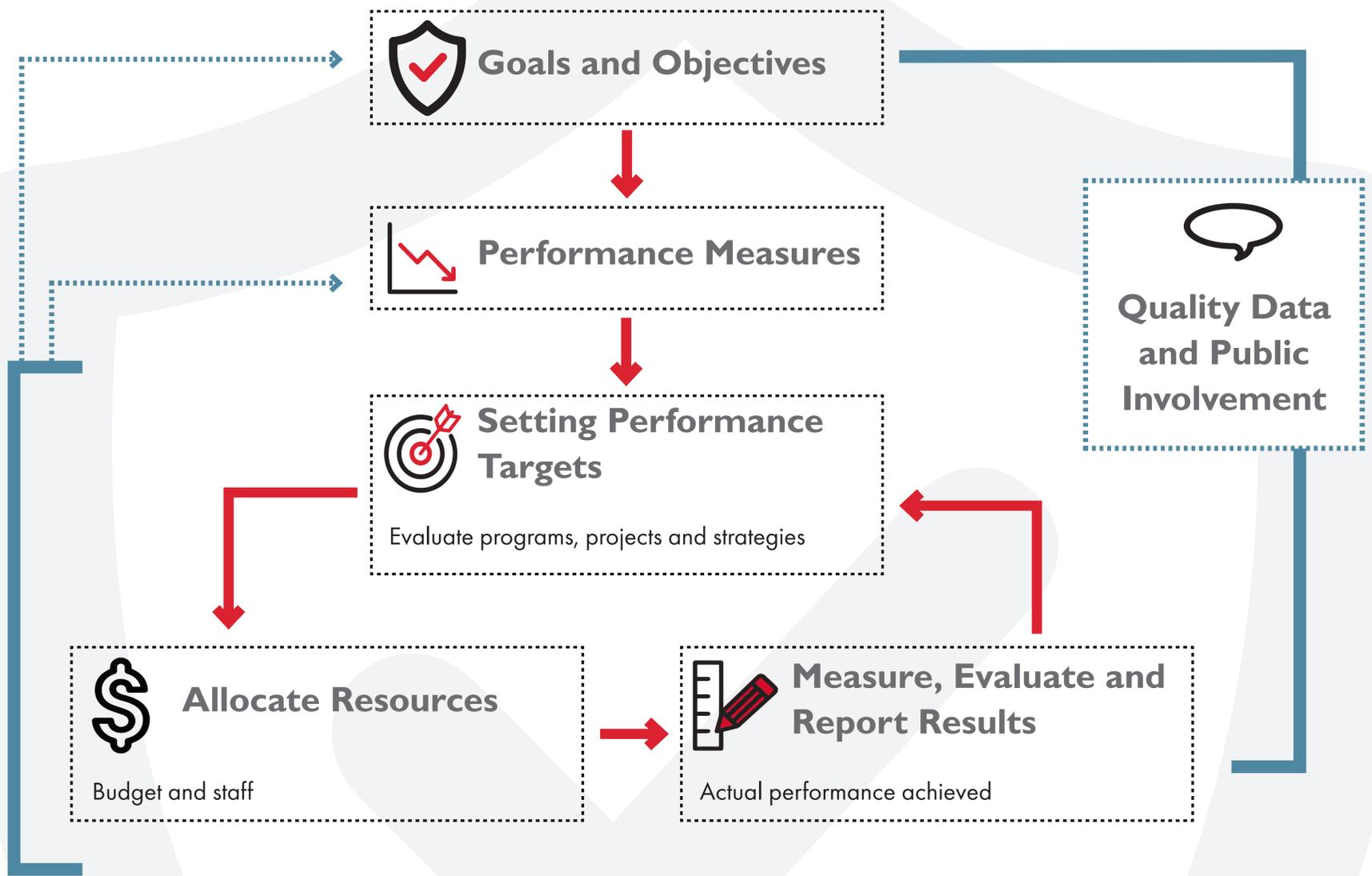
wade.kline@kljeng.com

» Rachel Drewlow, BMMPO

rdrewlow@bismarcknd.gov



GOALS, OBJECTIVES, AND PERFORMANCE MEASURES



Seven National Performance Goals:

- Safety
- Infrastructure Condition
- Congestion Reduction
- System Reliability
- Freight Movement and Economic Vitality
- Environmental Sustainability
- Reduce Project Delivery Delays

Objectives: Strategies that can be implemented to meet the planning goals.

Performance Measures: Measure the existing performance of the transportation system. They are evaluated over time to establish progress towards goals and objectives (performance targets).

At The Futures Summit held in October, the public was asked to prioritize the goals. Performance goals and performance measurement areas were prioritized throughout the entire community outreach and public involvement process—through project stakeholders and partners, during community-wide surveys and at the first round of public involvement meetings held in October, 2018. The results of the prioritized goals and performance measure areas are included in the table below and were used to prioritize the goals and objectives for the technical analysis of the project list.

Arrive 2045 Goals and Objectives	Total Votes	Goal Ranking	Prioritization Weight
Goal 1: Safety & Security	87	#2	4.5
Goal 2: Infrastructure Condition	96	#1	5
Goal 3: Congestion Reduction	70	#3	3.6
Goal 4: System Reliability for Freight Movement & Economic Vitality	44	#4	2.3
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GOALS, OBJECTIVES, AND PERFORMANCE MEASURES



ARRIVE 2045 GOAL 1: SAFETY & SECURITY

All transportation improvements should be developed with safety of the traveling public in mind. Safety should be considered when developing transportation projects for all modes of motorized and non-motorized transportation. These improvements should consider reducing both the severity and overall number of crashes.

Security of the transportation system includes ensuring users of the transportation system are protected from natural or human disaster (ie flooding, acts of terrorism). Security measures for transportation system users are often considered for public transit riders and non-motorized users of the trail systems. Security of our transportation system also considers the mobility of our emergency service vehicles.

PERFORMANCE MEASURES Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Safety Performance Measure	NDDOT 5-Year Average (2013 - 2017)	2019 NDDOT 5-Year Average Target
Number of Motorized Fatalities	128.6	127.3
^a Rate of Fatalities per 100 million VMT	1.283	1.271
Number of Motorized Serious Injuries	486.8	486.2
^a Rate of Serious Injuries per 100 million VMT	4.801	4.848
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	35.6	34.6

^aThe MPO will adapt current NDDOT targets for rate calculated goals

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Safety Performance Measure	MPO 5-Year Average (2013 - 2017)
Number of Motorized Fatalities	4.4
Rate of Fatalities per 100 million VMT	0.619
Number of Motorized Serious Injuries	32.8
Rate of Serious Injuries per 100 million VMT	4.613
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	4.6

Desired Target:

Reduction in crashes



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **1A:** Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes.
- » **1B:** Provide a safe and secure environment for transit system riders.
- » **1C:** Enhance transportation security and reliability by developing strategies to address critical transportation assets identified that will facilitate the rapid movement of first responders and support incident management during times of emergency.
- » **1D:** Support North Dakota's State Highway Safety Plan (SHSP) "Vision Zero" as a goal to move toward zero fatal resultant crashes.

ARRIVE 2045 GOAL 2: INFRASTRUCTURE CONDITION

As our transportation system ages, maintenance of our existing system is continuously needed to ensure that the condition of our pavements, bridges, bicycle and pedestrian facilities, transit facilities, and any other components of our existing transportation system are maintained and repaired to serve our traveling public. The challenges with maintaining our existing transportation system typically revolve around funding. The cost of transportation maintenance is continuously rising and there is often a competition between maintenance and operations costs of our existing system versus new facilities.

PERFORMANCE MEASURES Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Pavement Conditions Measures and Targets

NDDOT Conditions Performance Measure	Existing Condition	Target Condition
Interstate Good	80.2%	75.6%
Interstate Poor	0.1%	3%
Non-Interstate Good	62.8%	58.3%
Non-Interstate Poor	0.3%	3%

Conditions Performance Measure	Structures Good	Structures Poor
Target Condition (NDDOT)	60%	4%
Existing Condition (NDDOT)	64.44%	3.67%

Bridge Conditions Measures

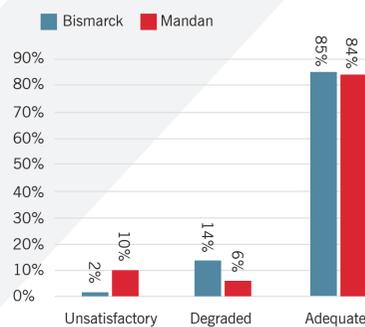
HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **2A:** Maintain pavement quality and bridges at acceptable levels.
- » **2B:** Maintain street signage and visibility.
- » **2C:** Maintain the current bicycle & pedestrian system.
- » **2D:** Maintain transit fleet, equipment, and facilities in a state of good repair as identified within the Transit Development Plan (TDP).

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Pavement Conditions Measures



Decrease Percent of Unsatisfactory/Degraded Pavement



Bridge Conditions Measures

Structures Good: **77.8%**
Structures Poor: **5.6%**

Desired Target: Maintain Bridges

- » **2E:** Maintain traffic signals and other transportation assets at acceptable levels.
- » **2F:** All MPO participating jurisdictions should cost participate in the data collection of pavement system condition on a 5-year cycle.

ARRIVE 2045 GOAL 3: CONGESTION REDUCTION

Mobility and connectivity of the transportation system allows users to move from one place to another in a direct route with reduced travel times and reduced delays. Connectivity allows people to make decisions based on traffic conditions, access, and desired trip destinations. Connectivity is not only about a direct route from an origin to a destination, it should also allow users to choose multiple transportation modes and to interchange between the modes in a safe and efficient manner.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Vehicle Miles Traveled (VMT) Per Capita

County	Population ^a	2017 Annual VMT ^b	Resultant Annual VMT per Capita ^c
Burleigh	95,273	739,236,000	7,800
Morton	31,095	446,409,000	14,500

^a Data Source: American Community Survey (ACS) 2018 Population Estimates

^b Data Source: 2017 NDDOT Annual Traffic Report per County

^c Rounded to the nearest 500 miles

Desired Target:

Reduction of VMT per Capita



Vehicle Hours Traveled (VHT) Per Capita

MPO Population ^c	VHT ^d	VHT per Capita
100,306	47,100	0.47 hours 28.2 minutes

^c Data Source: Bismarck Mandan MPO Monitoring Report - US Census, 2010

^d Data Source: 2015 Travel Demand Model

Desired Target:

Reduction of VHT per Capita



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **3A:** Implement projects and programs that will reduce travel delays.
- » **3B:** Provide and maintain corridors functionally classified as minor arterials and above that facilitate longer-distance travel within the region.
- » **3C:** Improve the continuity of the multimodal systems for pedestrians, cyclists, or transit riders; through improved network connections and reduction of system gaps.
- » **3D:** Support future development that would result in reduced motor vehicle trips.

GOALS, OBJECTIVES, AND PERFORMANCE MEASURES



ARRIVE 2045 GOAL 4: SYSTEM RELIABILITY FOR FREIGHT MOVEMENT AND ECONOMIC VITALITY

A transportation system that provides good access for all modes of transportation can promote future development and employment opportunities which will in return stimulate the region's local economy.

A well connected and efficient transportation system that facilitates the movement of goods between freight modes and facilitates the movement of goods and freight to commercial and industrial centers can lower the cost of doing business. This can both support existing business and attract new business to support and enhance the local economy.

PERFORMANCE MEASURES Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

System Performance for the Interstate and Non-Interstate NHS

Conditions Performance Measure	Travel Time Reliability Non-Interstate National Highway System (NHS)	Travel Time Reliability Interstate	Freight Reliability Index
Target Condition	85%	85%	3.0
Existing Condition (NDDOT - 2017)	91.6%	99.4%	1.15

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **4A:** Enhance the efficient and safe movement of freight and goods including investments in congestion reduction and safety improvements on the critical urban freight corridors and other designated freight corridors.
- » **4B:** Support transportation investments as identified in the most recent Bismarck-Mandan MPO Regional Freight Study.
- » **4C:** Promote transportation investments that enhance the local economy.



ARRIVE 2045 GOAL 5: ALTERNATIVE TRANSPORTATION MODES TO AUTOMOBILE TRAVEL

More people are choosing to use alternate modes of transportation to live a healthier lifestyle, reduce their environmental footprint, or spend less money out of their budget on transportation costs. Also, due to various social justice issues, certain portions of the population also are dependent on public transportation or non-motorized transportation. Regardless of the reason, it is important to provide a well-balanced transportation system that supports modes other than a single occupancy motor vehicle. This includes supporting alternative modes of transportation for users of all ages and all abilities.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Miles of Facilities

Facility Type	Miles	
	Bismarck	Mandan
Multi-use Trails	52 miles	18 miles
Bicycle Lanes	4 miles	0 miles
Shared-Use Routes	5 miles	0 miles

Desired Target:

Increase fixed route transit ridership



Desired Target:

Increase miles of bicycle facilities



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **5A:** Improve transit route efficiency, system productivity, and community awareness by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Transit Development Plan (TDP).
- » **5B:** Improve transit and rideshare opportunities for travelers commuting into Bismarck-Mandan from outside the urban area.
- » **5C:** Improve bicycle and pedestrian system accessibility and connectivity opportunities while maintaining safety by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Bicycle and Pedestrian Plan.
- » **5D:** Improve the awareness and safety of bicycling, and educate both bicyclists and motorists on rules and responsibilities.



ARRIVE 2045 GOAL 6: ENVIRONMENTAL SUSTAINABILITY

Air quality is affected by mobile source emissions resulting from vehicle miles traveled (VMT). Air quality impacts can be reduced through roadway improvements that reduce VMT or provide for transportation modes other than single occupancy vehicles. New and expanded transportation facilities can also negatively impact the environment such as impacting wetlands, historical and cultural resources, existing neighborhoods or properties, and many other potential environmental impacts.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

The performance measures and targets for reduction in VMT/Capita and VHT/Capita as identified in Goal 3 Congestion Reduction, will also support environmental sustainability through reduced on-road mobile source emissions. Please see Goal 3 Congestion Reduction for the performance measures, current system performance, and targets.

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **6A:** Minimize the transportation system's impacts on the natural and built environment.
- » **6B:** Ensure that projects located within Environmental Justice (EJ) areas have no negative impacts or have identified mitigation measures.
- » **6C:** Promote transportation investments that support infill, mixed use development patterns.
- » **6D:** Provide transportation infrastructure design guidance that fits within the context of the built environment.
- » **6E:** Plan for and address multimodal transportation system impacts/sufficiency when planning new developments.



ARRIVE 2045 GOAL 7: REDUCED PROJECT DELIVERY

A well developed MTP will consider fiscal constraint and develop, prioritize, and program projects to ensure they are within the means of each jurisdiction's transportation budget. This first includes consideration of maintenance and operation costs of the existing transportation system.

Secondly, lower cost alternatives should be considered to improve the performance of the transportation system before more expensive projects such as extending and widening the system are considered.

PERFORMANCE MEASURES Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

There is currently no data available for this performance measure. The MPO, when able, will commit to collecting these data following the completion of this plan. Baseline data will be available in 2020.

Possible Performance Measures:

- » Track the number of projects that are delivered on time (as scheduled).

Possible Desired Target:

Reduction of the number of delayed projects



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **7A:** Identify Non-Federal funding opportunities (public or private) to support transportation needs to fund entire projects or greater than the required Federal project match.
- » **7B:** Leverage the existing transportation system by emphasizing low-cost, high impact solutions that may include incremental system improvements, system preservation, and technology applications to achieve congestion in lieu of more expensive projects such as roadway widening.
- » **7C:** Develop policies to support consistent application of development-related improvement requirements and streamlined project development.

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Lincoln City Hall</i>	Meeting Type <i>PTM #2</i>	Meeting Date <i>7-9-19</i>
Project Number		PCN
Project Description <i>2020-2045 MTP - Arrive 2045</i>		

Name (Please print) <i>TRACY Stein & Judy Volk</i>		Title/Representing Self	
Address <i>10801 Lilly Dr.</i>			
City <i>Bismarck</i>	State <i>ND</i>	Zip code <i>58503</i>	Email <i>tg.stein@Bis.metro.net</i>

Name (Please print) <i>Patrick RM - Garg</i>		Title/Representing <i>Development Manager</i>	
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Name (Please print) <i>Bill Woken</i>		Title/Representing <i>Self</i>	
Address <i>2027 Astorwood Dr</i>			
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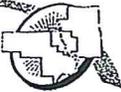
Name (Please print) <i>Steve Grabill</i>		Title/Representing <i>KLI</i>	
Address <i>8203 Okpealuk Street</i>			
City <i>Rapid City</i>	State <i>SD</i>	Zip code <i>57702</i>	Email <i>Steve.Grabill@KLIEN5.COM</i>

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Lincoln City Hall</i>	Meeting Type <i>PIM # 2</i>	Meeting Date <i>7-9-19</i>
Project Number		PCN
Project Description <i>Arrive 2045 (2020-2045 MTP)</i>		

Name (Please print) <i>Gerard L Wise</i>		Title/Representing <i>Mayor</i>	
Address			
City	State	Zip code	Email

Name (Please print) <i>Zachew Drowlow</i>		Title/Representing <i>MPO</i>	
Address			
City	State	Zip code	Email

Name (Please print) <i>Peggy Harter</i>		Title/Representing <i>Stantec</i>	
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City	State	Zip code	Email <i>peggy.harter@stantec.com</i>

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Lincoln City Hall</i>	Meeting Type <i>PIM # 2</i>	Meeting Date <i>2-9-19</i>
Project Number		PCN
Project Description <i>Arrive 2045 - (2020-2045 MTP)</i>		

Name (Please print) <i>Marcus J. Hall</i>		Title/Representing <i>Burleigh County</i>	
Address			
City	State	Zip code	Email <i>mahall@nd.gov</i>

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

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Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC NECE	Meeting Type PIM 2	Meeting Date 7-10-19
Project Number		PCN
Project Description Arrive 2045 (2020-2045 MTP)		

Name (Please print) BRUCE THOMPSON		Title/Representing NORTHERN ZMP.	
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City	State	Zip code	Email

Name (Please print) Susan Dingle		Title/Representing self	
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Name (Please print) Rovinne A. McPhail		Title/Representing NDDOT ROW	
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Name (Please print) Rachel Drewlow		Title/Representing MPO	
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City	State	Zip code	Email

Name (Please print) Patrick M'Garry		Title/Representing Development Manager,	
Address			
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Name (Please print) Ann Fritz		Title/Representing self/citizen	
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City Bismarck	State ND	Zip code 58503	Email amkfritz@gmail.com

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC NECE	Meeting Type PIM 2	Meeting Date 7-10-19
Project Number		PCN
Project Description Arrive 2045 (2020-2045 MTP)		

Name (Please print) Gabe Schell		Title/Representing City of Bismarck	
Address			
City	State	Zip code	Email

Name (Please print) Mark Berg		Title/Representing City of Bismarck	
Address			
City	State	Zip code	Email

Name (Please print) MICHAEL JOHNSON		Title/Representing NDDOT-LG	
Address			
City	State	Zip code	Email

Name (Please print) Peggy Harter		Title/Representing Stantec	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location BSC DECE	Meeting Type PIM #2	Meeting Date 7-10-19
Project Number		PCN
Project Description Arrive 2045 (2020-2045 MTP)		

Name (Please print) Greg One		Title/Representing Capital Electric Cooperative	
Address 4111 State St			
City Bismarck	State ND	Zip code 58503	Email grego@capitalelec.com

Name (Please print) Mike Chaussee		Title/Representing NAAP + Self	
Address 710 W. Turnpike Ave			
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Name (Please print) Steve Saunders		Title/Representing MPO	
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Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location	Mandan City Hall	Meeting Type	PIM # 2	Meeting Date	7-10-19
Project Number		PCN			
Project Description	Arrive 2045 (2020-2045 MTP)				

Name (Please print)	Bernie Hiller			Title/Representing	
Address	104 15th St NW				
City	Mandan	State	ND	Zip code	58554
Email					

Name (Please print)	Scott Harmstead			Title/Representing	SRF Consulting / IMAC Resources
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Name (Please print)	Wendy McNichols			Title/Representing	
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Name (Please print)	Eric Belanger			Title/Representing	
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Email: ericbelcastee@gmail.com					

Name (Please print)	JUSTIN FROSTETH			Title/Representing	CITY OF MANDAN
Address					
City		State		Zip code	
Email					

Name (Please print)	Peggy Harter			Title/Representing	Standec
Address					
City		State		Zip code	
Email					

Name (Please print)	Paul Trueman			Title/Representing	OWDA
Address	2399 Burgen Loop I 194				
City	Mandan	State	ND	Zip code	
Email					

Bismarck-Mandan

METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Mandan City Hall</i>	Meeting Type <i>PIM #2</i>	Meeting Date <i>7-10-19</i>
Project Number		PCN
Project Description <i>Arrive 2045 (2020-2045 MTP)</i>		

Name (Please print) <i>Patrick RM = Garry</i>		Title/Representing <i>Development Mgr</i>	
Address			
City <i>Williston</i>	State <i>ND</i>	Zip code	Email <i>Patrick M@JMAC Resources.com</i>

Name (Please print) <i>SHAUNA LABER</i>		Title/Representing <i>Self</i>	
Address <i>605 1st St NE</i>			
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Name (Please print) <i>Sherwin Wanner</i>		Title/Representing <i>Mandan Resident</i>	
Address <i>4000 35th Ave NW</i>			
City <i>Mandan</i>	State <i>ND</i>	Zip code <i>58554</i>	Email <i>swanner@houstoneng.com</i>

Name (Please print) <i>STEVE IVERSON</i>		Title/Representing <i>MOORE ENG.</i>	
Address <i>975 10th AVE E</i>			
City <i>WF</i>	State <i>ND</i>	Zip code <i>58078</i>	Email <i>Siverson@mooreengineeringinc.com</i>

Name (Please print) <i>Ryan David</i>		Title/Representing <i>Resident</i>	
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Name (Please print) <i>Jared Klabunde</i>		Title/Representing <i>Moore Eng.</i>	
Address <i>4000 Overland</i>			
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Name (Please print) <i>John Van Dike</i>		Title/Representing <i>City of Mandan - Planner</i>	
Address			
City	State	Zip code	Email

Arrive 2045

Public Input Meeting



The Bismarck-Mandan Metropolitan Planning Organization is in the process of updating its Metropolitan Transportation Plan (MTP), called Arrive 2045. Arrive 2045 establishes a long-range vision and strategy to shape the region's transportation systems. Over the past year two previous rounds of public engagement have been used to gather input and feedback on needs and strategies for the Bismarck-Mandan transportation system. A draft Arrive 2045 MTP has been developed which integrates both public input and technical analysis on future system needs.

The third and final round of public meetings has been developed to gather input and feedback on the final Draft Arrive 2045 MTP for the Bismarck-Mandan-Lincoln metro area. These meetings will start with a short presentation followed by an open house to allow for Q&A and discussion regarding key findings of Arrive 2045.

January 22, 2019

6:00 to 7:30 PM
Lincoln City Hall
74 Santee Road
Lincoln, ND

January 23, 2019

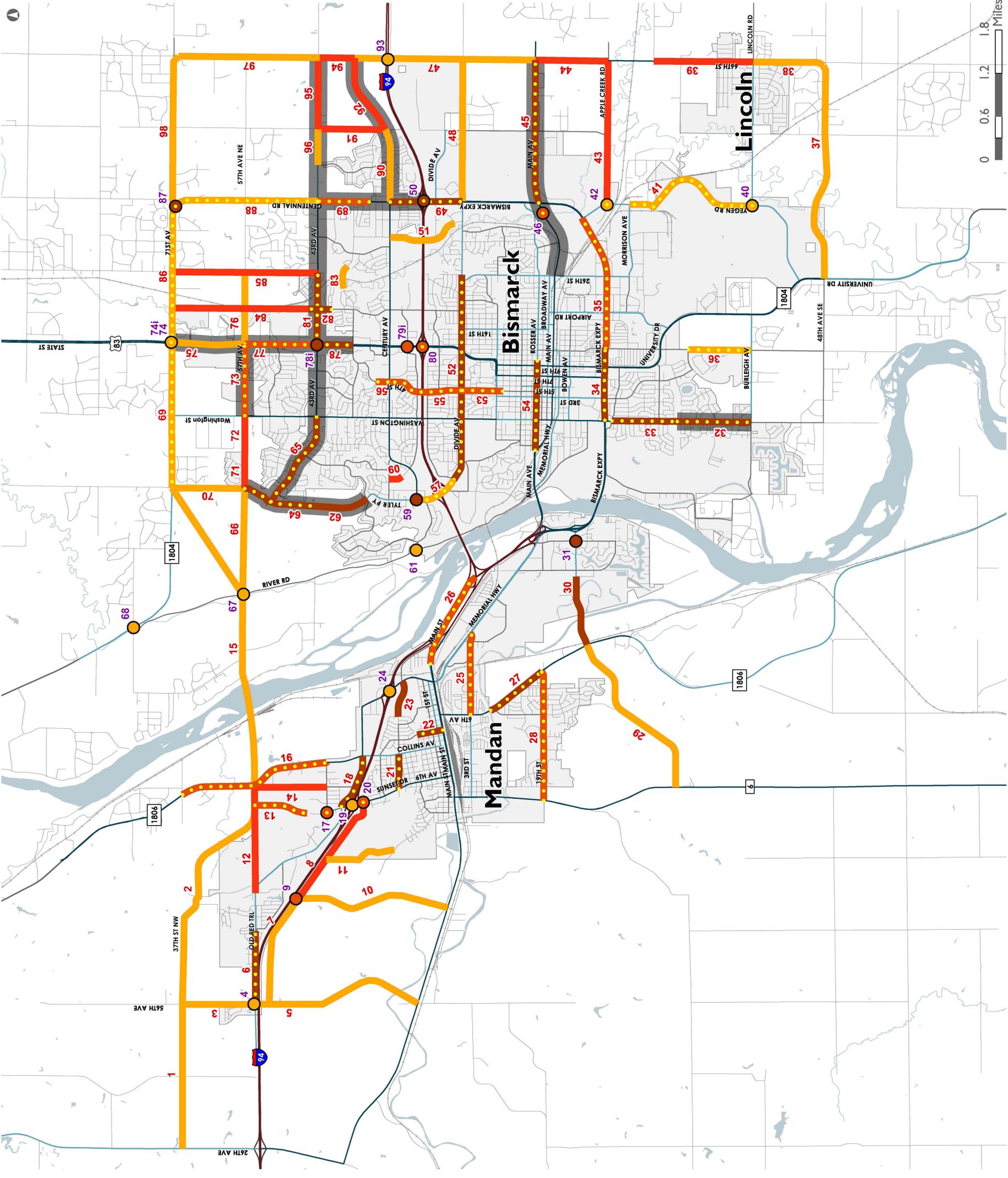
11:30 AM to 1:00 PM
Mandan City Hall
205 2nd Avenue NW
Mandan, ND

January 23, 2019

5:30 to 7:00 PM
Bismarck City Hall
221 N 5th Street
Bismarck, ND

All meetings are open to the public and will provide residents an opportunity to discuss and share ideas and feedback on issues through the Bismarck-Mandan MPO area. More information is available at www.arrive2045.com

If unable to attend, written comments can be submitted through the project webpage or mailed by January 31st, 2019, to Rachel Drewlow, Bismarck-Mandan MPO, 221 5th Street North, Bismarck, ND, 58501. To request accommodations for disabilities and/or language assistance, contact Title VI/ADA Coordinator at 701-355-1332, MPO@bismarcknd.gov, TTY 711, or 1-800-366-6888 at least five (5) days in advance of the meeting.



Project Phasing

- Short Range Projects
- Mid Range Projects
- Long Range Projects
- Short Range Projects for Constrained Plan
- Mid Range Projects for Constrained Plan
- Long Range Projects for Constrained Plan
- Bismarck Sales Tax Eligible Corridors



Short-Range Project List

ID	Location	Termini	Termini	Description	Phase	Cost	Year of Expenditure [YOE]	Program	Urban Program Priority
6	Old Red Trail	56th Avenue	40th Avenue NW	Reconstruct as 3-lane urban section.	Short	\$8,400,000	\$9,826,812	Urban	2
18	Old Red Trail	Sunset Drive	ND 1806 / Collins Avenue	Restripe for 3-lane urban section.	Short	\$39,500	\$46,209	Safety	
21	Division Street	Sunset Drive	ND 1806 / Collins Avenue	Reconstruction.	Short	\$2,500,000	\$2,924,646	Urban	5
22	3rd Avenue NE	Main Street	5th Street	Reconstruction.	Short	\$2,500,000	\$2,924,646	Urban (P&M)	7
23	Division Street	8th Avenue E	Mandan Avenue	Construct as 2-lane urban section.	Short	\$2,880,000	\$3,369,193	Urban	
27	Highway 1806	19th Street	Heart River Bridge	Pavement preservation project, including addition of turn lanes and signals at 8th Avenue and 19th Street.	Short	\$1,750,000	\$2,047,252	Regional	
30	McKenzie Road	Highway 1806	39th Avenue E	Construct as 2-lane rural section. Include new bridge across Heart River. Add signals at McKenzie Drive/ Bismarck Expressway ramps and at McKenzie Drive/40th Avenue.	Short	\$15,650,000	\$18,308,286	Urban	
31	McKenzie Road	46th Avenue SE		Intersection capacity improvement.	Short	\$2,500,000	\$2,924,646	Urban	
32	Washington Street	Burleigh Avenue	Drainage Channel	Reconstruct as 3-lane urban arterial.	Short	\$8,720,000	\$10,201,167	Urban	3
33	Washington Street	Drainage Channel	Denver Avenue	Turn lane improvements including restripe south of Reno Avenue as 3-lane section.	Short	\$39,000	\$45,624	Safety	
34	Bismarck Expressway	Washington Street	12th Street	Safety improvements.	Short	\$5,000,000	\$5,849,293	Safety	
45	Main Avenue	Bismarck Expressway	66th Street	Widen from 2-lane to 3-lane section (including intersection improvement at 52nd Street).	Short	\$10,020,000	\$11,721,983	Urban	6
49	Bismarck Expressway / Centennial Road	Divide Avenue	Century Avenue	Widen from 5-lane to 6-lane section.	Short	\$3,960,000	\$4,632,640	Mix	
50	Bismarck Expressway / Centennial Road	I-94		Interchange reconstruction.	Short	\$25,000,000	\$29,246,464	Interstate	
52	Divide Avenue	Turnpike Avenue	26th Street	Restripe as 3-lane urban section.	Short	\$143,500	\$167,875	Safety	
54	Rosser Avenue	Main Avenue	10th Street	Restripe as 3-lane urban section.	Short	\$62,000	\$72,531	Safety	
59	Century Avenue	Tyler Parkway		Intersection capacity improvement.	Short	\$2,500,000	\$2,924,646	Urban	
62	Tyler Parkway	Valley Drive	43rd Avenue	Construct as 2-lane urban section.	Short	\$4,260,000	\$4,983,597	Urban	
64	Tyler Parkway	43rd Avenue	57th Avenue	Overlay existing roadway to 2-lane rural section.	Short	\$500,000	\$584,929	Urban	8
65	Ash Coulee Drive	Tyler Parkway	Washington Street	Widen from 2-lane to 3-lane urban section.	Short	\$5,240,000	\$6,130,059	Urban	4
78	State Street	Calgary Avenue	43rd Avenue	At grade improvements: Calgary Avenue and 43rd Avenue; widening to 6-lane urban section from Calgary Avenue through 43rd Ave intersection.	Short	\$15,185,000	\$17,764,302	Regional	
78i	State Street	43rd Avenue		Grade separation.	Short	\$30,000,000	\$35,095,757	Regional	
81	43rd Avenue	State Street	26th Street	Construct 3-lane or 5-lane urban section.	Short	\$10,000,000	\$11,698,586	Urban	1
82	19th Street	North Valley Loop/Yucca Avenue	43rd Avenue	Reconstruct as 3-lane urban section.	Short	\$1,380,000	\$1,614,405	Urban	1
87	71st Avenue	Centennial Road		Intersection capacity improvement.	Short	\$2,500,000	\$2,924,646	Safety	
TBD	State Street	Calgary Avenue	43rd Avenue	Shared use path.	Short	\$1,000,000	\$1,169,859	Regional	

Mid-Range Project List

ID	Location	Termini	Termini	Description	Phase	Cost	Year of Expenditure [YOE]	Program
8	Boundary Road	32nd Avenue	Sunset Drive	Construct as 3-lane urban section.	Mid	\$12,640,000	\$20,237,047	Urban
9	32nd Avenue	I-94		Grade separation.	Mid	\$15,000,000	\$24,015,483	Urban
12	38th Street NW	Old Red Trail	Collins Avenue / ND 1806	Construct as 2-lane urban section.	Mid	\$8,700,000	\$13,928,980	Urban
13	Sunset Drive	Middle School	38th Street	Construct as 2-lane urban section.	Mid	\$4,500,000	\$7,204,645	Urban
14	8th Avenue NW	27th Street	38th Street	Construct as 2-lane urban section.	Mid	\$6,000,000	\$9,606,193	Urban
16	ND 1806	Old Red Trail	37th Street	Intersection capacity improvement, add turn lanes at key intersections. (Assume minor intersection improvements to match new 37th St section)	Mid	\$2,711,000	\$4,340,398	Regional (P&M)
17	27th Street N / Sunset Drive Intersection	Sunset Drive		Intersection capacity improvement.	Mid	\$2,500,000	\$4,002,581	Safety
20	Boundary Road	Sunset Drive		Signalize and stripe turn lanes on all approaches.	Mid	\$350,000	\$560,361	Safety
25	3rd Street	6th Avenue / ND1806	Memorial Highway	Restripe to include turn lanes or restripe to 3-lane section with center turn lane and no parking.	Mid	\$57,000	\$91,259	Safety
26	I-94	I-194		Additional westbound lane from I-94/I-194 to Main St/Exit 155.	Mid	\$6,000,000	\$9,606,193	Interstate
28	19th Street SE	ND 6	ND1806	Reconstruct as 3-lane urban section.	Mid	\$14,400,000	\$23,054,864	Urban
35	Bismarck Expressway	12th Street	Yegen Road	Implement 3/4 access control at 5 intersections and add right turn at Airport Road.	Mid	\$500,000	\$800,516	Regional (P&M)
39	66th Street	Lincoln Road	Northgate Drive	Widen from 2-lane to 3-section.	Mid	\$5,480,000	\$8,773,657	Urban
43	Apple Creek Road	Yegen Road	66th Street	Intersection capacity improvements at all intersections.	Mid	\$5,000,000	\$8,005,161	Urban
44	66th Street	Apple Creek	Highway 10/ Old Main Avenue	Widen from 2-lane to 3-section.	Mid	\$4,040,000	\$6,468,170	Urban
46	Main Avenue	Hay Creek Crossing		Structural replacement.	Mid	\$500,000	\$800,516	Regional (P&M)
53	4th Street	Boulevard Avenue	Divide Avenue	4th Street signal timing Improvements, stripe turn lanes at key intersections, potential new signal at Turnpike.	Mid	\$278,500	\$445,887	Safety
55	4th Street	Divide Avenue	Century Avenue	4th Street signal timing Improvements, stripe turn lanes at key intersections, potential new signal at Turnpike.	Mid	\$303,000	\$485,113	Safety
56	4th Street	Century Avenue	Montreal Street	4th Street signal timing Improvements, stripe turn lanes at key intersections, potential new signal at Turnpike.	Mid	\$275,000	\$440,284	Safety
60	Interstate Avenue	Country West Road	Country West Road	Construct as 2-lane urban section.	Mid	\$1,140,000	\$1,825,177	Urban
71	57th Avenue	Tyler Parkway	Crested Butte Road	Construct as 3-lane rural section.	Mid	\$3,150,000	\$5,043,251	Urban
72	57th Avenue	Crested Butte Road	Washington Street	Construct as 3-lane rural section.	Mid	\$3,710,000	\$5,939,830	Urban
73	57th Avenue	Washington Street	State Street	Construct as 3-lane rural section.	Mid	\$7,000,000	\$11,207,226	Urban
77	State Street	43rd Avenue	57th Avenue	Widen to 6-lanes from N of 43rd through 57th; intersection improvement at 57th.	Mid	\$11,350,000	\$18,171,716	Regional
79i	State Street	Interstate Boulevard		Grade separation.	Mid	\$23,000,000	\$36,823,741	Regional
80	State Street	I-94		Interchange reconstruction.	Mid	\$21,000,000	\$33,621,677	Interstate
84	19th Street	Skyline Boulevard	71st Avenue	Construct as 3-lane urban section.	Mid	\$15,040,000	\$24,079,525	Urban
85	26th Street	43rd Avenue	71st Avenue	Construct as 3-lane rural section.	Mid	\$16,000,000	\$25,616,515	Urban
89	Centennial Road	Jericho Road	43rd Avenue	Widen from 3-lane to 5-lane urban section.	Mid	\$2,800,000	\$4,482,890	Urban
91	52nd Street	Century Avenue	43rd Avenue	Reconstruct as 3-lane rural section.	Mid	\$7,440,000	\$11,911,680	Urban
92	Century Avenue	52nd Street	66th Street	Construct 3-lane urban section.	Mid	\$9,040,000	\$14,473,331	Urban
94	66th Street	Century Avenue	43rd Avenue	Reconstruct as 3-lane urban section.	Mid	\$4,190,000	\$6,708,325	Urban
95	43rd Avenue	52nd Street	66th Street	Widen from 2-lane to 3-lane or 5-lane urban section.	Mid	\$8,000,000	\$12,808,258	Urban

Long-Range Project List

ID	Location	Termini	Termini	Description	Phase	Cost	Year of Expenditure [YOE]	Program
1	37th Street NW	ND 25	56th Avenue	Construct 2-lane urban section.	Long	\$12,060,000	\$24,431,347	
2	37th Street NW	56th Avenue	ND 1806	Construct 3-lane urban section.	Long	\$27,920,000	\$56,560,797	
3	56th Avenue	Old Red Trail	37th Street	Reconstruct as 3-lane urban section .	Long	\$8,000,000	\$16,206,532	Urban
4	56th Avenue NW	I-94		New interchange.	Long	\$25,000,000	\$50,645,413	Interstate
5	56th Avenue NW	I-94 Business Loop (Main Street)	Old Red Trail	Construct as 3-lane urban section.	Long	\$19,280,000	\$39,057,742	Urban
7	Boundary Road	56th Avenue / I-94 Interchange	32nd Avenue	Construct as 3-lane urban section.	Long	\$13,200,000	\$26,740,778	Urban
10	32nd Avenue W	I-94 Business Loop (Main Street)	Boundary Road (Future)	Construct as 2-lane urban section.	Long	\$12,660,000	\$25,646,837	Urban
11	31st Street	Lohstreter Road	Boundary Road (Future)	Construct as 2-lane urban section.	Long	\$5,940,000	\$12,033,350	Urban
15	Northern Bridge Corridor	38th Street (Mandan)	River Road	Construct as 2-lane rural section. Include new bridge across Heart River. Add signals at McKenzie Drive / Bismarck Expressway ramps and at McKenzie Drive / 40th Avenue.	Long	\$62,450,000	\$126,512,241	
19	Sunset Drive	I-94		Interchange reconstruction.	Long	\$25,000,000	\$50,645,413	Interstate
24	Mandan Avenue	I-94		Interchange reconstruction.	Long	\$25,000,000	\$50,645,413	Interstate
29	McKenzie Road	ND 6	ND 1806	Construct as 2-lane rural section.	Long	\$12,550,000	\$25,423,997	Urban
36	12th Street	Burleigh Avenue	Santa Fe Avenue	Add turn lanes at Santa Fe Avenue and Burleigh Avenue.	Long	\$1,000,000	\$2,025,817	Safety
37	48th Avenue S	University Drive	66th Street	Construct 2-lane rural section and structure improvements at Apple Creek crossing.	Long	\$19,800,000	\$40,111,167	Urban
38	66th Street	48th Avenue S	Lincoln Road	Reconstruct as 2-lane urban section.	Long	\$5,880,000	\$11,911,801	Urban
40	Lincoln Road	Yegen Road / Airway Avenue		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Safety
41	Yegen Road	Lincoln Road	Morrison Avenue	Add 6 new turn lanes in key locations.	Long	\$1,500,000	\$3,038,725	Safety
42	Apple Creek Road	Yegen Road		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Safety
47	66th Street	Highway 10 / Old Main Avenue	Century Avenue	Construct as 3-lane urban section (tied with project for interchange with I-94 at 66th Street).	Long	\$19,920,000	\$40,354,265	Urban
48	Divide Avenue	Bismarck Expressway	66th Street	Reconstruct as 3-lane urban section.	Long	\$15,200,000	\$30,792,411	Urban
51	Hamilton Street / Channel	Divide Avenue	Century Avenue	Construct as 2-lane urban section with grade separation.	Long	\$20,940,000	\$42,420,598	Urban
57	Tyler Parkway	Schafer Road	Burnt Board Drive	Intersection capacity improvement. Add turn lanes and include safety improvements.	Long	\$750,000	\$1,519,362	Urban
61	Burnt Boat Drive	River Road		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Urban
66	57th Avenue	River Road	Tyler Parkway	Construct as 3-lane rural section.	Long	\$10,220,000	\$20,703,845	Urban
67	Burnt Creek Loop South (57th Avenue)	River Road		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Urban
68	Burnt Creek Loop North / River Road	ND 1804		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Regional
69	71st Avenue/ ND 1804	15th Street/Tyler Parkway	State Street	Widen from 2-lane to 4-lane section.	Long	\$10,150,000	\$20,562,038	Regional
70	Tyler Parkway	57th Avenue	ND 1804 / 71st Avenue	Construct as 3-lane urban section.	Long	\$7,920,000	\$16,044,467	Urban
74	71st Street	State Street		Intersection capacity improvement.	Long	\$2,200,000	\$4,456,796	Regional
74i	71st Street	State Street		Grade separation.	Long	\$25,000,000	\$50,645,413	Regional
75	State Street	57th Avenue	71st Avenue	Widen to 6-lanes from 57th Avenue to ND 1804/ 71st Avenue.	Long	\$12,600,000	\$25,525,288	Regional
76	57th Avenue	State Street	26th Street	Construct 3-lane urban section.	Long	\$7,680,000	\$15,558,271	Urban
83	Calgary Avenue	DMVW Railroad	Haycreek Road	Construct 2-lane urban section across DMVW RR with grade separation.	Long	\$36,980,000	\$74,914,695	Urban
86	71st Avenue	State Street	Centennial Road	Widen from 2-lane to 3-lane rural section.	Long	\$7,280,000	\$14,747,944	Urban
88	Centennial Road	43rd Avenue	71st Avenue	Widen from 2-lane to 3-lane rural section.	Long	\$7,960,000	\$16,125,499	Urban
90	Century Avenue	Centennial Road	52nd Street	Reconstruct as 5-lane urban section.	Long	\$10,875,000	\$22,030,755	Urban
93	I-94	66th Street		New interchange.	Long	\$25,000,000	\$50,645,413	Interstate
96	43rd Avenue	Roosevelt Drive	52nd Street	Widen from 2-lane to 3-lane urban section.	Long	\$1,960,000	\$3,970,600	Urban
97	66th Street	43rd Avenue	71st Avenue	Reconstruct/New Construct as a 3-lane urban section.	Long	\$15,600,000	\$31,602,738	Urban
98	71st Avenue	Centennial Road	66th Street	Reconstruct as a 3-lane urban section.	Long	\$16,160,000	\$32,737,195	Urban



Bismarck-Mandan **Metropolitan Transportation Plan**

Executive Summary

January 2020



SUMMARY

Arrive 2045 is the long-range transportation plan (LRTP), now known as the metropolitan transportation plan (MTP), for the Bismarck-Mandan Metropolitan Planning Organization (BMMPO) area, which includes the City of Bismarck, the City of Mandan, City of Lincoln, Burleigh County, and Morton County. Arrive 2045 is designed to help realize BMMPO's adopted outcomes to meet current and future transportation needs and to gauge the success of these efforts with established performance measures. Arrive 2045 will guide the development of multimodal transportation systems throughout the Bismarck-Mandan metropolitan area for the next 25 years. It will be used to prioritize most of transportation spending throughout this period, and as such, it is vitally important that the plan reflect the choices and desires of the Bismarck-Mandan metropolitan area's residents, workers, and visitors. Since transportation has a broad impact on society, long-range transportation planning must consider concerns, such as impact upon the environment, land use, and economic development, in addition to traditional transportation-related issues, such as mobility and safety.

In accordance with Federal law, metropolitan transportation plans are updated every five years to accommodate the changing needs of the area and to reflect changes in the socio-economic composition of the area, as well as changes in local transportation policy. The last MTP for the Bismarck-Mandan metropolitan area was adopted in 2015. While 2045 extends beyond what can be accurately predicted, a long-range plan's value lies in comprehensively assessing the region's current transportation system and charting a course of action for coming years. It presents an opportunity to step back and take a big-picture look at current conditions, challenges, and possible solutions. Arrive 2045 creates a vision that assists in guiding future decisions toward the goal of a safe and efficient transportation system to meet the area's current and future needs.

Arrive 2045 must also consider all modes of transportation; streets and highways, transit, bicycle and pedestrian, air, rail and water, as well as freight movement within and through the Bismarck-Mandan metropolitan area. The Plan must be maintained so local jurisdictions can receive Federal funding for transportation improvements within the Bismarck-Mandan metropolitan area.

Arrive 2045 must present a reasonable expectation of revenue to fund the improvements identified to meet the transportation needs of the Bismarck-Mandan metropolitan area now and in the future. It must be a fiscally-constrained document. Fiscally-constrained, simply stated, is that the expense of accomplishing the projects identified in the Plan does not exceed what the Bismarck-Mandan metropolitan area can reasonably expect to receive in revenues.

FEDERAL REQUIREMENTS

Arrive 2045 is an integral part of the BMMPO's "continuing, cooperative, and comprehensive" planning process as stipulated by Federal law. This process was established by the Federal government with the intent of fostering better management, operation, and development of the surface transportation system. This Plan is also compliant with the national goals set forth in Fixing America's Surface Transportation (FAST) Act, the current Federal transportation program. Arrive 2045 adheres to all requirements stipulated in the FAST Act.

PLAN DEVELOPMENT PROCESS

The planning process for the development of Arrive 2045 consisted of six phases:

- » Identify the baseline and future conditions which assessed historic growth and development, analyzed the region's transportation system, and evaluated existing issues and needs.
- » Create a transportation vision, goals, and objectives to guide the development.
- » Establish a fiscal constraint.
- » Evaluate options and alternatives that will address the region's transportation issues and needs and help meet the overall transportation vision for Bismarck-Mandan.
- » Prioritize projects based on the fiscal constraint and time line for implementation.
- » Plan review and approval by the Bismarck-Mandan MPO's Policy Board.

The six phases were part of the overall process, as shown on the next page.

THE PROCESS



PUBLIC ENGAGEMENT

The development of Arrive 2045 was conducted with a proactive public involvement process. BMMPO staff also worked cooperatively with decision-makers of its member jurisdictions, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the North Dakota Department of Transportation (NDDOT), and the public to execute a continuous, cooperative, and comprehensive planning process and develop the highest quality public investment plans for our changing society.

STEERING COMMITTEE

A steering committee was established to provide technical direction and guidance of the Metropolitan Transportation Plan (MTP) development. Representation on the committee included:

- » City of Bismarck
- » City of Mandan
- » City of Lincoln
- » Burleigh County
- » Morton County
- » Bismarck International Airport
- » Bismarck Public Schools
- » Bismarck Police Department
- » Bismarck Rural Fire Department
- » North Dakota Department of Transportation

There were ten Steering Committee meetings held throughout the development of the MTP.

INFORMATION AND MARKETING

Project Website

Arrive2045.com was the website established for the MTP to serve as the primary warehouse for all project documents and information as well as a forum to submit public comment. The website included:

- » A home page with the most recent project updates and links for new information and to provide comment.
- » An about page with a general overview, a frequently asked questions section, the schedule, and project partners.
- » A documents page with all documents and newsletters produced during the MTP.
- » A contact page with an email submission form and other relevant contact information.

Social Media

Facebook was used to keep the community engaged throughout the MTP development. Facebook posts were published as appropriate throughout the process, with key stakeholders sharing the posts as they were able.

Throughout the study process, there were more than 25 Facebook posts that were viewed by more than 900 different users.

PUBLIC INPUT MEETINGS

PIM #1: Arrive 2045 Futures Summit

On October 9th and 10th, 2018, the Bismarck-Mandan MPO held the first round of public engagement for the Bismarck – Mandan Metropolitan Transportation Plan (MTP). These were advertised as the Arrive 2045 Futures Summit meetings. The first round included three meetings located across the MPO Planning area. At each meeting there was a brief presentation on the issues identified through the technical analysis; small group prioritization exercise for goals, performance areas, and emerging issues; and a table top exercise to identify future transportation improvements to the transportation network.

PIM#2: Options & Alternatives

A second round of public input was deployed at the midway point of developing Arrive 2045. The second round of public input meetings was structured to provide the public and key stakeholder an opportunity to provide input on the universe of projects which had been developed and evaluated.

Meeting participants were provided with a list and map of identified projects being contemplated for inclusion in Arrive 2045. Each project was identified with a relative technical score that had been previously identified by the project Study Committee. Participants were asked to provide a ranking of their top three projects; and then to provide a general listing of the seven other projects they felt were high priority needs for Arrive 2045.

A total of three input meetings were held the week of July 9, 2019. Each meeting was opened with a short background presentation the Arrive 2045 and provided content and guidance to participants on what input was needed from them at this point in the planning process.

PIM #3: Draft Plan Review

To be completed after the third public input meeting.

VISION, GOALS, OBJECTIVES & PERFORMANCE MEASURES

TRANSPORTATION VISION

The future of the transportation system in the Bismarck-Mandan metropolitan area will be driven by the vision, goals, objectives, and performance measures developed for Arrive 2045. The vision for Arrive 2045 has been developed as follows:

Arrive 2045 is focused on **preserving** the transportation infrastructure of the Bismarck-Mandan MPO Area. The development of new **funding strategies** will be critical. Future investments in system preservation must be balanced against thoughtful implementation of **new infrastructure** which serve to **expand transportation capacity**. Arrive 2045 establishes a set of **regional priorities** to **balance public expectations** for improved **regional mobility**. Arrive 2045 recognizes the future contains many opportunities to channel **technology** to influence transportation mobility.

ARRIVE 2045 GOALS, OBJECTIVES & PERFORMANCE MEASURES

The goals developed for Arrive 2045 reflect guidance from MAP-21 planning factors, MAP-21 and FAST Act National Performance Goals, the NDDOT statewide transportation plan, and input from project stakeholders and community outreach. The figure below depicts how the performance measure areas are set as part of MAP-21 and the FAST Act and the requirements for which measures and targets are to be set for NDDOT's Statewide Transportation Plan and the MPO's MTP – Arrive 2045.

Again, the graphic is inclusive of the required performance measure areas. Additional performance measures and desired target trendlines have been set by the MPO as part of Arrive 2045 that pertain specifically to the MPO's system.

Federal Performance Measure Categories	REQUIRED FOR NDDOT STATEWIDE TRANSPORTATION PLAN	REQUIRED FOR MPO MTP – ARRIVE 2045	ARRIVE 2045 ADDITIONAL LOCAL PERFORMANCE MEASURES
PAVEMENT CONDITION ⁽¹⁾	→ ✓	→ ✓	→ ✓
PERFORMANCE ⁽¹⁾	→ ✓	→ ✓	→ ✓
BRIDGE CONDITION ⁽²⁾	→ ✓	→ ✓	→ ✓
SAFETY – FATALITIES & SERIOUS INJURY ⁽³⁾	→ ✓	→ ✓	→ ✓
TRAFFIC CONGESTION ⁽⁵⁾	→ ✓	→ OPTIONAL	→ ✓
ON-ROAD MOBILE SOURCE EMISSIONS ⁽⁵⁾	→ ✓	→ OPTIONAL	→ NOT INCLUDED
FREIGHT MOVEMENT ⁽⁴⁾	→ ✓	→ ✓	→ NOT INCLUDED

Roadways “Required” for the Federal Performance Categories:

(1) Required for Interstate and Non-Interstate NHS Roadways; (2) Required for all NHS Roadways; (3) Required for all Public Roadways; (4) Required for Interstate System Roadways; (5) Required Roadways Not Specified



ARRIVE 2045 GOAL I:

SAFETY & SECURITY

Goal 1 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goal for safety
- » National Performance Measure for Safety - Fatalities and Serious Injuries
- » MAP-21 Planning Factors to increase the safety of the transportation system for motorized and non-motorized users and to increase the security of the transportation system for motorized and non-motorized users.

All transportation improvements should be developed with safety of the traveling public in mind. Safety should be considered when developing transportation projects for all modes of motorized and non-motorized transportation. These improvements should consider reducing both the severity and overall number of crashes.

Security of the transportation system includes ensuring users of the transportation system are protected from natural or human disaster (ie flooding, acts of terrorism). Security measures for transportation system users are often considered for public transit riders and non-motorized users of the trail systems. Security of our transportation system also considers the mobility of our emergency service vehicles.

PERFORMANCE MEASURES

Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Safety Performance Measure	NDDOT 5-Year Average (2013 - 2017)	2019 NDDOT 5-Year Average Target
Number of Motorized Fatalities	120.0	108.3
^a Rate of Fatalities per 100 million VMT	1.2	1.106
Number of Motorized Serious Injuries	458.6	413.9
^a Rate of Serious Injuries per 100 million VMT	4.59	4.23
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	36.2	33.4

^a The MPO will adapt current NDDOT targets for rate calculated goals

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Safety Performance Measure	MPO 5-Year Average (2013 - 2017)
Number of Motorized Fatalities	4.6
Rate of Fatalities per 100 million VMT	0.642
Number of Motorized Serious Injuries	33.6
Rate of Serious Injuries per 100 million VMT	4.687
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	5.2

**Desired Target:
Reduction in crashes**



HOW WILL WE ACHIEVE THE GOAL?

Objectives:

- » **1A:** Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes. This may include implementing improvements that are both proven Crash Reduction Measures at locations with an existing crash history or at locations without an existing crash history as a proactive improvement (SMO)
- » **1B:** Provide a safe and secure environment for transit system riders (PBO)

- » **1C:** Enhance transportation security and reliability by developing strategies to address critical transportation assets identified that will facilitate the rapid movement of first responders and support incident management during times of emergency (SMO)
- » **1D:** Support North Dakota's State Highway Safety Plan (SHSP) "Vision Zero" as a goal to move toward zero fatal resultant crashes (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective



ARRIVE 2045 GOAL 2:

INFRASTRUCTURE CONDITION

Goal 2 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for the infrastructure condition of pavements and bridges.
- » National Performance Measure Categories of bridge condition and pavement condition
- » MAP-21 Planning Factors to emphasize the preservation of the existing transportation system and to promote efficient system management and operations.

As our transportation system ages, maintenance of our existing system is continuously needed to ensure that the condition of our pavements, bridges, bicycle and pedestrian facilities, transit facilities, and any other components of our existing transportation system are maintained and repaired to serve our traveling public. The challenges with maintaining our existing transportation system typically revolve around funding. The cost of transportation maintenance is continuously rising and there is often a competition between maintenance and operations costs of our existing system versus new facilities.

PERFORMANCE MEASURES

Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Pavement Conditions Measures and Targets

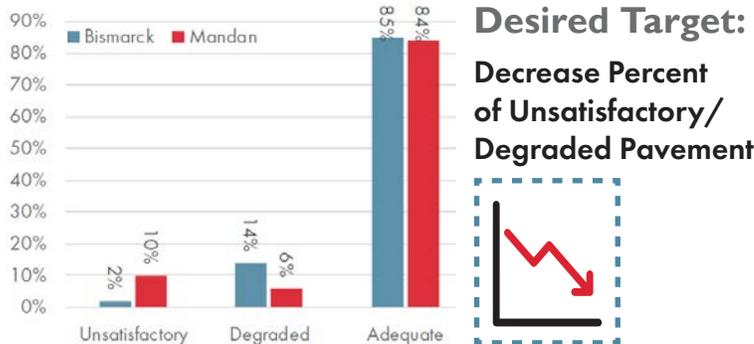
NDDOT Conditions Performance Measure	Existing Condition	Target Condition
Interstate Good	80.2%	75.6%
Interstate Poor	0.1%	3%
Non-Interstate Good	62.8%	58.3%
Non-Interstate Poor	0.3%	3%

Bridge Conditions Measures

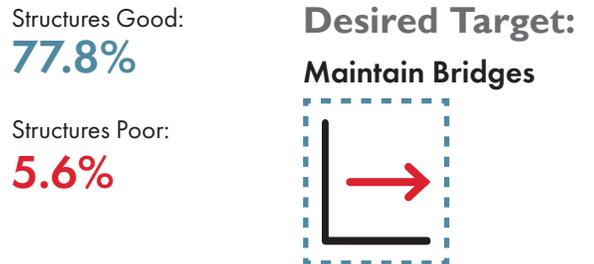
Conditions Performance Measure	Structures Good	Structures Poor
Target Condition (NDDOT)	60%	4%
Existing Condition (NDDOT)	64.44%	3.67%

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Pavement Conditions Measures



Bridge Conditions Measures



HOW WILL WE ACHIEVE THE GOAL?

Objectives:

- » **2A:** Maintain pavement quality and bridges at acceptable levels (SMO)
- » **2B:** Maintain street signage and visibility (SMO)
- » **2C:** Maintain the current bicycle & pedestrian system (SMO)
- » **2D:** Maintain transit fleet, equipment, and facilities in a state of

SMO: Scoring Metric Objective | PBO: Policy Based Objective

- good repair as identified within the Transit Development Plan (TDP) (SMO)
- » **2E:** Maintain traffic signals, lighting, and other transportation ITS assets at acceptable levels (SMO)
- » **2F:** All MPO participating jurisdictions should cost participate in the data collection of pavement system condition on a 5-year cycle (PBO)



ARRIVE 2045 GOAL 3:

CONGESTION REDUCTION

Goal 3 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for congestion reduction and system reliability
- » National Performance Measure Categories of traffic congestion and freight movement.
- » MAP-21 Planning Factor to enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

Mobility and connectivity of the transportation system allows users to move from one place to another in a direct route with reduced travel times and reduced delays. Connectivity allows people to make decisions based on traffic conditions, access, and desired trip destinations. Connectivity is not only about a direct route from an origin to a destination, it should also allow users to choose multiple transportation modes and to interchange between the modes in a safe and efficient manner.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Vehicle Miles Traveled (VMT) Per Capita

County	Population ^a	2017 Annual VMT ^b	Resultant Annual VMT per Capita ^c
Burleigh	95,273	739,236,000	7,800
Morton	31,095	446,409,000	14,500

^a Data Source: American Community Survey (ACS) 2018 Population Estimates

^b Data Source: 2017 NDDOT Annual Traffic Report per County

^c Rounded to the nearest 500 miles

Desired Target:
Reduction of VMT per Capita



Vehicle Hours Traveled (VHT) Per Capita

MPO Population ^c	VHT ^d	VHT per Capita
100,306	47,100	0.47 hours 28.2 minutes

^c Data Source: Bismarck Mandan MPO Monitoring Report - US Census, 2010

^d Data Source: 2015 Travel Demand Model

Desired Target:
Reduction of VHT per Capita

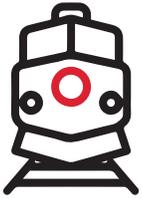


HOW WILL WE ACHIEVE THE GOAL?

Objectives:

- » **3A:** Implement projects and programs that will reduce travel delays on corridors that have an existing or proposed Level of Service (LOS) D or worse, to a LOS C or better after the improvement is made (SMO)
- » **3B:** Provide and maintain corridors functionally classified as minor arterials and above that facilitate longer-distance travel within the region (SMO)
- » **3C:** Improve the continuity of the multimodal systems for pedestrians, cyclists, or transit riders; through improved network connections and reduction of system gaps (SMO)
- » **3D:** Support future development that would result in reduced motor vehicle trips (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective



ARRIVE 2045 GOAL 4:

SYSTEM RELIABILITY FOR FREIGHT MOVEMENT AND ECONOMIC VITALITY

Goal 4 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for system reliability and freight movement and economic vitality.
- » National Performance Measure Category of Freight Movement
- » MAP-21 Planning Factors to support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; enhance the integration and connectivity of the transportation system, across and between modes, for people and freight; and increase accessibility and mobility of people and freight.

A transportation system that provides good access for all modes of transportation can promote future development and employment opportunities which will in return stimulate the region’s local economy.

A well connected and efficient transportation system that facilitates the movement of goods between freight modes and facilitates the movement of goods and freight to commercial and industrial centers can lower the cost of doing business. This can both support existing business and attract new business to support and enhance the local economy.

PERFORMANCE MEASURES

Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

System Performance for the Interstate and Non-Interstate NHS

Conditions Performance Measure	Travel Time Reliability Non-Interstate National Highway System (NHS)	Travel Time Reliability Interstate	Freight Reliability Index
Target Condition	85%	85%	3.0
Existing Condition (NDDOT - 2017)	91.6%	99.4%	1.15

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

There is not an MPO desired performance measure or target for this goal.

HOW WILL WE ACHIEVE THE GOAL?

Objectives:

- » **4A:** Enhance the efficient and safe movement of freight and goods including investments in congestion reduction and safety improvements on the critical urban freight corridors and other designated freight corridors (SMO)
- » **4B:** Support transportation investments as identified in the most recent Bismarck-Mandan MPO Regional Freight Study (PBO)
- » **4C:** Promote transportation investments that enhance the local economy (PBO)



ARRIVE 2045 GOAL 5:

ALTERNATIVE TRANSPORTATION MODES TO AUTOMOBILE TRAVEL

Goal 5 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for congestion reduction, system reliability and environmental sustainability.
- » National Performance Measure Categories of traffic congestion and on-road mobile source emissions.
- » MAP-21 Planning Factors to increase accessibility and mobility of people and freight; protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic

development patterns; and enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

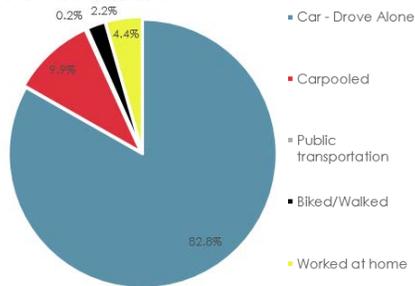
More people are choosing to use alternate modes of transportation to live a healthier lifestyle, reduce their environmental footprint, or spend less money out of their budget on transportation costs. Also, due to various social justice issues, certain portions of the population also are dependent on public transportation or non-motorized transportation. Regardless of the reason, it is important to provide a well-balanced transportation system that supports modes other than a single occupancy motor vehicle. This includes supporting alternative modes of transportation for users of all ages and all abilities.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Mode Share

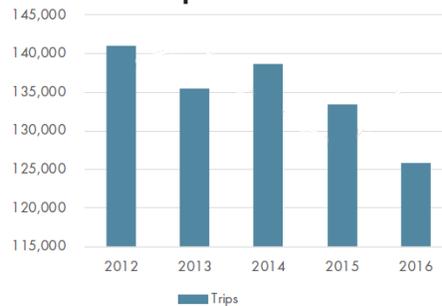


Desired Target:

Decrease single vehicle use

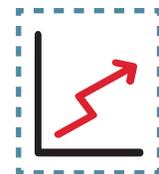


CAT Ridership



Desired Target:

Increase fixed route transit ridership



Miles of Facilities

Facility Type	Miles	
	Bismarck	Mandan
Multi-use Trails	52 miles	18 miles
Bicycle Lanes	4 miles	0 miles
Shared-Use Routes	5 miles	0 miles

Desired Target:

Increase miles of bicycle facilities



HOW WILL WE ACHIEVE THE GOAL?

Objectives:

- » **5A:** Consider coordination with transit agencies to improve transit route efficiency, system productivity, and community awareness by implementing transportation investments that support the transit system (PBO)
- » **5B:** Improve transit and rideshare opportunities for travelers commuting into Bismarck-Mandan from outside the urban area (PBO)

- » **5C:** Improve bicycle and pedestrian system accessibility and connectivity opportunities while maintaining safety by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Bicycle and Pedestrian Plan (SMO)
- » **5D:** Improve the awareness and safety of bicycling, and educate both bicyclists and motorists on rules and responsibilities (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective



ARRIVE 2045 GOAL 6:

ENVIRONMENTAL SUSTAINABILITY

Goal 6 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goal for environmental sustainability.
- » National Performance Measure Category for on-road mobile source emissions.
- » MAP-21 Planning Factor to promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

Air quality is affected by mobile source emissions resulting from vehicle miles traveled (VMT). Air quality impacts can be reduced through roadway improvements that reduce VMT or provide for transportation modes other than single occupancy vehicles. New and expanded transportation facilities can also negatively impact the environment such as impacting wetlands, historical and cultural resources, existing neighborhoods or properties, and many other potential environmental impacts.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

The performance measures and targets for reduction in VMT/Capita and VHT/Capita as identified in Goal 3 Congestion Reduction, will also support environmental sustainability through reduced on-road mobile source emissions. Please see Goal 3 Congestion Reduction for the performance measures, current system performance, and targets.

HOW WILL WE ACHIEVE THE GOAL?

Objectives:

- » **6A:** Minimize the transportation system's impacts on the natural and built environment (PBO)
- » **6B:** Ensure that projects located within Environmental Justice (EJ) areas have no negative impacts or have identified mitigation measures (PBO)
- » **6C:** Promote transportation investments that support infill, mixed use development patterns (PBO)
- » **6D:** Provide transportation infrastructure design guidance that fits within the context of the built environment (PBO)
- » **6E:** Plan for and address multimodal transportation system impacts/sufficiency when planning new developments (PBO)



ARRIVE 2045 GOAL 7:

REDUCED PROJECT DELIVERY

Goal 7 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for reduced project delivery delay.
- » MAP-21 Planning Factors to support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; promote efficient system management and operation; and emphasize the preservation of the existing transportation system.

A well developed MTP will consider fiscal constraint and develop, prioritize, and program projects to ensure they are within the means of each jurisdiction’s transportation budget. This first includes consideration of maintenance and operation costs of the existing transportation system.

Secondly, lower cost alternatives should be considered to improve the performance of the transportation system before more expensive projects such as extending and widening the system are considered.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

There is currently no data available for this performance measure. The MPO, when able, will commit to collecting these data following the completion of this plan. Baseline data will be available in 2020.

Possible Performance Measures:

- » Track the number of projects that are delivered on time (as scheduled).

Possible Desired Target:

Reduction of the number of delayed projects



HOW WILL WE ACHIEVE THE GOAL?

Objectives:

- » **7A:** Identify Non-Federal funding opportunities (public or private) to support transportation needs to fund entire projects or greater than the required Federal project match (PBO)
- » **7B:** Leverage the existing transportation system by emphasizing low-cost, high impact solutions that may include incremental system improvements, system preservation, and technology applications to achieve congestion in lieu of more expensive projects such as roadway widening (SMO)
- » **7C:** Develop policies to support consistent application of development-related improvement requirements and streamlined project development (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective

EXISTING SYSTEM PERFORMANCE

The Existing System Performance analysis evaluated the current conditions for all modes of transportation and was used to identify issues and opportunities for investment over the life of Arrive 2045.

TRAFFIC OPERATIONS

The travel demand model provides level of service for the functionally classified roadways. Areas of existing concern based on deficient LOS include many of the metro's most heavily traveled arterial roadways:

- » Washington Street
- » State Street
- » I-94
- » Divide Avenue
- » Bismarck Expressway
- » Centennial Road
- » 19th Street N
- » 7th Street
- » 3rd Street (Mandan)
- » Memorial Highway
- » Downtown Bismarck and Mandan (various streets)

ASSET MANAGEMENT

Highways, roads, and bridges are an integral part of the community. These assets keep the economy moving, connect to daily destinations, and provide access in case of an emergency. Asset management is defined as a strategic and systematic process of operating, maintaining, and improving physical assets based on engineering and economic analysis. For Arrive 2045 asset management includes pavement conditions and bridge structures.

- » Pavement Conditions
 - 75.6 percent of the Interstate in the MPO area is in good condition and 3 percent in poor condition.
 - 58.3 percent of the Non-Interstate National Highway System in the MPO area is in good condition and 3 percent in poor condition.
 - 85 percent of Bismarck's roadways have an adequate pavement condition and 2 percent in unsatisfactory condition.
 - 84 percent of Mandan's roadways have an adequate pavement condition and 10 percent in unsatisfactory condition.
- » Bridge Conditions
 - 70 percent of bridge structures in the MPO area are in good condition and just 2 percent in poor condition.

ROADWAY SAFETY

The last five years of crash data was analyzed to understand roadway safety patterns and high crash locations. During this timeframe there were 15,039 motorized vehicle and 238 non-motorized crashes. This includes 23 fatal crashes, of which six occurred at intersections, and 186 serious injury crashes.

Bismarck has 17 of 50 high crash urban locations across North Dakota. Mandan, Lincoln, Burleigh, and Morton County had none.

OTHER HIGHLIGHTS

- » Vehicle miles traveled (the sum of the length of each trip driven by every person on the transportation network) has grown faster in Burleigh County than in Morton County, likely associated with larger population growth and suburban style development.
- » Vehicle hours traveled (the sum of the travel time for each trip driven by every person on the transportation network) increased 21 percent between 2010 and 2015.
- » Passenger trips on Capital Area Transit's fixed routes have declined nearly 11 percent between 2012 and 2016 and about eight percent on the paratransit and demand response service. The Transit Development Plan was recently completed and outlined a variety of potential service improvements and funding mechanisms.
- » The Cities of Bismarck and Mandan have 516 miles of bicycle and pedestrian facilities. The 2017 Bicycle and Pedestrian Plan identified priority routes and intersections to improve walking and biking in the Bismarck-Mandan metro.

GROWTH, TRENDS, AND FORECASTS

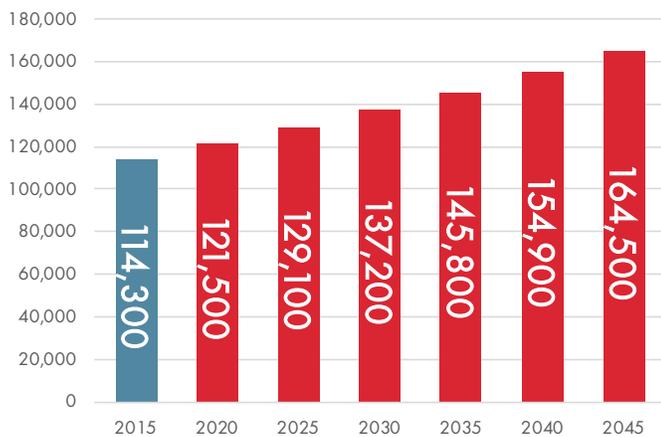
DEMOGRAPHIC TRENDS

Population, household, and employment growth in the Bismarck-Mandan metro area are directly related to the demands placed on the transportation network. As more people and jobs are located in the region, there are more commuting and freight trips. This section includes a review of the population, household, and employment forecasts developed for the Bismarck-Mandan metro area as part of the Bismarck-Mandan Model Review and Socio-Economic Update Study.

Population Growth

The Bismarck-Mandan metro area population has historically grown at a rate of 1.2 percent per year (1985 to 2015), however more recent trends have shown a more significant growth rate, around 2.4 percent per year (2010 to 2015). Recently, the 2045 socioeconomic forecasts were approved using the historic growth rate around 1.2 percent per year, on average, resulting in more than 50,000 new people by 2045, for an expected population of 164,500.

Current and Projected Population

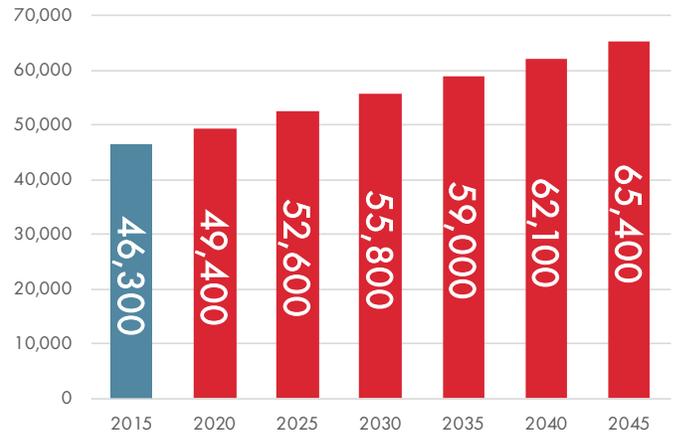


Household Growth

The population growth forecasted through 2045 is allocated to new households based on household size, which reflects a variety of factors, including age and housing type (single-family/multi-family). Household size has declined since the 1970s (3.37) to 2005 (2.39), but has recently stabilized. The demographic forecasts expects a slight increase in household size through 2045.

This results in around 65,400 total households in the Bismarck-Mandan metro area by 2045, an increase of more than 19,000 new households. This forecasts is lower (10.5 percent) than previous 25-year forecasts.

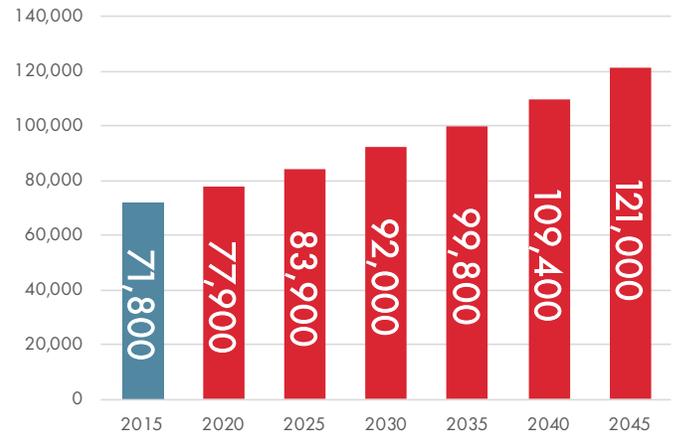
Current and Projected Households



Employment Growth

Employment growth in the Bismarck-Mandan metro area is expected to grow around 1.8 percent per year through 2045, resulting in more than 49,000 new jobs, for a total of 121,000 jobs. This forecast is slightly lower (2.6 percent) than previous 25-year forecasts, likely associated with the uncertainty surrounding energy development in western North Dakota.

Current and Projected Employment



Current and Forecasted Change in Socioeconomic Data

	2015	2020	2025	2030	2035	2040	2045	2015-2045 Percent Change
Metro Population	114,300	121,500	129,100	137,200	145,800	154,900	164,500	43.9%
Metro Households	46,300	49,400	52,600	55,800	59,000	62,100	65,400	41.3%
Metro Jobs	71,800	77,900	83,900	92,000	99,800	109,400	121,000	68.5%

FUTURE SYSTEM PERFORMANCE

The 2020 to 2045 Bismarck-Mandan Metropolitan Transportation Plan uses a year 2045 planning horizon to provide a 25-year time period after plan adoption for prioritizing regional transportation improvements. This chapter provides a performance assessment of the future transportation system.

2030 FUTURE NETWORK PERFORMANCE

By 2030, the Bismarck-Mandan metro area will add nearly 10,000 households and 20,000 jobs. Even with this anticipated growth, the network will continue to operate effectively through most of the metro, however, there are some areas of growing congestion. Vehicle hours traveled (VHT) by all vehicles on the network will increase 30.3 percent, while vehicle miles traveled (VMT) by all vehicles on the network will increase 28.5 percent. VHT growing at a faster rate than VMT indicates increasing congestion, however mild through 2030.

The 2030 LOS is shown in below. Many of the metro’s most heavily traveled arterial roadways will continue to see growing congestion, especially in the northeast.

2030 Model Outputs

	2015	2030	2015-2030 Percent Change
VHT	28,605	37,265	30.3%
VMT	1,753,850	2,253,430	28.5%
% of Links Over Capacity	1.2%	5.1%	322.3%

2045 FUTURE NETWORK PERFORMANCE

From 2030 to 2045, the Bismarck-Mandan metro area will add another 10,000 households and 29,000 jobs. This anticipated growth begins to overload the network, with many of the functionally classified roadways over capacity. VHT increases far outpace VMT increases, indicating significant congestion on the network. The percent of roadway links over capacity increases more than 10 times when compared to 2015. Many of the metro’s most heavily traveled arterial roadways will continue to see growing congestion.

2045 Model Outputs

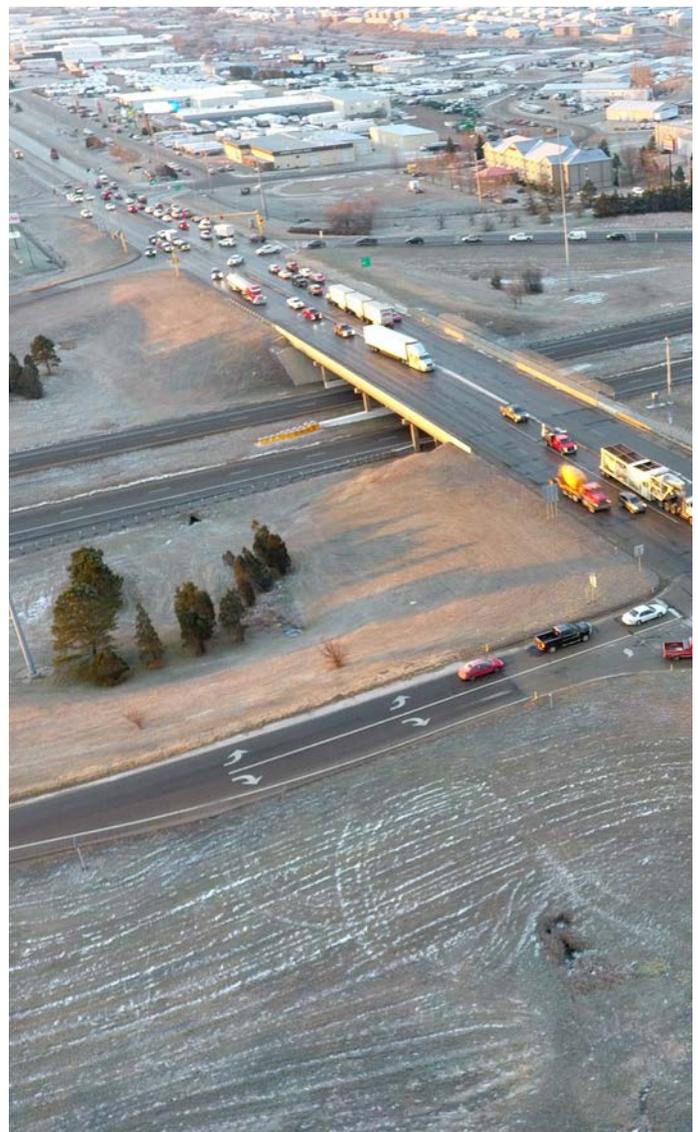
	2015	2045	2015-2045 Percent Change
VHT	28,605	55,650	94.5%
VMT	1,753,850	2,932,685	67.2%
% of Links Over Capacity	1.2%	13.6%	1,033.3%

ALTERNATIVE ANALYSIS

The alternatives analysis for Arrive 2045 was a multi-phased approach to assist in the identification of projects that should be evaluated and prioritized through 2045. This process included the following analyses:

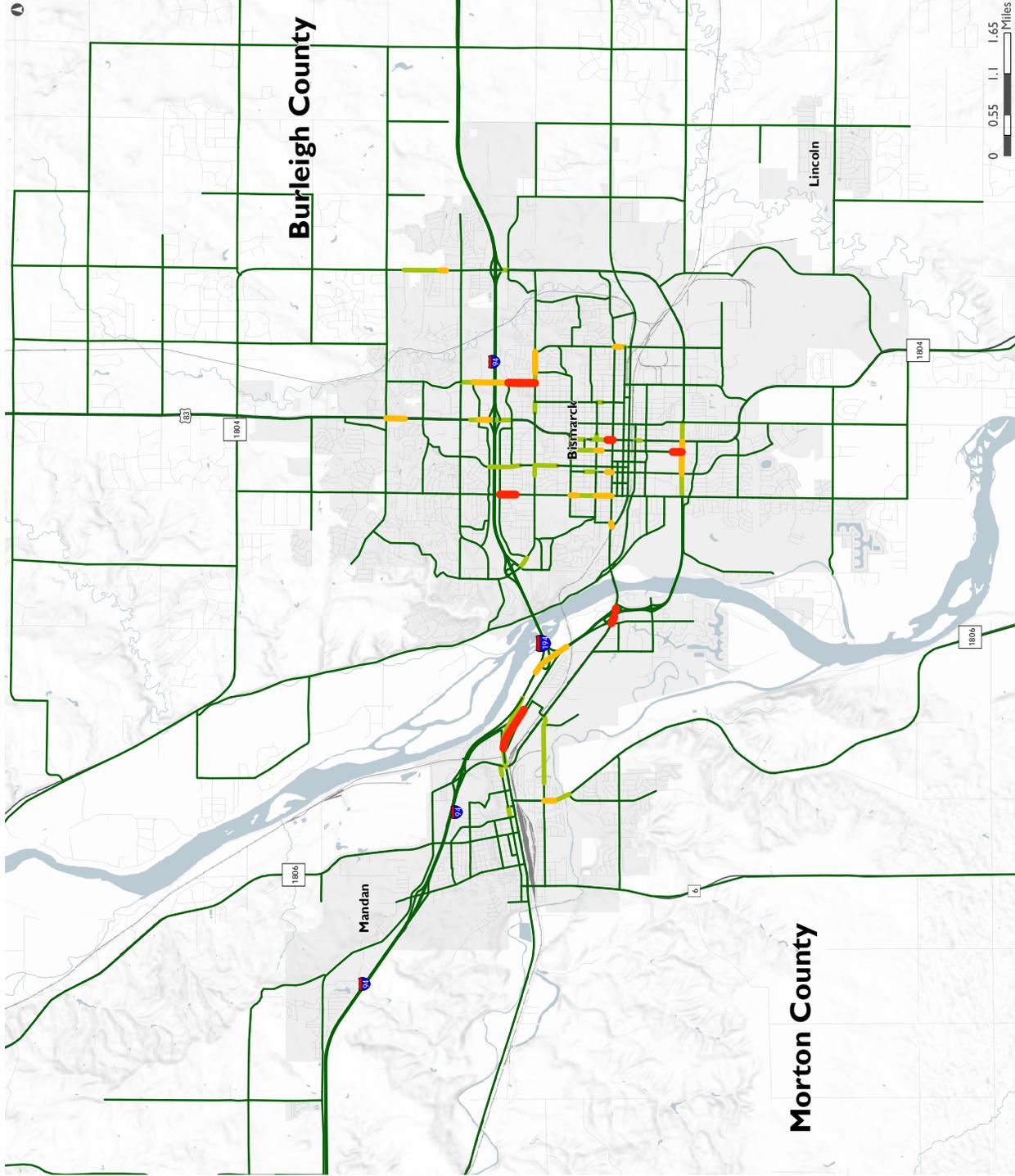
- » The Macro-Level Analysis evaluated large project concepts that would potentially address some of the most significant transportation issues, like new river crossings, interchanges, and other major connections.
- » The Interstate Analysis completed a more detailed evaluation of the I-94 and I-194 mainline and existing interchanges.
- » Smart Mobility workshop evaluated the impacts connected and autonomous vehicles and technology solutions could have on the transportation network.
- » Project Evaluation and Prioritization scored and ranked the universe of projects included in this MTP.

Growing Traffic Demands Along Centennial Road



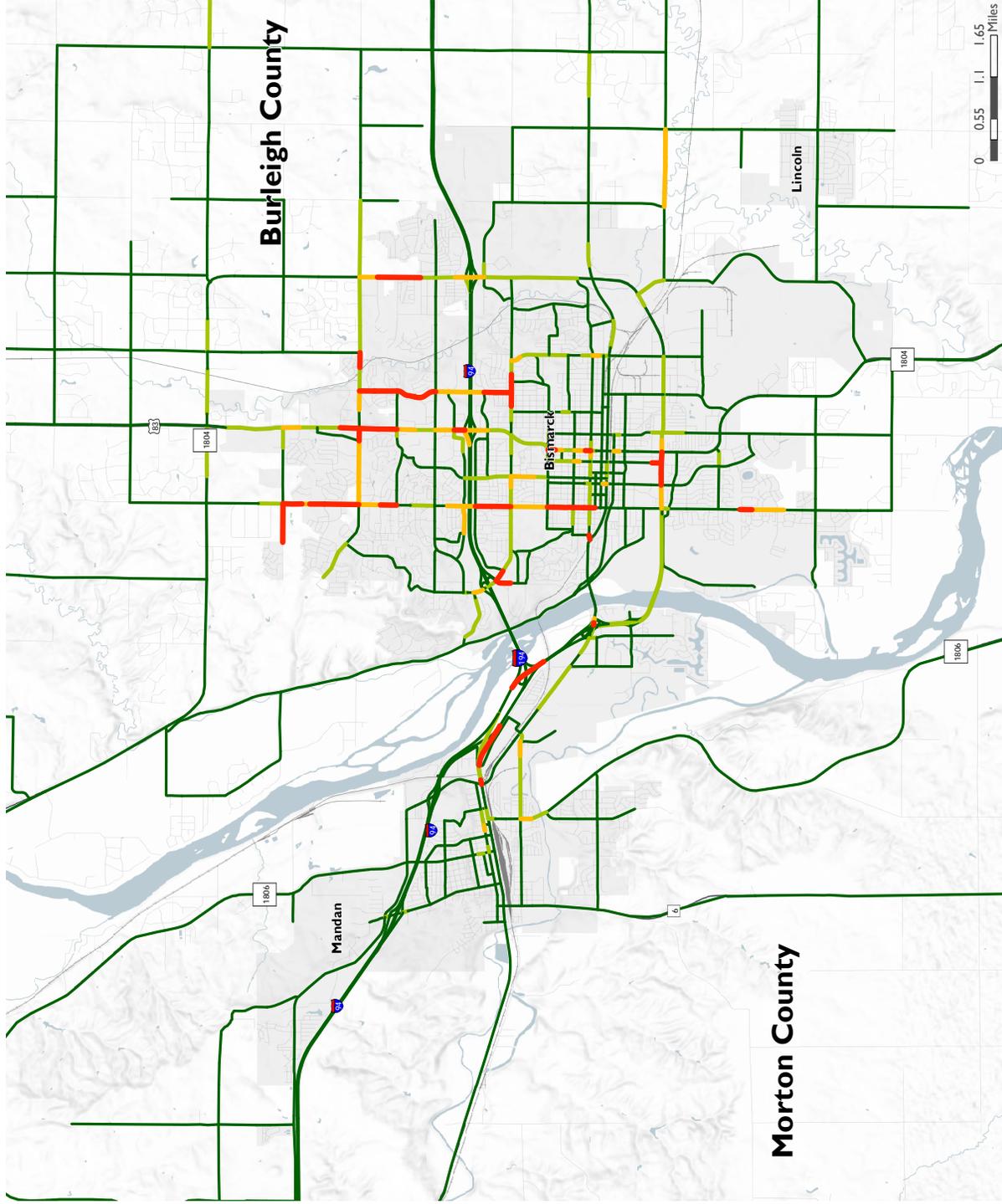
Level of Service 2015

- Level of Service
- LOS F
 - LOS E
 - LOS D
 - LOS A-C



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Existing + Committed Projects Only



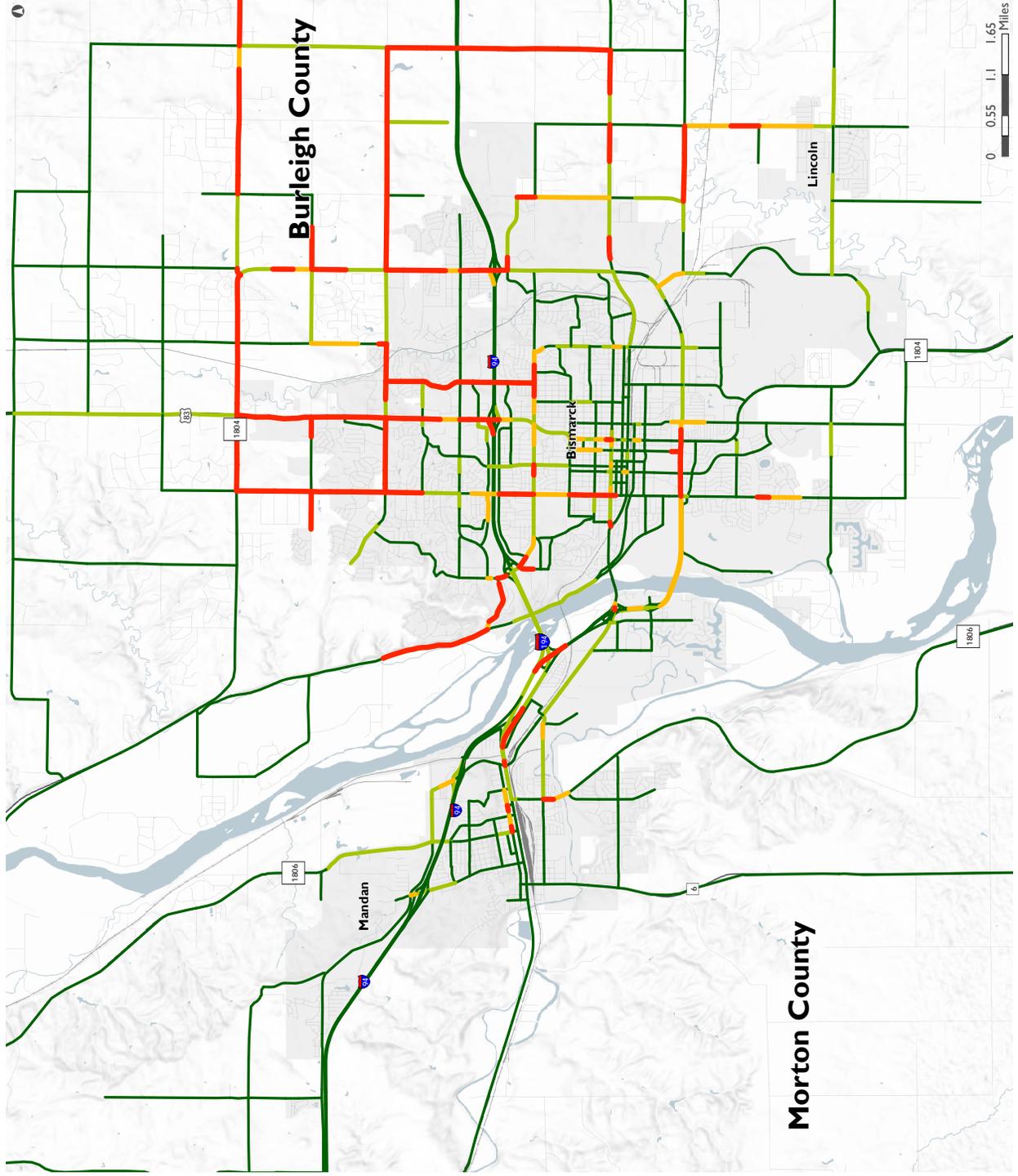
Level of Service 2030

- LOS 2045
- F
 - E
 - D
 - A-C



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Existing + Committed Projects Only



Level of Service 2045

- LOS 2045
- F (Red)
- E (Yellow)
- D (Light Green)
- A-C (Dark Green)



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FISCALLY CONSTRAINED PLAN

DEVELOPMENT OF THE FISCAL CONSTRAINT

Development of the project list for Arrive 2045 must be based on an established fiscal constraint agreed to between the Bismarck-Mandan MPO and NDDOT. Development of a fiscal constraint can be based on a variety of scenarios and data points regarding transportation funding programs. Five potential scenarios were evaluated based on historical spending and future programmed funds from the current Transportation Improvement Programs. These trends were extrapolated to 2045 and allocated to the different funding programs, including Urban Roads, Regional Roads, Interstate, Safety, and Transportation Alternatives. The scenario selected was reduced by expected preservation and maintenance costs and operations costs to ensure the fiscal constraint is sufficient to manage the existing transportation network before expansion projects were considered. The table below shows the funding available across all project areas and across the short-term (2024-2031), mid-term (2032-2038), and long-term (2039-2045).

PRIORITIZATION OF PROJECTS

To determine which projects would be selected given limited funds and in what time period the project would be proposed, all projects were prioritized through a three-step process including

- » Technical project evaluation based on the project goals and evaluation criteria. A composite score was calculated for each project based on the goal score times the goal weight which was developed as part of the public involvement process.
- » Public involvement during the second round of public meetings where the public could select their top priorities.
- » Steering Committee review of technical needs and construction feasibility.

Year	Urban	Regional	Interstate	Safety (State)	Safety (Urban)	TA + RTP
Base Year	\$3,936,368	\$4,581,824	\$5,120,750	\$699,713	\$651,250	\$233,750
2024	\$4,172,550	\$428,524	\$3,321,051	\$741,695	\$690,325	\$247,775
2025	\$4,235,138	\$399,247	\$3,318,193	\$752,821	\$700,680	\$251,492
2026	\$4,298,666	\$366,977	\$3,313,186	\$764,113	\$711,190	\$255,264
2027	\$4,363,145	\$331,568	\$3,305,912	\$775,575	\$721,858	\$259,093
2028	\$4,428,593	\$292,866	\$3,296,250	\$787,208	\$732,686	\$262,979
2029	\$4,495,022	\$250,712	\$3,284,073	\$799,016	\$743,676	\$266,924
2030	\$4,562,447	\$204,939	\$3,269,248	\$811,002	\$754,831	\$270,928
2031	\$4,630,884	\$155,372	\$3,251,638	\$823,167	\$766,154	\$274,992
Subtotal	\$29,967,507	\$2,430,206	\$26,359,550	\$6,254,597	\$5,821,400	\$2,089,447
2032	\$4,700,347	\$1,976,831	\$3,231,098	\$835,514	\$777,646	\$279,117
2033	\$4,770,852	\$1,919,128	\$3,207,477	\$848,047	\$789,311	\$283,303
2034	\$4,842,415	\$1,857,064	\$3,087,523	\$848,047	\$789,311	\$283,303
2035	\$4,915,051	\$1,790,436	\$3,055,866	\$860,768	\$801,150	\$287,553
2036	\$4,988,777	\$1,719,029	\$2,926,125	\$860,768	\$801,150	\$287,553
2037	\$5,063,608	\$1,642,620	\$2,885,684	\$873,679	\$813,168	\$291,866
2038	\$5,139,563	\$1,560,977	\$2,745,356	\$873,679	\$813,168	\$291,866
Subtotal	\$28,298,190	\$12,466,086	\$21,139,129	\$6,000,502	\$5,584,903	\$2,004,562
2039	\$5,216,656	\$1,473,859	\$2,695,322	\$886,784	\$825,365	\$296,244
2040	\$5,294,906	\$1,381,012	\$2,640,890	\$900,086	\$837,746	\$300,688
2041	\$5,374,329	\$1,282,174	\$2,581,847	\$913,587	\$850,312	\$305,198
2042	\$5,454,944	\$1,177,072	\$2,517,971	\$927,291	\$863,066	\$309,776
2043	\$5,536,769	\$1,065,420	\$2,449,034	\$941,201	\$876,012	\$314,423
2044	\$5,619,820	\$946,920	\$2,374,794	\$955,319	\$889,153	\$319,139
2045	\$5,704,117	\$821,264	\$2,295,002	\$969,648	\$902,490	\$323,926
Subtotal	\$30,144,852	\$8,147,721	\$17,554,860	\$6,493,916	\$6,044,144	\$2,169,395
Total	\$88,410,549	\$23,044,013	\$65,053,539	\$18,749,015	\$17,450,447	\$6,263,404

FISCALLY CONSTRAINED PROJECT LIST

Projects are assigned a time period based on their relative need. So, even if a project could be funded in a later phase, it is kept in the phase at which it is needed and would be listed as “illustrative” which allows for a better representation of unmet funding needs.

Short-Range Projects

The most significant time period and project list is the short-range list, which reflects projects from which to choose for developing the next five TIPs until Arrive 2045 is updated in 2025. Projects with a yellow fill are recommended for inclusion in the constrained plan and would reflect the MPO’s prioritized list.

Based on the identification of short range projects, below reflects the financial analysis for the years 2024 to 2031 of Arrive 2045, with a summary of the revenue programs below.

- » Urban Program
 - Requires \$16M to \$19M in Bismarck sales tax to balance program.
 - All Bismarck projects are sales tax eligible; sales tax benefit to the urban system is not fully shown in MTP financial analysis.
- » Regional Program
 - Program is balanced; however, P&M revenues needed to support low cost improvements on State Street.
 - Assumes constraint of low cost improvements on State Street while high cost improvements on State Street remain illustrative.
- » Interstate Program
 - Generally balanced, includes reconstruction of Exit 161.

Mid Range Projects

Projects with a yellow fill are recommended for inclusion in the constrained plan. Unlike the short-range project lists, there is no Urban Program priority. These projects can be prioritized as necessary.

Mid-Range Financial Analysis

Based on the identification of mid-range range projects, below reflects the financial analysis for the years 2032 to 2038 of Arrive 2045, with a summary of the revenue programs below.

- » Urban Program
 - Program slightly out of balance, likely balanced with use of Bismarck Sales Tax.
- » Regional Program
 - Program is balanced; however, requires use of P&M revenue to support program.
 - Assumes constraint of low cost improvements on State Street but high cost improvements on State Street remain illustrative.

- » Interstate Program
 - Requires more capacity investment to support reconstruction of Exit 159; program still balanced.

Long-Range Projects

Projects with a yellow fill are recommended for inclusion in the constrained plan and can be prioritized as necessary.

Based on the identification of long-range range projects, below reflects the financial analysis for the years 2039 to 2045 of Arrive 2045, with a summary of the revenue programs below.

- » Urban Program
 - Program balanced.
- » Regional Program
 - Program is balanced; however, requires use of P&M revenue to support program.
 - Assumes constraint of low cost improvements on State Street while high cost improvements on State Street remain illustrative.
- » Interstate Program
 - No capacity programmed in long range (e.g. 66th Street Interchange not included in constrained MTP).

FISCALLY CONSTRAINED PROJECTS AND FUTURE NETWORK PERFORMANCE

Projects that were cost constrained in the short-, mid-, and long-term were applied to the travel demand model. The prioritized and constrained projects reduce congestion, when compared to the 2030 and 2045 networks without these projects, but increase vehicle miles traveled.

2030 Fiscally Constrained Projects Model Outputs

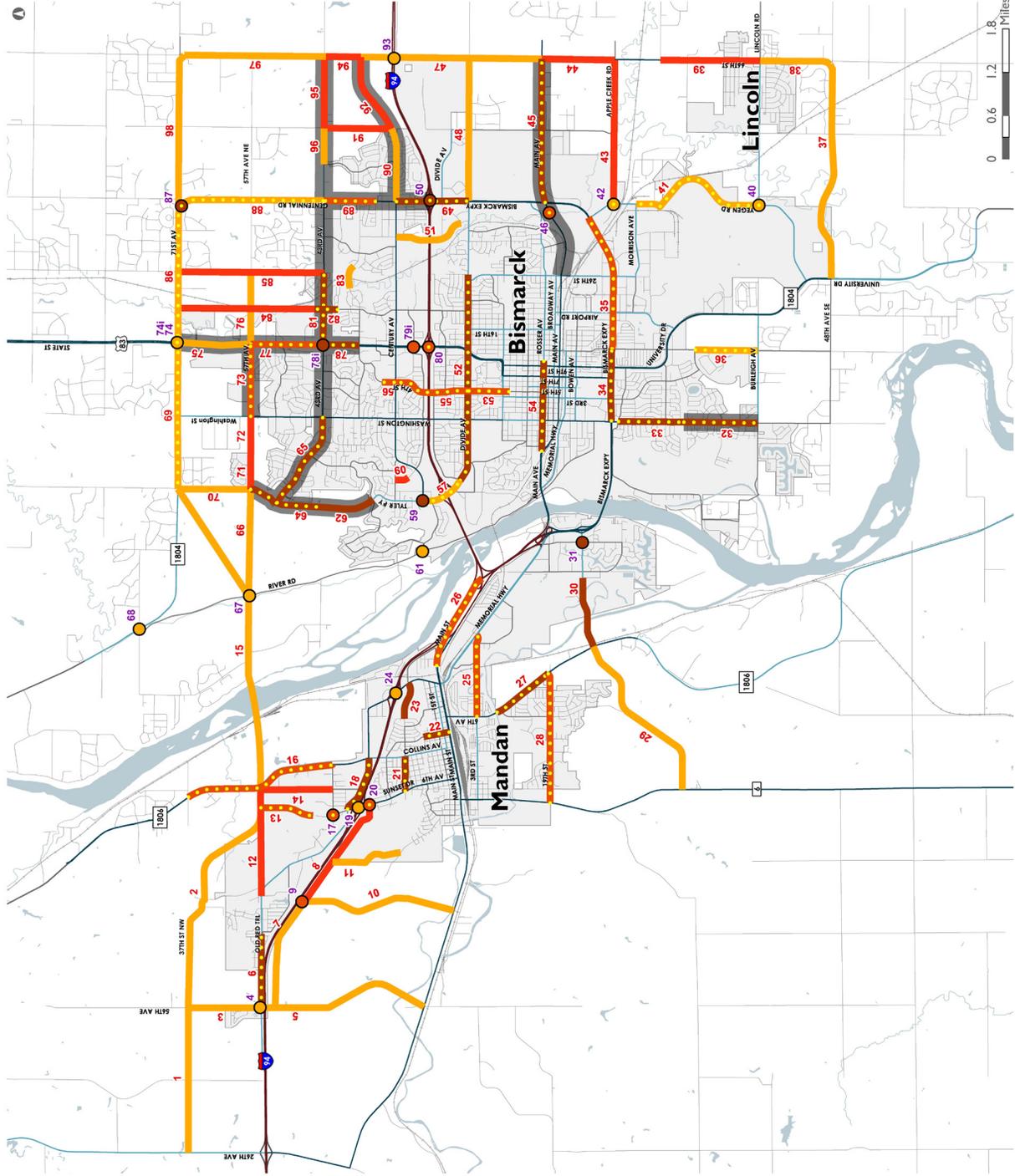
	2015	2030	2015-2030 Percent Change
VHT	28,605	37,415	30.8%
VMT	1,753,850	2,489,035	41.9%
% of Links Over Capacity	1.2%	2.8%	133.3%

2045 Fiscally Constrained Projects Model Outputs

	2015	2045	2015-2045 Percent Change
VHT	28,605	49,235	72.1%
VMT	1,753,850	3,291,190	87.7%
% of Links Over Capacity	1.2%	7.6%	533.3%

Project Phasing

-  Short Range Projects
-  Mid Range Projects
-  Long Range Projects
-  Short Range Projects for Constrained Plan
-  Mid Range Projects for Constrained Plan
-  Long Range Projects for Constrained Plan
-  Bismarck Sales Tax Eligible Corridors



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Short-Range Project List

ID	Location	Termini	Termini	Description	Phase	Cost	Year of Expenditure [YOE]	Program	Urban Program Priority
6	Old Red Trail	56th Avenue	40th Avenue NW	Reconstruct as 3-lane urban section.	Short	\$8,400,000	\$9,826,812	Urban	2
18	Old Red Trail	Sunset Drive	ND1806 / Collins Avenue	Restripe for 3-lane urban section.	Short	\$39,500	\$46,209	Safety	
21	Division Street	Sunset Drive	ND 1806 / Collins Avenue	Reconstruction.	Short	\$2,500,000	\$2,924,646	Urban	5
22	3rd Avenue NE	Main Street	5th Street	Reconstruction.	Short	\$2,500,000	\$2,924,646	Urban (P&M)	7
23	Division Street	8th Avenue E	Mandan Avenue	Construct as 2-lane urban section.	Short	\$2,880,000	\$3,369,193	Urban	
27	Highway 1806	19th Street	Heart River Bridge	Pavement preservation project, including addition of turn lanes and signals at 8th Avenue and 19th Street.	Short	\$1,750,000	\$2,047,252	Regional	
30	McKenzie Road	Highway 1806	39th Avenue E	Construct as 2-lane rural section. Include new bridge across Heart River. Add signals at McKenzie Drive/ Bismarck Expressway ramps and at McKenzie Drive/40th Avenue.	Short	\$15,650,000	\$18,308,286	Urban	
31	McKenzie Road	46th Avenue SE		Intersection capacity improvement.	Short	\$2,500,000	\$2,924,646	Urban	
32	Washington Street	Burleigh Avenue	Drainage Channel	Reconstruct as 3-lane urban arterial.	Short	\$8,720,000	\$10,201,167	Urban	3
33	Washington Street	Drainage Channel	Denver Avenue	Turn lane improvements including restripe south of Reno Avenue as 3-lane section.	Short	\$39,000	\$45,624	Safety	
34	Bismarck Expressway	Washington Street	12th Street	Safety improvements.	Short	\$5,000,000	\$5,849,293	Safety	
45	Main Avenue	Bismarck Expressway	66th Street	Widen from 2-lane to 3-lane section (including intersection improvement at 52nd Street).	Short	\$10,020,000	\$11,721,983	Urban	6
49	Bismarck Expressway / Centennial Road	Divide Avenue	Century Avenue	Widen from 5-lane to 6-lane section.	Short	\$3,960,000	\$4,632,640	Mix	
50	Bismarck Expressway / Centennial Road	I-94		Interchange reconstruction.	Short	\$25,000,000	\$29,246,464	Interstate	
52	Divide Avenue	Turnpike Avenue	26th Street	Restripe as 3-lane urban section.	Short	\$143,500	\$167,875	Safety	
54	Rosser Avenue	Main Avenue	10th Street	Restripe as 3-lane urban section.	Short	\$62,000	\$72,531	Safety	
59	Century Avenue	Tyler Parkway		Intersection capacity improvement.	Short	\$2,500,000	\$2,924,646	Urban	
62	Tyler Parkway	Valley Drive	43rd Avenue	Construct as 2-lane urban section.	Short	\$4,260,000	\$4,983,597	Urban	
64	Tyler Parkway	43rd Avenue	57th Avenue	Overlay existing roadway to 2-lane rural section.	Short	\$500,000	\$584,929	Urban	8
65	Ash Coulee Drive	Tyler Parkway	Washington Street	Widen from 2-lane to 3-lane urban section.	Short	\$5,240,000	\$6,130,059	Urban	4
78	State Street	Calgary Avenue	43rd Avenue	At grade improvements: Calgary Avenue and 43rd Avenue; widening to 6-lane urban section from Calgary Avenue through 43rd Ave intersection.	Short	\$15,185,000	\$17,764,302	Regional	
78i	State Street	43rd Avenue		Grade separation.	Short	\$30,000,000	\$35,095,757	Regional	
81	43rd Avenue	State Street	26th Street	Construct 3-lane or 5-lane urban section.	Short	\$10,000,000	\$11,698,586	Urban	1
82	19th Street	North Valley Loop/Yucca Avenue	43rd Avenue	Reconstruct as 3-lane urban section.	Short	\$1,380,000	\$1,614,405	Urban	1
87	71st Avenue	Centennial Road		Intersection capacity improvement.	Short	\$2,500,000	\$2,924,646	Safety	
TBD	State Street	Calgary Avenue	43rd Avenue	Shared use path.	Short	\$1,000,000	\$1,169,859	Regional	

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Mid-Range Project List

ID	Location	Termini	Termini	Description	Phase	Cost	Year of Expenditure [YOE]	Program
8	Boundary Road	32nd Avenue	Sunset Drive	Construct as 3-lane urban section.	Mid	\$12,640,000	\$20,237,047	Urban
9	32nd Avenue	I-94		Grade separation.	Mid	\$15,000,000	\$24,015,483	Urban
12	38th Street NW	Old Red Trail	Collins Avenue / ND 1806	Construct as 2-lane urban section.	Mid	\$8,700,000	\$13,928,980	Urban
13	Sunset Drive	Middle School	38th Street	Construct as 2-lane urban section.	Mid	\$4,500,000	\$7,204,645	Urban
14	8th Avenue NW	27th Street	38th Street	Construct as 2-lane urban section.	Mid	\$6,000,000	\$9,606,193	Urban
16	ND 1806	Old Red Trail	37th Street	Intersection capacity improvement, add turn lanes at key intersections. (Assume minor intersection improvements to match new 37th St section)	Mid	\$2,711,000	\$4,340,398	Regional (P&M)
17	27th Street N / Sunset Drive Intersection	Sunset Drive		Intersection capacity improvement.	Mid	\$2,500,000	\$4,002,581	Safety
20	Boundary Road	Sunset Drive		Signalize and stripe turn lanes on all approaches.	Mid	\$350,000	\$560,361	Safety
25	3rd Street	6th Avenue / ND1806	Memorial Highway	Restripe to include turn lanes or restripe to 3-lane section with center turn lane and no parking.	Mid	\$57,000	\$91,259	Safety
26	I-94	I-194		Additional westbound lane from I-94/I-194 to Main St/Exit 155.	Mid	\$6,000,000	\$9,606,193	Interstate
28	19th Street SE	ND 6	ND 1806	Reconstruct as 3-lane urban section.	Mid	\$14,400,000	\$23,054,864	Urban
35	Bismarck Expressway	12th Street	Yegen Road	Implement 3 / 4 access control at 5 intersections and add right turn at Airport Road.	Mid	\$500,000	\$800,516	Regional (P&M)
39	66th Street	Lincoln Road	Northgate Drive	Widen from 2-lane to 3-section.	Mid	\$5,480,000	\$8,773,657	Urban
43	Apple Creek Road	Yegen Road	66th Street	Intersection capacity improvements at all intersections.	Mid	\$5,000,000	\$8,005,161	Urban
44	66th Street	Apple Creek	Highway 10/ Old Main Avenue	Widen from 2-lane to 3-section.	Mid	\$4,040,000	\$6,468,170	Urban
46	Main Avenue	Hay Creek Crossing		Structural replacement.	Mid	\$500,000	\$800,516	Regional (P&M)
53	4th Street	Boulevard Avenue	Divide Avenue	4th Street signal timing improvements, stripe turn lanes at key intersections, potential new signal at Turnpike.	Mid	\$278,500	\$445,887	Safety
55	4th Street	Divide Avenue	Century Avenue	4th Street signal timing improvements, stripe turn lanes at key intersections, potential new signal at Turnpike.	Mid	\$303,000	\$485,113	Safety
56	4th Street	Century Avenue	Montreal Street	4th Street signal timing improvements, stripe turn lanes at key intersections, potential new signal at Turnpike.	Mid	\$275,000	\$440,284	Safety
60	Interstate Avenue	Country West Road	Country West Road	Construct as 2-lane urban section.	Mid	\$1,140,000	\$1,825,177	Urban
71	57th Avenue	Tyler Parkway	Crested Butte Road	Construct as 3-lane rural section.	Mid	\$3,150,000	\$5,043,251	Urban
72	57th Avenue	Crested Butte Road	Washington Street	Construct as 3-lane rural section.	Mid	\$3,710,000	\$5,939,830	Urban
73	57th Avenue	Washington Street	State Street	Construct as 3-lane rural section.	Mid	\$7,000,000	\$11,207,226	Urban
77	State Street	43rd Avenue	57th Avenue	Widen to 6-lanes from N of 43rd through 57th; intersection improvement at 57th.	Mid	\$11,350,000	\$18,171,716	Regional
791	State Street	Interstate Boulevard		Grade separation.	Mid	\$23,000,000	\$36,823,741	Regional
80	State Street	I-94		Interchange reconstruction.	Mid	\$21,000,000	\$33,621,677	Interstate
84	19th Street	Skyline Boulevard	71st Avenue	Construct as 3-lane urban section.	Mid	\$15,040,000	\$24,079,525	Urban
85	26th Street	43rd Avenue	71st Avenue	Construct as 3-lane rural section.	Mid	\$16,000,000	\$25,616,515	Urban
89	Centennial Road	Jericho Road	43rd Avenue	Widen from 3-lane to 5-lane urban section.	Mid	\$2,800,000	\$4,482,890	Urban
91	52nd Street	Century Avenue	43rd Avenue	Reconstruct as 3-lane rural section.	Mid	\$7,440,000	\$11,911,680	Urban
92	Century Avenue	52nd Street	66th Street	Construct 3-lane urban section.	Mid	\$9,040,000	\$14,473,331	Urban
94	66th Street	Century Avenue	43rd Avenue	Reconstruct as 3-lane urban section.	Mid	\$4,190,000	\$6,708,325	Urban
95	43rd Avenue	52nd Street	66th Street	Widen from 2-lane to 3-lane or 5-lane urban section.	Mid	\$8,000,000	\$12,808,258	Urban

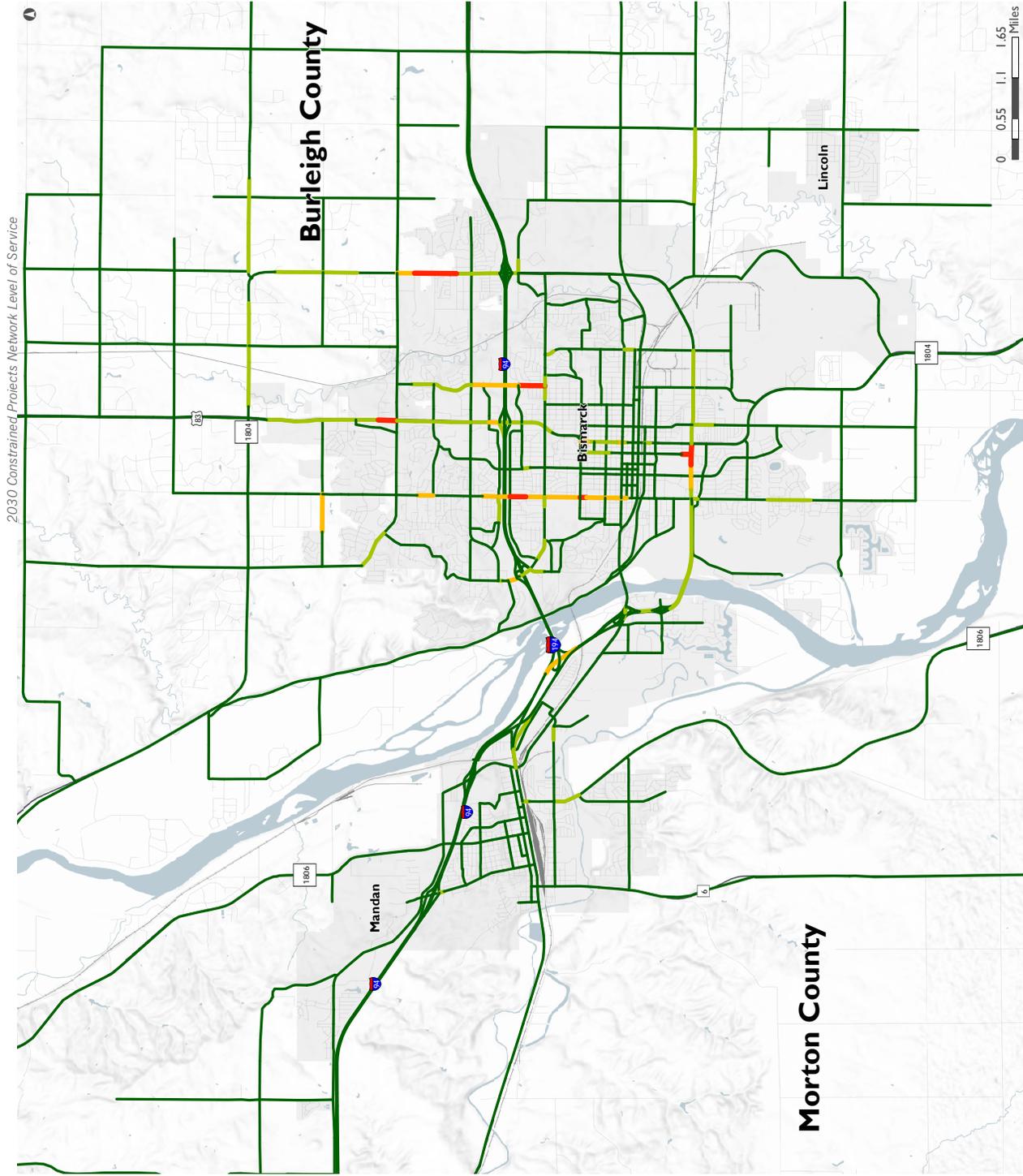
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Long-Range Project List

ID	Location	Termini	Termini	Description	Phase	Cost	Year of Expenditure [YOE]	Program
1	37th Street NW	ND 25	56th Avenue	Construct 2-lane urban section.	Long	\$12,060,000	\$24,431,347	
2	37th Street NW	56th Avenue	ND 1806	Construct 3-lane urban section.	Long	\$27,920,000	\$56,560,797	
3	56th Avenue	Old Red Trail	37th Street	Reconstruct as 3-lane urban section .	Long	\$8,000,000	\$16,206,532	Urban
4	56th Avenue NW	I-94		New interchange.	Long	\$25,000,000	\$50,645,413	Interstate
5	56th Avenue NW	I-94 Business Loop (Main Street)	Old Red Trail	Construct as 3-lane urban section.	Long	\$19,280,000	\$39,057,742	Urban
7	Boundary Road	56th Avenue / I-94 Interchange	32nd Avenue	Construct as 3-lane urban section.	Long	\$13,200,000	\$26,740,778	Urban
10	32nd Avenue W	I-94 Business Loop (Main Street)	Boundary Road (Future)	Construct as 2-lane urban section.	Long	\$12,660,000	\$25,646,837	Urban
11	31st Street	Lohstreter Road	Boundary Road (Future)	Construct as 2-lane urban section.	Long	\$5,940,000	\$12,033,350	Urban
15	Northern Bridge Corridor	38th Street (Mandan)	River Road	Construct as 2-lane rural section. Include new bridge across Heart River. Add signals at McKenzie Drive / Bismarck Expressway ramps and at McKenzie Drive / 40th Avenue.	Long	\$62,450,000	\$126,512,241	
19	Sunset Drive	I-94		Interchange reconstruction.	Long	\$25,000,000	\$50,645,413	Interstate
24	Mandan Avenue	I-94		Interchange reconstruction.	Long	\$25,000,000	\$50,645,413	Interstate
29	McKenzie Road	ND 6	ND 1806	Construct as 2-lane rural section.	Long	\$12,550,000	\$25,423,997	Urban
36	12th Street	Burleigh Avenue	Santa Fe Avenue	Add turn lanes at Santa Fe Avenue and Burleigh Avenue.	Long	\$1,000,000	\$2,025,817	Safety
37	48th Avenue S	University Drive	66th Street	Construct 2-lane rural section and structure improvements at Apple Creek crossing.	Long	\$19,800,000	\$40,111,167	Urban
38	66th Street	48th Avenue S	Lincoln Road	Reconstruct as 2-lane urban section.	Long	\$5,880,000	\$11,911,801	Urban
40	Lincoln Road	Yegen Road / Airway Avenue		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Safety
41	Yegen Road	Lincoln Road	Morrison Avenue	Add 6 new turn lanes in key locations.	Long	\$1,500,000	\$3,038,725	Safety
42	Apple Creek Road	Yegen Road		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Safety
47	66th Street	Highway 10 / Old Main Avenue	Century Avenue	Construct as 3-lane urban section (tied with project for interchange with I-94 at 66th Street).	Long	\$19,920,000	\$40,354,265	Urban
48	Divide Avenue	Bismarck Expressway	66th Street	Reconstruct as 3-lane urban section.	Long	\$15,200,000	\$30,792,411	Urban
51	Hamilton Street / Channel	Divide Avenue	Century Avenue	Construct as 2-lane urban section with grade separation.	Long	\$20,940,000	\$42,420,598	Urban
57	Tyler Parkway	Schafer Road	Burnt Board Drive	Intersection capacity improvement. Add turn lanes and include safety improvements.	Long	\$750,000	\$1,519,362	Urban
61	Burnt Boat Drive	River Road		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Urban
66	57th Avenue	River Road	Tyler Parkway	Construct as 3-lane rural section.	Long	\$10,220,000	\$20,703,845	Urban
67	Burnt Creek Loop South (57th Avenue)	River Road		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Urban
68	Burnt Creek Loop North / River Road	ND 1804		Intersection capacity improvement.	Long	\$2,500,000	\$5,064,541	Regional
69	71st Avenue/ ND 1804	15th Street/Tyler Parkway	State Street	Widen from 2-lane to 4-lane section.	Long	\$10,150,000	\$20,562,038	Regional
70	Tyler Parkway	57th Avenue	ND 1804 / 71st Avenue	Construct as 3-lane urban section.	Long	\$7920,000	\$16,044,467	Urban
74	71st Street	State Street		Intersection capacity improvement.	Long	\$2,200,000	\$4,456,796	Regional
74i	71st Street	State Street		Grade separation.	Long	\$25,000,000	\$50,645,413	Regional
75	State Street	57th Avenue	71st Avenue	Widen to 6-lanes from 57th Avenue to ND 1804 / 71st Avenue.	Long	\$12,600,000	\$25,525,288	Regional
76	57th Avenue	State Street	26th Street	Construct 3-lane urban section.	Long	\$7,680,000	\$15,558,271	Urban
83	Calgary Avenue	DMVW Railroad	Haycreek Road	Construct 2-lane urban section across DMVW RR with grade separation.	Long	\$36,980,000	\$74,914,695	Urban
86	71st Avenue	State Street	Centennial Road	Widen from 2-lane to 3-lane rural section.	Long	\$7,280,000	\$14,747,944	Urban
88	Centennial Road	43rd Avenue	71st Avenue	Widen from 2-lane to 3-lane rural section.	Long	\$7,960,000	\$16,125,499	Urban
90	Century Avenue	Centennial Road	52nd Street	Reconstruct as 5-lane urban section.	Long	\$10,875,000	\$22,030,755	Urban
93	I-94	66th Street		New interchange.	Long	\$25,000,000	\$50,645,413	Interstate
96	43rd Avenue	Roosevelt Drive	52nd Street	Widen from 2-lane to 3-lane urban section.	Long	\$1,960,000	\$3,970,600	Urban
97	66th Street	43rd Avenue	71st Avenue	Reconstruct/New Construct as a 3-lane urban section.	Long	\$15,600,000	\$31,602,738	Urban
98	71st Avenue	Centennial Road	66th Street	Reconstruct as a 3-lane urban section.	Long	\$16,160,000	\$32,737,195	Urban

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Constrained Projects (Short-term)

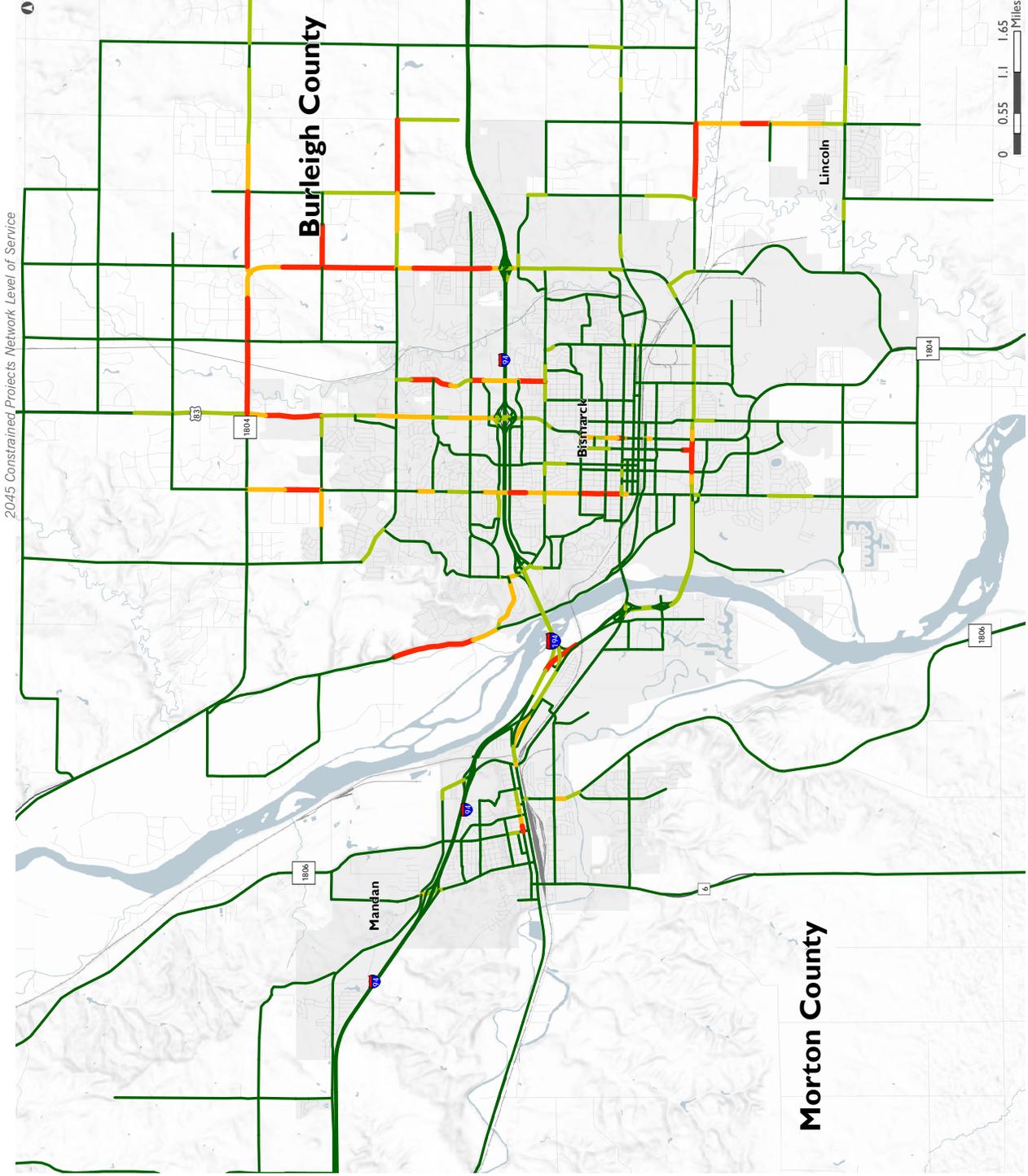


Level of Service 2030



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Constrained Projects (All Years)



Level of Service 2045

- LOS 2045
- F
 - E
 - D
 - A-C



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Public Input Meeting #3

January, 2020

Bismarck-Mandan

Metropolitan Transportation Plan

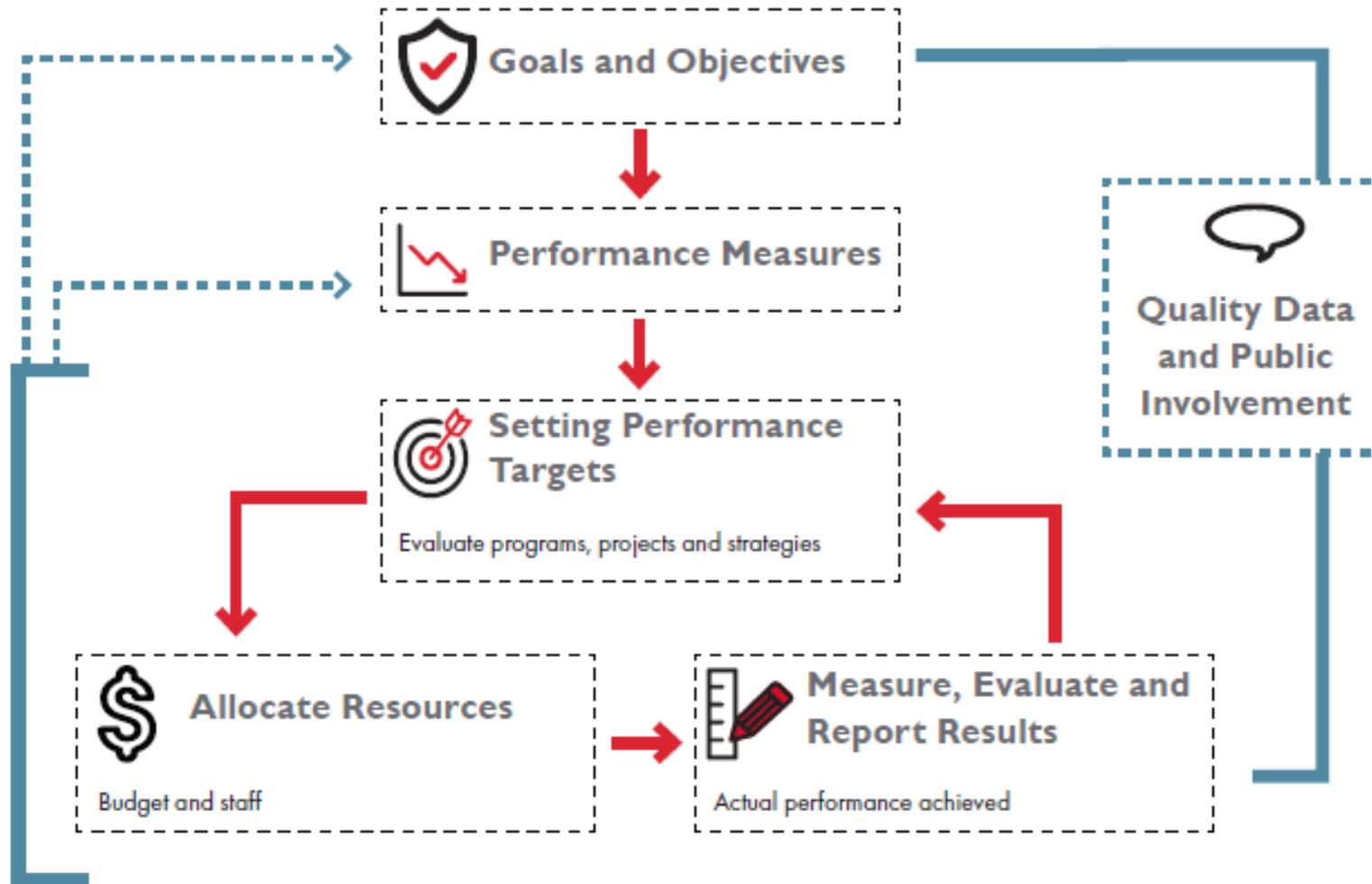
THE PROCESS



MTP Development Process



Performance Based Planning



Goal I: Safety and Security

NDDOT Safety Performance Measure	NDDOT 5-Year Avg.	2020 NDDOT 5-Year Average Target
Number of Motorized Fatalities	120.0	108.3
*Rate of Fatalities per 100 Million VMT	1.2	1.106
Number of Motorized Serious Injuries	458.6	413.9
*Rate of Serious Injuries per 100 Million VMT	4.59	4.23
Number of Non-Motorized Fatalities and Serious Injuries	36.2	33.4

Objectives

- » 1A: Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes. This may include implementing improvements that are both proven Crash Reduction Measures at locations with an existing crash history or at locations without an existing crash history as a proactive improvement.
- » 1B: Provide a safe and secure environment for transit system riders.
- » 1C: Enhance transportation security and reliability by developing strategies to address critical transportation assets identified that will facilitate the rapid movement of first responders and support incident management during times of emergency.
- » 1D: Support North Dakota's State Highway Safety Plan (SHSP) "Vision Zero" as a goal to move toward zero fatal resultant crashes.

MPO Safety Performance Measure	MPO 5-Year Avg.	Desired Target
Number of Motorized Fatalities	4.6	
Rate of Fatalities per 100 Million VMT	0.642	
Number of Motorized Serious Injuries	33.6	
Rate of Serious Injuries per 100 Million VMT	4.687	
Number of Non-Motorized Fatalities and Serious Injuries	5.2	



Goal 2: Infrastructure Condition

NDDOT Conditions Performance Measure	Existing Condition	Target Condition
Interstate Good	80.2%	75.6%
Interstate Poor	0.1%	3%
Non-Interstate Good	62.8%	58.3%
Non-Interstate Poor	0.3%	3%
NDDOT Structures Good	64.44%	60%
NDDOT Structures Poor	3.67%	4%

MPO Conditions Performance Measure	Existing Condition	Target Condition
Bismarck Unsatisfactory/Degraded Pavement	16%	↓
Mandan Unsatisfactory/Degraded Pavement	16%	
Structures Good	77.8%	→
Structures Poor	5.6%	

Objectives

- » 2A: Maintain pavement quality and bridges at acceptable levels.
- » 2B: Maintain street signage and visibility.
- » 2C: Maintain the current bicycle and pedestrian system.
- » 2D: Maintain transit fleet, equipment, and facilities in a state of good repair as identified within the Transit Development Plan (TDP).
- » 2E: Maintain traffic signals, lighting, and other transportation ITS assets at acceptable levels.
- » 2F: All MPO participating jurisdictions should cost participate in the data collection of pavement system condition on a 5-year cycle.



Goal 3: Congestion Reduction

MPO Congestion Performance Measure	Existing Condition	Target Condition
Burleigh County VMT per Capita	7,800	↓
Morton County VMT per Capita	14,500	
MPO VHT per Capita	0.47 Hours 28.2 Minutes	↓

Objectives

- » 3A: Implement projects and programs that will reduce travel delays on corridors that have an existing or proposed Level of Service (LOS) D or worse, to a LOS C or better after the improvement is made.
- » 3B: Provide and maintain corridors functionally classified as minor arterials and above that facilitate longer-distance travel within the region.
- » 3C: Improve the continuity of the multimodal systems for pedestrians, cyclists, or transit riders; through improved network connections and reduction of system gaps.
- » 3D: Support future development that would result in reduced motor vehicle trips.



Goal 4: System Reliability

NDDOT Reliability Performance Measure	Existing Condition	Target
Travel Time Reliability – Non-Interstate National Highway System	91.6%	85%
Travel Time Reliability – Interstate	99.4%	85%
Freight Reliability Index	1.15	3.0

Objectives

- » 4A: Enhance the efficient and safe movement of freight and goods including investments in congestion reduction and safety improvements on the critical urban freight corridors and other designated freight corridors.
- » 4B: Support transportation investments as identified in the most recent Bismarck-Mandan MPO Regional Freight Study.
- » 4C: Promote transportation investments that enhance the local economy.



Goal 5: Alternative Transportation Modes

MPO Congestion Performance Measure	Existing Condition	Target Condition
Single-Occupant Vehicle Use	82.8%	↓
Fixed-Route Transit Ridership	125,760	↑
Miles of Bicycle Facilities	Bismarck: 61 Miles Mandan: 18 Miles	↑

Objectives

- » 5A: Consider coordination with transit agencies to improve transit route efficiency, system productivity, and community awareness by implementing transportation investments that support the transit system.
- » 5B: Improve transit and rideshare opportunities for travelers commuting into Bismarck-Mandan from outside the urban area.
- » 5C: Improve bicycle and pedestrian system accessibility and connectivity opportunities while maintaining safety by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Bicycle and Pedestrian Plan.
- » 5D: Improve the awareness and safety of bicycling, and educate both bicyclists and motorists on rules and responsibilities.



Performance Based Plan

Federal Performance Measure Categories	REQUIRED FOR NDDOT STATEWIDE TRANSPORTATION PLAN	REQUIRED FOR MPO MTP – ARRIVE 2045	ARRIVE 2045 ADDITIONAL LOCAL PERFORMANCE MEASURES
PAVEMENT CONDITION ⁽¹⁾	→ ✓	→ ✓	→ ✓
PERFORMANCE ⁽¹⁾	→ ✓	→ ✓	→ ✓
BRIDGE CONDITION ⁽²⁾	→ ✓	→ ✓	→ ✓
SAFETY – FATALITIES & SERIOUS INJURY ⁽³⁾	→ ✓	→ ✓	→ ✓
TRAFFIC CONGESTION ⁽⁵⁾	→ ✓	→ OPTIONAL	→ ✓
ON-ROAD MOBILE SOURCE EMISSIONS ⁽⁵⁾	→ ✓	→ OPTIONAL	→ NOT INCLUDED
FREIGHT MOVEMENT ⁽⁴⁾	→ ✓	→ ✓	→ NOT INCLUDED

» Compliant with FAST Act

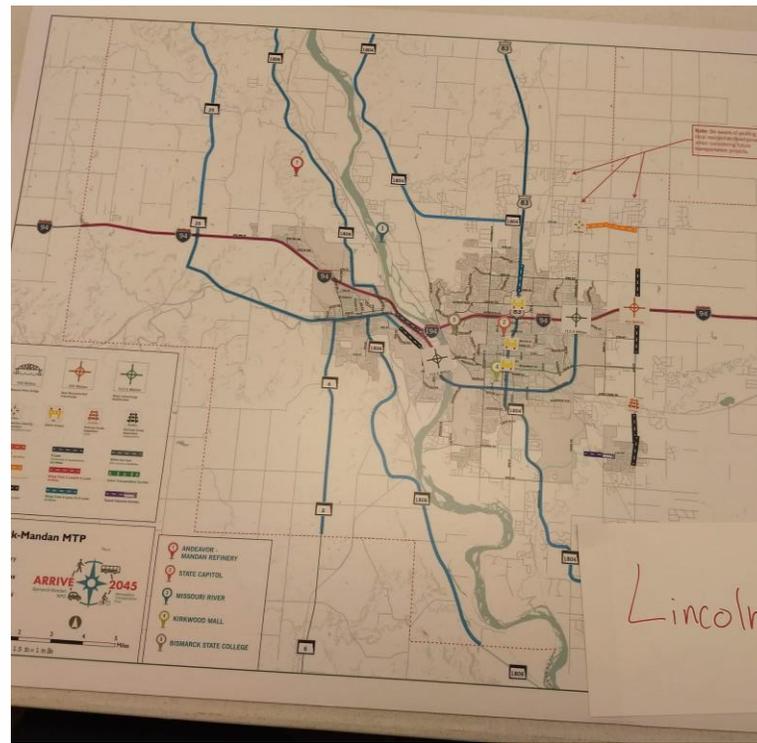
» Consistent with NDDOT Performance Measures



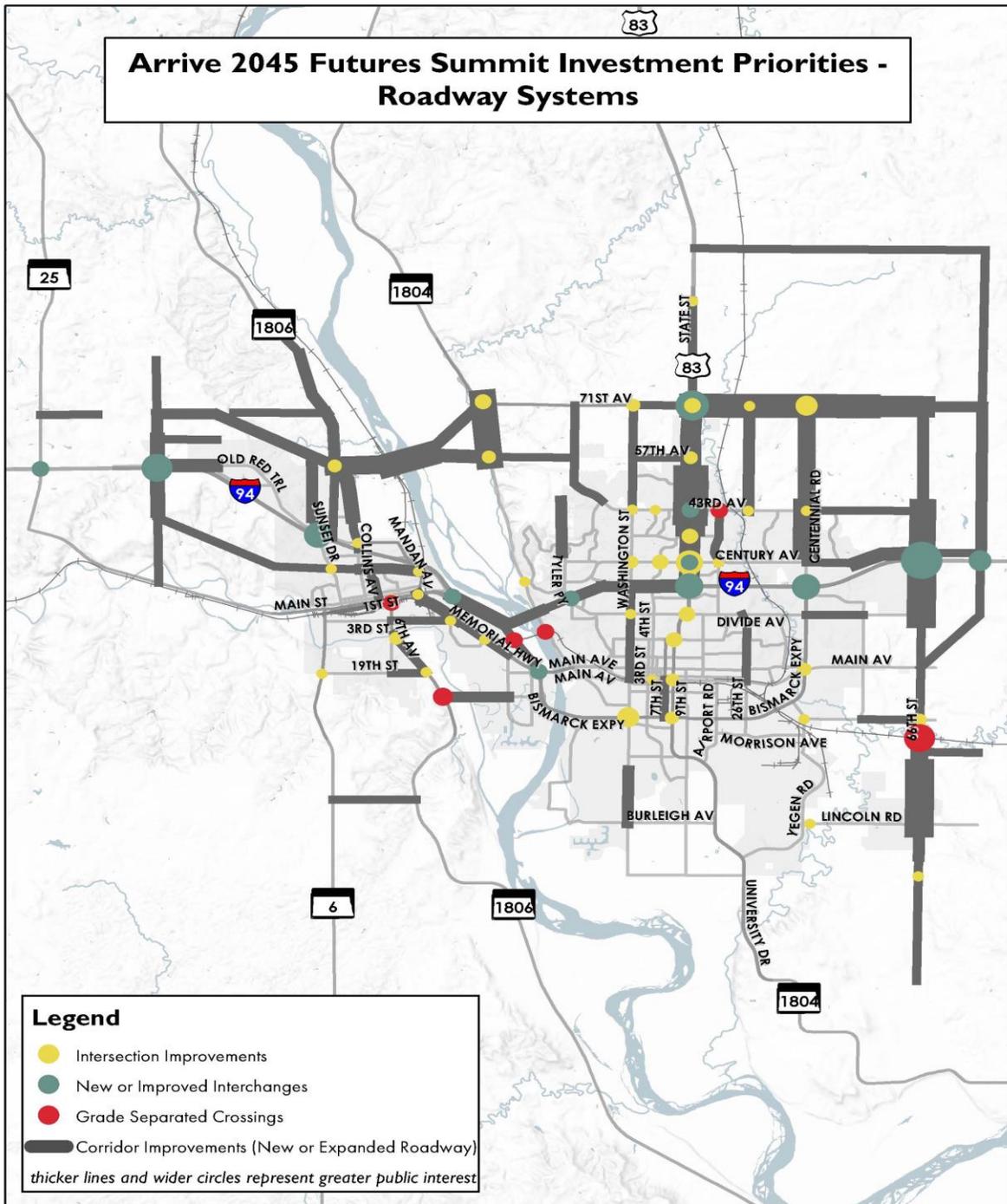
Public Engagement Overview

- » Round #1 – Futures Summit
 - » Understand issues/needs
- » Round #2 – Prioritize Projects
 - » Select high priority projects
- » Smart Mobility Workshop

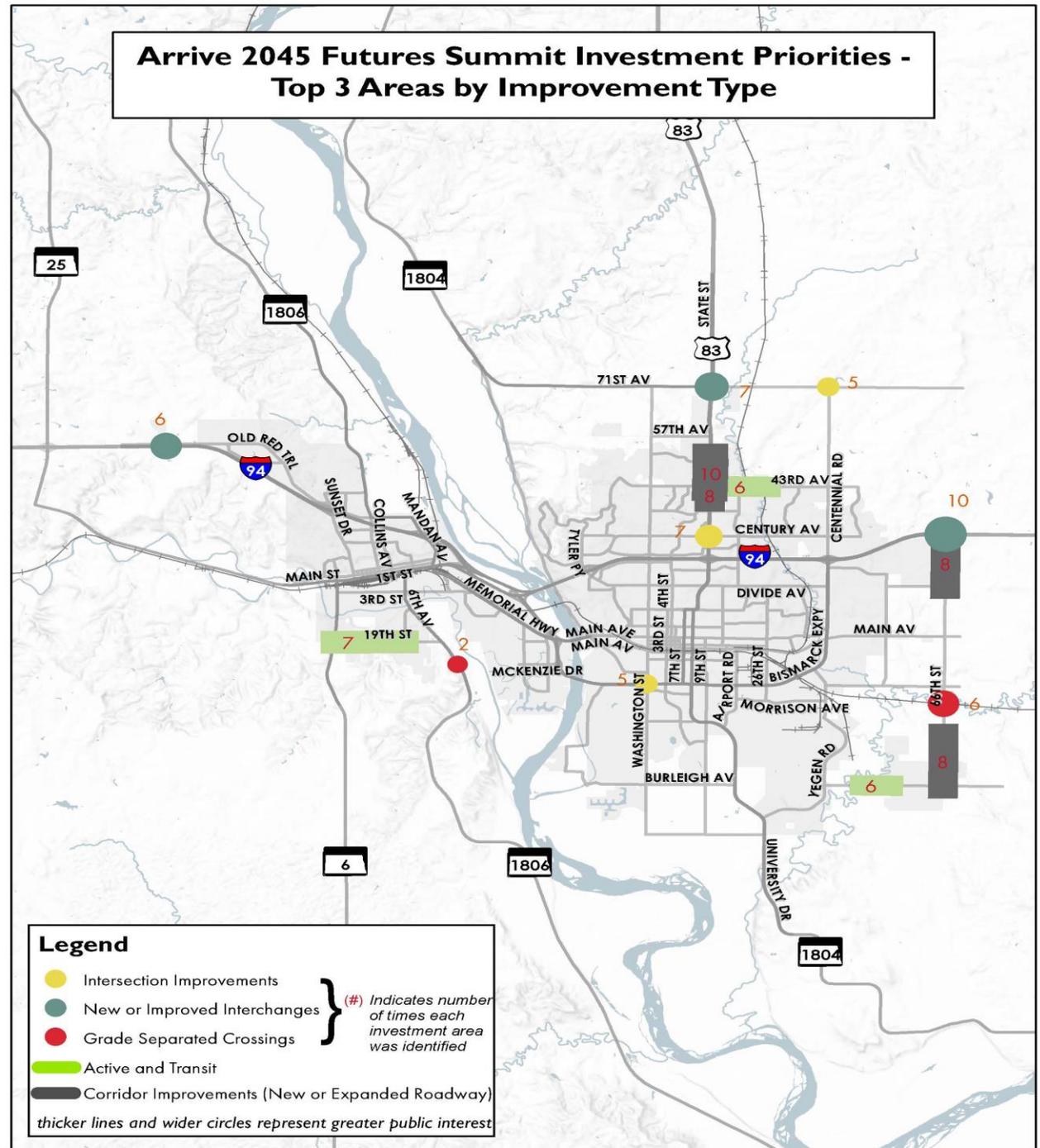
PIM# 1 - Futures Summit Mapping



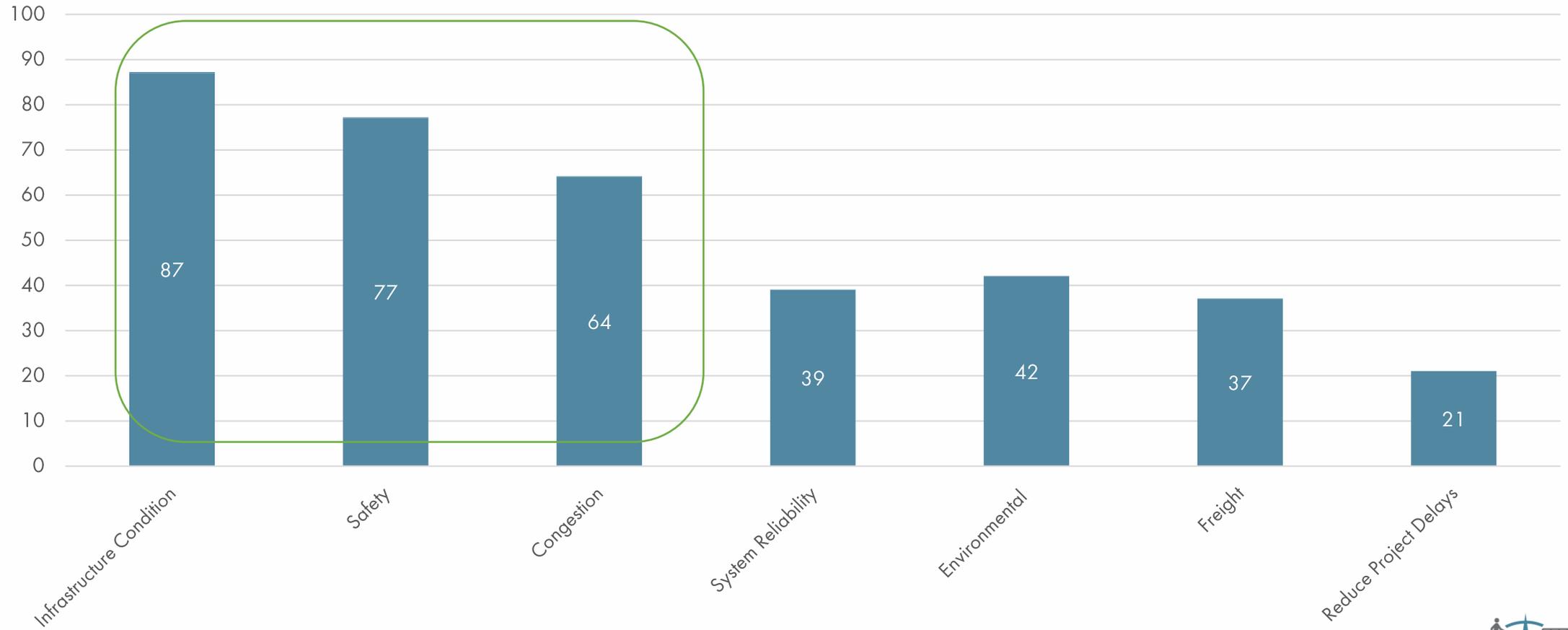
Arrive 2045 Futures Summit Investment Priorities - Roadway Systems



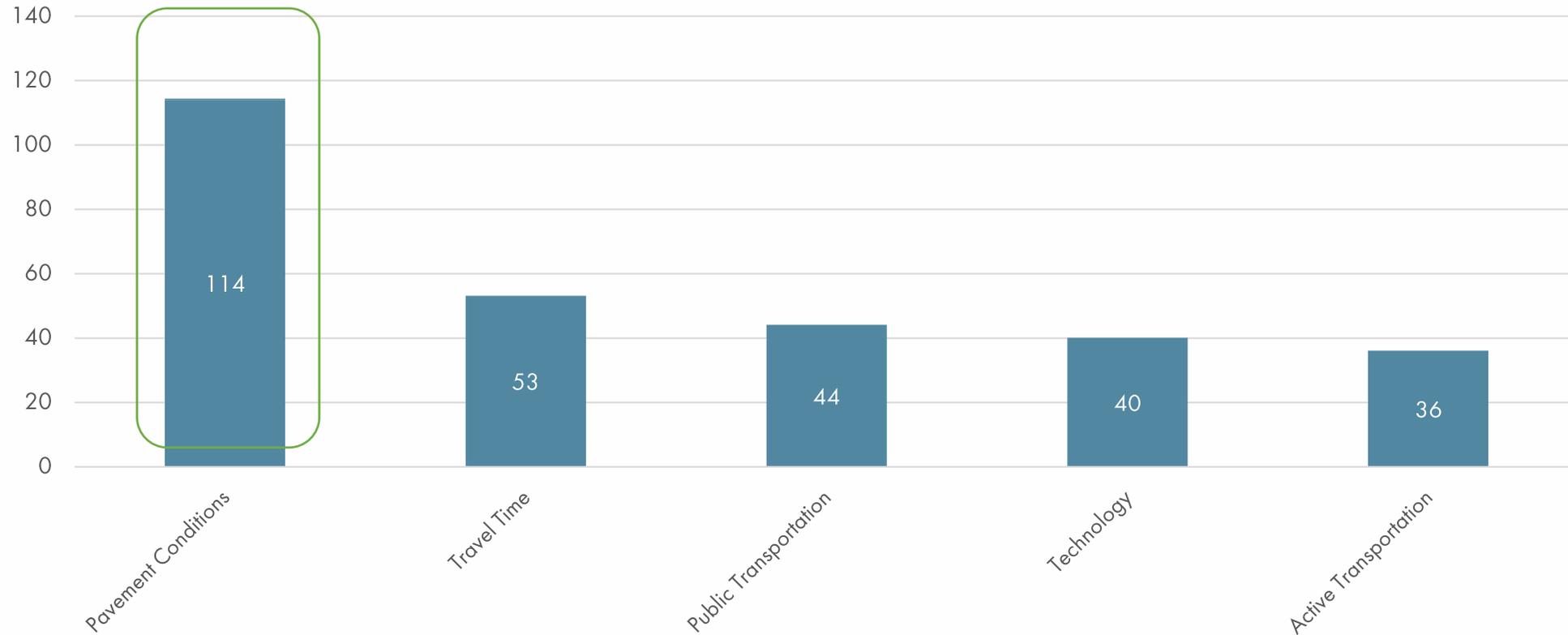
Arrive 2045 Futures Summit Investment Priorities - Top 3 Areas by Improvement Type



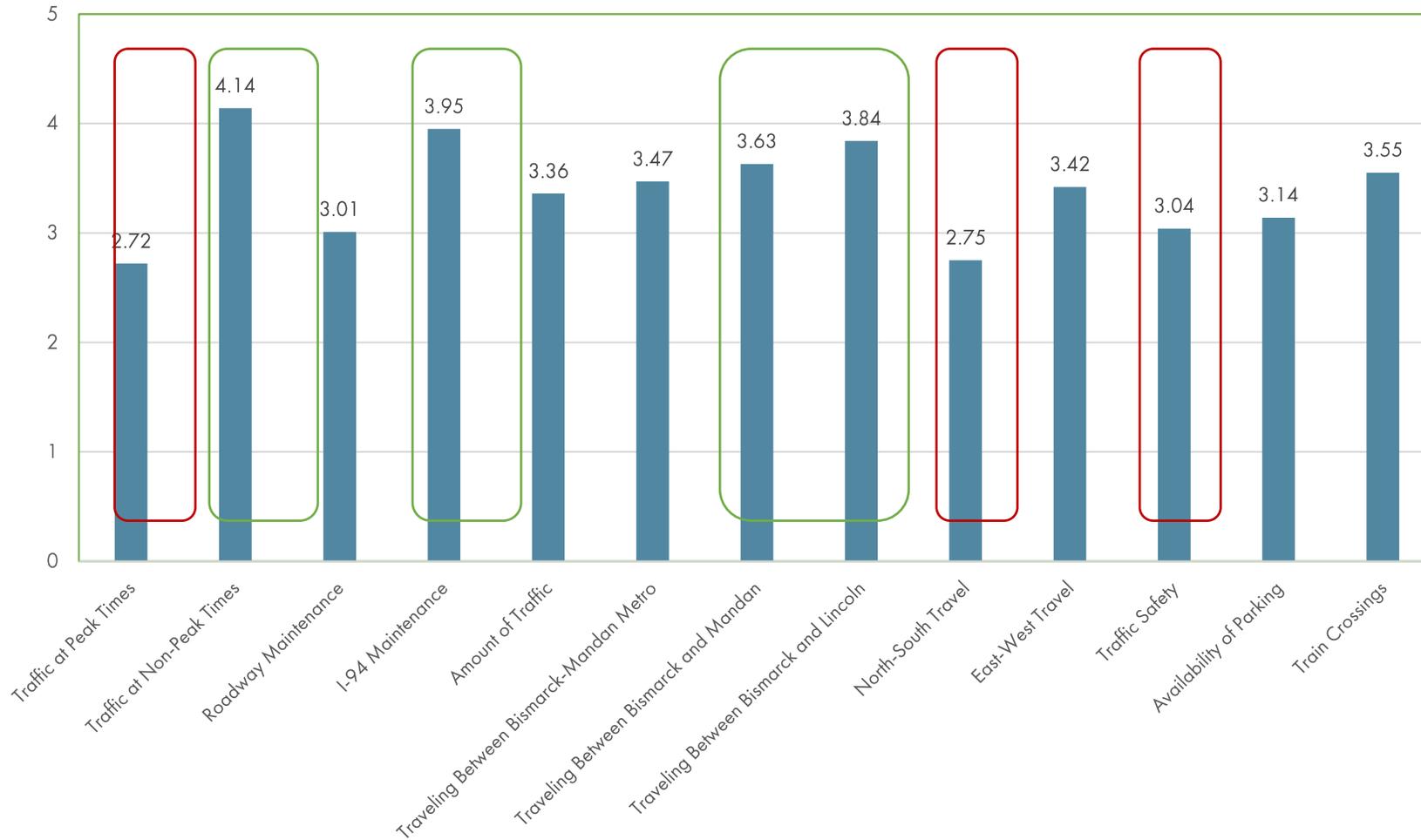
Goal Prioritization



Performance Areas

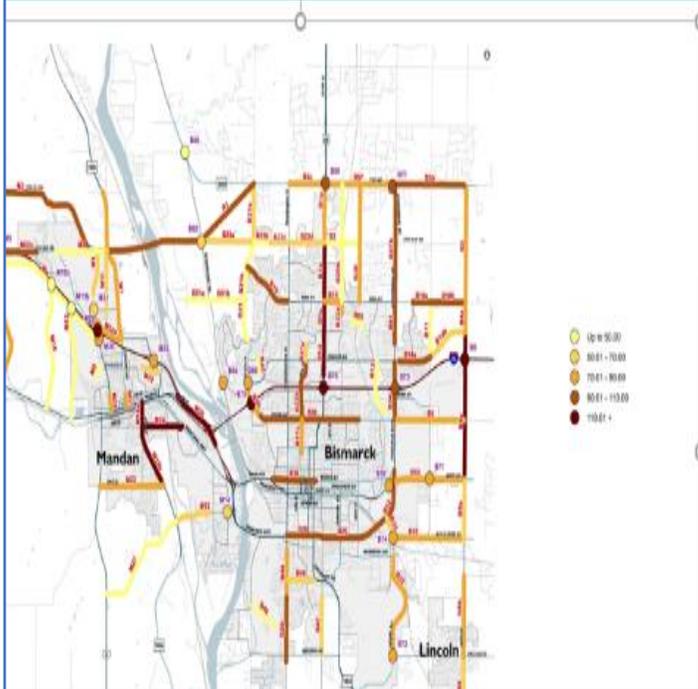


Transportation Survey: Rating Current Issues



PIM #2 - Project Priorities

Project Priorities



» You Chose!

» Select ten (10) priority projects

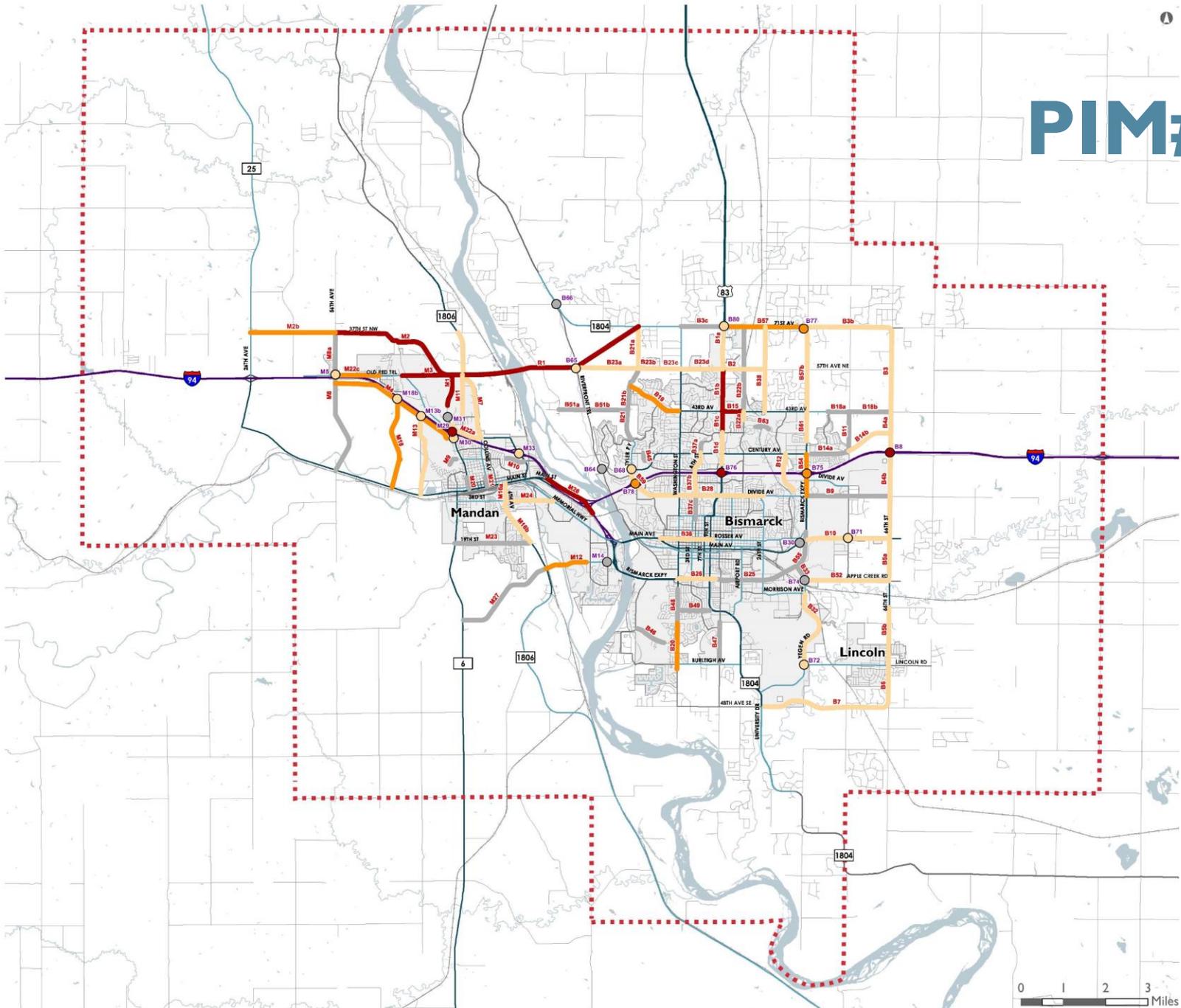
- Big Three (Red)
- Another Seven (Blue)



PIM#2 Recap

Public Input Score

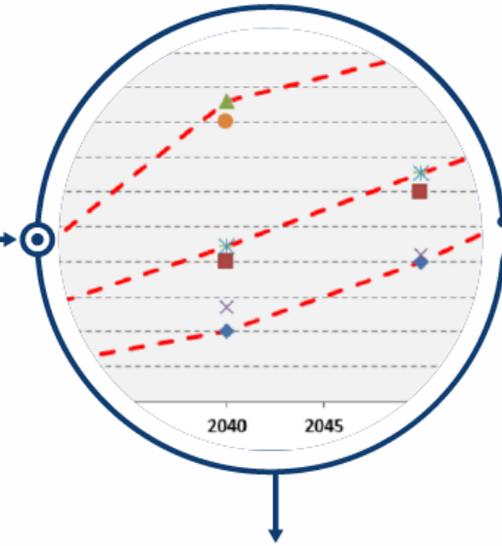
- Public Input Scores:
- 0
 - 1 - 5
 - 6 - 10
 - 10+
- Study Area Boundary



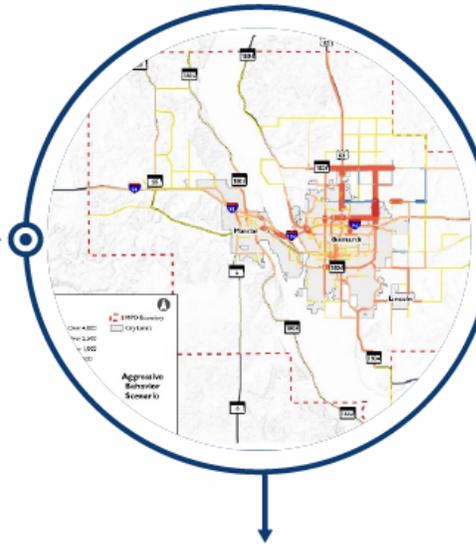
CAV Workshop



Background
and Policy



Research and
Projections



Scenario Planning in
Bismarck-Mandan



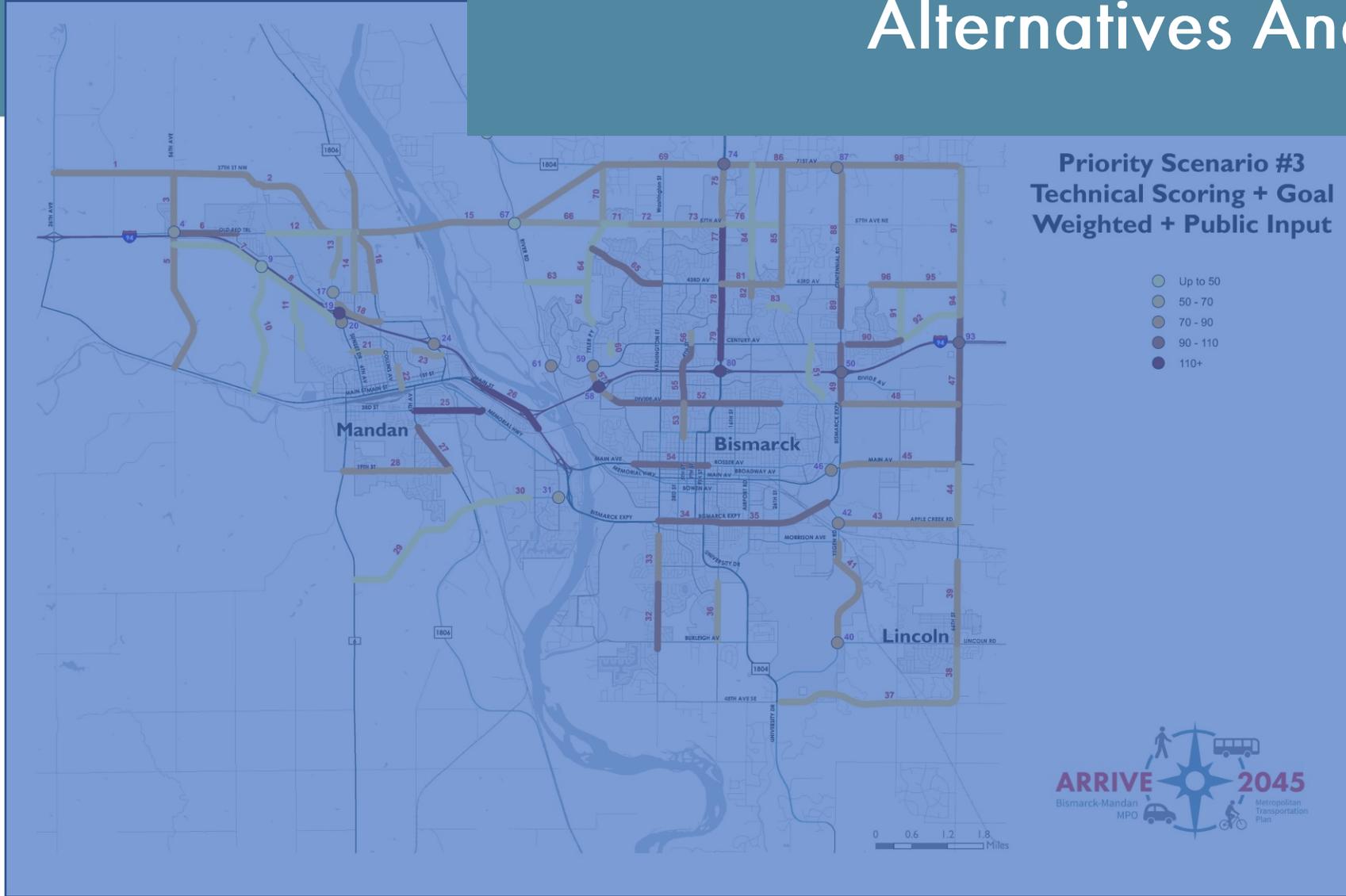
Scenario
Workshop

Key Takeaway

- » Very Contrasting Views of the Future
- » North Dakota versus National Projections
- » Planning Becomes Exponentially More Important Each Year

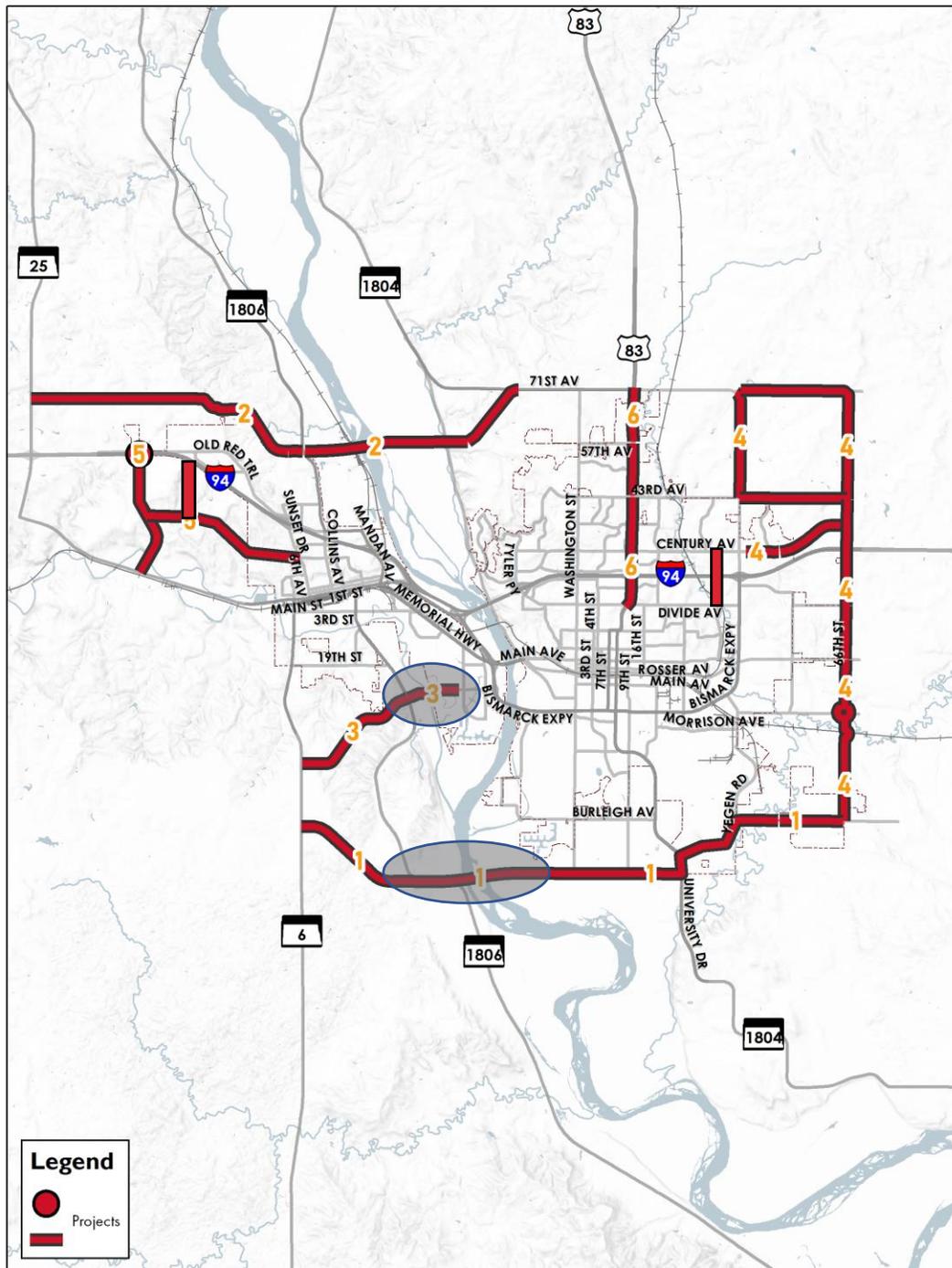


Alternatives Analysis



Macro Analysis

- » Ten concept clusters were independently modeled.
- » Summary of impacts compared against the 2045 Conditions.
- » Assisted in Shortlisting Larger Project Needs



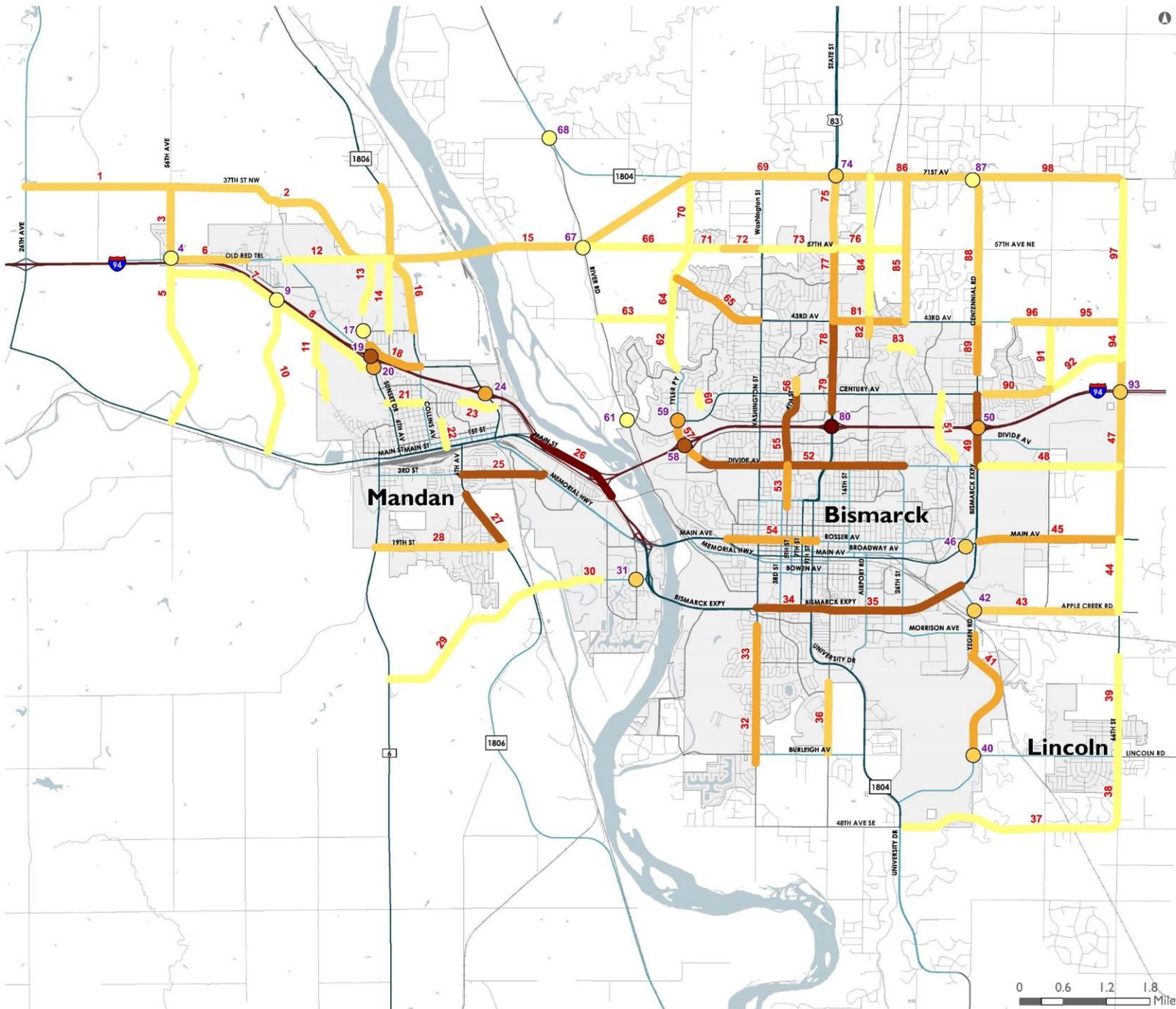
Goal Weighting

Prioritized Goal Results

Table 2.3: Prioritized Goals

Arrive 2045 Goals and Objectives	Total Votes	Goal Ranking	Prioritization Weight
Goal 1: Safety & Security	87	#2	4.5
Goal 2: Infrastructure Condition	96	#1	5
Goal 3: Congestion Reduction	70	#3	3.6
Goal 4: System Reliability for Freight Movement & Economic Vitality	44	#4	2.3
Goal 5: Alternative Transportation Modes to Automobile Travel	41	#6	2.1
Goal 6: Environmental Sustainability	43	#5	2.2
Goal 7: Reduced Project Delays	23	#7	1.2

- » Translate public and technical input
- » Allow for “scoring” to reflect both technical and public desires

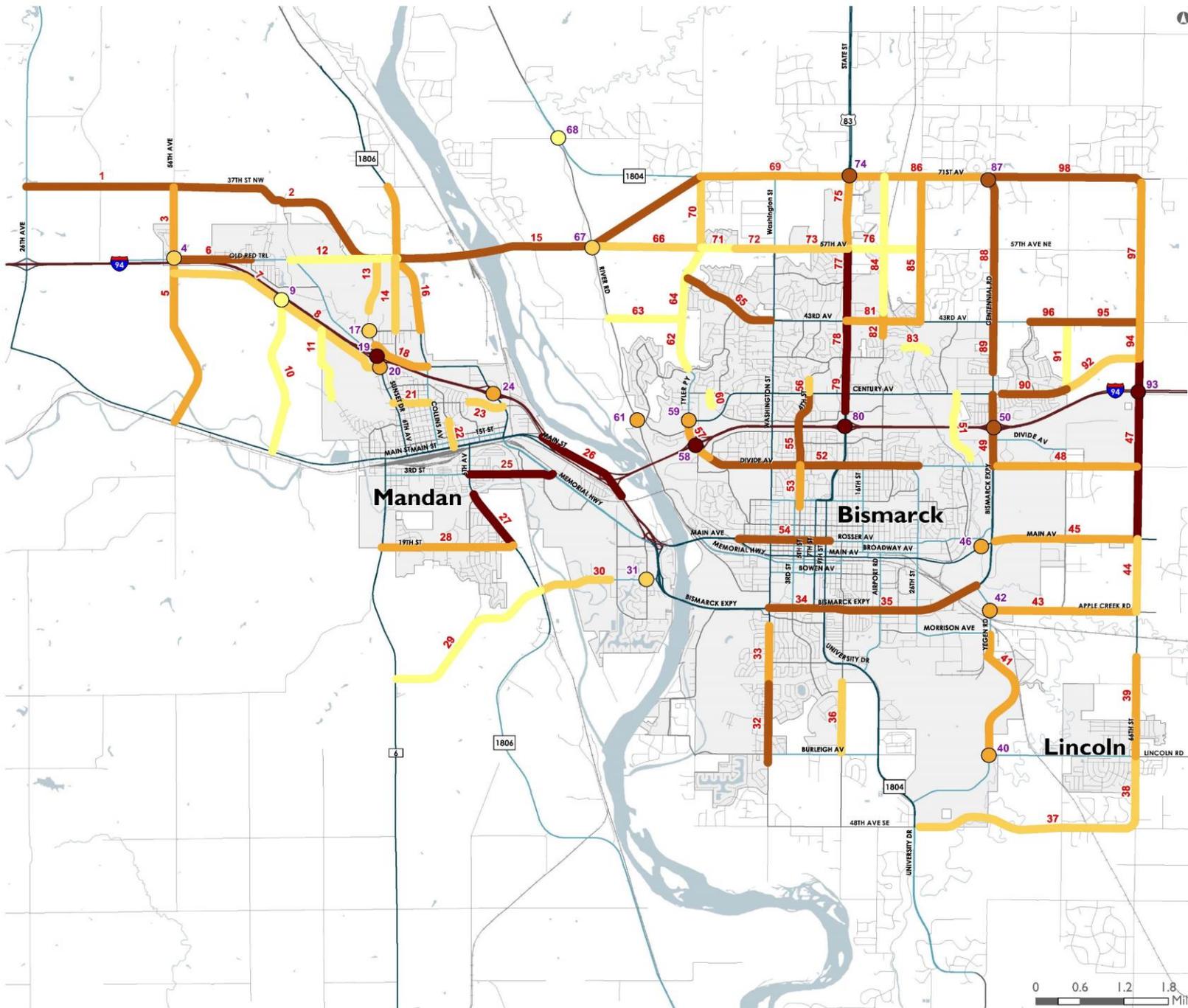


» *Raw Technical Scoring*

» Raw Technical Score
+

» Not Weighted for goal
scoring metrics





- » Preferred Scenario
- » Weighted Technical Score
- +
- » Public Priorities Added
- +
- » Added weight more regionally significant projects

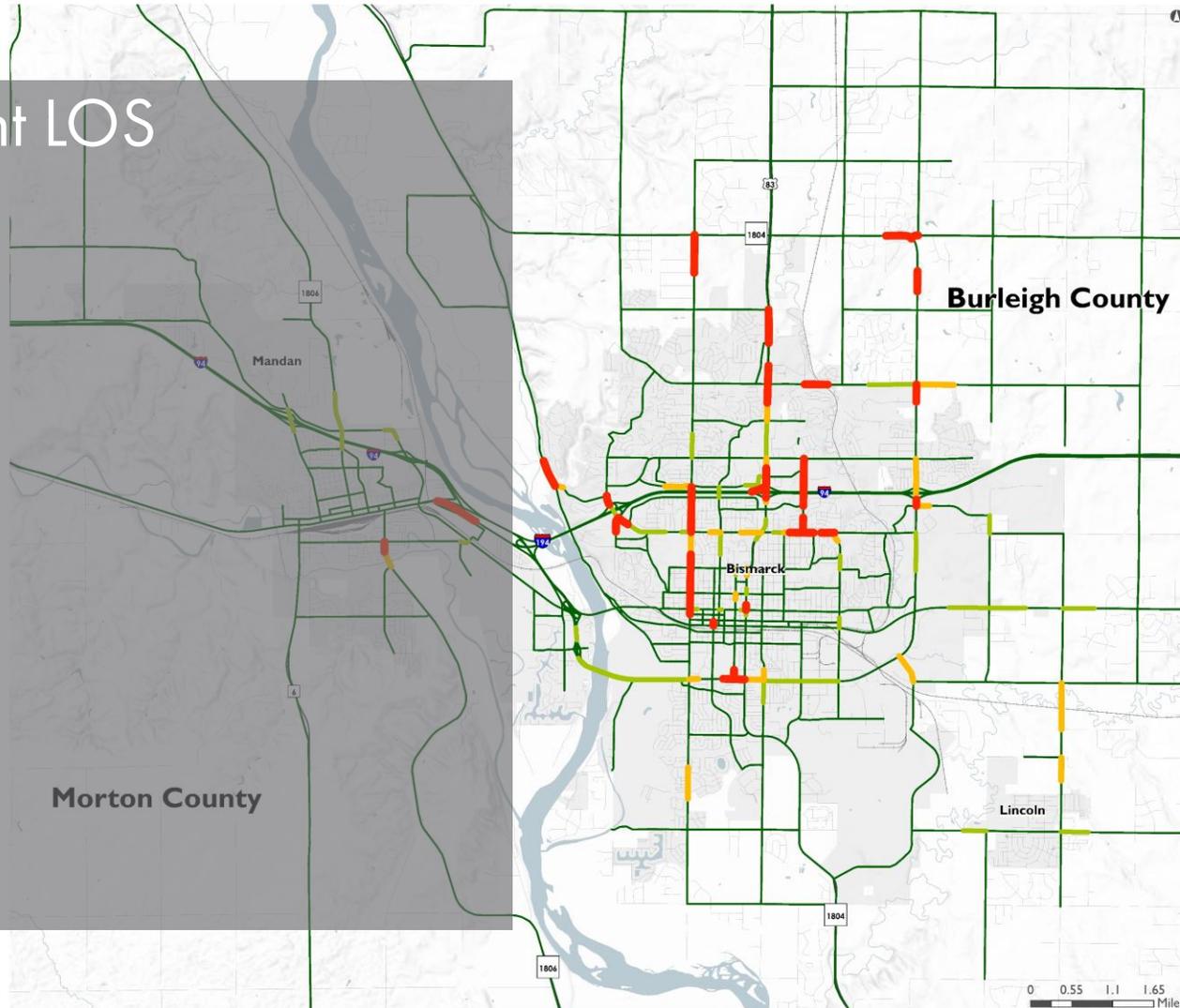


Interstate Analysis

» 7 Locations with Deficient LOS

» 6 Projects in Top 12%

» 9 Projects in top 50%

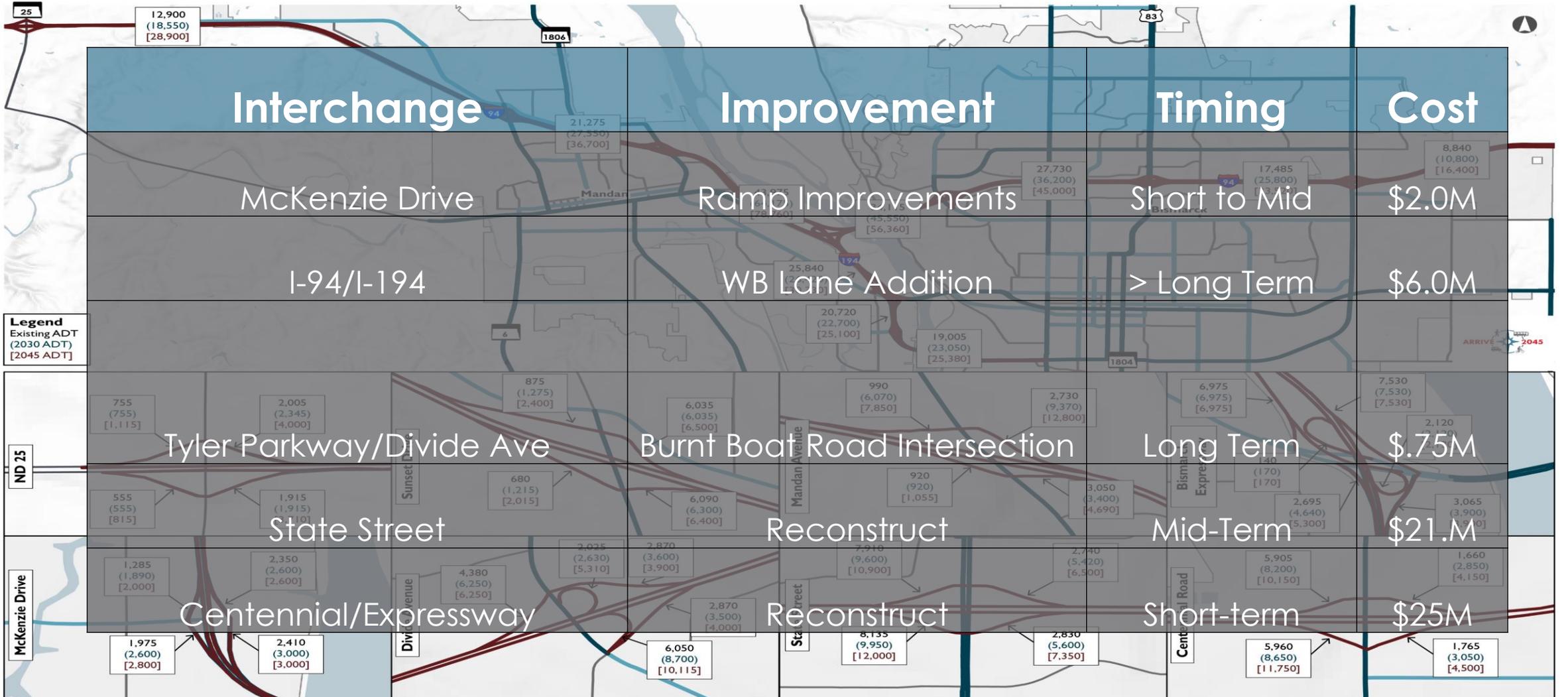


Level of Service 2045

- Level of Service
- LOS F
- LOS E
- LOS D
- LOS A-C



Implementation Plan

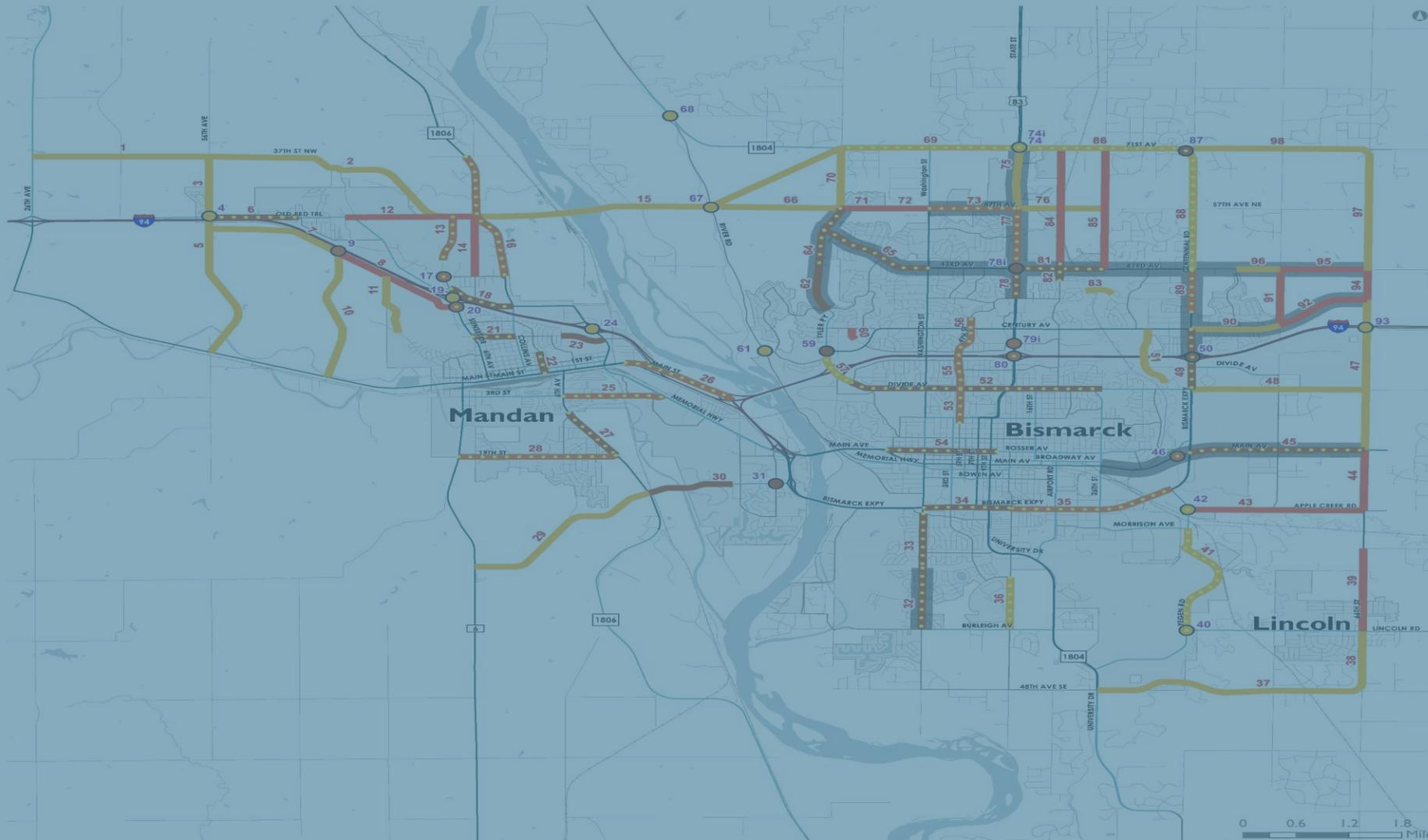


US 83 Evaluation & Summary

Alternative	Benefits (\$)	Benefits (%)	Deficient	Costs	Costs (%)
6-Lane At Grade	\$523.3M	Best	36% LOS "E"	\$64.3M	Best
6-Lane with Interstate Avenue Grade Separation	\$495.2M	-5%	32% LOS "E"	\$89.3M	+39%
Expressway	\$289.5M	-45%	0% LOS "E"	\$145.1M	+125%

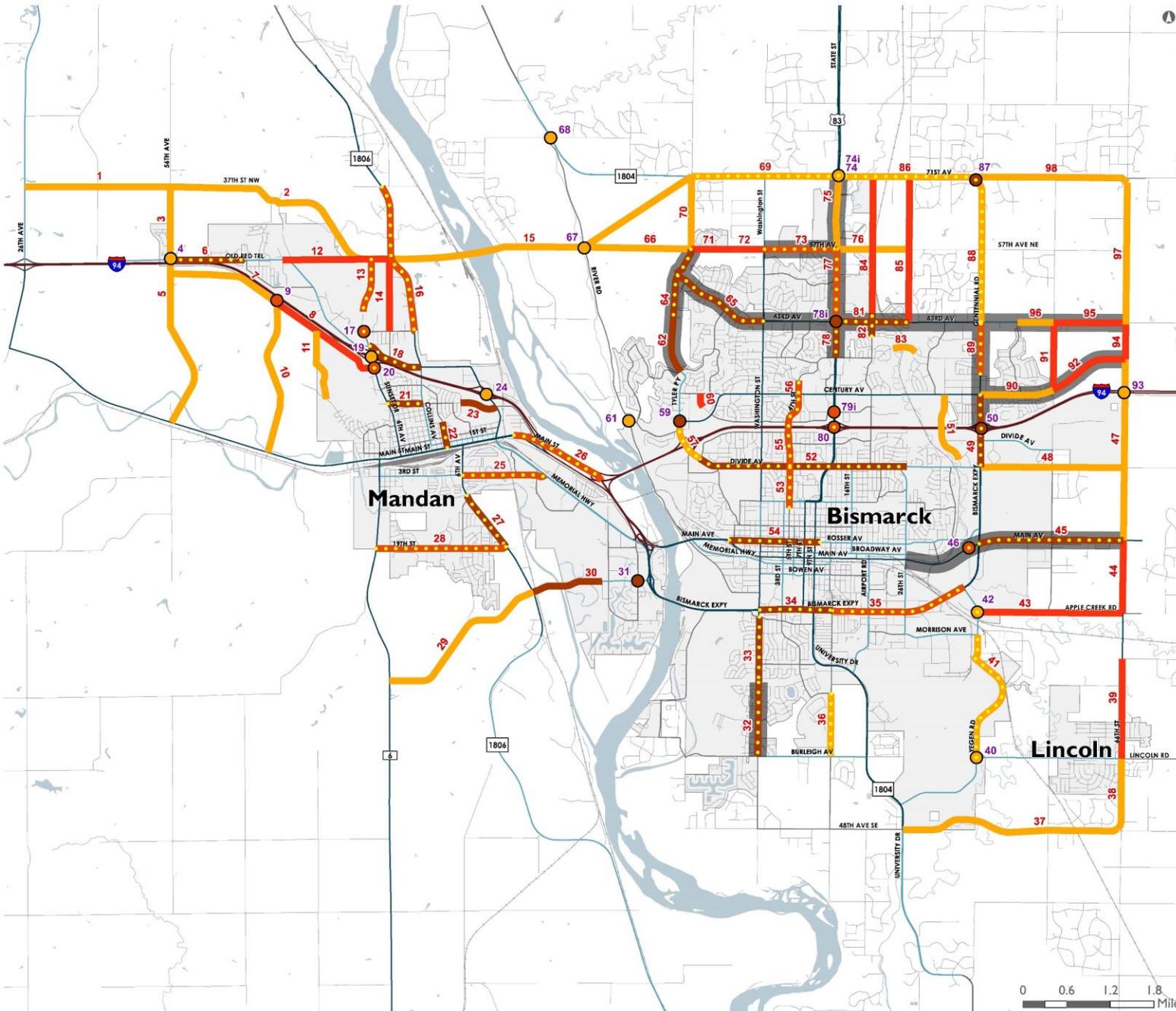
- » Study Did Not Quantify Environmental, Social, or Business Impacts
- » Analysis Used Only Macro-Modeling Tools

Financial Plan & Project Prioritization



Project Phasing

- Short Range Projects
- Mid Range Projects
- Long Range Projects
- Short Range Projects for Constrained Plan
- Mid Range Projects for Constrained Plan
- Long Range Projects for Constrained Plan
- Bismarck Sales Tax Eligible Corridors



Project Phasing

- Short Range Projects
- Mid Range Projects
- Long Range Projects
- Short Range Projects for Constrained Plan
- Mid Range Projects for Constrained Plan
- Long Range Projects for Constrained Plan
- Bismarck Sales Tax Eligible Corridors



Financial Plan – Methods & Assumptions

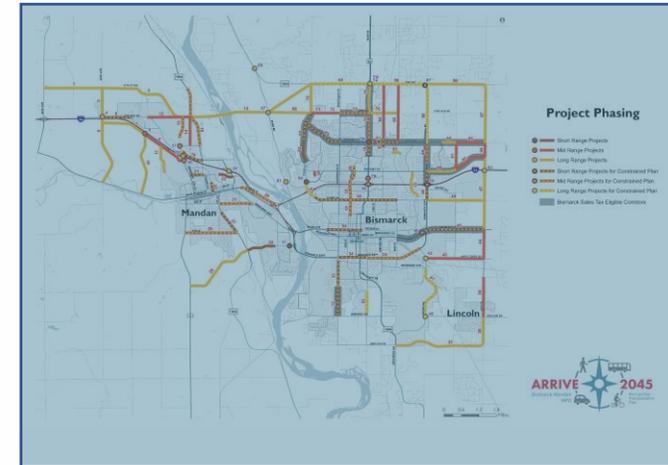
» Revenue Estimates

- 2015- 2022 (Existing + Committed)

» Operations & Maintenance (O&M)

» Preservation & Maintenance (P&M) vs. Capacity/Expansion

- Evaluation of 2011 – 2022 TIP/STIP



Financial Analysis – Short Range



- » **Urban Program**
 - » Requires \$16M to \$19M in Bismarck Sales Tax to balance program
 - » All Bismarck projects are sales tax eligible; sales tax benefit to urban system not fully shown in MTP financial analysis
- » **Regional**
 - » Program is balanced; however P&M revenues needed to support low cost improvements on State Street
 - » Assumes constraint of “low cost” improvements on State Street;
 - » High cost improvements on State Street remain “illustrative
- » **Interstate Program**
 - » Generally balanced

Financial Analysis – Mid & Long Range

Mid Range

- » **Urban Program**
 - » Program slightly out of balance.
- » **Regional**
 - » Program is balanced; however requires use of P&M revenue to support program.
 - » Assumes constraint of “low cost” improvements on State Street;
 - » High cost improvements on State Street remain “illustrative
- » **Interstate Program**
 - » Requires more capacity investment to support reconstruction of Exit 159; program still balanced.

Long Range

- » **Urban Program**
 - » Program balanced
- » **Regional**
 - » Program is balanced; however requires use of P&M revenue to support program.
 - » Assumes constraint of “low cost” improvements on State Street;
 - » High cost improvements on State Street remain “illustrative
- » **Interstate Program**
 - » No capacity programmed in long range (e.g. 66th Street not included in constrained MTP)

Capacity vs. Expansion - Historic vs. Projected

Historic Investment by Major Program

	Urban	Regional	Interstate
Capacity	82.0%	20.9%	47.4%
P&M	18.0%	79.1%	52.6%

Arrive 2045 Investment by Major Program

	Urban	Regional	Interstate
Capacity	85.2%	49.5%	47.7%
P&M	14.8%	50.5%	52.3%

- » Arrive 2045 generally follows historic funding splits between capacity vs. P&M
- » Only exception is Regional program which is the result of addressing existing and projected needs along State Street
 - » Regional Program assumptions heavily discounted in short range to account for Memorial Highway project

Local Approvals & Hearings Schedule

Bismarck City Planning and Zoning*	Feb 26 (5:00 pm)	Tom Baker Meeting Rm City/ County Office Bldg 221 N 5 th St, Bismarck, ND
Bismarck City Commission*	Mar 10 (5:15 pm)	
Burleigh County Planning and Zoning*	Mar 11 (5:15 pm)	Tom Baker Meeting Rm City/ County Office Bldg 221 N 5 th St, Bismarck, ND
Burleigh County Commission	Mar 16 (5:00 pm)	
Mandan City Planning and Zoning*	Feb 24 (5:30 pm)	Commission Room Mandan City Hall 205 2 nd Ave NW, Mandan, ND
Mandan City Commission	Mar 3 (5:30 pm)	
Morton County Planning and Zoning *	Feb 27 (5:30 pm)	Commission Room Morton Cty Courthouse 210 2 nd Ave NW, Mandan, ND
Morton County Commission	Mar 12 (5:30 pm)	
Lincoln Planning and Zoning*	Feb 25 (7:00 pm)	Lincoln City Hall 74 Santee Road Lincoln, ND
Lincoln City Council	Mar 5 (7:00 pm)	

* Public Hearing



Comments & Contacts

Project Contacts

Wade Kline, KLJ

Wade.kline@kljeng.com

701.271.5009

Rachel Drewlow, MPO

rdrewlow@bismarcknd.gov

701.355-1852

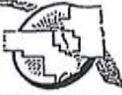
*Comments due by February 24th
2020*

More Information:

www.arrive2045.com



Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Lincoln City Hall</i>	Meeting Type <i>PTM # 3</i>	Meeting Date <i>1-22-2020</i>
Project Number <i>Arrive 2045 (2020-2045 MTP)</i>	PCN	
Project Description		

Name (Please print) <i>Brandon + Cammie Schock</i>		Title/Representing	
Address <i>2959 Majestic St</i>			
City <i>Lincoln</i>	State <i>ND</i>	Zip code <i>58504</i>	Email <i>4719553@gmail.com</i>

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
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Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Lincoln City Hall</i>	Meeting Type <i>PIM # 3</i>	Meeting Date <i>1-22-2020</i>
Project Number <i>Arrive 2045 (2020 - 2045 MTP)</i>		PCN
Project Description		

Name (Please print) <i>WAYNE ZACHOR</i>		Title/Representing <i>NDDOT - LGD</i>	
Address			
City	State	Zip code	Email

Name (Please print) <i>Gerard J Wise</i>		Title/Representing <i>Mayor</i>	
Address			
City	State	Zip code	Email

Name (Please print) <i>Manal Massajli</i>		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print) <i>Wale Khe</i>		Title/Representing <i>KLI</i>	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <u>Mandan City Hall</u>	Meeting Type <u>PI #3</u>	Meeting Date <u>1/23/2020</u>
Project Number <u>Amvc 2045 MTP</u>	PCN	
Project Description		

Name (Please print) <u>Rachel Drewlow</u>		Title/Representing <u>MPO</u>	
Address			
City	State	Zip code	Email

Name (Please print) <u>BRAD PFEIFER</u>		Title/Representing <u>HOUSTON ENG.</u>	
Address <u>3712 LOCKPORT ST.</u>			
City <u>BISMARCK</u>	State <u>ND</u>	Zip code <u>58503</u>	Email <u>bpfeifer@houstoneng.com</u>

Name (Please print) <u>Nickolas Cullen</u>		Title/Representing <u>Houston Engineering</u>	
Address <u>3712 Lockport St</u>			
City <u>Bismarck</u>	State <u>ND</u>	Zip code <u>58503</u>	Email <u>ncullen@houstoneng.com</u>

Name (Please print) <u>Kim Fetting</u>		Title/Representing <u>City of Mandan</u>	
Address <u>205 2nd Ave NW</u>			
City <u>mandan</u>	State <u>ND</u>	Zip code <u>58554</u>	Email <u>kfetting@cityofmandan.com</u>

Name (Please print) <u>Ellen Huber</u>		Title/Representing <u>City of Mandan Bus Dev & Comm</u>	
Address <u>205 2nd Ave NW</u>			
City <u>Mandan</u>	State <u>ND</u>	Zip code <u>58554</u>	Email <u>ehuber@cityofmandan.com</u>

Name (Please print) <u>JUSTIN FROSTH</u>		Title/Representing <u>CITY OF MANDAN</u>	
Address			
City	State	Zip code	Email

Name (Please print) <u>TOM DOERING</u>		Title/Representing <u>Morton Co.</u>	
Address <u>210 2nd Ave NW</u>			
City <u>Mandan</u>	State <u>ND</u>	Zip code <u>58504</u>	Email <u>tomdoering@mortonnd.org</u>

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Mandan City Hall</i>	Meeting Type <i>PM #3</i>	Meeting Date <i>1/23/2020</i>
Project Number <i>Arrive 2015</i>	PCN	
Project Description		

Name (Please print) <i>Mark Berg</i>		Title/Representing <i>City of Bis</i>	
Address			
City <i>Bismarck</i>	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

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Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location <i>Tom Baker Meeting Room</i>	Meeting Type <i>PIM # 3</i>	Meeting Date <i>1-23-20</i>
Project Number		PCN
Project Description <i>Arrive 2045 (2015-2045 MTP)</i>		

Name (Please print) <i>Steve Saunders</i>		Title/Representing <i>MPO</i>	
Address <i>211 N 5th St</i>			
City <i>Bismarck</i>	State <i>ND</i>	Zip code <i>58501</i>	Email <i>ssaunders@bismarcknd.gov</i>

Name (Please print) <i>Rachel Drewlow</i>		Title/Representing <i>MPO</i>	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

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Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan



METROPOLITAN PLANNING ORGANIZATION

Meeting Location Tom Baker Meeting Room	Meeting Type PLM #3	Meeting Date 1-23-20
Project Number Arrive 2045 (2015-2045 MTP)	PCN	
Project Description		

Name (Please print) Gabe Schell		Title/Representing City of Bismarck	
Address 221 N 5 th St			
City Bismarck	State ND	Zip code 58501	Email gschelle@bismarcknd.gov

Name (Please print) Gabe Johnson		Title/Representing Self	
Address 6405 Preston Loop			
City Bismarck	State ND	Zip code 58504	Email smj58501@yahoo.com

Name (Please print) Susan Dingle		Title/Representing	
Address 700 N Mandan ST			
City Bismarck	State ND	Zip code 58501	Email suszida@hotmail.com

Name (Please print) Ben Edwards		Title/Representing City of Bismarck	
Address			
City	State	Zip code	Email

Name (Please print) W. K. Hutchings		Title/Representing City of Bismarck	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Name (Please print)		Title/Representing	
Address			
City	State	Zip code	Email

Bismarck-Mandan Metropolitan Transportation Plan

Date: 4/18/2018
Time: 1:30 p.m.
Location: Bis-Man Transit Training Room
Re: Steering Committee Meeting #1

Agenda

- » Welcome & Introductions
- » Review Overall Scope and Schedule
 - Review and Discuss early phase deliverables
 - Existing Conditions/Baseline Conditions Report
 - Review Data Collection & Data Needs
 - Financial/Fiscal Constraint Analysis
 - Goals/Objectives & Performance Measures
 - Interim TIP & MTP Amendment
- » Update/Status of Travel Demand Model
- » Next Steps & Meetings

2020-2045 Metropolitan Transportation Plan

Study Committee Meeting #1

April 18, 2018



ENGINEERING, REIMAGINED

Bismarck-Mandan 
METROPOLITAN PLANNING ORGANIZATION



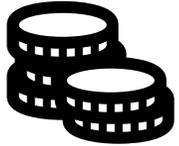
What is the Metropolitan Transportation Plan



Examine System Data & Trends



Build Partnerships & Strengthen Relationships



Prioritize Resources



Build Projects



Improve Mobility



Schedule

Critical Milestones	2018										2019										2020			
	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan		
Existing and Projected Conditions	→																							
Goals and Objectives			→																					
Performance Measures			◆	→																				
Public Involvement				PIM #1		◆					PIM #2		◆			PIM #3		◆						
Steering Committee	◆		◆	◆				◆	◆	◆				◆	◆	◆	◆		◆					
Website/Social Media			→								→					→								
Newsletters			→								→						→							
TAC/Policy Board Updates	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
Alternatives Analysis									→															
Financial Analysis		→												→										
Project Prioritization											→													
Approvals																			→					
MTP Development														Draft MTP		◆				Final MTP		◆		
Project Management/QC/QA	→																							



MTP 101 – Informational Videos

Education & Outreach

Branding & Naming

Videos and Informational Tools

[What is an MTP](#)

<https://youtu.be/nfcp6kAUB2o>

[MTP Process \(Start at 3:30\)](#)

<https://www.youtube.com/watch?v=TxZr56wjLP4>

[What is Transportation](#)

<https://www.youtube.com/watch?v=rB1EjfYtl2U>

Focus Areas

PERFORMANCE MANAGEMENT



PROJECT INVESTMENT



OPTIONS AND ALTERNATIVES



PUBLIC INVOLVEMENT





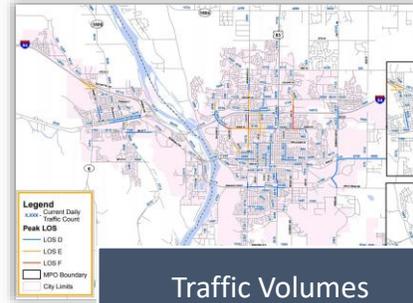
Conditions Assessment = Existing Conditions



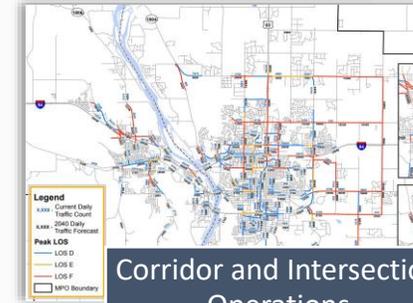
Pavement Conditions



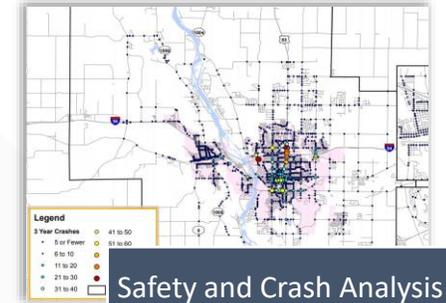
Functional Classification and Jurisdiction



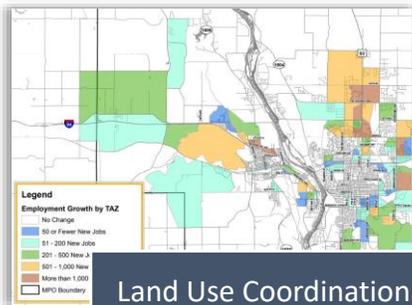
Traffic Volumes



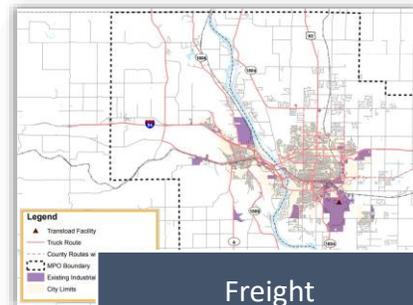
Corridor and Intersection Operations



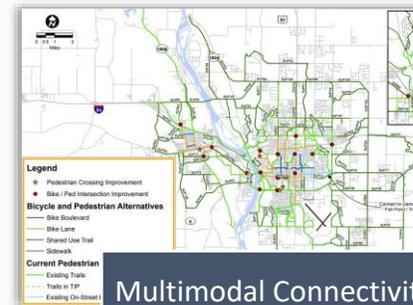
Safety and Crash Analysis



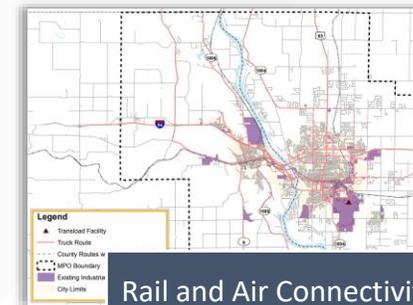
Land Use Coordination



Freight



Multimodal Connectivity



Rail and Air Connectivity



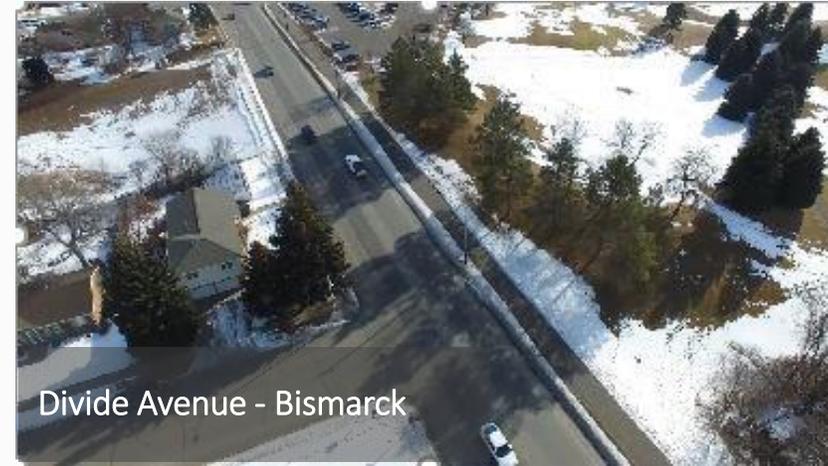
Data Collection for Conditions Assessment

Data Need	Data Source
Pavement Condition	NDDOT
Functional Classification	BMMPO
Jurisdictional Ownership	BMMPO
Existing & Forecast Traffic Volumes (All Scenarios)	TDM
Land Use Data	Jurisdictions
Socioeconomic Data	TDM
Corridor LOS (All Scenarios)	TDM
Crash Data	NDDOT
Freight Data	Plan in Progress
Transit Data	Plan in Progress
Rail Data	FRA Website
Air Data	
Bicycle & Pedestrian Data	Bike-Ped Plan

Multimodal Conditions Assessment



Main Street - Mandan



Divide Avenue - Bismarck



LOS "A"



LOS "C"



LOS "F"



LOS "F"



LOS "D"



LOS "E"



LOS "B"



LOS "B"



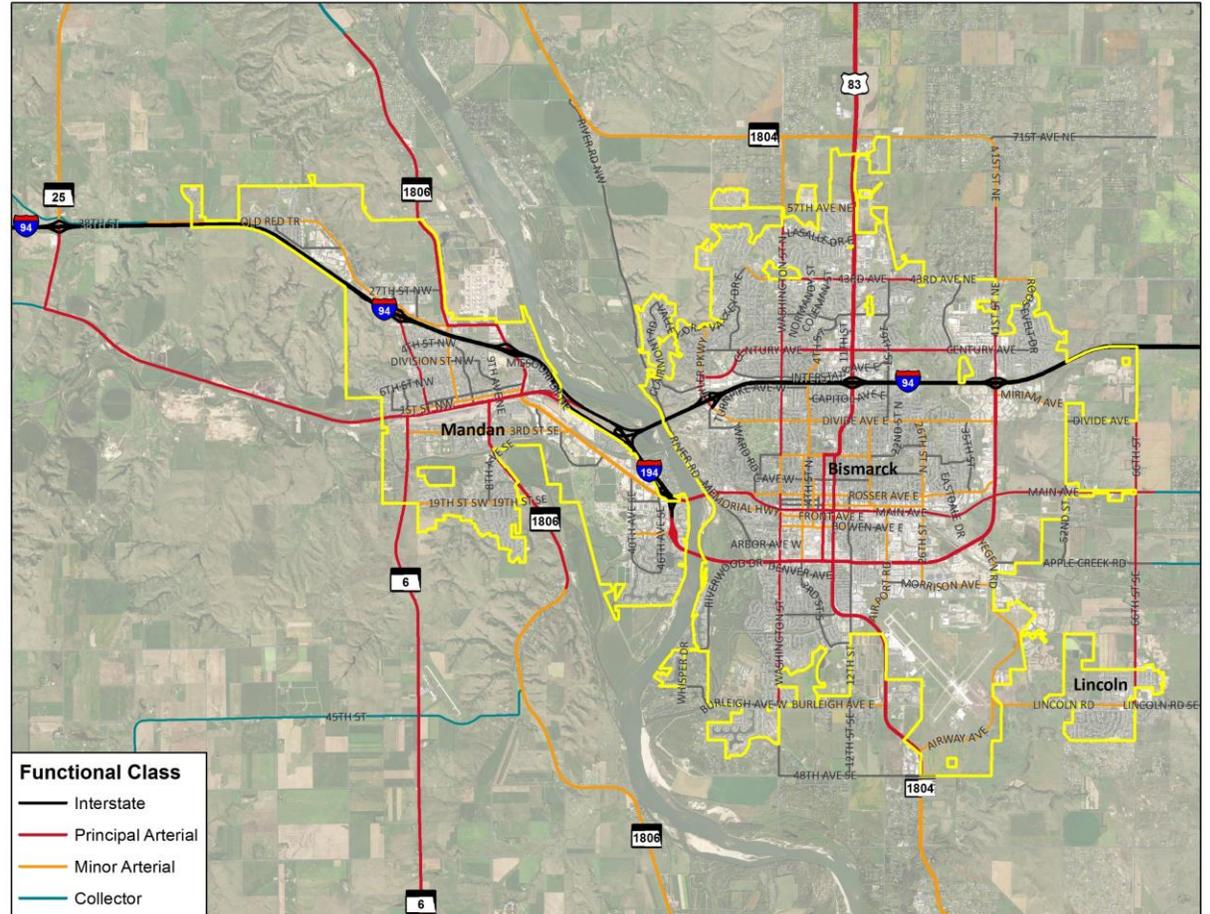
LOS "C"



LOS "C"

Multimodal Conditions Assessment

Mode	Methodology	Source
Vehicles	V/C Ratio from Calibrated 2015 and 2045 Travel Demand model	HCM
Bicycle	Generalized Service Volume Thresholds	Florida Department of Transportation
Pedestrian	Generalized Service Volume Thresholds	Florida Department of Transportation
Transit	Number of buses per hour within ¼ mile of a street	Transit Capacity and Quality of Service Manual



Performance Management





Performance-Based MTP

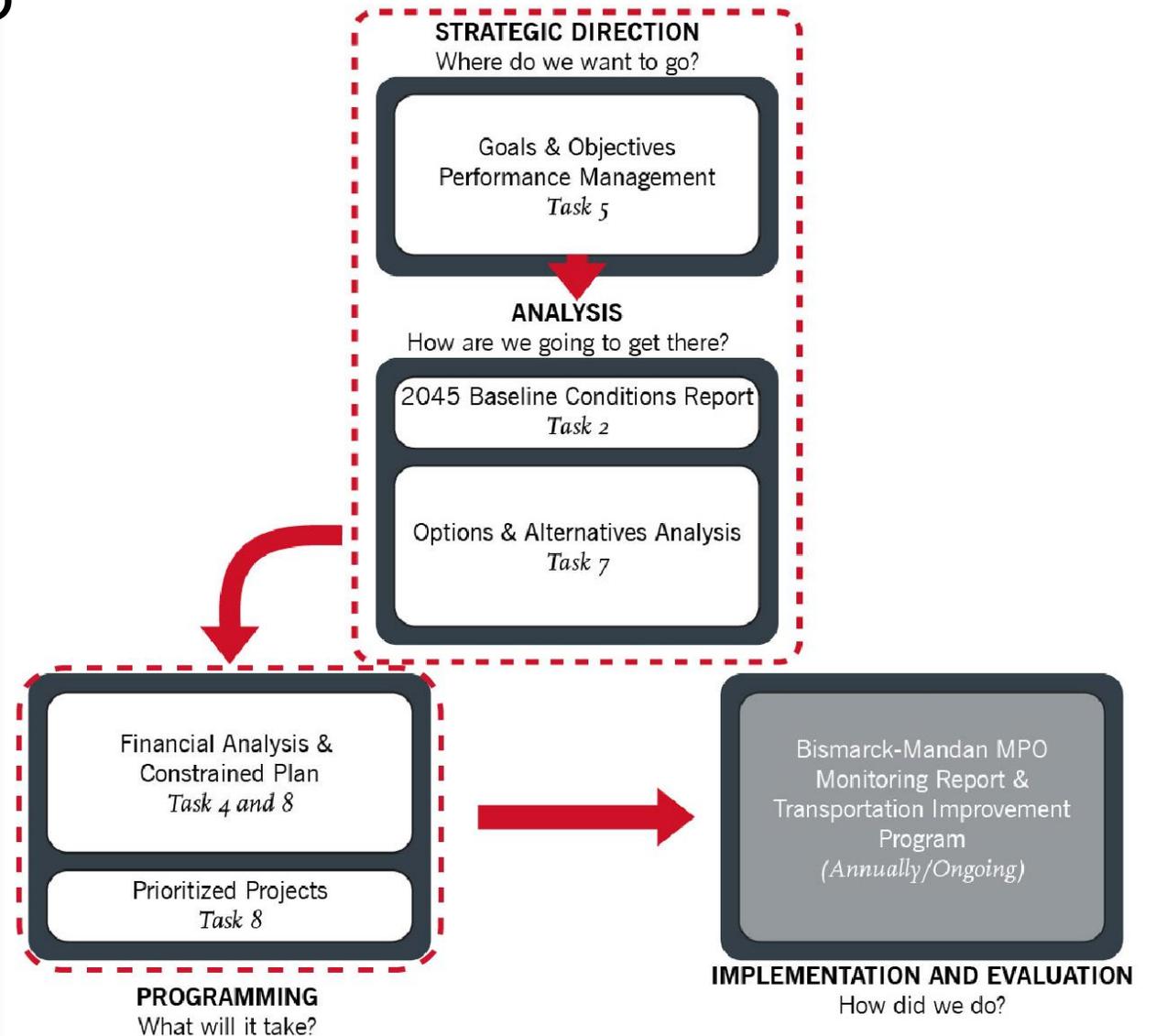
Background on MAP-21 & FAST Act

Federal Regulations, under MAP-21 legislation, require MPO's to utilize performance based planning and to link investment priorities to the federal performance targets for safety, pavement, bridge, system reliability, freight, CMAQ and transit asset management and safety.

Performance-Based MTP

Framework

- > Connected Process
- > Reinforce Linkages
- > Support MPO Program





Developing The Goals – Existing

Goal 1

Maintain & Improve **Regional Mobility & Connections**

Goal 2

Enhance **Regional Alternatives to Automobile Travel**

Goal 3

Maintain the Transportation System in a State of Good Repair

Goal 4

Coordinate Transportation Planning with the **Natural & Built Environment**

Goal 5

Provide a Transportation System that Effective Moves Goods & **Enhances the Local Economy**

Goal 6

Provide a **Safe & Secure** Transportation System

Goal 7

Identify Transportation Supportive **Funding & Policy Opportunities**



Developing the Vision

Building Blocks

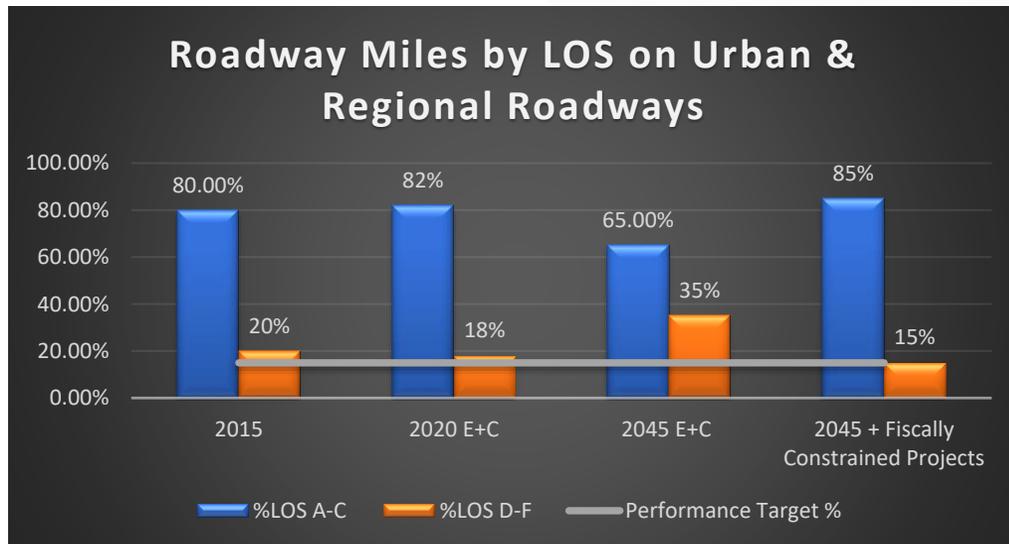
- ***Performance Based***
- ***Fiscally Constrained***
- ***Prioritization of system needs***

> What are we missing?

Performance-Based MTP

Pavement and System Reliability

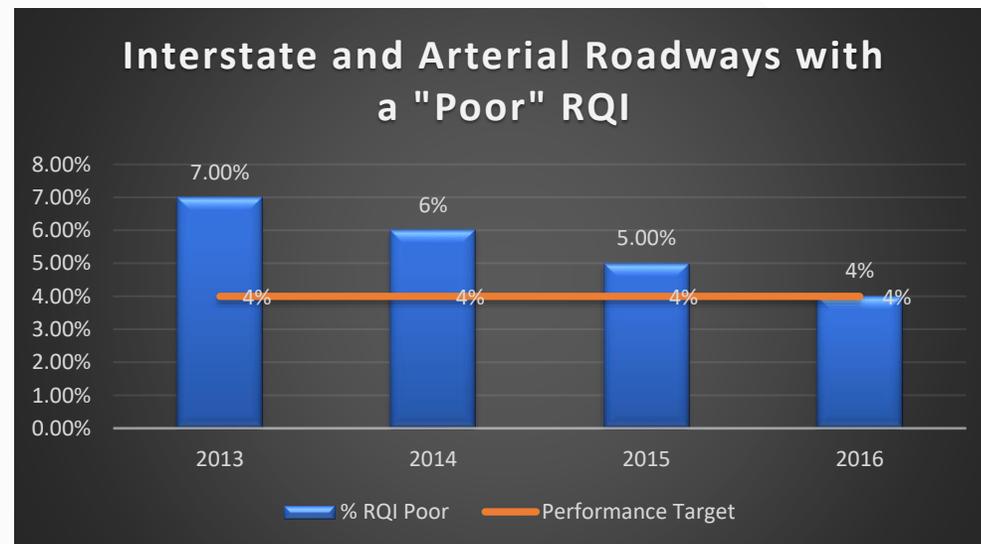
Goal 1: Maintain & Improve Regional Mobility & Connections



Objective 1: Reduce percentage of roadway miles with a “LOC D” or worse to 15% or less on Urban and Regional Roadways.

Pavement and System Reliability

Goal 3: Maintain the Transportation System in a State of Good Repair



Objective 1: Reduce percentage of roadway miles with a “Poor” condition ride quality of 4% or less on the Interstate and Arterial functionally classified roadways.

SYSTEM AREA

GOAL

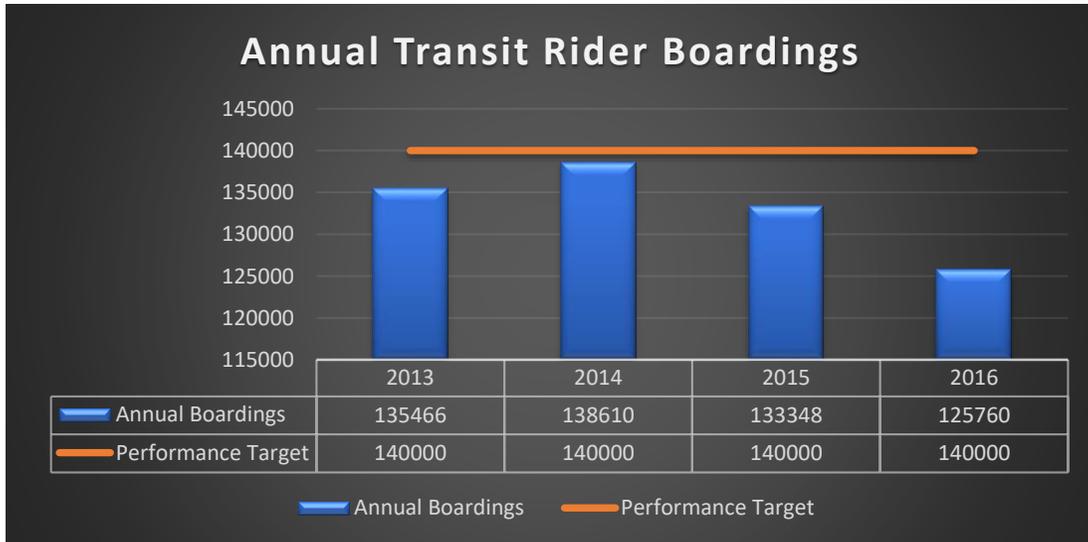
DATA AND TREND LINE

OBJECTIVE

Performance-Based MTP

Air Quality

Goal 4: Coordinate Transportation Planning with the Natural & Built Environment



Objective 1: Increase the number of transit riders within the Bismarck-Mandan Area to 140,000 by 2025.



Performance-Based MTP

To be compliant with MAP-21, PM1 or Safety targets shall be amended and discussed in the current active TIP and Long Range Plan by May 27, 2018.

- > Understandable
- > Simplicity of approach

SAFETY & SECURITY

Goal: Provide a safe and secure transportation system.

Objective: Reduce the incidence of all multi-modal crashes, with an emphasis on serious injury and fatal crashes.

<p>Performance Measure 1</p> <p>Number of Vehicle Crashes per 100 Million Miles Traveled</p> <div style="text-align: center;"> <p><i>Desired Trend</i></p> </div>	<p>Performance Measure 2</p> <p>Number of Pedestrian and Bicycle Crashes</p> <div style="text-align: center;"> <p><i>Desired Trend</i></p> </div>
<p>Baseline Data</p> <p>2013- 2015 Crashes per 100 Million Miles Traveled:</p> <p style="text-align: center;">4.26</p>	<p>Baseline Data</p> <p>2013- 2015 Pedestrian and Bicycle Crashes:</p> <p style="text-align: center;">138</p>



Performance-Based MTP

Interim TIP and MTP Amendment

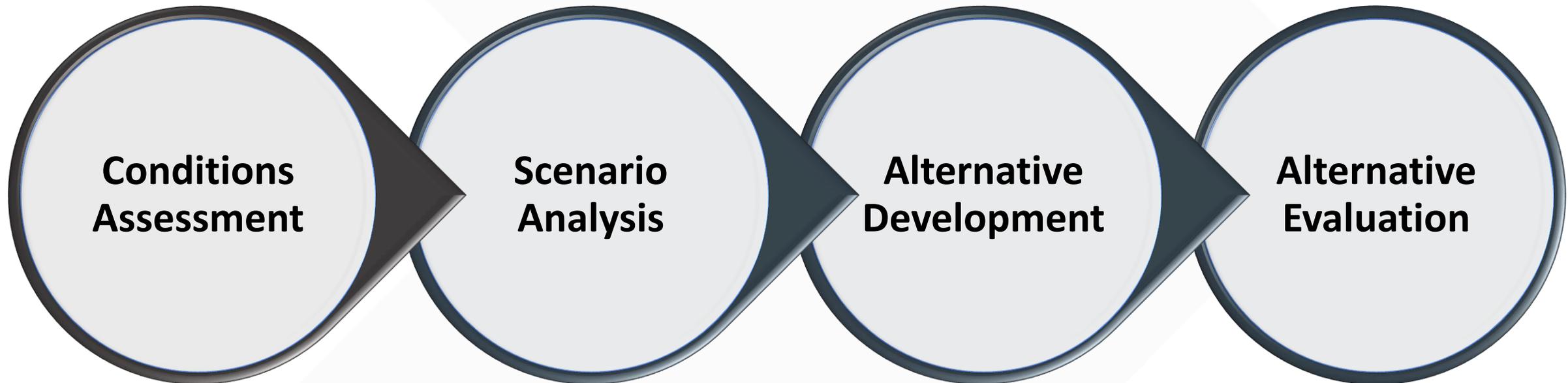
The BMMPO intends to adopt and ***support the targets established by NDDOT*** and provide a numerical performance measurement specific to the BMMPO planning area. At this time, NDDOT has provided the *State Performance Report* dated April 9, 2018, which notes that the development for the ***statewide targets for the safety performance measures are currently in progress.***

The ***BMMPO will pursue continued compliance*** through its ongoing Metropolitan Transportation Plan update and its next Transportation Improvement Plan (TIP) ***to develop the baseline of the five safety performance measures as outlined in the Safety PM Final Rule.*** The BMMPO will ***adopt the state targets for safety performance measurements once they are developed by NDDOT.***

Options and Alternatives



Alternatives



By 2045 We Could See...



Crashes

-90%



Delay

-45%



**Miles
Travelled**

~+500%



Ride-Share

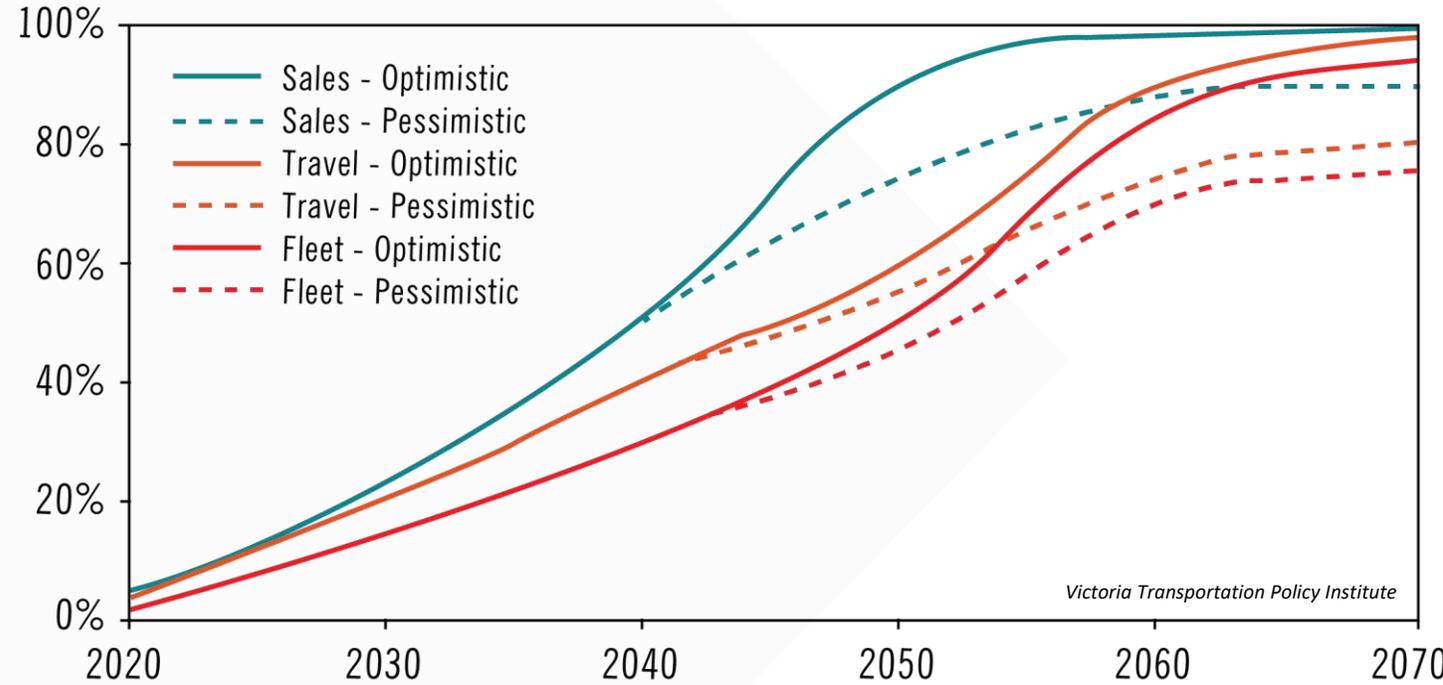
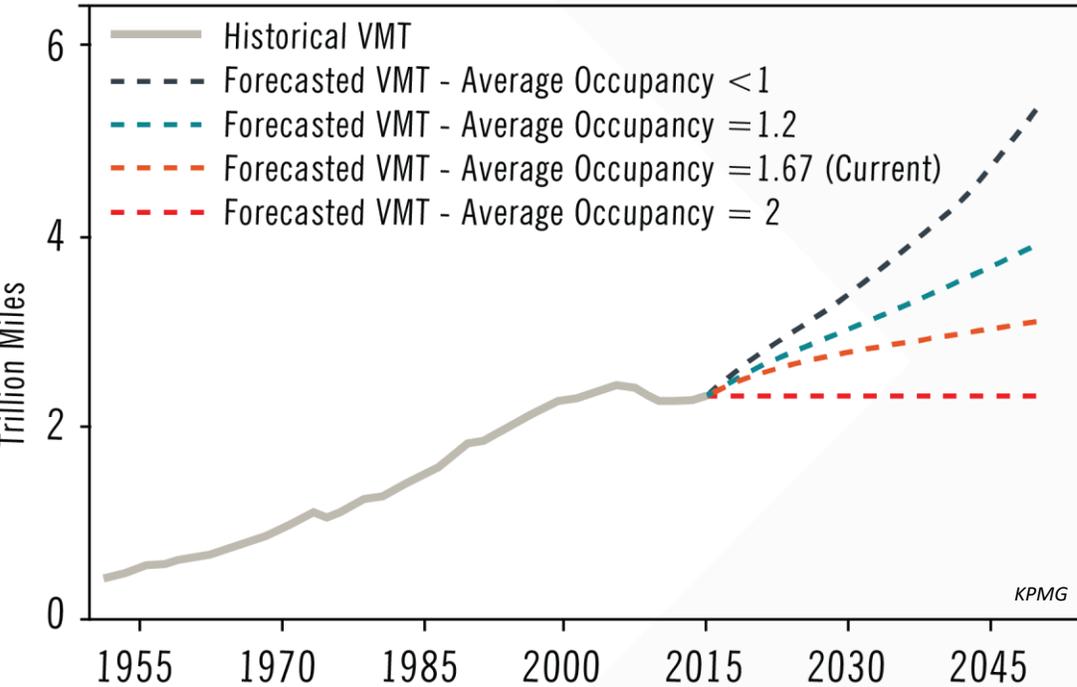
+50%



**Auto
Ownership**

-15%

Scenario Assessment



Our **BEST** Estimates Can Vary by 4 Trillion VMT

Scenario Assessment

AUTONOMOUS VEHICLE POPULATION	CARPOOL/ RIDE-SHARE	MODAL SPLIT (PED, BIKE, TRANSIT)
50% by 2045	11% (Existing)	3% (Existing)
75% by 2045	11% (Existing)	3% (Existing)
75% by 2045	17%	6%
100% by 2045	11% (Existing)	3% (Existing)
100% by 2045	17%	6%



Alternative Development



**Past
Planning**



**Capacity
Enhancements**



Technology



**Alternative
Modes**



Past Planning

43RD AVENUE CORRIDOR STUDY
FINAL REPORT
May 2013

Where the City meets the Country

An Intermodal Transportation Plan

FINAL REPORT
194 Corridor Study
Bismarck-Mandan Metropolitan Planning Organization

BISMARCK - MANDAN
BICYCLE + PEDESTRIAN PLAN
DECEMBER 19, 2017

Northwest Bismarck Sub-area Study
prepared for
Ulteig Bismarck-Mandan Metropolitan Planning Organization

S Parlin
Bismarck-Mandan Metropolitan Planning Organization
City of Bismarck
Burleigh

Northeast Bismarck Subarea Study
Final Report
November 17, 2015
Prepared for the Bismarck-Mandan Metropolitan Planning Organization

Bismarck-Mandan Metropolitan Planning Organization HoustonEngineering Inc. KLJ

FRINGE ROAD MASTER PLAN
BISMARCK-MANDAN MPO

SRF Orig Aug Re-d May

2014 FRINGE AREA ROAD MASTER PLAN
Morton County - Mandan

Bismarck-Mandan Metropolitan Planning Organization
Bismarck-Mandan Metropolitan Planning Organization
221 North 5th Street, Bismarck, ND 58506

SRF HDR

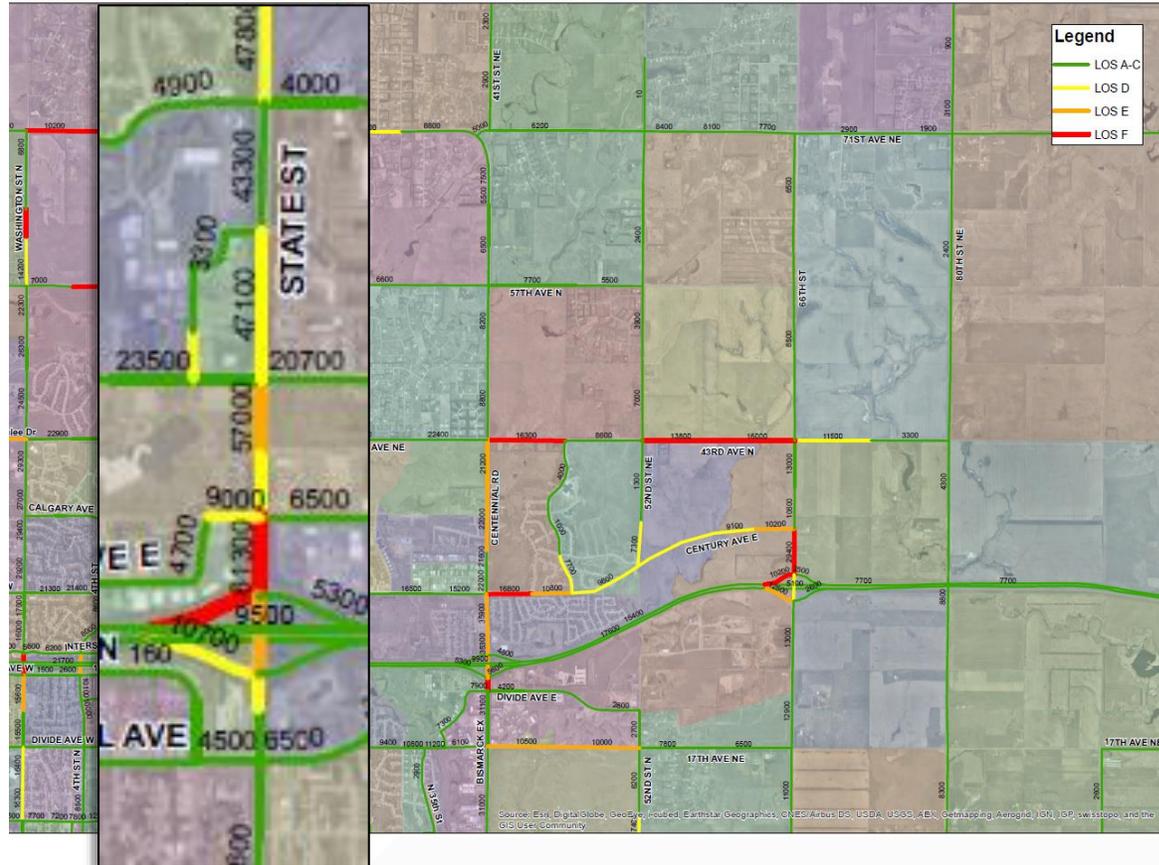
RDG... KLJ

MANDAN DOWNTOWN SUBAREA STUDY
Mandan, ND

September 2016

Capacity Enhancements

Phase I: Macro Analysis

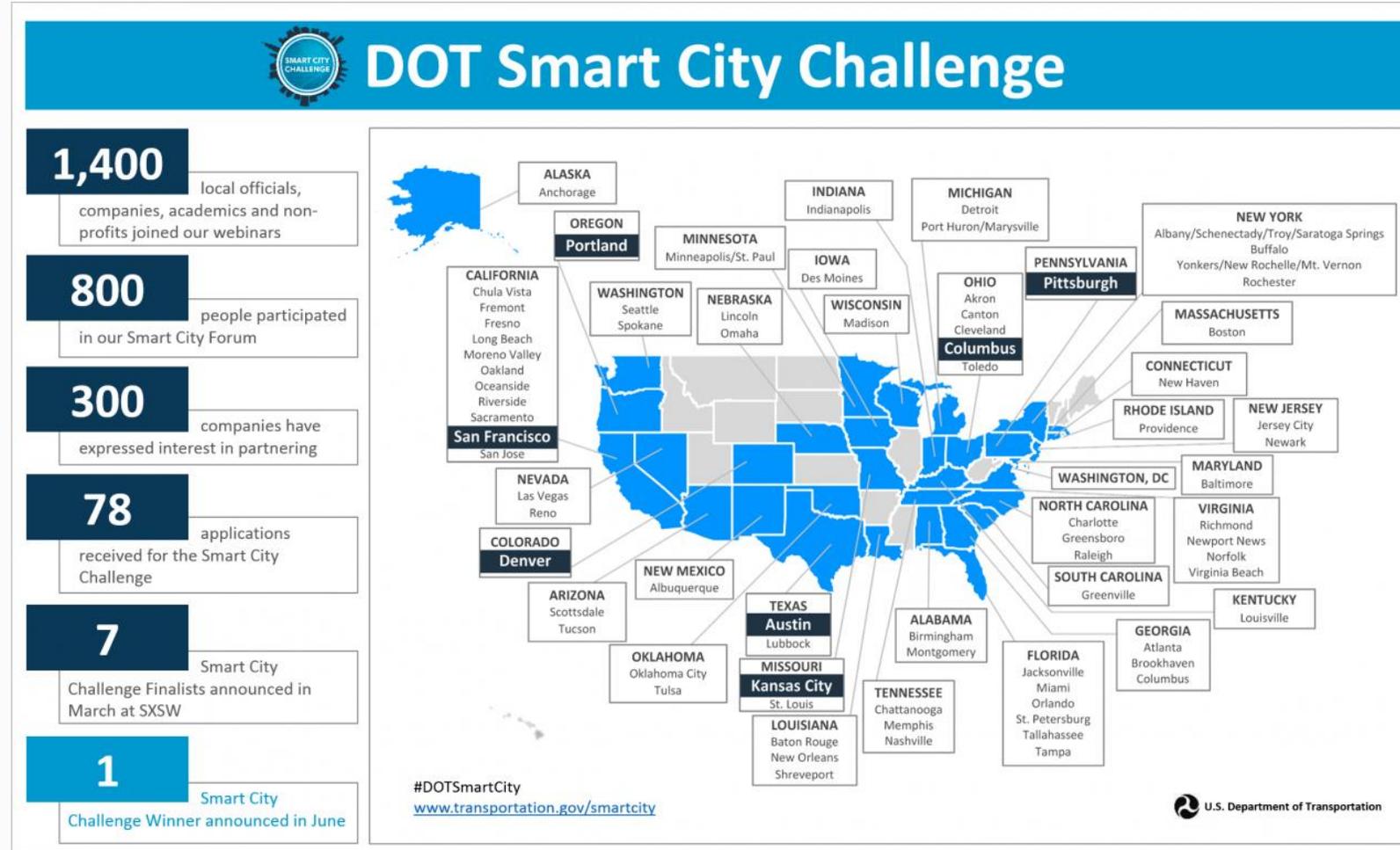


Phase II: Hot-Spot Analysis



Technology

- *US DOT = \$115 Million in Grants*
- *Columbus = \$450 Million in PPP*
- *Other Legislation in Process*
- *Integrate “smart city” concepts into MTP*



Smart Cities

<https://www.youtube.com/watch?v=vpSLICKnjPc>

Technology

Downtown District



Event Management



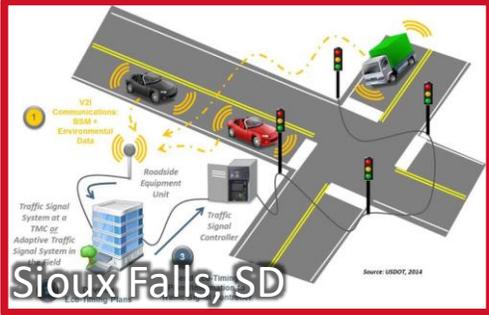
Connected Infrastructure



Smart Parking



Technology



Adaptive Signal Control



Bus Rapid Transit



Dynamic Lane Assignment



Technology



Bremen, Germany

Multimodal Hub



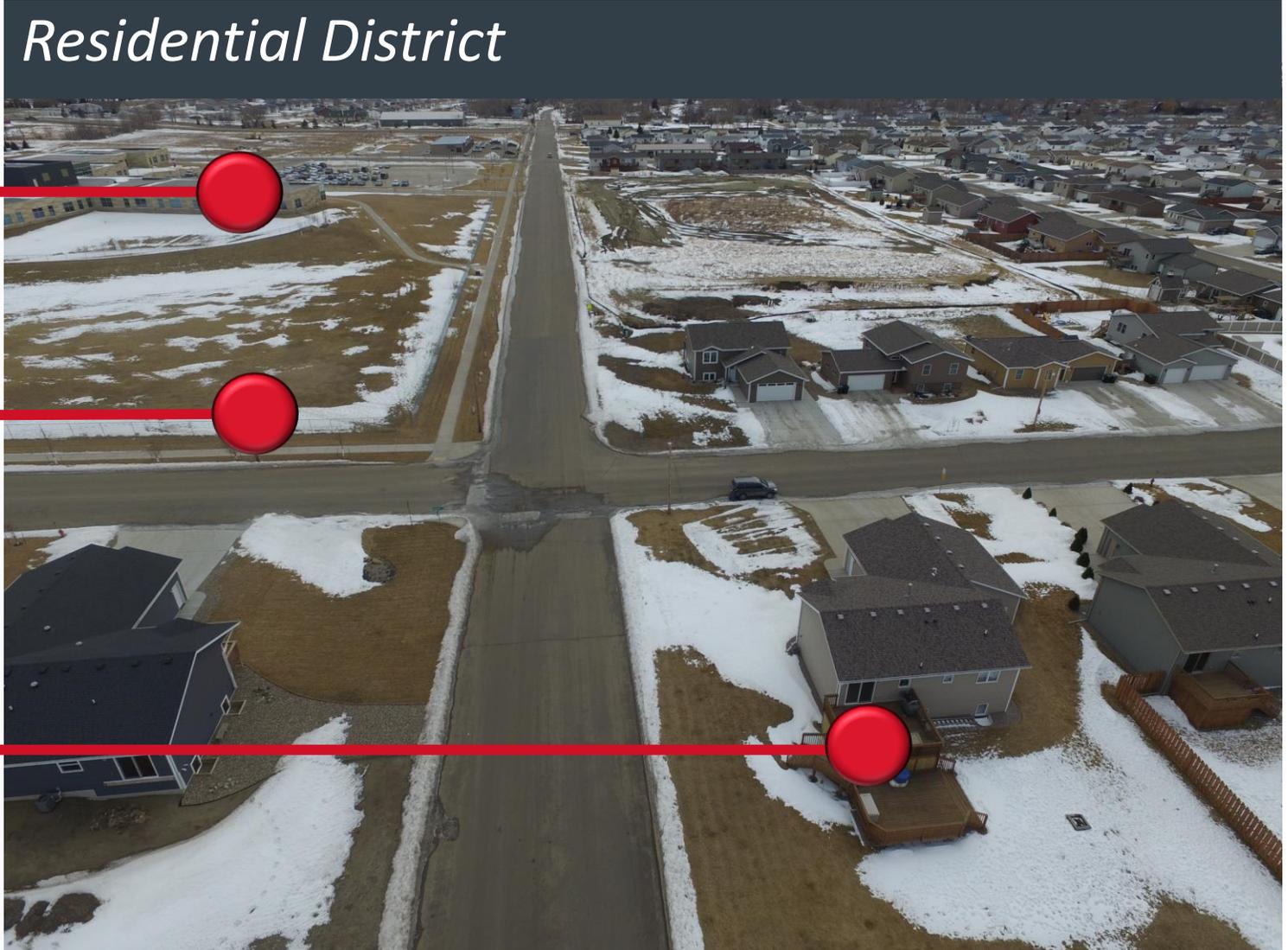
Harrisburg, PA

Smart Lighting



Los Angeles, CA

Multimodal Trip Planning

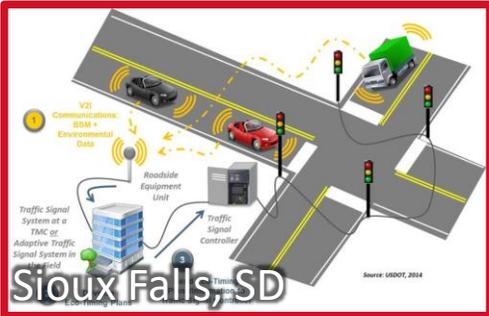


Residential District

Technology



Ramp
Metering



Freight Signal
Priority



AV Lane/
Widen Shoulder

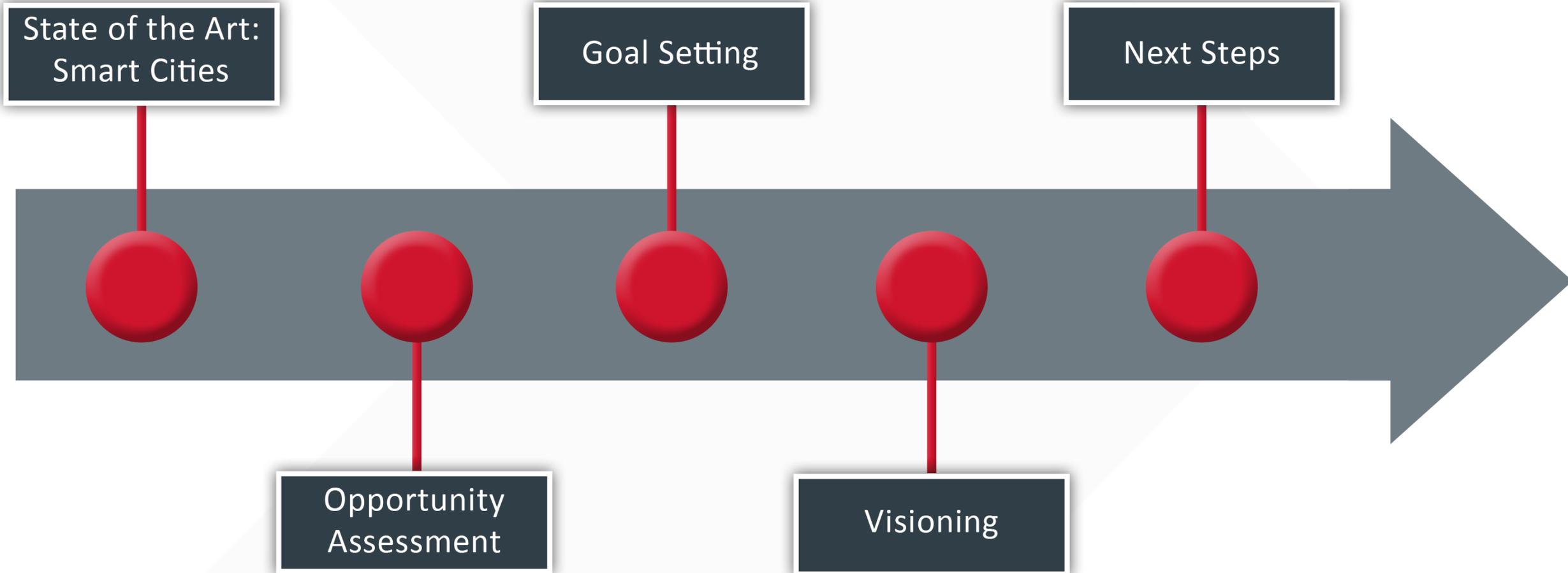
Emerging Technology

Logistics District



Timing: Between PIM #1 and #2

Smart Cities Workshop

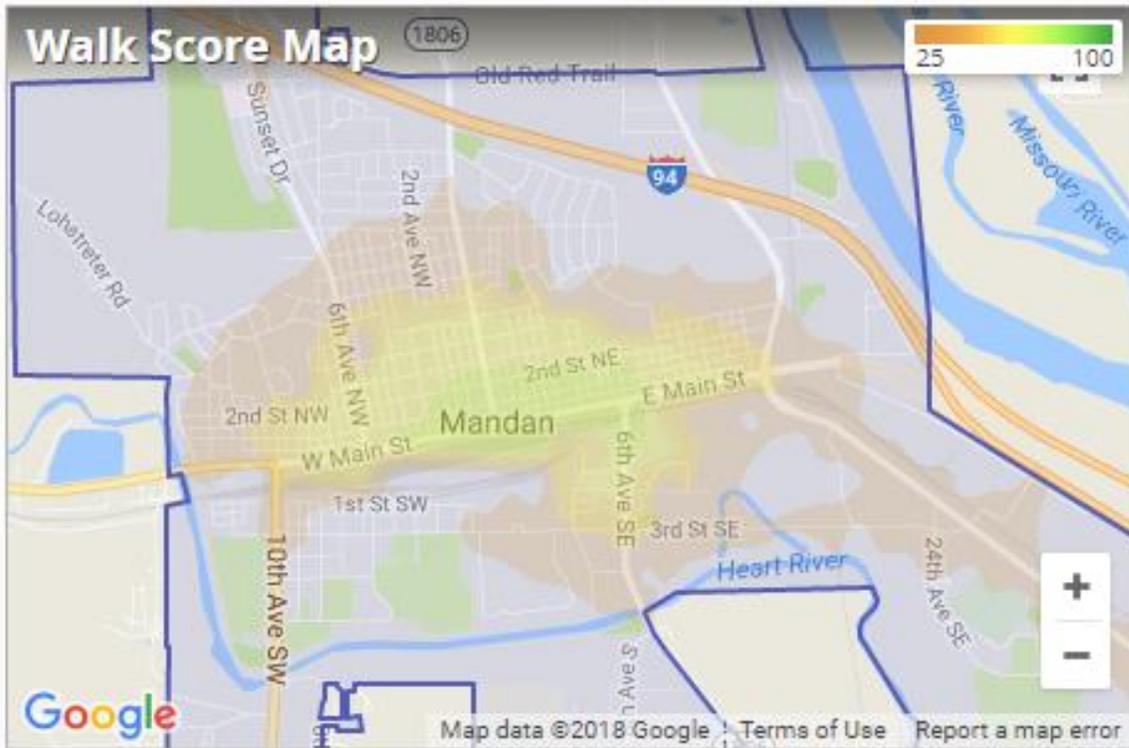


Alternative Modes

Walk Score
26

Mandan is a Car-Dependent city

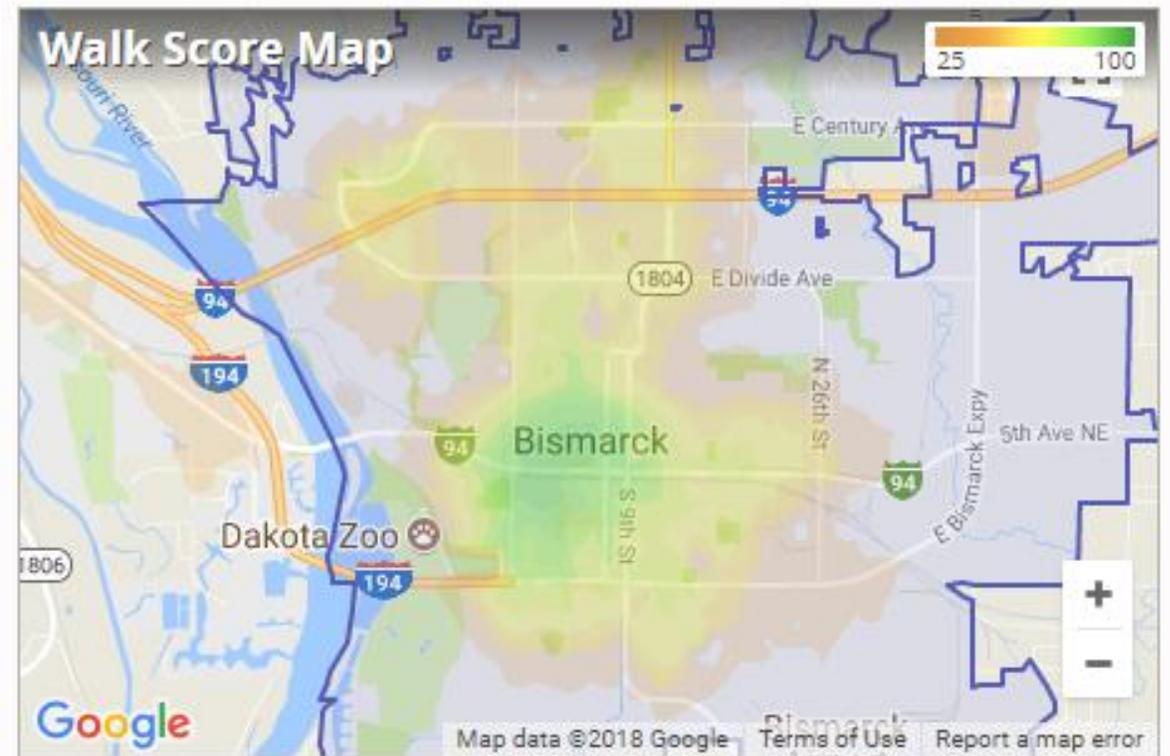
Most errands require a car.



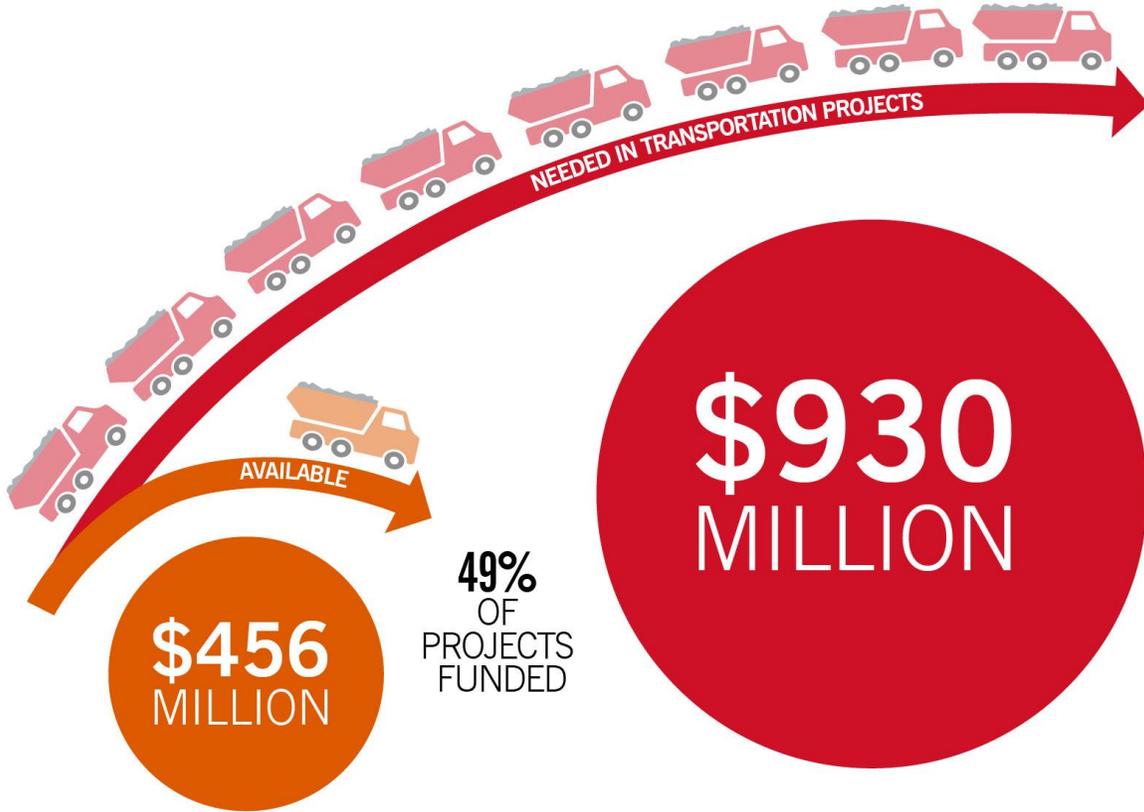
Walk Score
35

Bismarck is a Car-Dependent city

Most errands require a car.



Alternative Evaluation



Technology



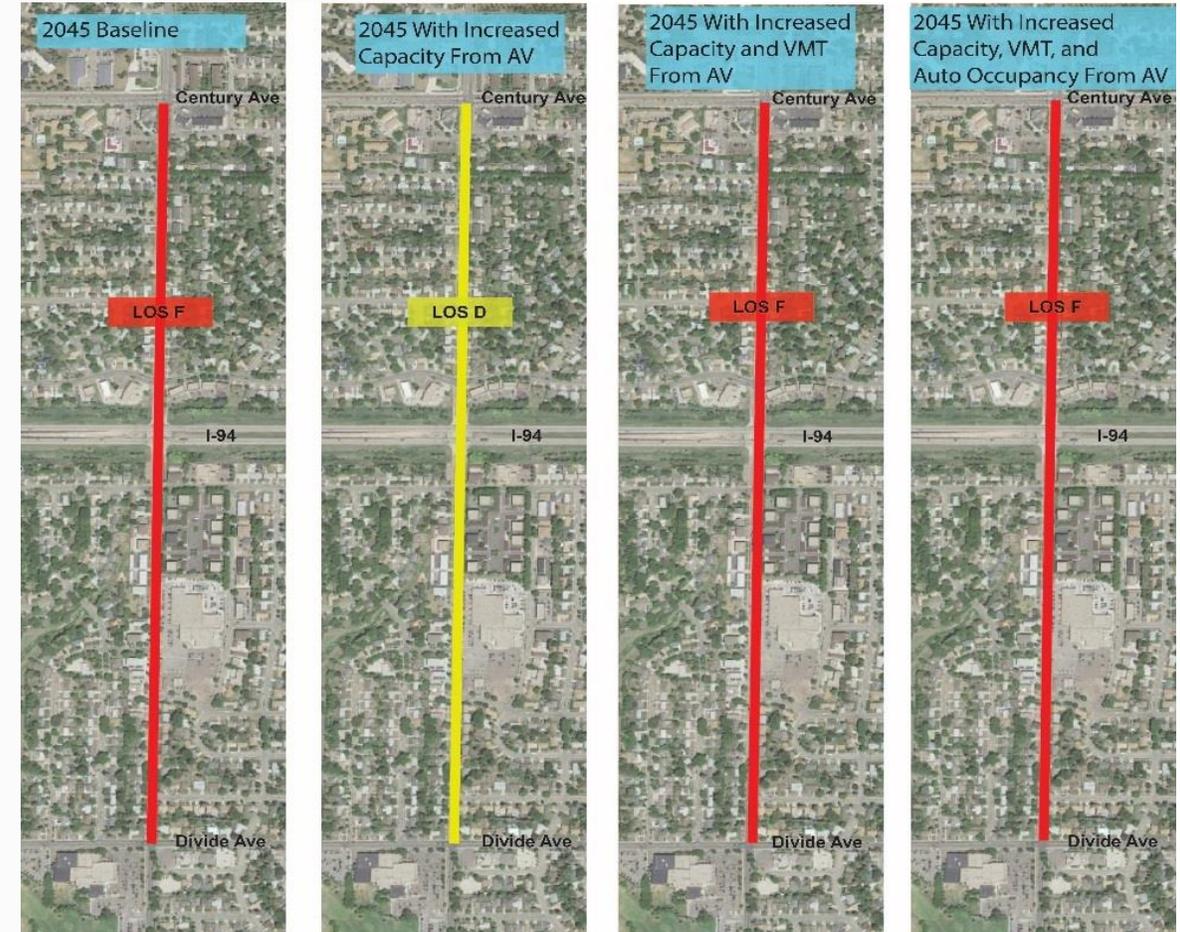
Alternative Modes

Alternative Evaluation

Performance Measures

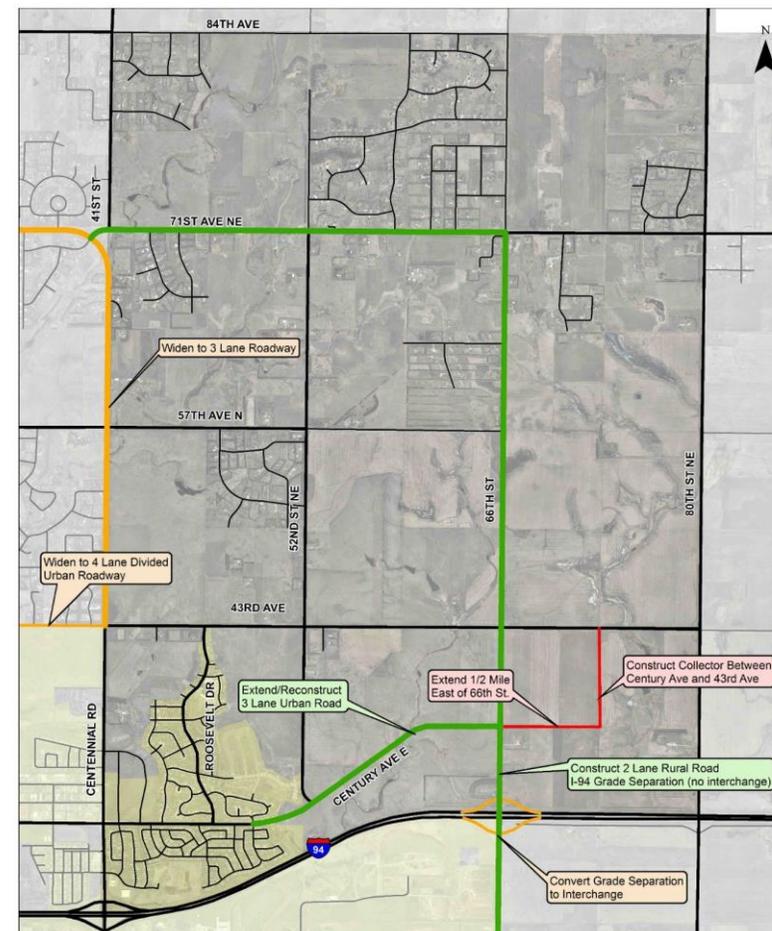


Risk Assessment



Travel Demand Modeling

- Develop Base Year Model: 2015
- Future Year 2030 & 2045
- Developed by MPO & ATAC (In Progress!)



Project Investment



Financial Analysis

Federal

- > Urban Road/Regional
- > Urban Grant
- > Transportation Alternatives
- > Highway Safety (HSIP)
- > Interstate Maintenance/NHPP

State

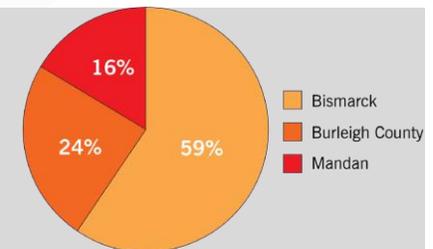
- > Highway User Tax

Local

- > General Fund
- > Sales Tax

Funding Projections - Methods

- > Proportional/Population Based
- > Historic Trends
- > Projections based on conservative inflation factor of 1.5%



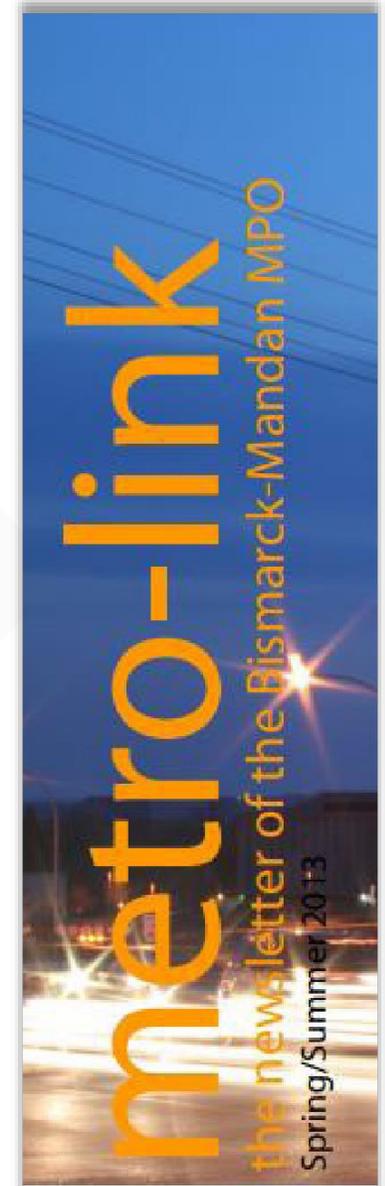
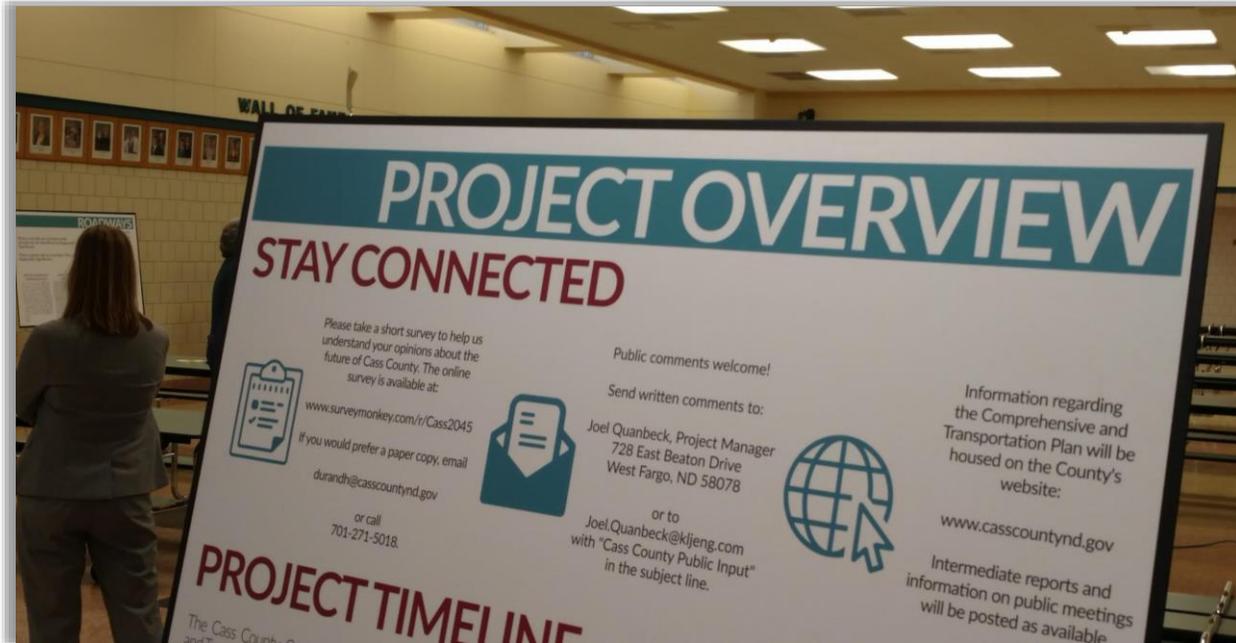
Historic Urban Road Funding by Jurisdiction: 2012-2021 – Total awarded: \$35.6 million. Annual average over 10 years: \$3.5 million.

Public Involvement Process



Public Involvement

Newsletters & Publications & Branding



Public and Stakeholder Engagement



Public Input Meeting #1

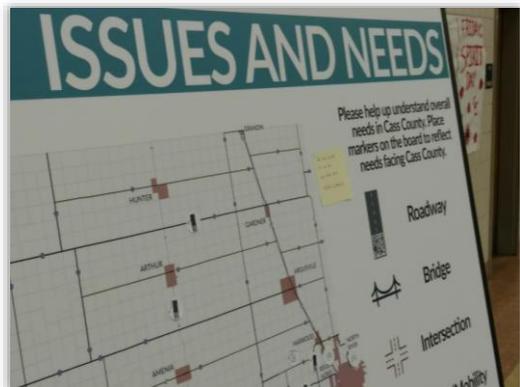
- > Vision Identification
- > Key Themes
- > Strategic Initiatives

Public Input Meeting #2

- > Mobility Choices
- > Understand Options
- > Prioritize Alternatives

Public Input Meeting #3

- > Draft Plan
- > Celebrate





Schedule

Critical Milestones	2018										2019										2020			
	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan		
Existing and Projected Conditions	→																							
Goals and Objectives			→																					
Performance Measures			◆	→																				
Public Involvement				PIM #1		◆					PIM #2		◆			PIM #3		◆						
Steering Committee	◆		◆	◆				◆	◆	◆				◆	◆	◆	◆		◆					
Website/Social Media			→								→					→								
Newsletters			→								→						→							
TAC/Policy Board Updates	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		
Alternatives Analysis									→															
Financial Analysis		→												→										
Project Prioritization											→													
Approvals																			→					
MTP Development														Draft MTP		◆				Final MTP		◆		
Project Management/QC/QA	→																							



Your Perspective

Why do you need transportation?

Key Issues or Expectations for the MTP?

How can the 2045 MTP Help?

Bismarck-Mandan Metropolitan Transportation Plan

Date: 04/18/2018

Time: 1:30 p.m.

Location: Bis-Man Transit Training Room

Attendees: Rachel Drewlow, Bismarck Mandan MPO; Gary Stockert, Bismarck Engineering Management; Ken Nysether, City of Lincoln Engineer; Kim Lee, City of Bismarck; Natalie Pierce, Morton County; Ray Ziegler, Burleigh County; Michael Johnson, NDDOT; Tim Nilsen, Morton County; Gabe Schell Bismarck Engineering; Greg Haug, Bismarck Airport; Marcus Hall, Burleigh County; Becky Labella, Bismarck Public Schools; John Van Dyke, City of Mandan; Justin Froseth, City of Mandan; Jeff Solemsaas, Bismarck P.D.; Peggy Harter, Stantec; Wade Kline, KLU

Agenda

Welcome & Introductions

Rachel Drewlow welcomed everyone and asked everyone to introduce themselves.

Review Overall Scope & Schedule

Wade Kline provided a high-level overview of what a Metropolitan Transportation Plan (MTP) is and what to expect throughout the process. When asked, about half the committee members indicated they have not previously been involved with an MTP process. Wade shared some informational videos on what is an MTP and noted that similar videos will be developed like these that will be shared with the public as a lead up to the start of the public input process.

Project Schedule

Starting in April 2018 and will be completed in January of 2020.



MEETING MINUTES

Focus Areas of the MTP

- » Performance Management – Develop Goals, Objectives and a Vision based on a background set of data and expectations for future performance.
- » Project Investment – Developing a constrained transportation plan based on realistic funding targets.
- » Options & Alternatives – explore all options and consider a range of alternatives for improving regional mobility.
- » Public Involvement – process of engaging the public and getting the community involved in the development of the MTP.

Conditions Assessment/Existing Conditions

- » Data Collection – KJ/Stantec will collect a range of available data set from the BMMPO and its partner agencies to assist with developing an existing conditions assessment. Will be an early step in the planning process. Peggy Harter explained the required data sets.
- » Multimodal Conditions Assessment – The MTP will evaluate transportation corridors based on aggregate level of Service (LOS) that accounts for all modes of transportation. This provides a better assessment of a roadways current service level. Wade Kline used Main Street (Mandan) and Divide Avenue (Bismarck) to illustrate the process.
 - Gabe – will there be a priority rating on the mode types for the different corridors? - Yes
 - Marcus – is there a different weighting for the differing types of roadways? - Yes

Performance Management

- » Peggy Harter provided some background on Performance Based MTP. Peggy Harter explained the background and basis for a performance based MTP.
- » Developing and weighting the Goals will be an early first step. Peggy Harter summarized the existing goal statement in the current Envision 2040 MTP. Wade Kline noted that at the 2nd SCM members will be asked to weight and rank goals and start to develop larger strategy points.
- » Developing the Vision (Expectations)
 - Peggy Harter outlined the building blocks of Vision, restating key elements which will need to be considered (Performance Based; Fiscally Constrained; Prioritized). Wade Kline asked the SCM to offer other suggestions on expectations or vision level ideas for the MTP:
 - Justin - Emphasis on the first five years for development of the TIP;
 - Gabe – Fiscal constraint based on the past funding – how do we know what the future dollars are going to be. Develop a sensitivity to the unknown funding sources.
 - Rachel – the last LRTP focused on expansion and was short on preservation. I would like for our group to be more critical on the division between preservation/maintenance v. expansion. So, what is our true goal – expansion v. preservation/maintenance.
 - Rachel – as part of our 5-year plan I want those projects to focus on our regional goal and develop projects that work together to develop a better regional network.

MEETING MINUTES

- Natalie - Local commitment to regional thinking.
 - Greg Haug – commitment to private public partnerships (PPP) funding.
 - Michael Johnson – District DOT level – coordinated effort with the local jurisdiction roadways v. Central Office DOT level – participate in the process to ensure NDDOT guidance and acceptance.
 - Gabe – are we limited to the 2045 time-frame – should we look to preserve the corridors/right of way now for projects which may be longer range in nature.
 - Wade Kline suggested that the MTP is absolutely the time and process to think big, and make sure the ideas and concepts are included in the plan. If there are ideas or concepts no longer considered relevant or needed, they should be remove.
 - The group mentioned concepts such as the Northern Bridge Corridor and Beltway which should be reexamined in this MTP.
- » Gabe – Regarding LOS and measuring performance, it will be important that an LOS D in Bismarck is measured the same as it is in Fargo or Grand Forks. Make sure system needs are accounted for equally across the larger population centers.
- Peggy – This will be reviewed early in the process once we start to see the calibrated travel demand model.
- » Interim TIP and LRTP Amendment
- Peggy Harter and Rachel Drewlow provided an overview of the interim amendment to the MPO will need to make to its TIP and MTP to address performance management provisions set by US DOT.
 - Michael Johnson – The state has established targets for safety. We will get the targets from the state as soon as possible.

Options & Alternatives

- » Wade Kline explained the Alternatives Development element of the MTP, which include four primary inputs: Conditions Assessment, Scenario Analysis, Alternative Development and then Alternatives Evaluation.
- » Wade Kline stressed that we will see a lot of change by 2045? – there are a lot of changes – ride sharing, auto ownerships, autonomous vehicles/connected vehicles (AV/CV). Wade Kline noted the following key elements to this element of the MTP:
- Scenario Assessment – Multiple scenarios for unknown future conditions based on potential commuting changes. So, we can look at corridor impacts based on the varying scenarios.
 - Alternative Development- based on past planning, capacity enhancements, technology, alternative modes, etc.
 - Past Planning Efforts – let’s use all of the plans that we have already developed and the future projects/needs that have already been developed.



MEETING MINUTES

- Capacity Enhancements – Phase I – Macro Analysis (Travel Demand Model) and Phase II – Micro or Hot-Spot Analysis. The hot spot analysis will look closer at a handful of intersections or corridor segments for the next 5 to 8 years to better define our needs.
 - Technology – Smart Cities – What is it? It is emerging technology that our governor’s office is talking a lot about. Some great examples – the City of Columbus and gets back to the private/public partnership. Wade shared a video of what is a Smart City. We can look at event management planning, adaptive signal control, bus rapid transit, dynamic lane assignment, multimodal hub, smart lighting, multimodal trip planning, ramp metering, freight signal priority, AV lanes, etc. Once we get through the public involvement meeting we will conduct a Smart Cities Workshop to include our SCM members and others to discuss the Smart Cities concepts.
 - Alternative Modes – Look at all modes of transportation as part of the plan.
 - Alternative Evaluation – Let’s reduce the number of project to ensure we can really prioritize our projects and meet fiscal constraint. Then we can look back to our performance measures to assist with final prioritization.
- » Travel Demand Modeling – Base year model is 2015 and future year models will be 2030 and 2045. The model is developed by the MPO & ATAC and is currently in progress.

Project Investment

- » Financial Analysis – We will look at three levels of funding – Federal \$, State \$ and Local \$. What has been available in the past and what funding pots and amounts are likely available within the future. Methods for funding projections include 1) proportional/population based, 2) historic trends, and 3) projections based on conservative inflation factor of 1.5%.
- Michael Johnson – one of the options for a new transportation bill would be to flop the federal and local matches. Instead of 80% Fed and 20% local it could then be 80% local and 20% local. Also, don’t forget to account for the local funding matches.
 - NDDOT is in the process of providing guidance on future funding levels under two different scenarios – 1) Scenario 1 – status quo and 2) Fargo-Moorhead becomes a Transportation Management Area (TMA), which changes how the state distributes urban and regional funds. This guidance will be supplied for the financial analysis/fiscal constraint piece. The first year this would start is year 2023.
 - Gabe – Does this consider that Watford City would be an added urban area over the 5,000 population. Michael – yes.
- » Project Identification – Projects will be identified in three time bands: Short Range, Medium Range and Long Range. The current TIP has roughly the same \$’s programmed for the years 2017-2021 as the MPO just received in applications for 2002. So here lies the issue with number of project needs/applications and the need to prioritize and establish consent on what the best fit set of projects to address local and regional needs.



MEETING MINUTES

Public Involvement

- » Wade Kline summarized the following key elements of the public involvement portion of the project:
 - Project Branding – we will be bringing branding/naming options to the next meeting so that the plan can be identifiable throughout the entire process.
 - Newsletters
 - Project Website
 - Stakeholder Engagement
 - Three Public Involvement Meetings staggered throughout the process, with the first being in September.

Key Issues or Expectations for the MTP? How can the 2045 MTP Help?

- » Greg Haug – how will the freight study be incorporated into this? Wade - We will link this to all the other studies developed.
- » Natalie – make sure that we are keeping our goals and performance measures tied back to how you assess and evaluate projects as they come forward.
- » Gabe – why the change to LRTP to MTP? Rachel – FHWA changed it in the regulations.
- » Gabe – the invite included a lot of people, how do we capture the summary of everything especially if one of us misses a meeting? The info will be sent out to everyone invited.
- » Marcus – let's revise the schedule a bit to ensure that the SCM meets a few weeks (at most) ahead of all the public input meetings.

Next Steps & Meetings

- » Development of Existing and Projected Conditions – Background Report
- » Next SC Meeting in early to mid-June
- » First PIM Meeting in mid-September

2020-2045 Metropolitan Transportation Plan

Study Committee Meeting #1

April 18, 2018

Name	Title/Representing
Rachel Drewlow	Transportation Planner-PM Bis-Man MPO
Gary Stockert	Bismarck Emergency Management
Ken Nysother	City of Lincoln Engineer
Kim Lee	Planning Manager City of Bismarck
Natalie Pierce	Director of P&Z Morton County
Ray Ziegler	Burleigh Co.
Daniel Burgard	Bis Rural Fire Dept.
MICHAEL JOHNSON	MDDOT-LG
Tim Nilsen	Morton County
Gabe Schell	Bismarck Engineering
Greg Haug	Bismarck Airport
Marcus J. Hall	Burleigh County
Becky LaBella	Bismarck Public Schools
John Van Dike	Planner / City of Mandan

SIGN-IN SHEET



*2020-2045 Metropolitan Transportation Plan
Study Committee Meeting #1
April 18, 2018*

Name	Title/Representing
JUSTIN FROST	MANDAN
Jeff Solemsaas	Bismarck P.D.
Peggy Harter	Stantec, Deputy PM
Wade Kline	KLJ

Bismarck-Mandan Metropolitan Transportation Plan

Date: June 12, 2018
Time: 1 :00PM
Location: Bis-Man Transit Training Room
Re: Steering Committee Meeting #2

Agenda

- » Welcome and Introductions
- » Project Updates
 - Financial Forecasting/Fiscal Constraint Analysis
 - Baseline Conditions Report
 - Public Outreach/Awareness
 - Project Branding/Logo/Website
- » Introduction to FAST Act goals and prioritization
- » Transportation visioning exercise
 - Brainstorming and prioritizing
 - Independent visioning
 - Vision extraction
 - Prioritizing big ideas
 - Session review
- » Wrap up and next steps

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Peggy Harter, Stantec
Date: June 12, 2018
Re: Goals and Objectives

WHAT IS THE HISTORY OF OUR TRANSPORTATION LEGISLATION AS IT RELATES TO PERFORMANCE MEASURES?

Federal Regulations, under transportation legislation (MAP-21 and the FAST Act), require MPO's to utilize performance-based planning and to link investment priorities to the federal performance targets for safety, pavement, bridge, system reliability, freight, CMAQ and transit asset management.

MAP-21

The Moving Ahead for Progress in the 21st Century Act, MAP-21, is a funding and authorization bill to govern United States federal surface transportation spending. It was passed by Congress on June 29, 2012 and signed into law on July 6, 2012.

A key feature of MAP-21 was the establishment of a performance- and outcome-based program. The objective of this performance- and outcome-based program is for States and MPOs to invest resources in projects that collectively will make progress toward the achievement of the national goals.

FAST Act

The Fixing America's Surface Transportation (FAST) Act is a funding and authorization bill to govern United States federal surface transportation spending. It was passed by Congress on December 3, 2015 and was signed into law on December 4, 2015.

The FAST Act continues MAP-21's overall performance management approach, within which States invest resources in projects that collectively will make progress toward national goals. The FAST Act makes no changes to the performance management provisions established by MAP-21, with a few minor exceptions. The main change applicable to the State DOTs and MPOs was to adjust the timeframe in which the planning organizations make progress toward meeting their performance targets.

MAP-21 established national performance goals for the Federal-aid highway program in seven areas:

Goal Area	National Goal
Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
Infrastructure condition	To maintain the highway infrastructure asset system in a state of good repair
Congestion reduction	To achieve a significant reduction in congestion on the National Highway System
System reliability	To improve the efficiency of the surface transportation system
Freight movement and economic vitality	To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
Environmental sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment
Reduced project delivery delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

What has the BMMPO done to date regarding transportation performance measures?

At this time, the BMMPO has identified that they will adopt the NDDOT's performance measures and targets as they are developed. In May 2018, the BMMPO adopted the performance measures and targets for PM-1 for Safety. NDDOT recently adopted performance measures and targets for PM-2 Infrastructure Condition and PM-3 Congestion Reduction.

How do we incorporate our performance measures into our BMMPO MTP goals?

This section illustrates how the seven core performance measures fit within the transportation goals for the MTP. Notice how some of the performance measures can support multiple goals for our transportation system.

Draft MTP goals from the current plan:

Goal 1: Maintain & Improve Regional Mobility & Connections

Performance Measure – Congestion Reduction

Performance Measure – System Reliability

Performance Measure – Freight Movement and Economic Vitality

Goal 2: Enhance Regional Alternatives to Automobile Travel

Performance Measure – Congestion Reduction

Performance Measure – System Reliability

Performance Measure – Environmental Sustainability

Goal 3: Maintain the Transportation System in a State of Good Repair

Performance Measure – Infrastructure Condition: Pavement and Bridges

Performance Measure – System Reliability

Performance Measure – Freight Movement & Economic Vitality

Goal 4: Coordinate Transportation Planning with the Natural & Built Environment

Performance Measure – Environmental Sustainability

Goal 5: Provide a Transportation System that Effectively Moves Goods & Enhances the Local Economy

Performance Measure – Congestion Reduction

Performance Measure – System Reliability

Performance Measure – Freight Movement & Economic Vitality

Goal 6: Provide a Safe & Secure Transportation System

Performance Measure – Safety

Goal 7: Identify Transportation Supportive Funding & Policy Opportunities

Performance Measure – Reduced Project Delivery Delays

Additional MTP goals for consideration:

Goal 8: Consider Effects of Transportation Technology on Future Demands of the Transportation System

Performance Measure – Congestion Reduction

How do the goals and performance measures tie into our transportation planning process?

Develop & Prioritize Goals and Performance Measures for the MTP



Develop Performance Measures Targets that we will work to achieve for our transportation system. (MPO is adopting State Performance Targets)



Identify the Baseline Performance of our Transportation System (Baseline Conditions Report)



Develop projects that will maintain or improve transportation system deficiencies in support of our MTP Goals, Performance Measures, and Target



Evaluate and Prioritize Projects within the MTP to Maintain Fiscal Constraint – Stay Within our Budget!



Program Projects within the Transportation Improvement Programs



Monitor the Performance of Our Transportation System through the Annual Monitoring Report and/or Transportation Improvement Program



Evaluate our Work – Based on the Performance of our Transportation System – do we need to change our priorities or project types being programmed?

How do we prioritize our goals and performance measures?

We will prioritize our goals and performance measures through our entire public involvement process – through our project stakeholders and partners, during our community wide survey, and at our first round of public involvement!

On a scale of 1 to 5 (1 being the lowest or not important to you and 5 being the highest or the most important to you) how do you rank each of the following Transportation System performance goals? Each goal should be considered and ranked individually and not against the other goals.

Transportation System Performance Goal	Ranking				
	1 (Least Important)	2	3	4	5 (Most Important)
Safety					
Infrastructure condition					
Congestion reduction					
System reliability					
Freight movement and economic vitality					
Environmental sustainability					
Reduced project delivery delays					

Name:

What do we do with this prioritization?

Each project developed as part of the MTP will identify how it would respond to each of our Goals and Performance Measurements. We can prioritize our projects by applying a weighted ranking based on the input we received from our project stakeholders and members of the public. This will be in addition to identifying how the project will assist in meeting our performance targets. Not all projects are directly comparable to one another. Projects will be weighted against one another for prioritization and programming depending on the funding source(s) in which they are eligible.

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Bethany Brandt-Sargent, KU
Date: June 12, 2018
Re: Transportation visioning exercise

The Bismarck-Mandan Metropolitan Transportation Plan (MTP) evaluates existing and future transportation needs to guide and prioritize investments in the transportation infrastructure in the metro area, including Bismarck, Mandan, Lincoln, Burleigh County, and Morton County. The MTP incorporates the needs of all modes of transportation including freight, automobiles, bikes, pedestrians, transit, and transportation technology. It is updated every five years to ensure the plan is current and incorporates changes in population and development trends.

Identify three (3) solutions for each priority problem area.

Name: _____

Problem area #1: _____

1.

2.

3.

Problem area #2: _____

1.

2.

3.

Problem area #3: _____

1.

2.

3.

Problem area #4: _____

1.

2.

3.

Problem area #5: _____

1.

2.

3.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1.

2.

3.



Bismarck-Mandan

Metropolitan Transportation Plan

Agenda

- » Welcome and introductions
- » Project updates
- » Introduction to FAST Act goals and prioritization
- » Transportation visioning exercise
- » Wrap up and next steps

Project Updates

- » Financial forecasting/fiscal constraints analysis
- » Baseline conditions report
- » Project branding and public awareness

CRITICAL MILESTONES	2018										
	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		
Existing and Projected Conditions	→										
Goals and Objectives			→								
Performance Measures			◆		→						
Public Involvement					PIM #1	◆					
Steering Committee	◆		◆	◆				◆	◆		
Website/Social Media			→								
Newsletters			→								
TAC/Policy Board Updates	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	
Alternatives Analysis									→		
Financial Analysis		→									
Project Prioritization											
Approvals											
MTP Development											
Project Management/QC/QA	→										

Logo



Option 1

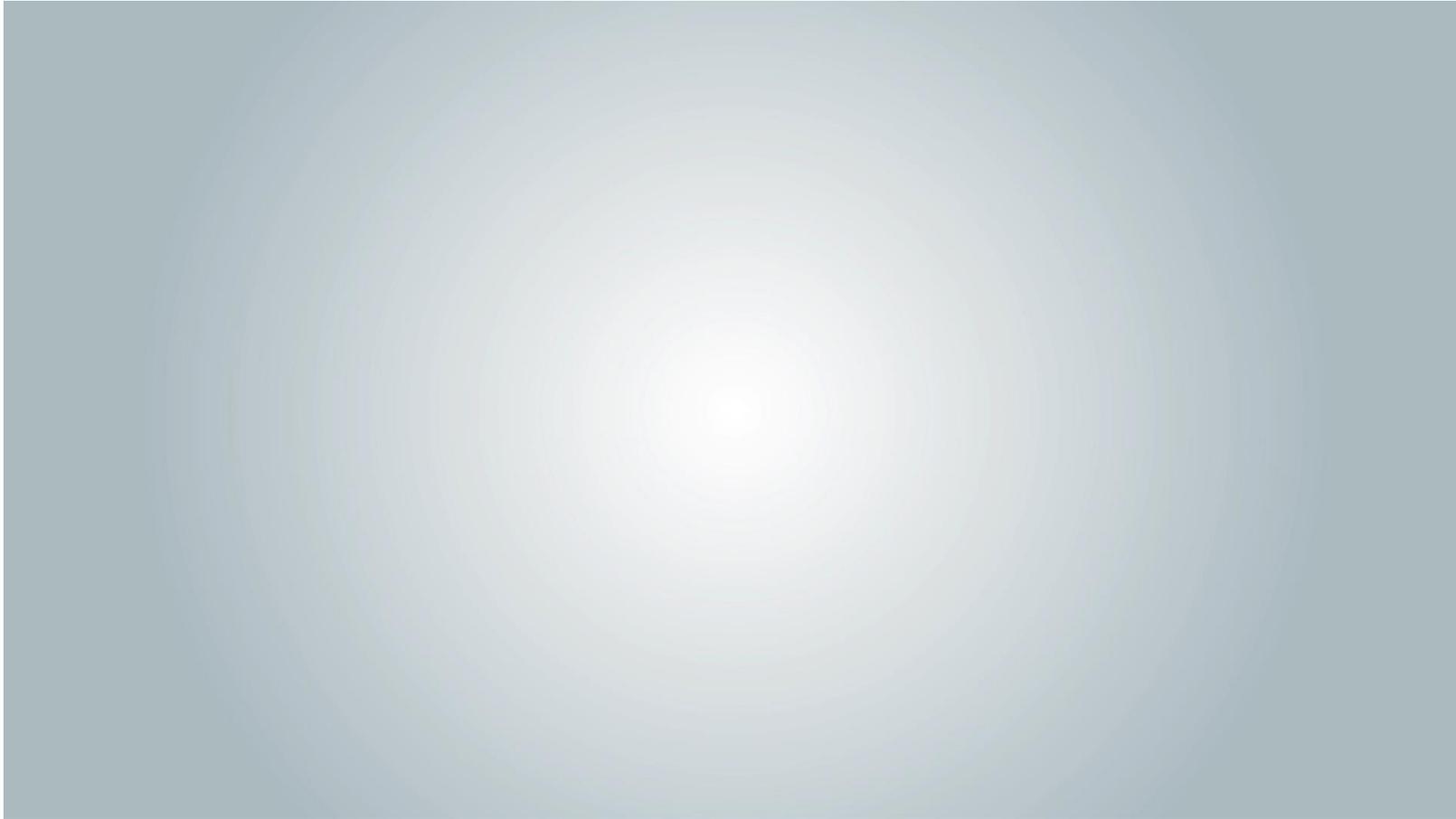


Option 2



Option 3

Video





FAST Act Goals

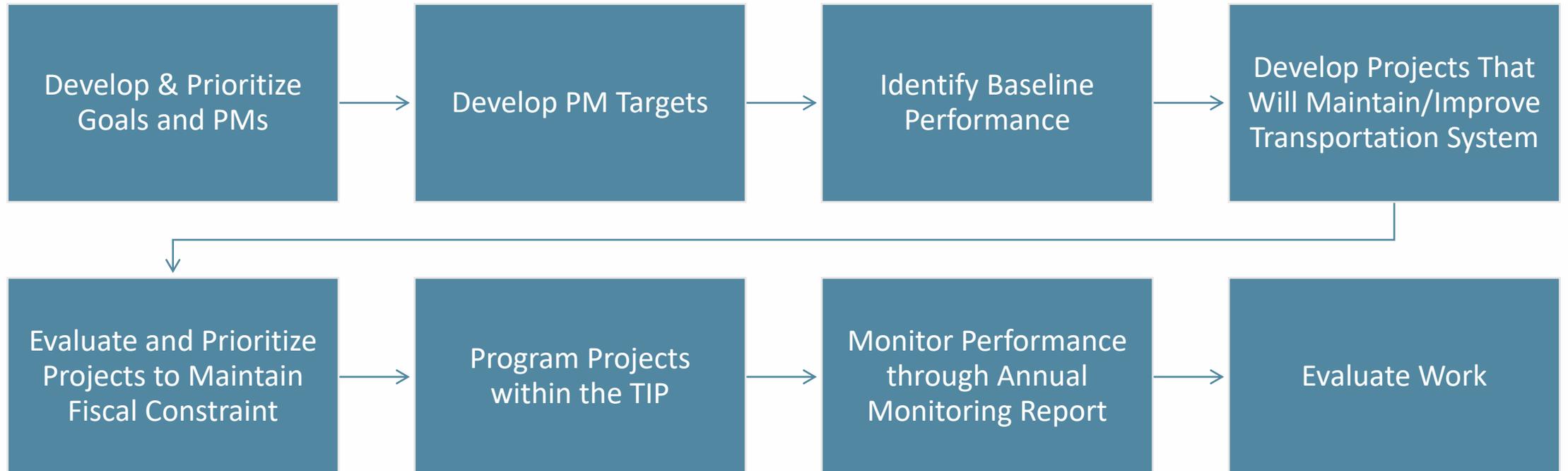
Transportation Legislation

- » Moving Ahead for Progress in the 21st Century Act (MAP-21)
 - Established performance and outcome based program
- » Fixing America's Surface Transportation Act (FAST Act)
 - Continues performance management approach
 - Adjusts timeframe to make progress toward meeting performance targets

National Performance Goals

Goal Area	National Goal
Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
Infrastructure condition	To maintain the highway infrastructure asset system in a state of good repair
Congestion reduction	To achieve a significant reduction in congestion on the National Highway System
System reliability	To improve the efficiency of the surface transportation system
Freight movement and economic vitality	To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
Environmental sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment
Reduced project delivery delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

How Does This Impact the Planning Process



Prioritize Goals

Transportation System Performance Goal	Ranking				
	1 (Least Important)	2	3	4	5 (Most Important)
Safety					
Infrastructure condition					
Congestion reduction					
System reliability					
Freight movement and economic vitality					
Environmental sustainability					
Reduced project delivery delays					

A photograph of a city street scene. In the foreground, a concrete sidewalk curves from the bottom left towards the center. To the left of the sidewalk is a grassy area with a tall, black, ornate street lamp. To the right is another grassy area with a manhole cover. In the middle ground, there are several young trees planted along the sidewalk. In the background, there are various buildings, including a brick building with a 'brea' sign, and a parking lot with several cars. The sky is clear and blue. The text 'Visioning Exercises' is overlaid in a large, white, sans-serif font across the center of the image.

Visioning Exercises

Group Brainstorming

- » What are the major transportation issues in the Bismarck-Mandan area?
- » Take 10 minutes to prioritize the problem areas with the dots in front of you.

Independent Visioning

Take 15 minutes to brainstorm solutions to the big issues:

1. Big Issue #1
2. Big Issue #2
3. Big Issue #3
4. Big Issue #4
5. Big Issue #5
6. What role does technology play in transportation? How does it impact the solutions you discussed previously in big issues 1-5?

Discussion of Solutions

- » Take 10 minutes to prioritize the problem areas with the dots in front of you.



Next Steps

How do we prioritize our goals and performance measures?

We will prioritize our goals and performance measures through our entire public involvement process – through our project stakeholders and partners, during our community wide survey, and at our first round of public involvement!

On a scale of 1 to 5 (1 being the lowest or not important to you and 5 being the highest or the most important to you) how do you rank each of the following Transportation System performance goals? Each goal should be considered and ranked individually and not against the other goals.

Transportation System Performance Goal	Ranking				
	1 (Least Important)	2	3	4	5 (Most Important)
Safety					X 4.5
Infrastructure condition					
Congestion reduction			X 3		
System reliability				X 3.5	
Freight movement and economic vitality					Y 4
Environmental sustainability			X 3		
Reduced project delivery delays		X 2			

Name:

What do we do with this prioritization?

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Safety					*
Infrastructure condition				*	
Congestion reduction			*		
System reliability				*	
Freight movement and economic vitality			*		
Environmental sustainability		*			
Reduced project delivery delays		*			

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Safety					X
Infrastructure condition					X
Congestion reduction			X		
System reliability				X	
Freight movement and economic vitality			X		
Environmental sustainability		X			
Reduced project delivery delays				X	

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Safety					5
Infrastructure condition				4	
Congestion reduction				4	
System reliability			3		
Freight movement and economic vitality			3		
Environmental sustainability	1				
Reduced project delivery delays				4	

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Infrastructure condition				X	
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System reliability				X	
Freight movement and economic vitality			X		
Environmental sustainability			X		
Reduced project delivery delays		X			

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Infrastructure condition				X	
Congestion reduction		X			
System reliability			X		
Freight movement and economic vitality		X			
Environmental sustainability			X		
Reduced project delivery delays			X		

Name:

JUSTIN F.

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Congestion reduction				X	
System reliability				X	
Freight movement and economic vitality	X				
Environmental sustainability		X			
Reduced project delivery delays	X				

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Freight movement and economic vitality			X		
Environmental sustainability			X		
Reduced project delivery delays		✓	X		

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Freight movement and economic vitality				4	
Environmental sustainability				4	
Reduced project delivery delays			3		

Name: *Steve Saunders*

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Infrastructure condition			3	4	
Congestion reduction					5
System reliability					5
Freight movement and economic vitality				4	
Environmental sustainability		2			
Reduced project delivery delays			3		

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Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Molly Herrington, KLJ
Date: June 12, 2018
Re: Transportation visioning exercise

The Bismarck-Mandan Metropolitan Transportation Plan (MTP) evaluates existing and future transportation needs to guide and prioritize investments in the transportation infrastructure in the metro area, including Bismarck, Mandan, Lincoln, Burleigh County, and Morton County. The MTP incorporates the needs of all modes of transportation including freight, automobiles, bikes, pedestrians, transit, and transportation technology. It is updated every five years to ensure the plan is current and incorporates changes in population and development trends.

Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: Funding & Authorization tools

1. ~~expand~~ ~~expand~~ ~~expand~~ ~~expand~~ ~~expand~~
- 2.
- 3.

Problem area #2: Driver behavior

1. Public education pieces - PSA.
2. Continued update on signage. As new systems are being put in, signage is getting better.
3. Improve traffic flow to create less congestion during peak hours.

Problem area #3: Public Expectations

1. Public Education pieces - PSA. News stories, etc.

2.

3.

Problem area #4: System Preservation

1.

2.

3.

Problem area #5: Footprint Management

1.

2.

3.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1.

2.

3.

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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1:

Funding & Authorization Tackle

1.

Sales Tax

2.

Fuel Tax

3.

User Utility Fund

4

Reduction of Bureaucracy

Problem area #2:

Driver Behavior

1. Increased Fines for violations
(Accountability)
2. Education - Drivers Ed
3. Retesting
- 4) Elimination of Distractions

Problem area #3:

Public Expectations

1. Education
2. Public Involvement

Problem area #4:

System Preservation

1. Increase Maintenance Funding
2. Better Original Construction Methods
3. Data Collection & Monitoring
4. Utilization of New Technologies

Problem area #5: Foot Print Mgmt

1. Limit Public Services
2. Land use Planning
3. Urban densities → increase

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1. Increase Utilization
2. Increase Education
3. Increase Funding

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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: Funding & Authorization tasks

1.

2.

3.

Problem area #2: Driver Behavior

1. Increased fines for violations
2. Drivers Education
- 3.

Problem area #3: Public Expectations

1. Public Awareness Campaigns
- 2.
- 3.

Problem area #4: System Presentation

1. Hold contractors responsible for low quality work
- 2.
- 3.

Problem area #5: Footprint Management

1. Pay for outward growth through special assessments
2. Incentives for fill in projects
- 3.

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Identify three (3) solutions for each priority problem area.

Name: ~~XXXXXXXXXX~~

Problem area #1: FUNDING + AUTHORIZATION TOOLS

1. CHAMPION IDEAS TO THE LEGISLATIVE BODIES (w/out LOBBYING).
2. INCREASE OPPORTUNITIES TO RAISE MORE LOCAL FUNDS.
3. PURSUE ALTERNATIVE FUNDING MECHANISMS, i.e. BUILD, PPP

Problem area #2: DRIVER BEHAVIOR

1. STRONGER LAWS RELATED TO DEVICE USE WHILE DRIVING.
- 2.
- 3.

Problem area #3: PUBLIC EXPECTATIONS

1. INCREASED EDUCATIONAL OPPORTUNITIES FROM LPA'S & MPO.
↳ MTGS, HANDOUTS, WEBINARS, ETC.
- 2.
- 3.

Problem area #4: SYSTEM PRESERVATION

1. RESEARCH INNOVATIVE TREATMENT OPTIONS & TECHNIQUES.
2. STAY ACTIVE, DON'T FALL BEHIND.
- 3.

Problem area #5: FOOTPRINT MANAGEMENT

1. DEVELOP FROM WITHIN FIRST.
2. INCREASE THE BURDEN ON DEVELOPERS WISHING TO INCREASE FOOTPRINT.
- 3.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1. PLAYS A VITAL ROLE WHICH INCREASES DAILY.
2. WILL MOST LIKELY EFFECT HOW TRANSPORTATION IS SPENT IN THE FUTURE.
- 3.

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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: Funding & authorization Tools

1. Legislative efforts to allow impact fees and other funding options at the local level vs. specific actions to limit cities/counties
2. Figuring out ways to do more w/ less - phased approach to improvement - 2 lane rural → 3 lane rural w/turning lanes → full urbanization
3. Do a better job of identifying projects that improve the whole system vs. benefitting one or two jurisdictions

Problem area #2: Driver Behavior

1. Education re: distracted driving
2. Watch for pedestrians & bicyclists - similar to watch for motorcycle advertising campaign
3. Increase enforcement

Problem area #3: Public Expectations

1. Education of residents on funding sources, limitations of available funding and how projects are prioritized
2. Expectations were somewhat reduced during boom - when there was more congestion, people dealt with it - maybe anything other than LOS A is not failing...
- 3.

Problem area #4: System Preservation

1. Continued pavement management efforts
2. Incorporate alternative transportation options into existing ROW
- 3.

Problem area #5: Footprint Management

1. Discourage expansion of footprint by making developers pay larger share of costs for new infrastructure
2. Adopt an urban growth boundary for urban development
3. Encourage infill and redevelopment by decreasing development costs if possible

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

- 1.
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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: Funding + Authorization Tools

1. find champions in state legislature or initiate a policy advocate position w/in MPO
2. public outreach campaign to shift mindset from fed/state funding to local funding sources
3. Cut costs

Problem area #2: Driver Behavior

1. Improve N-S and E-W traffic flow (i.e. corridors with no stop lights) 694 and 494 concept.
2. Work with legislature to increase penalties for violations.
- 3.

Problem area #3: Public Expectations

1. Start making public outreach activities a regularly funded program.
- 2.
- 3.

Problem area #4: System Preservation

1. Shrink the total road miles in the system and there will be more \$ to go around for preservation of the system.
2. Improve opportunities for ~~take~~ alternate transit improve connections so existing system isn't so heavily used.
- 3.

Problem area #5: Footprint Management

1. Revised urban growth boundary policies (such as user-paid maintenance for infrastructure in addition to initial construction. Or stricter UGB rules)
2. Incentives for infill development (+ missing middle housing development)
- 3.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

- 1.
- 2.
- 3.

For a number of items above: implement toll roads (need state authorization first)

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Molly Herrington, KLJ
Date: June 12, 2018
Re: Transportation visioning exercise

The Bismarck-Mandan Metropolitan Transportation Plan (MTP) evaluates existing and future transportation needs to guide and prioritize investments in the transportation infrastructure in the metro area, including Bismarck, Mandan, Lincoln, Burleigh County, and Morton County. The MTP incorporates the needs of all modes of transportation including freight, automobiles, bikes, pedestrians, transit, and transportation technology. It is updated every five years to ensure the plan is current and incorporates changes in population and development trends.

Identify three (3) solutions for each priority problem area.

Name: Gabe Schell

Problem area #1: Funding and Authorization tools

1. minimize need for funding by reducing outward expansion of system
2. provide information & data to public on costs of maintaining & expanding infrastructure
3. enable legislation for additional tools at state & local level including wheel tax, registration fees, local street maintenance utility, impact development fees

Problem area #2: Driver Behavior

1. Educate in school + otherwise on defensive driving
2. Enforce
3. Enable legislation on Mandatory seat belt, increased speeding fines, DUI.

Problem area #3: Public Expectations

1. communicate costs + how level of maintenance is provided w/ funding available by exercise on public budgets
2. ~~inform~~ inform public on tax base + ~~the~~ marginal increase in taxable ~~property~~ property that does not offset increased cost of Municipality to serve the property
3. Educate public on ~~x~~

Problem area #4: System Preservation

1. Identify Best practices for pavement preservation for maximized life-cycle cost of the asset
2. require best practices in new development (edge drain, concrete pmt, etc) to minimize future O+M costs
3. increased collaboration w/ City/State/county jurisdictions on pmt mgmt

Problem area #5: Footprint Mgmt

1. Define growth ~~area~~ area that v.b. services will be provided to in 5yr period to focus funds to one geographic area
2. require impact fees from new ~~development~~ development specifically earmarked for infrastructure improvements in ~~the~~ previously identified growth area
3. take stronger position on guiding development to areas that utilize existing investments in infrastructure

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1. provide analysis
- 2.
- 3.

Bismarck-Mandan Metropolitan Transportation Plan

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From: Molly Herrington, KLJ
Date: June 12, 2018
Re: Transportation visioning exercise

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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: Funding & Authorization Tools

1. Dedicated Local \$ for Transportation
2. Legislative encouragement for Public Private Partnerships.
- 3.

Problem area #2: Driver Behavior

1. Radio + TV + Social Media Campaigns @ Safe Driver Behavior
2. ↑ Ticket \$
3. Feedback Signs.

Problem area #3: Public Expectations

1. Education Campaign @ Funding limitations.
2. Educate public on where their money goes regarding transportation.
- 3.

Problem area #4: System Preservation

1. Pavement Management roster for ~~each jurist~~ the jurisdictions.
2. Dedicated local \$ to roadways/transportation
3. Investment in technologies to keep system in good repair.

Problem area #5: Footprint Management

1. Jurisdictional resolve to ~~land~~ manage land development.
2. Education (c) ~~cost~~ land development's cost on transportation network preservation and expansion.
3. Promote Infill development.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1. May be ways to use technology to educate the public (e) ^{↑ or legislature} various transportation issues. (analysis tools or media)
2. use technology to provide driver feedback ~~to each~~ to influence driver behavior.
- 3.

* harnessing that tech to communicating the benefits may be ~~most~~ challenging. Need the right ppl to champion those activities.

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Bethany Brandt-Sargent, KLU
Date: June 12, 2018
Re: Transportation visioning exercise

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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: Funding & Authorization Tools

1. Legislation that favors innovative
ie. financing Private Public Partnerships
2. Privatizing corridors
- 3.

Problem area #2: Driver Behavior

1.

2.

3.

Problem area #3: Public Expectations

1. Public Education Social Media

2.

3.

Problem area #4: System Preservation

1. Alternative Rehab Actions

2. Increase in use of Chemistry, new materials

3.

Problem area #5: Footprint Management

1. Develop long range plans with areas easements planned f
2. Zoning requirements that encourage more planned growth
- 3.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

- 1.
- 2.
- 3.

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Bethany Brandt-Sargent, KU
Date: June 12, 2018
Re: Transportation visioning exercise

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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: Funding & Authorization Tools

1. Relaxation of State Laws for Funding Alternatives
- 2.
- 3.

Problem area #2: Driver Behavior

1. More PSAs
2. ~~Mandatory~~ Reinstate Mandatory Driver Education at High School
- 3.

Problem area #3: Public Expectations

1. Have polling that determines periodically what the public's appetite of safety, congestion, infrastructure expansion, others versus funding increases (tax) alternative)
2. Share outside areas public expectations to our local public
- 3.

Problem area #4: System Preservation

1. Preserving System Needs farther than customary 25 years
2. Put a premium on preserving existing system in prioritizations over expansion
- 3.

Problem area #5: Footprint Management
accurate

1. Bring defined costs of sprawl to the public attention

2.

3.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1.

2.

3.

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
 From: Molly Herrington, KLJ
 Date: June 12, 2018
 Re: Transportation visioning exercise

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Identify three (3) solutions for each priority problem area.

Name:

Problem area #1: FUNDING & AUTHORIZATION TOOLS

1. ALLOW FUNDING SOURCES THAT CURRENTLY AREN'T. i.e.; ROADWAY UTILITY AS PART OF MONTHLY BILL. ← STATE DECISION I THINK.
2. EDUCATE ON WHAT INFRA. COSTS REALLY ARE
 ↓ ROAD
3. GAS TAX RAISE. OR OTHER WAY TO TAX SUCH AS MILEAGE TAX.

Problem area #2: DRIVER BEHAVIOR

1. STIFFER PENALTIES, STATE LEG. TO INCREASE ALLOWABLE TRAFFIC FINES,
2. ENCOURAGE ROADWAY GEOMETRY THAT CALMS TRAFFIC.
3. PUBLIC SERVICE ANNOUNCEMENTS IN MEDIA. SEEMS TO HAVE WORKED TO SOME DEGREE FOR DRUNK DRIVING, BOLSTER IT FOR DISTRACTED DRIVING,

Problem area #3: PUBLIC EXPECTATIONS

1. COMPARE OUR LOS. TO OTHER AREAS OF COUNTRY. I THINK WE'D STILL LOOK GOOD VS. LARGE CITIES DESPITE RECENT GROWTH.
2. EDUCATE ON ROAD COSTS. i.e.; WHEN BUYING A HOUSE, AGENT HAS TO STATE THAT APPROX. \$1,000/YR. IS HISTORIC AMOUNT TO KEEP ROADS UP.
3. INFORMATIONAL VIDEO THAT STAYS ON WEBSITE.
(FAQ) ← NO DOT HAS YOUTUBE CHANNEL.

Problem area #4: SYSTEM PRESERVATION

1. PRIORITIZE EXISTING SYSTEM NEEDS. ACTUALLY SEEMS TO BE GOING THIS WAY.
2. MANAGE WHAT IS REALLY NEEDED FOR INITIAL BUILD SO THAT FUTURE PRESERVATION ISN'T SUCH A HUGE TASK.
3. BETTER SYSTEMATIC APPROACH. i.e.; MILL & OVERLAY @ YRS. 10 & 20 VS. FULL RECONSTRUCT @ YR. 20-25.

Problem area #5: FOOTPRINT MANAGEMENT.

1. STOP SPECIAL ASSESSMENTS FOR NEW ^{DEVELOPMENT} CONSTRUCTION.
2. PROMOTE OR CREATE PROGRAMS THAT ENCOURAGE INFILL.
3. SUPPORT AFFORDABLE HOUSING OPTIONS THAT LESSEN LOT SIZES.

What role does technology play in transportation? How does it impact the solutions you discussed previously in this exercise?

1. TRAFFIC LIGHT COORDINATION IS A BIG PRO.
2. I BELIEVE THAT AUTO-VEHICLES ARE COMING. HOW MUCH & HOW SOON?
3. TECH. COMES W/ GROWING PAINS, BUT ONCE FIGURED OUT, USUALLY MAKES MORE EFFICIENT.

Bismarck-Mandan Metropolitan Transportation Plan

Date: 06/12/2018

Time: 1:00 p.m.

Location: Bis-Man Transit Training Room

Attendees: Mark Berg, City of Bismarck; Kim Lee, City of Bismarck; Gabe Schell, City of Bismarck; Becky LaBella, Bismarck Public Schools; Jeff Solemsaas, Bismarck P.D.; Greg Haug, Bismarck Airport; Marcus Hall, Burleigh County; Justin Froseth, City of Mandan; Cole Higlin, Mandan Park District; Natalie Pierce, Morton County; John Saiki, Morton County; Michael Johnson, NDDOT-LG; Steve Saunders, Bismarck-Mandan MPO; Rachel Drewlow, Bismarck-Mandan MPO; Bethany Brandt, KLJ; Molly Herrington, KLJ; Steve Grabill, KLJ; Wade Kline, KLJ; Peggy Harter, Stantec

Agenda

Welcome and Introductions

Rachel Drewlow opened the meeting welcoming everyone and introductions.

Project Updates

Wade Kline provided project updates on the following items.

- » Financial Forecasting/Fiscal Constraint Analysis – a pre-meeting occurred today with Bismarck, Mandan, Morton and Burleigh County to get clarification and information regarding the basis of funding and needs for the financial plan. The preliminary financial analysis will be ready mid-summer.
- » Baseline Conditions Report – much of this data has been collected with the exception of waiting on the TDM data coming out of ATAC. We will finalize this report when the TDM data is available.

MEETING MINUTES

» Public Outreach/Awareness

- Project Branding – The brand name will be “Arrive 2045” through the consensus with the MPO staff.
- Logo – Three Options – SC will vote on their preferred option
 - Blend of Options 1 & 2 – graphic of Option 1 with text of Option 2 and show Option 2 person on bicycle.
 - Make some refinements with the text of Option 1 – add in the Bismarck-Mandan and MTP to the top/bottom and Rachel will decide on the final logo.
- Project Website – Web domain is Arrive 2045.com
- Draft of the MTP video specific to the Bis-Man area to inform the public of the purpose of the MTP. Wade showed the video to the committee for review. The video is 1 minute and 17 seconds long. Natalie suggested item to add is a brief discussion on the project schedule and when to expect public input. Gabe suggested to add some imagery for the Bismarck-Mandan area to show this video was made specifically for the Bis-Man MPO area.

Introduction to FAST Act Goals and Prioritization

Peggy Harter reviewed the Goals and Objectives Memorandum that was passed out to the SC members. Highlights of the memo and discussion include:

- » Discussion on the history of our transportation legislation that lead to a performance based transportation system.
- » Identification of the seven FHWA develop performance based goals.
- » Discussion on what NDDOT and BMMPO have done to date regarding a performance based transportation system.
- » How do we tie our performance measures into our MTP goals?
- » How do the performance measures tie into our transportation planning process?
- » The group conducted an exercise to rank/prioritize the 7 performance measures on a scale of 1 to 5 (1 being the least important and 5 being the most important.)



Visioning Exercises

Molly Herrington kicked off the meeting and asked the group to identify areas of concerns to the future of the transportation system. She noted not to complain about a specific intersection in town, but higher-level issues. The group identified the following items:

- » Funding
- » Network Expansion
- » North-South Transportation Corridors
- » East-West Transportation Corridors
- » Driver Behavior
- » Planning for Technology and the unknown for the Speed of it occurring
- » Public Knowledge of the Transportation System
- » Public Expectations
- » Growing Population
- » System Preservation
- » Congestion Intolerance
- » Multi-modal interactions – bicycle, trains, buses, cars, etc.
- » Representing all jurisdictions through the MPO as one voice
- » Prioritizing projects with multiple needs
- » Future infrastructure needs for technology and the additional funding that comes with it
- » Long term corridor preservation outside of the MTP planning horizon
- » Freight considerations with increase of on-line buying/selling
- » Intersection controls
- » Sprawl growth preference affecting our transportation system needs
- » Federal funding limitations – stagnant and construction costs increasing – erosion of buying power.
- » Phased growth approach
- » Freight corridors needed – i.e. bypasses and planning for future bypasses

Dotmocracy Exercise

Everyone received 6 dots and had to place them on 6 different issues identified – no stacking of votes – each person must vote for 6 different issues as their top priorities. Once the voting was completed the top 6 issues are identified below.

MEETING MINUTES

SC members then identified solutions that may overcome these issues.

» Funding and Authorization Tools – Top 3 are highlighted

- Minimize projects based on project types/costs – 6 votes
- Relaxation of funding laws – 7 votes
- Specific enabling legislation – 3 votes
- Legislative encouragement for public/private partnerships – 0 votes
- New or alternative funding sources – impact fees – 8 votes
- New or alternative funding sources – user-based fees – i.e. toll roads, mileage tax, fuel tax, etc. – 6 votes
- Elect different politicians – 1 vote
- Educate public based on funding limitations v. needs – 5 votes
- Formal presence in the legislature to advocate for area transportation needs – 0 votes

» Driver Behavior – Top 3 are highlighted

- Increase penalties for violations/enforcement
- New or stronger laws for cell phone reduction
- Education – radio/tv/social media campaigns
- Improve N/S and E/W traffic flow
- New technology that shuts down your phone when your vehicle is driving
- Street design standards and driver feedback
- Driver re-testing
- Mandatory driver's education for students

» Public Expectations – top 3 are highlighted

- Traffic efficiency – lower the public expectation – congestion tolerance
- Make public outreach a funded function
- Public wants and needs for transportation projects v. public not wanting increased costs/takes/specials
- Public budgeting exercise
- Increasing something other than single occupancy vehicles and a campaign around this
- Access management and roadway speed limits – keep the traffic moving
- 5 minute informational video explaining the taxes paid and explaining where they go – one for each jurisdiction. Also include a FAQ that addresses questions that are regularly received.

MEETING MINUTES

- » System Preservation – top 3 are highlighted
 - Reduce the road mileage
 - Identify best practices for life cycle costs
 - Require best practices in new developments to expand the life of the roadway
 - Better data management/monitoring – re-evaluate the use of planning funds to collect pavement conditions data.
 - Systems Programs – better data collection, management, monitoring.
 - Improve connection for alternative modes of transportation – i.e. non-motorized, transit, etc.
 - Curbing uses expectations of roadway
 - Establish \$ - local or state funds for future preservation needs
 - Being proactive with the funding that we have.

- » Footprint Management – top 3 are highlighted
 - Revised urban growth boundary policies – developer infrastructure and maintenance costs when they are beyond specific growth boundaries.
 - Identifying the Incentives for infill development – identify the lower infrastructure costs
 - Limitation of services – police/fire/etc. the increased response times in turn increase insurance premiums which is a disincentive.
 - Impact fees for new development limited to transportation infrastructure
 - Eliminate special assessments for new developments by rolling them back to the develop and the price of the lots.
 - Jurisdictions and politicians need to start to say “no” to sprawl development if they can’t afford the growth.
 - Urban growth boundaries would need to be cross-jurisdictional between Cities/Counties and across the river.
 - Government should be leading development
 - Local transportation funding for development

- » Technology Infrastructure – this data was collected via written comments and will be summarized.

Project Wrap Up and Next Steps

- » Baseline Conditions Report
- » Financial Analysis
- » Next SC Meeting – end of July/early August
- » First PIM – in September

Meeting adjourned at 3:15 pm



MEETING SIGN IN

Name	Organization	Email
Wade Hine	KLS	
Beverly Brandt	KLS	
Molly Herrington	KLS	molly.herrington@klseng.com
Mark A Berg	City of Bismarck	mberg@bismarcknd.gov
Marcus S. Hall	Burleigh County	mahall@nd.gov
Natalie Pierce	Morton County	natalie.pierce@mortonnd.org
Becky LaBella	Bismarck Public Schools	becky_labela@bismarckschools.org
Kim Lee	City of Bismarck	klee@bismarcknd.gov
Steve Grabill	KLS	steve.grabill@klseng.com
Steve Saunders	MPO	ssaunders@bismarcknd.gov
Greg Haug	Bis Airport	ghaug@bismarcknd.gov
MICHAEL JOHNSON	NDDOT-LG	mjohnson@nd.gov
Cole Higin	Mandan Park District	chigin@mandanparks.com
John A. Saiki	Morton County	john.saiki@mortonnd.org
JUSTIN FROSETH	CITY OF MANDAN	jfroseth@cityofmandan.com
Gabe Schell	City of Bismarck	gschell@bismarcknd.gov
Jeff Solemsoe	Bismarck P.D.	jsolemsoe@bismarcknd.gov
Peggy Harter	Stantec	peggy.harter@stantec.com
Rachel Drewlow	BMMPO	rdrewlow@bismarcknd.gov

Bismarck-Mandan Metropolitan Transportation Plan

Date: September 25, 2018
Time: 10:00 a.m.
Location: Bis-Man Transit Training Room
Re: Steering Committee Meeting #3

Agenda

- » Welcome and Introductions
- » Project Updates
- » Review Performance Management Elements of MTP
- » System Performance Overview
 - (Draft Existing Systems Report)
- » Preliminary Fiscal Constraint Analysis
- » Future Summit Workshops
 - Review Format and Content
 - Committee Workshop on 9/9 (early morning or early afternoon)
- » Wrap up and next steps



Bismarck-Mandan Metropolitan Transportation Plan

Steering Committee Meeting #3
September 25, 2018



Agenda

- » Welcome and introductions
- » Project updates
- » Recap performance based planning
- » System performance overview
- » Preliminary financial assessment
- » Futures Summit workshops
- » Wrap up and next steps



Project Updates

- » Baseline conditions report in draft form
- » Awaiting data from other MPO efforts
- » Marketing campaign underway
 - Website/social media
 - Newsletters
 - News media and Dakota Access
- » Upcoming public meetings

CRITICAL MILESTONES	2018										
	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec		
Existing and Projected Conditions	→										
Goals and Objectives			→								
Performance Measures			◆		→						
Public Involvement						PIM #1	◆				
Steering Committee	◆		◆			◆		◆	◆		
Website/Social Media					→						
Newsletters					→						
TAC/Policy Board Updates	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	
Alternatives Analysis										→	
Financial Analysis					→						
Project Prioritization											
Approvals											
MTP Development											
Project Management/QC/QA	→										

Performance Based Planning

Transportation Legislation

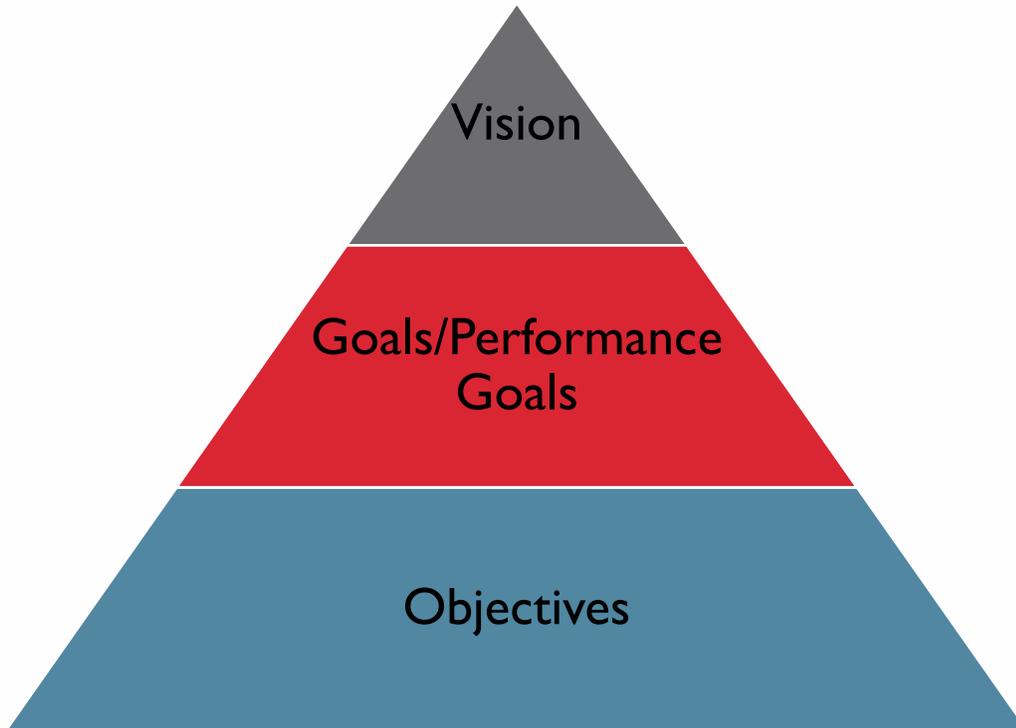
» Moving Ahead for Progress in the 21st Century Act (MAP-21)

- Established performance and outcome based program
- Incorporate MAP-21 Planning Factors

» Fixing America's Surface Transportation Act (FAST Act)

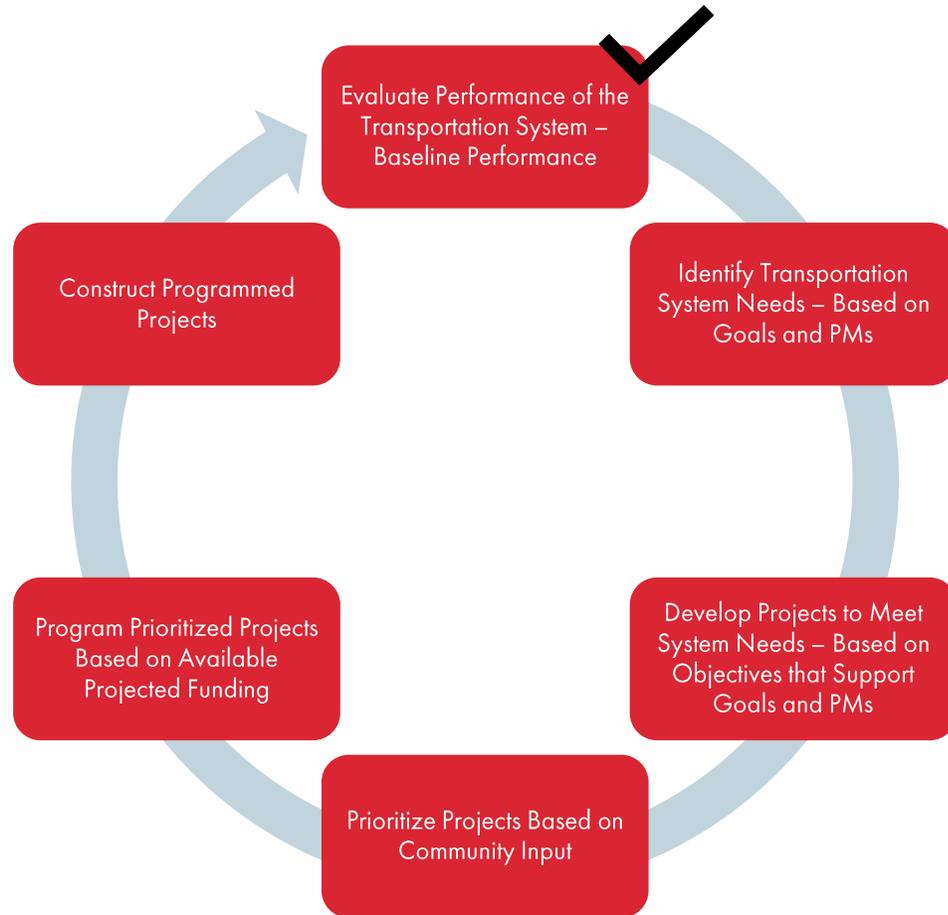
- Continues performance management approach
- Adjusts timeframe to make progress toward meeting performance targets

MTP – Vision, Goals, and Objectives



- » Based on transportation legislation guidance
- » Based on stakeholder and public input
- » Based on system needs

Performance Based Transportation Plan



» Performance Goals

» Performance Measures

» Performance Targets

Summary of SC Goals Ranking

Goal	Ranking (Out of 5)
Safety	4.89
Infrastructure condition	4.00
Congestion reduction	3.57
System reliability	3.82
Freight movement and economic vitality	3.00
Environmental sustainability	2.43
Reduced project delivery delays	2.79

- » Give us a first data point
- » Public will have opportunity to establish similar goal “weighting”
- » Public will be asked to more specifically identify “performance areas”

Demographic Growth & Forecasting

Demographics

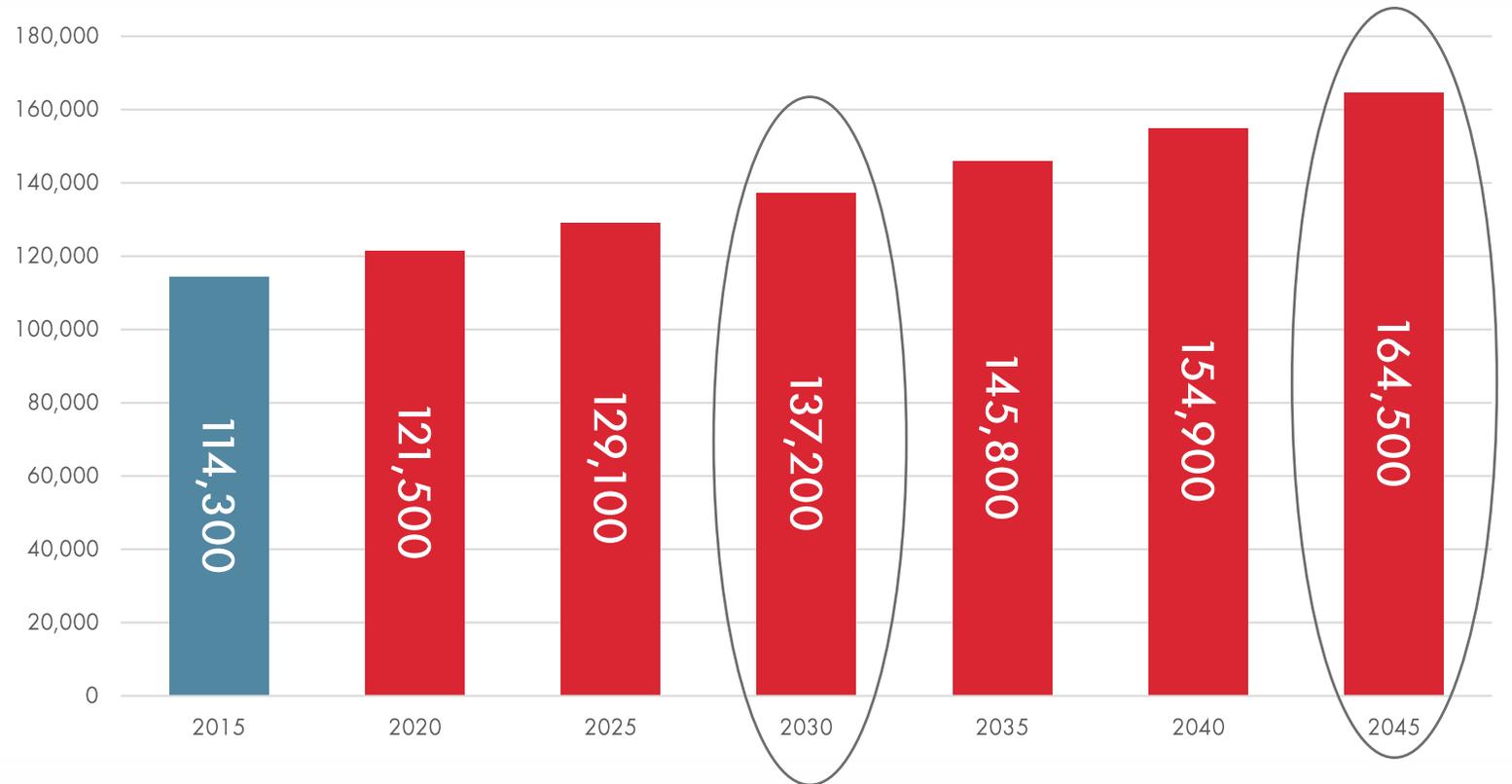
» Population Forecasts

- + 22,900 by 2030
- + 50,200 by 2045

» Employment Forecasts

- +20,200 by 2030
- +49,200 by 2045

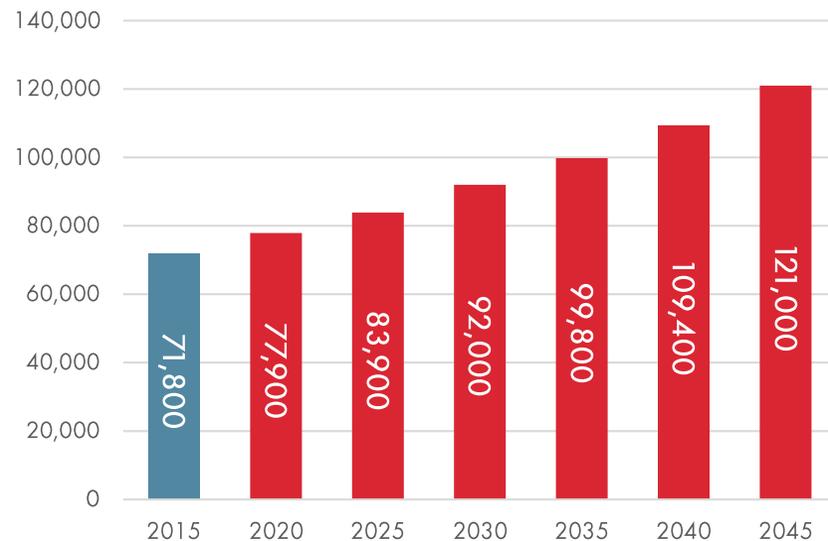
» Support Travel Demand Model



Demographics

» Job growth

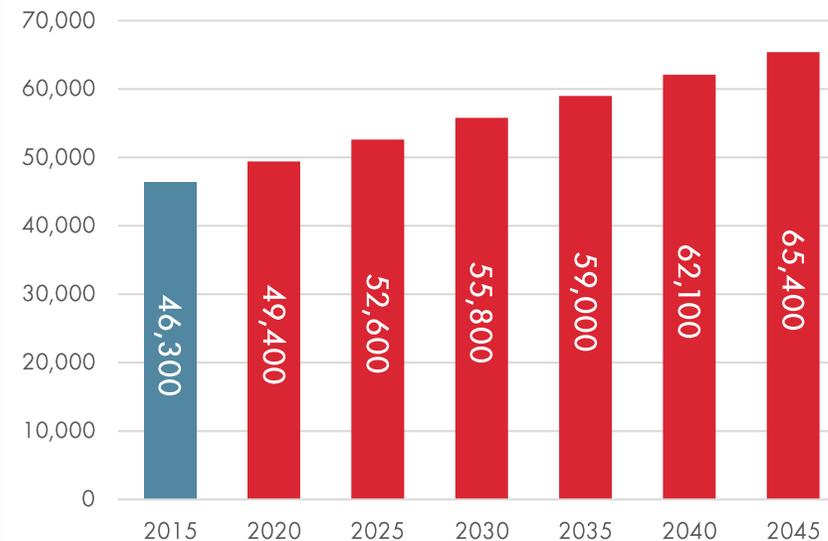
- + 20,200 by 2030
- + 49,200 by 2045



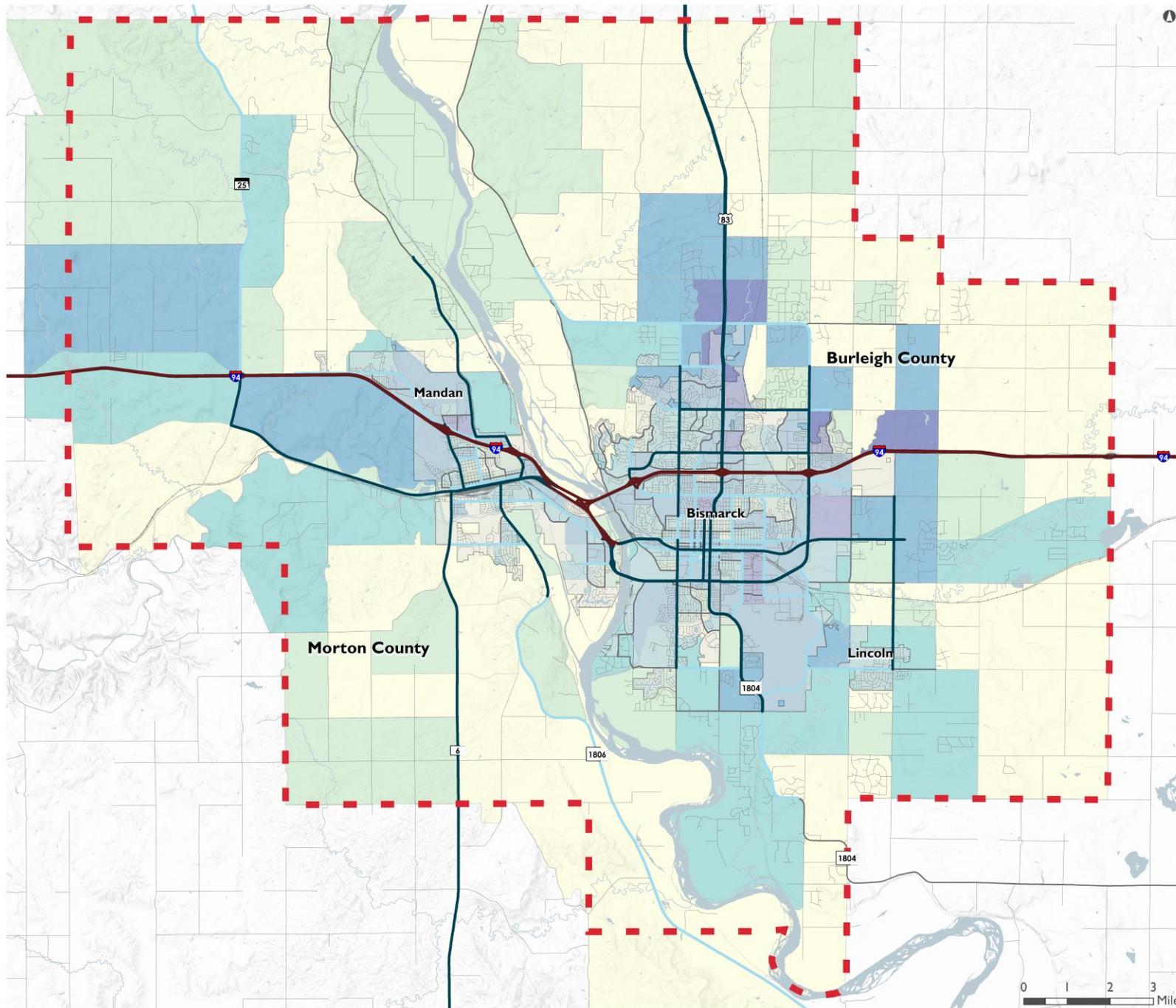
Job growth is 2.6% lower than Envision 2040 (124,200)

» Household growth

- + 9,500 by 2030
- + 19,100 by 2045



Household growth is 10.5% lower than Envision 2040 (73,100)



2045 Household Growth

Metropolitan Planning Organization Boundary

Boundary

Roadway by Functional Classification

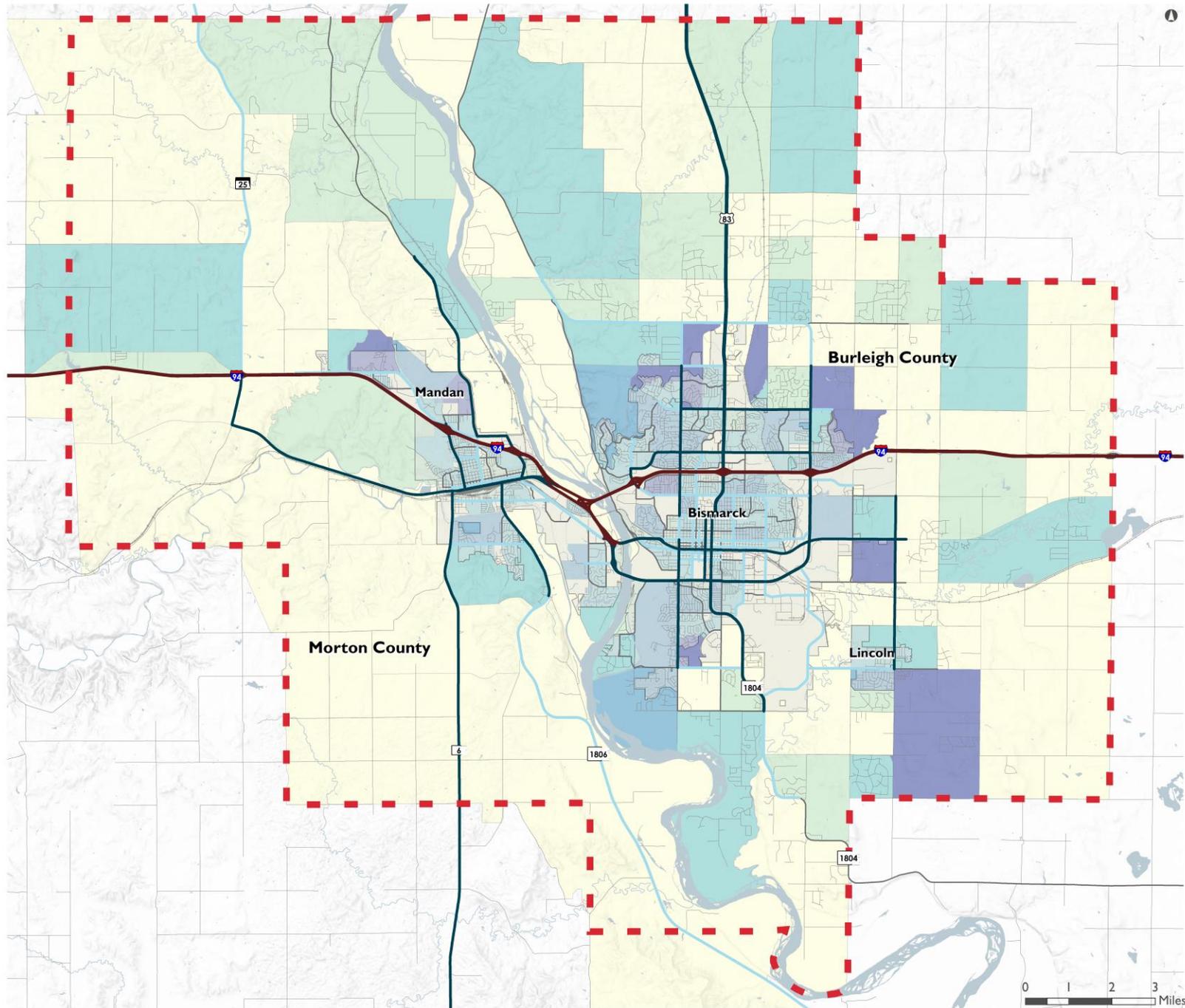
- Interstate
- Principal Arterial
- Minor Arterial
- Collector

2045 TAZ Data

Additional Jobs

- 0 - 10
- 11 - 50
- 51 - 250
- 251 - 1500
- 1501 +





2045 Household Growth

Metropolitan Planning Organization Boundary

- - - Boundary

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

2045 TAZ Data

Additional Households

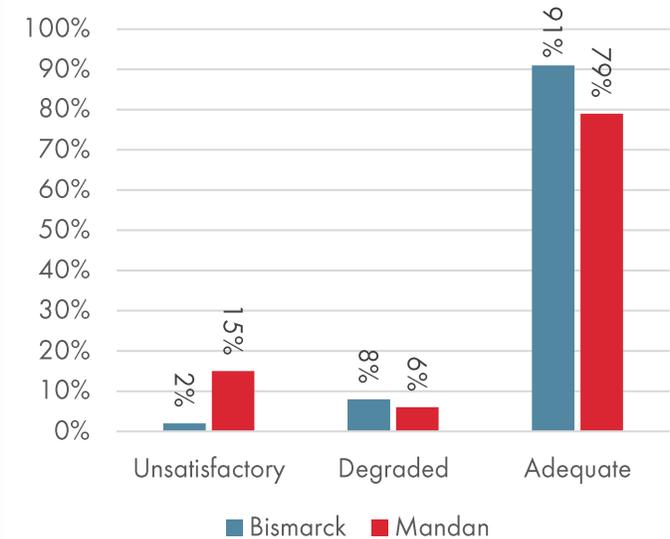
- 0 - 100
- 101 - 200
- 201 - 500
- 501 - 1000
- 1001 - 1564



System Performance Overview

Pavements

	Pavement Condition in MPO Area	NDDOT Target	Arrive 2045 Target
Interstate: Good	75.6%	80.2%	80.2%
Interstate: Poor	3.0%	0.1%	0.1%
Non-Interstate NHS: Good	58.3%	62.8%	62.8%
Non-Interstate NHS: Poor	3.0%	0.3%	0.3%

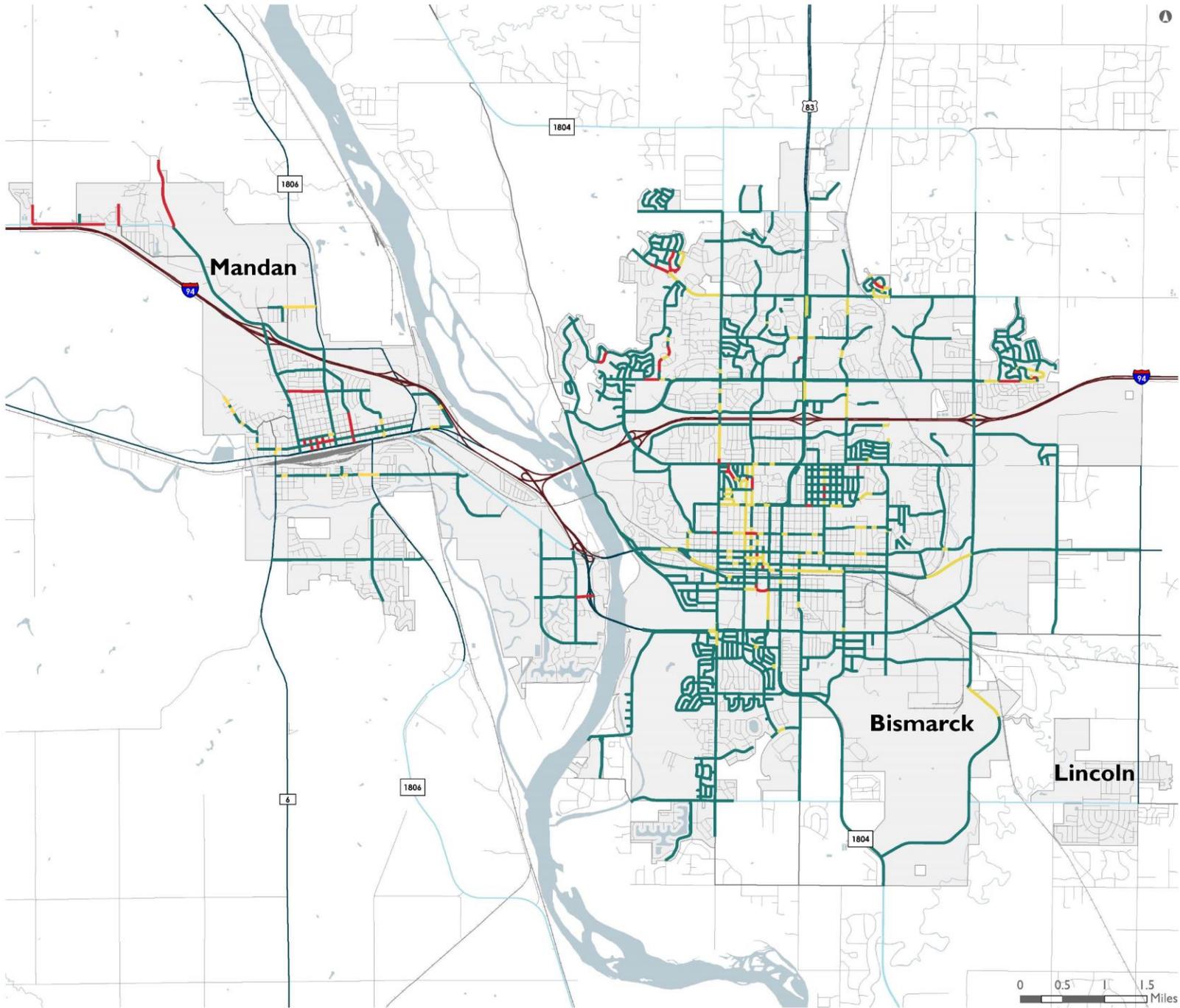


	Collector			Minor Arterial			Principal Arterial		
	A	D	U	A	D	U	A	D	U
Bismarck	89.5%	7.9%	2.6%	85.7%	12.0%	2.3%	84.8%	15.0%	0.3%
Mandan	83.7%	8.4%	7.9%	79.5%	5.3%	15.2%	100.0%	0%	0%

*A = Acceptable; D = Degraded; U = Unsatisfactory

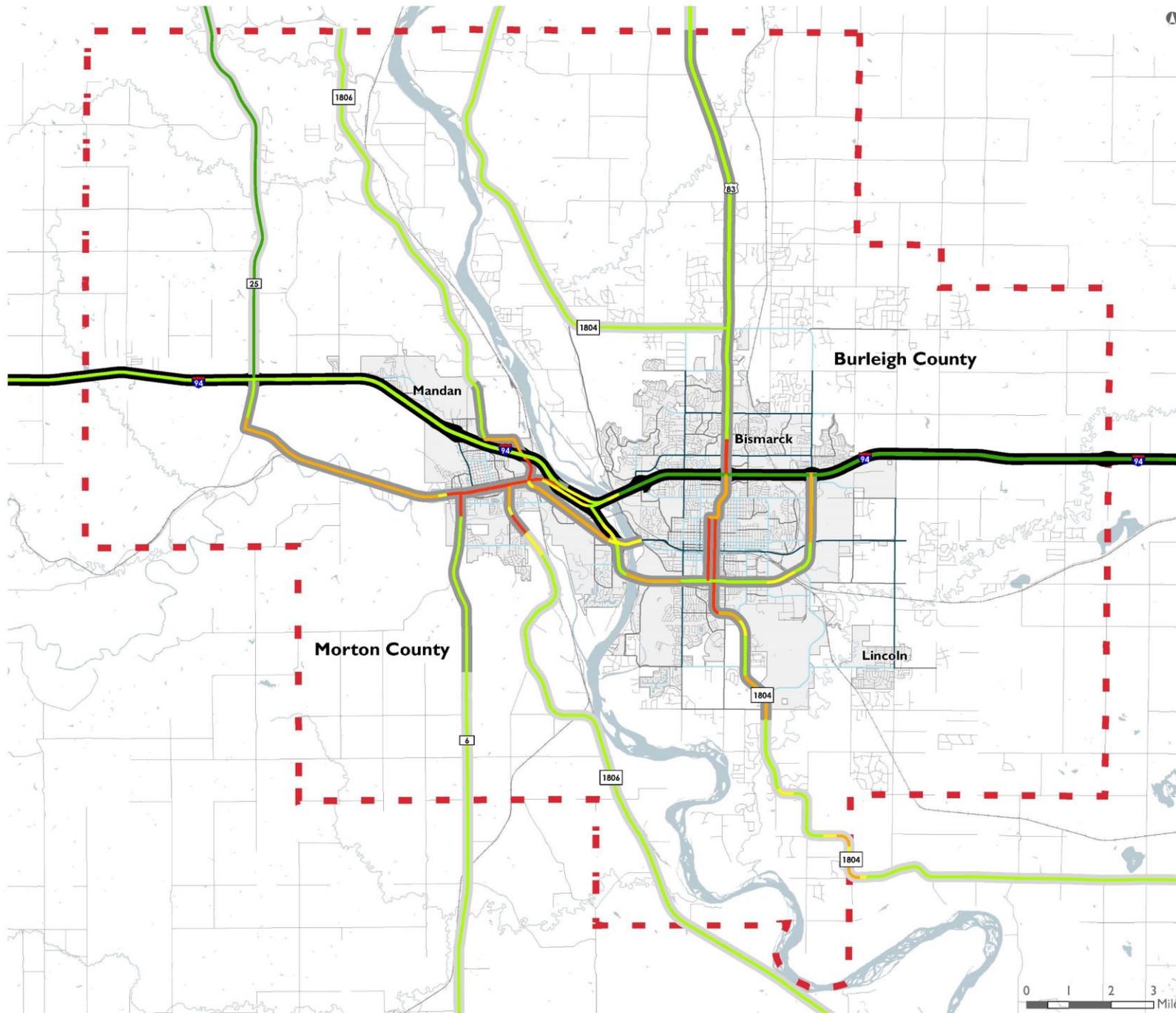


Locally Owned Roads Pavement Conditions Index (PCI) Rating 2016-2018



- PCI Rating**
- Adequate
 - Degraded
 - Unsatisfactory
- Roadway by Functional Classification**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector





State Owned Roads International Roughness Index (IRI) Rating 2017

IRI Rating

- Excellent
- Good
- Fair
- Poor
- No Data

NHS Classification

- Interstate
- Principal Arterial
- State Non-NHS

Metropolitan Planning Organization Boundary

- Boundary

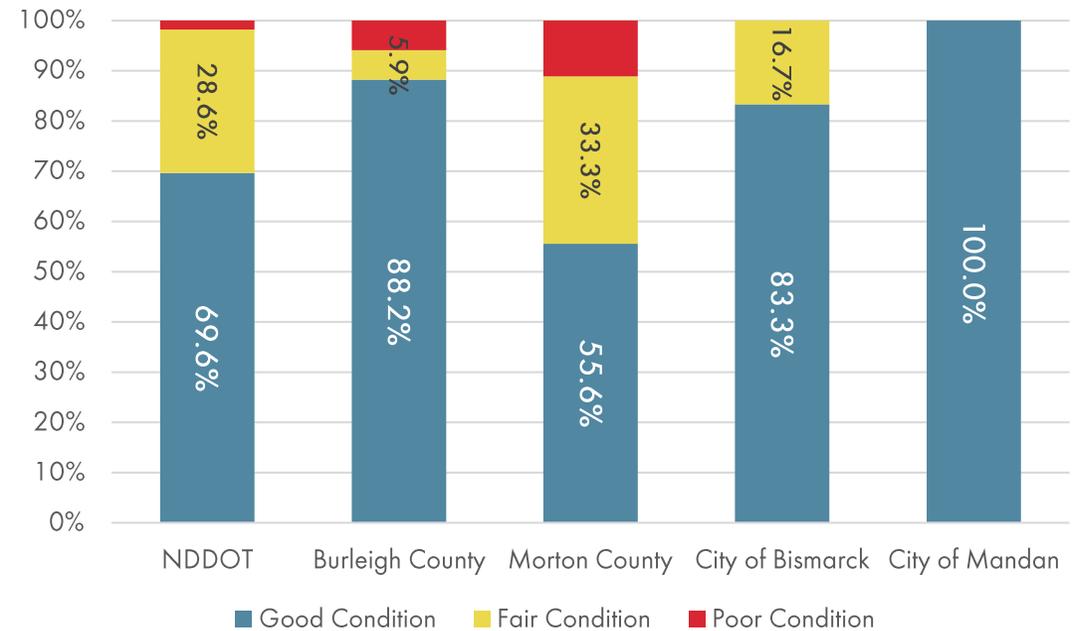
Roadway by Functional Classification

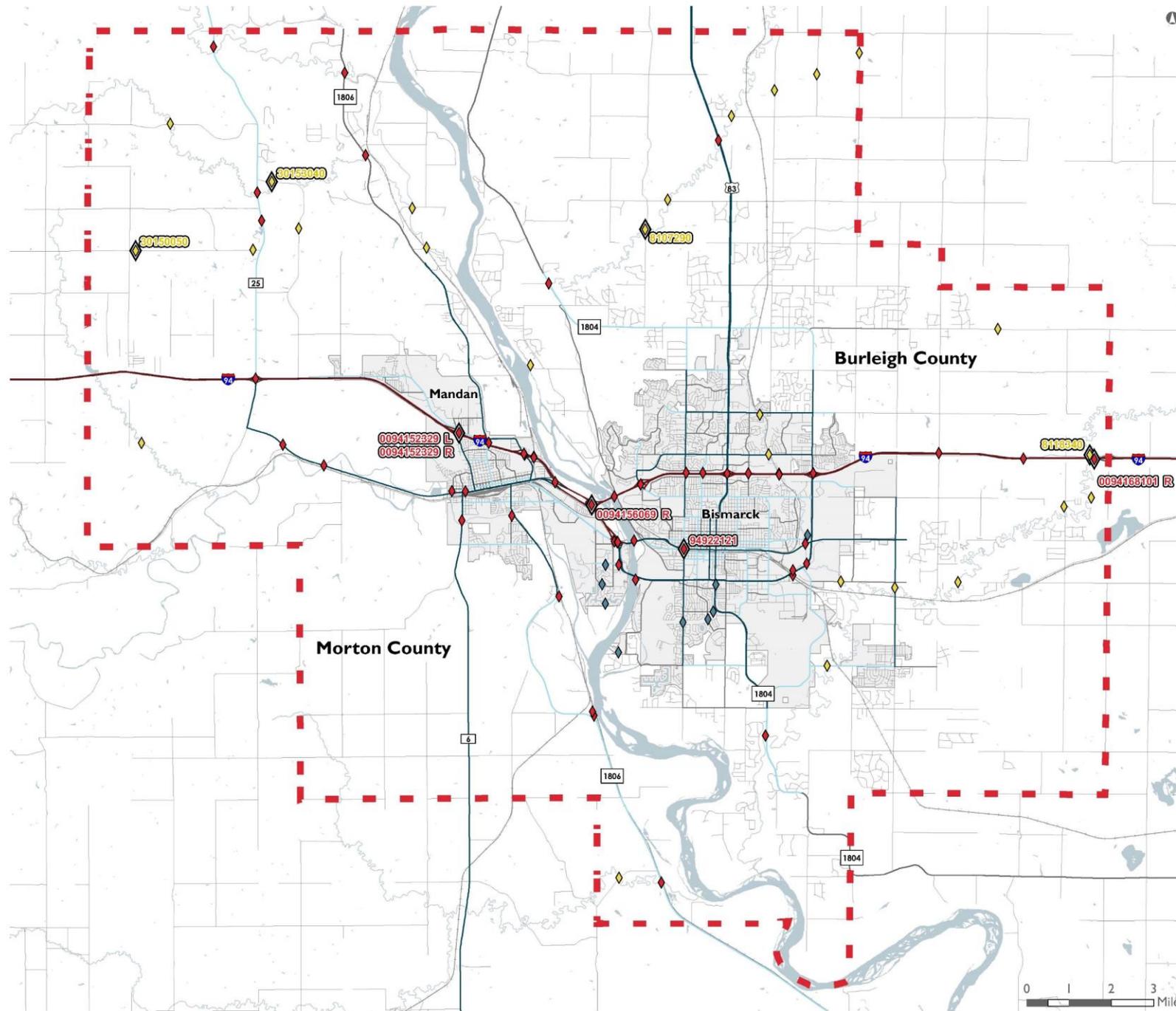
- Interstate
- Principal Arterial
- Minor Arterial
- Collector



Bridges

	Bridge Condition in MPO Area	NDDOT Target	Arrive 2045 Target
Good Condition	73.6%	64.4%	64.4%
Poor Condition	3.3%	3.7%	3.7%





Bridges in MPO Boundary

Bridges in MPO

- ◆ State Highway Agency Bridge
- ◆ County Highway Agency Bridge
- ◆ City or Municipal Highway Agency Bridge
- ◇ Structurally Deficient Bridge

Metropolitan Planning Organization Boundary

- Boundary

Roadway by Functional Classification

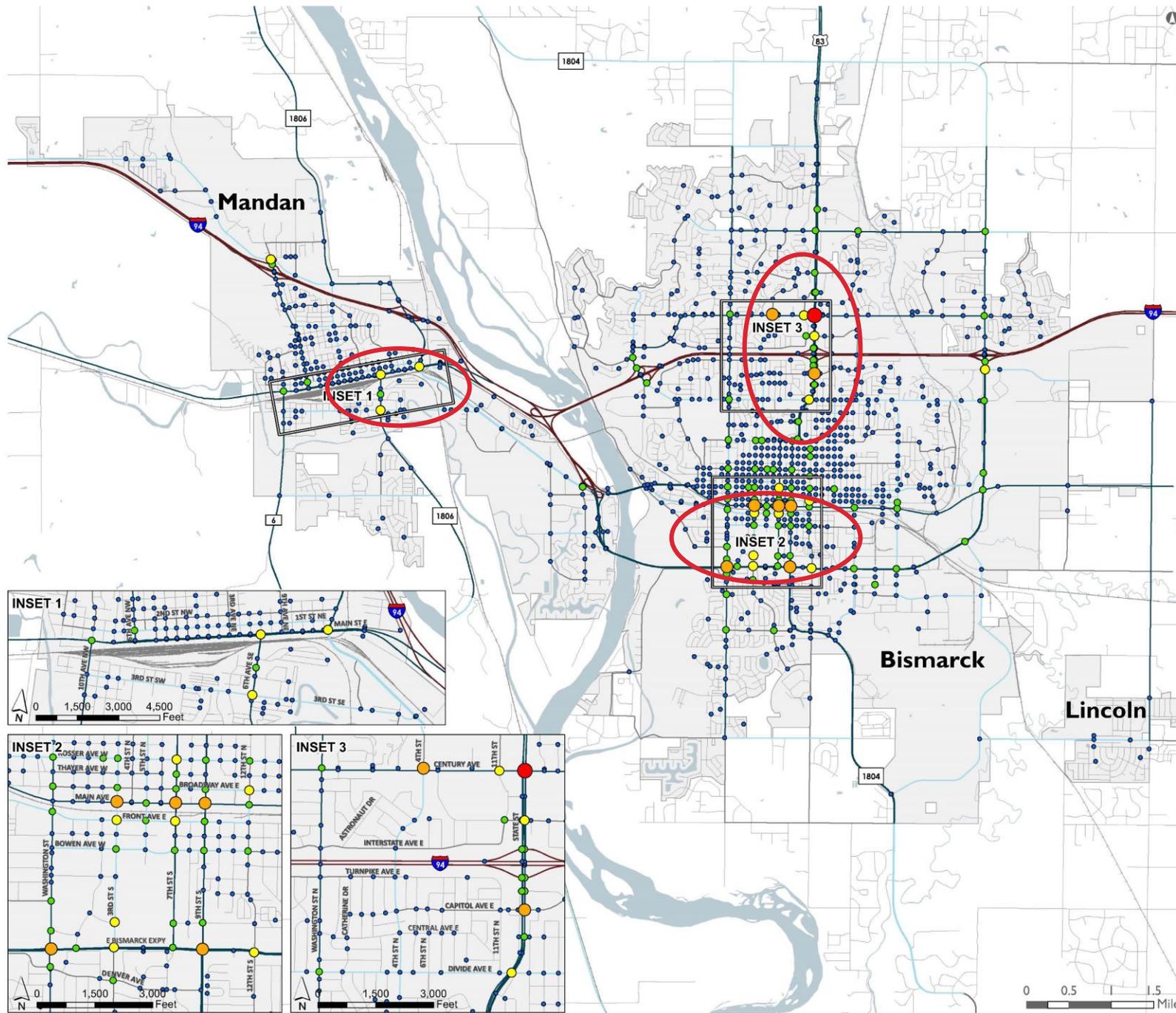
- Interstate
- Principal Arterial
- Minor Arterial
- Collector



Safety

MPO Targets were modified for total number of fatal and serious injury crashes.

Performance Measure	NDDOT 5-Year Average	NDDOT 5-Year Average Target	Percent Reduction to Target	MPO 5-Year Average	MPO 5-Year Average Target
Number of Motorized Fatalities	139.4	138.0	1%	4.6	5 or Less
Rate of Fatalities per 100 million VMT	1.38	1.366	N/A	0.647	1.366
Number of Motorized Serious injuries	516.6	516.0	0%	37.2	37 or Less
Rate of Serious injuries per 100 million VMT	5.06	5.088	N/A	5.232	5.088
Number of Non-Motorized Fatalities and Serious Injuries	36.4	34.8	4%	4.6	4 or Less



City Limit Intersection Crashes 2013 - 2017

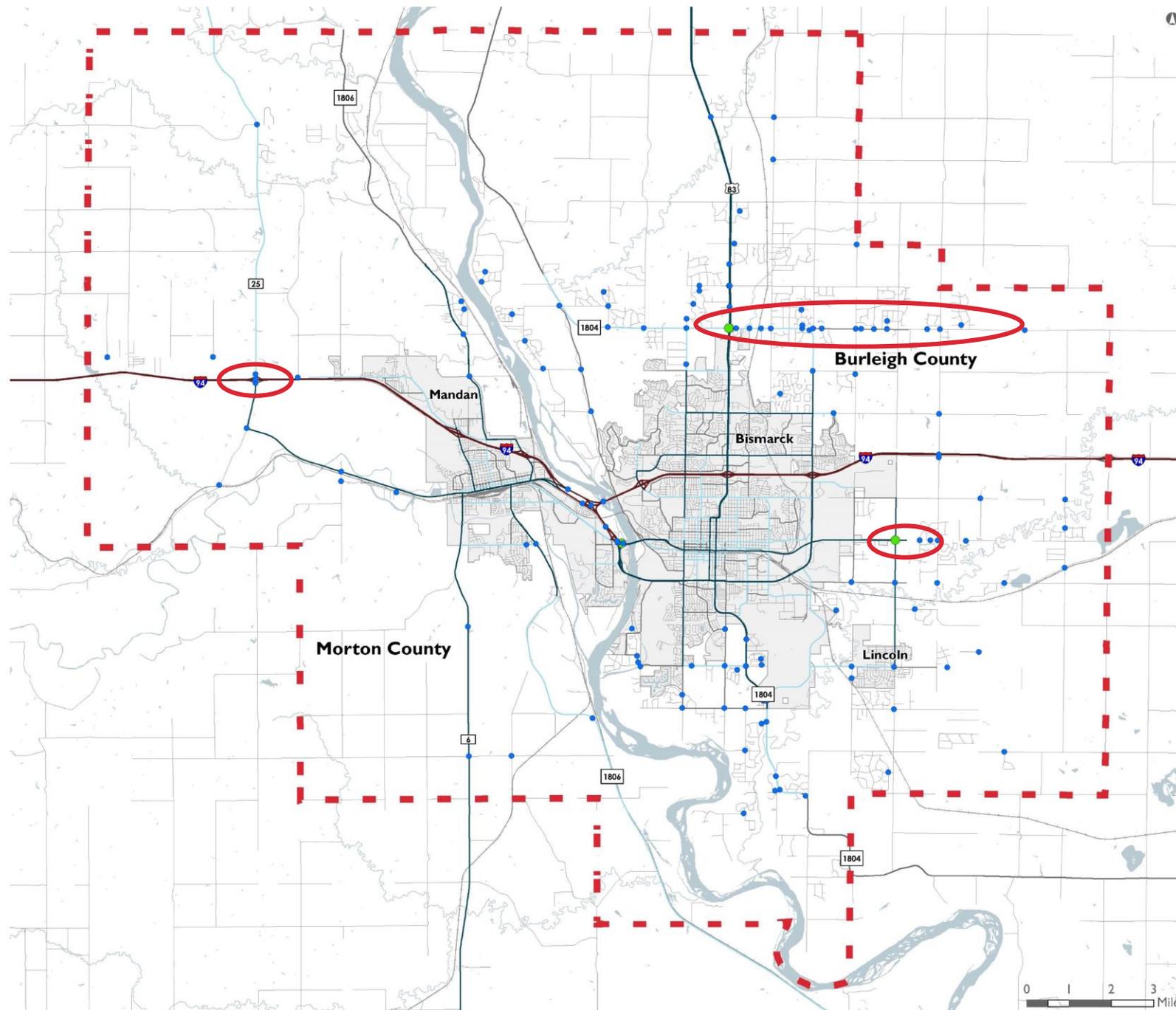
Crash Count

- 70+
- 51 - 70
- 31 - 50
- 11 - 30
- 1 - 10

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector





Rural Intersection Crashes 2013 - 2017

Crash Counts

- 11 - 15
- 1 - 10

Metropolitan Planning Organization Boundary

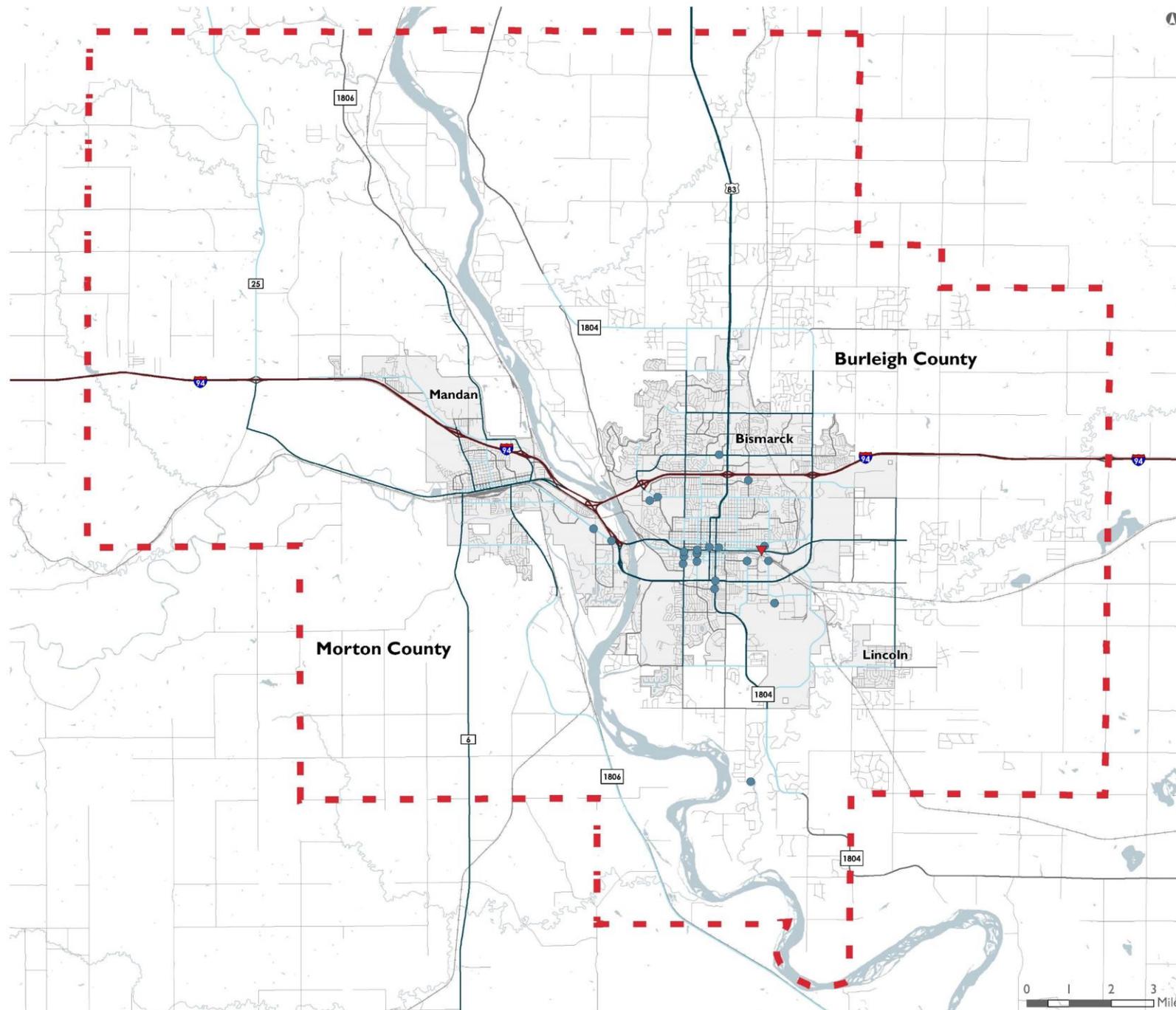
- Boundary

Roadway by Functional Classification

- Interstate
- Principal Arterial
- Minor Arterial
- Collector

Note: Crashes inside city limits are mapped on map titled "City Limit Intersection Crashes 2013-2017".





Serious Non-Motorized Crashes 2013 - 2017

- Serious Non-Motorized Crashes**
- ▼ Fatal Crashes
 - Incapacitating Injury Crashes
- Metropolitan Planning Organization Boundary**
- Boundary
- Roadway by Functional Classification**
- Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector



Mobility and Congestion

» Pending travel demand model

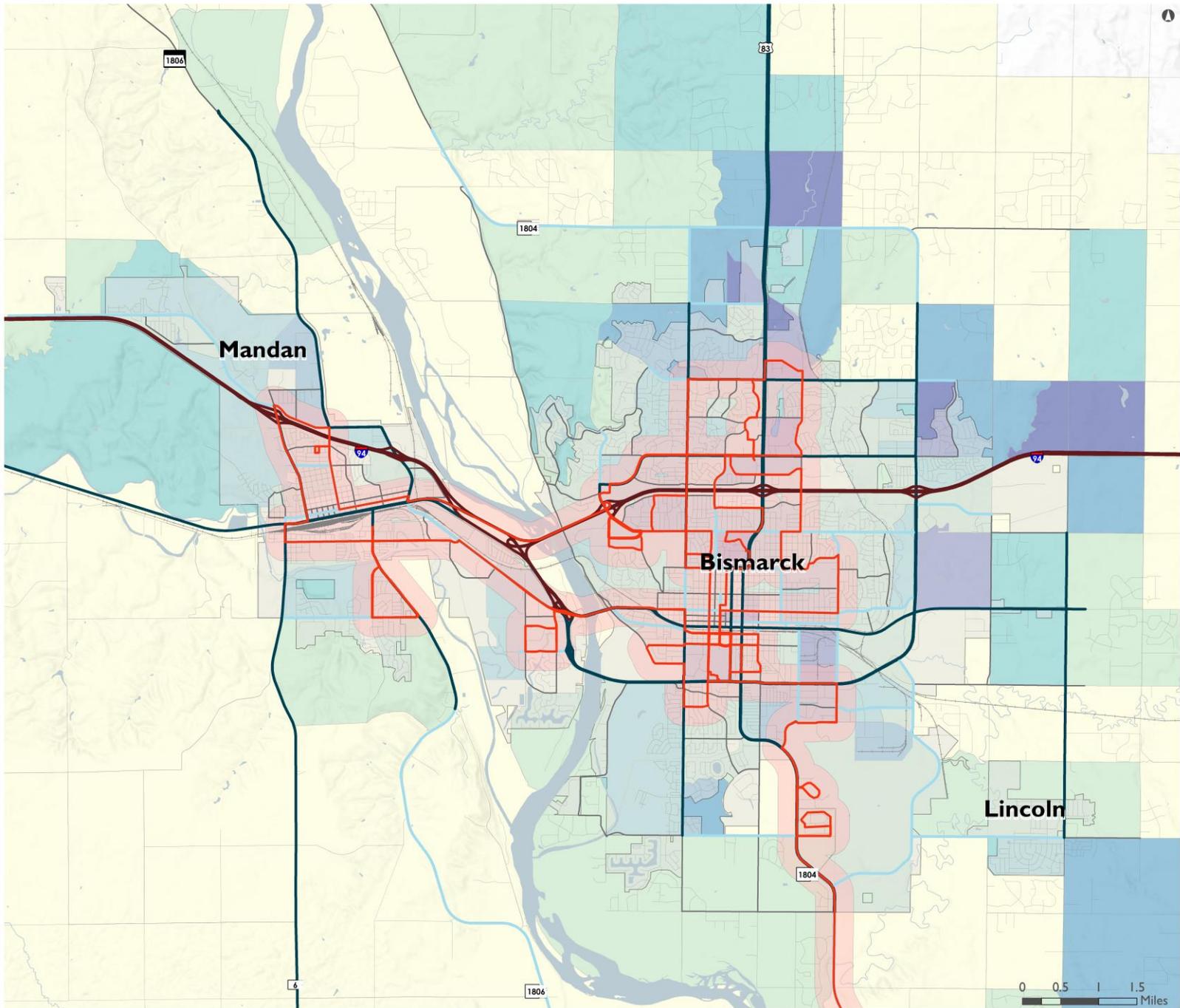


Multimodal

- » Transit: pending inputs from Transit Development Plan
- » Bicycle and pedestrian facilities
- » Bicycle and pedestrian level of traffic stress

	Facility Type	Description	Inventory
	 <p>SIDEWALKS</p>	<p>Sidewalks are located on most streets in Bismarck and are typically constructed once a property is developed</p>	<p>Bismarck: 437 miles Mandan: no data</p>
	 <p>MULTI-USE TRAILS</p>	<p>These trails are separated from the roadway and used for bicycling, walking, running, or other non-motorized activities. There are multi-use trails in both Bismarck and Mandan. Many of these trails continue outside city limits in Morton and Burleigh County.</p>	<p>Bismarck: 52 miles Mandan: 18 miles</p>
	 <p>BICYCLE LANES</p>	<p>Some roads in Bismarck include dedicated bicycle lanes, which are between 4 and 6 feet wide and marked with paint.</p>	<p>Bismarck: 4 miles Mandan: 0 miles</p>
	 <p>SHARED-USE ROUTES</p>	<p>Some residential and collector roads in Bismarck are marked with Share the Road signs and/or street markings to encourage motorists to make space for bicyclists.</p>	<p>Bismarck: 5 miles Mandan: 0 miles</p>
	 <p>BIKE RACKS</p>	<p>The Bismarck-Mandan MPO conducted a recent count of bicycle racks in the two cities.</p>	<p>136 Total Racks</p>

This section is linked to the outcomes of the Transit Development Plan.

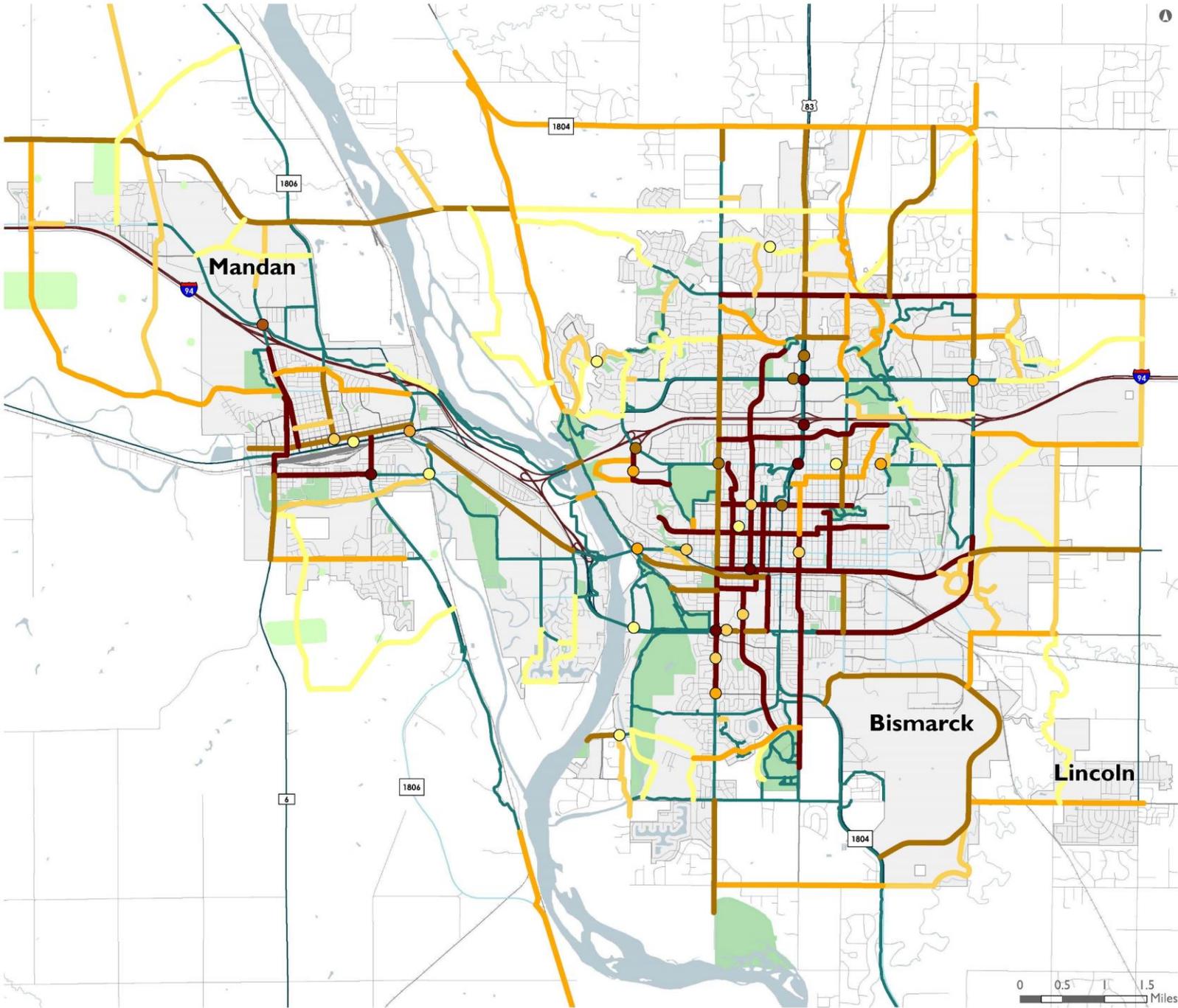


Transit Routes

- Bis-Man Transit Routes 2017
 - Transit Routes 1/4 Mile Buffer
- 2045 TAZ Data**
Additional HH + Jobs
- 0 - 250
 - 250 - 750
 - 750 - 1,250
 - 1,250 - 2,500
 - 2,500+



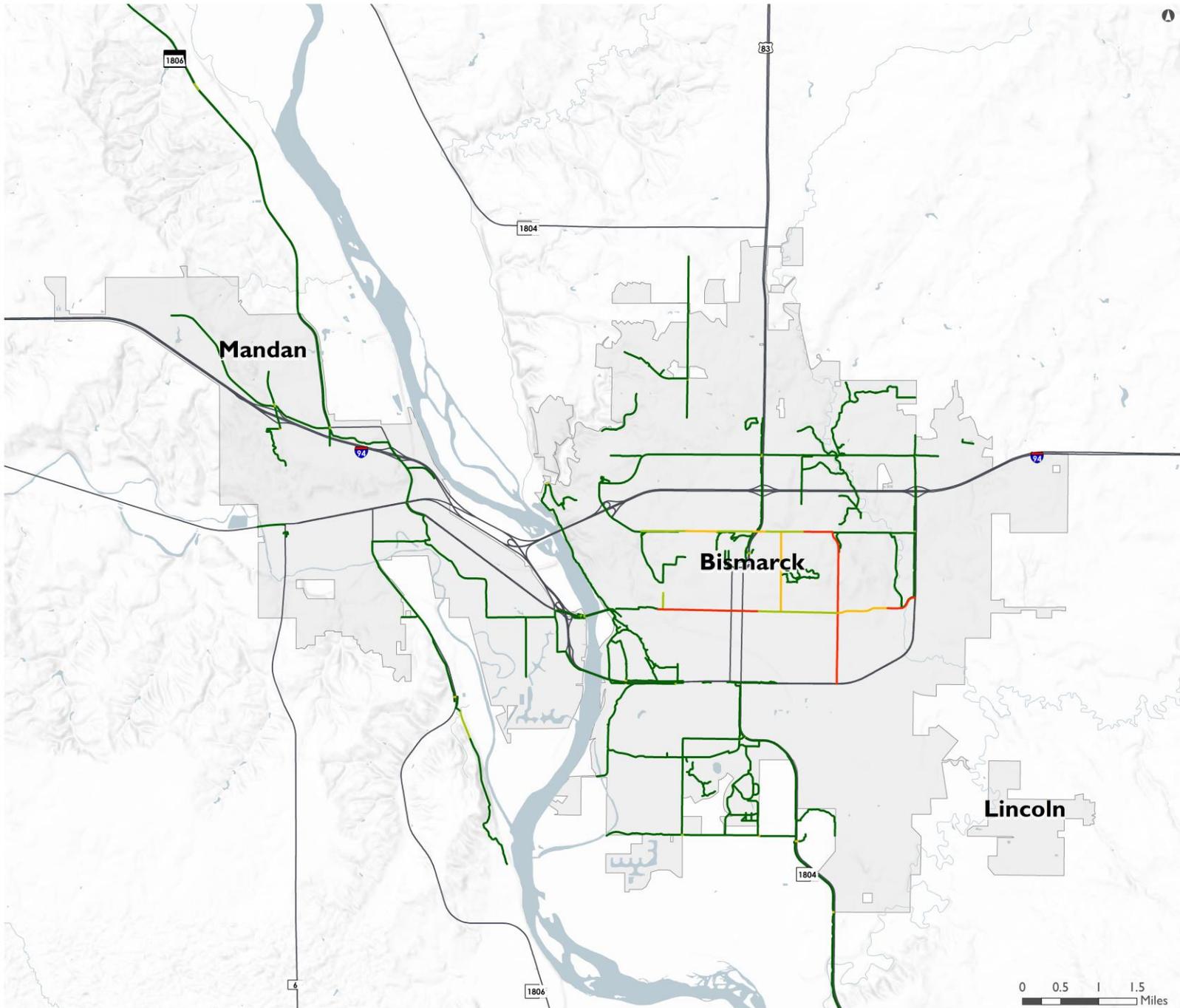
Intersection and Connection Analysis Scoring Bismarck-Mandan Bicycle and Pedestrian Plan



Level of Traffic Stress

- » Rating given to a road segment or crossing indicating the “stress” it imposes.
- » Typically evaluates pavement condition, facility width, buffer type and width, number of travel lanes, land use, functional class, daily traffic, speed, lighting.

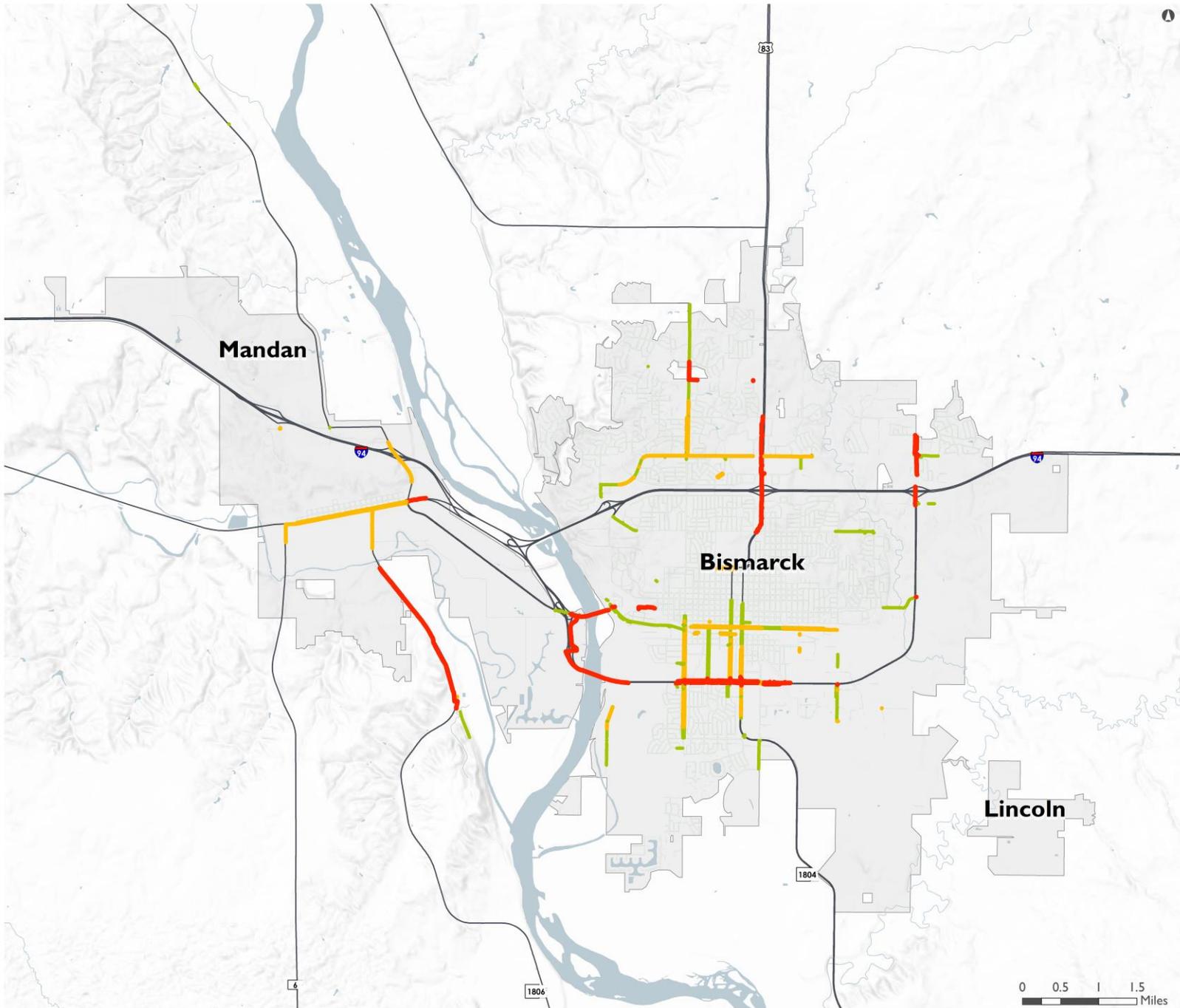
Level of Traffic Stress	Bicycles	Pedestrians
1	Separation from all traffic excepting low speed and low traffic. Simple crossings; suitable for children.	Requires little attention to vehicular traffic. Simple crossings; suitable for children, groups, and people with mobility devices.
2	Cyclists have dedicated place to ride that keeps them from interacting with traffic; suitable for most adults.	Good sidewalk condition, may be along roadways with higher speeds and volumes. May not be appropriate for young children.
3	Involves interaction with moderate speed or multilane traffic. Appropriate for confident cyclists.	Moderate stress that may make use uncomfortable, but still safe; smaller buffers. May be impassable for a person using a mobility device.
4	Interaction with higher speed traffic or close proximity to high speed traffic. Appropriate for experienced cyclists.	High traffic stress would lead few users to select this facility. Limited or no facilities. Only select this route when no other available.



Bike Traffic Stress Level

- LTS**
- LTS 4
 - LTS 3
 - LTS 2
 - LTS 1



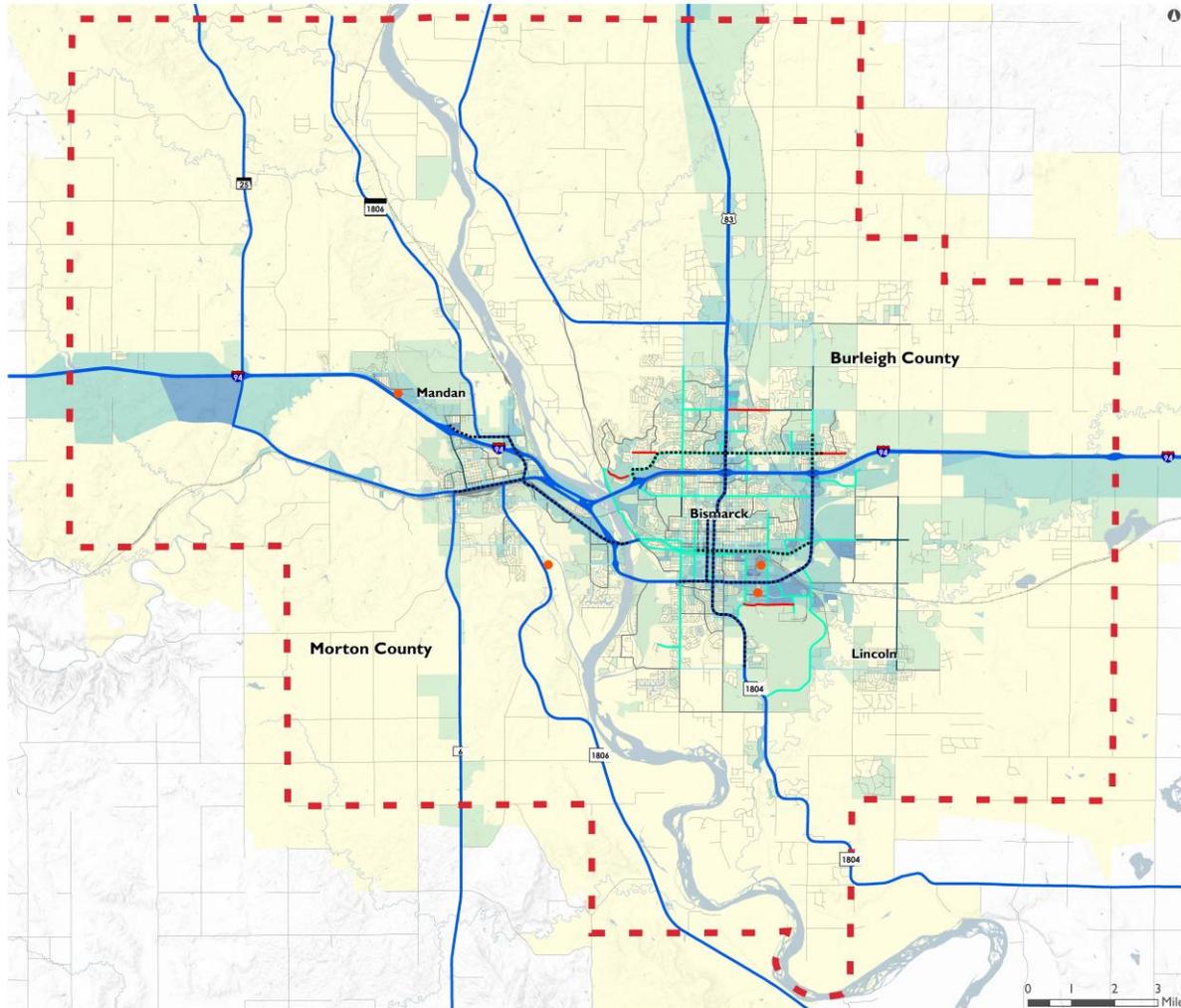


Pedestrian Traffic Stress Level



Freight

This section is linked to the outcomes of the Freight Plan.



Truck Routes

- Major Freight Generators
- Critical Urban Freight Corridors
- Metropolitan Planning Organization Boundary**
 - Boundary
 - State and Federal Truck Routes
- Bismarck Local Routes**
 - Designated Truck Route
 - 6-ton Limit
- Roadway by Functional Classification**
 - Interstate
 - Principal Arterial
 - Minor Arterial
 - Collector
 - Railroads
- Truck Pings per Square Meter**
 - 0.00000 - 0.00004
 - 0.00005 - 0.00043
 - 0.00044 - 0.00433
 - 0.00434 - 0.04333
 - 0.04334 - 0.43338



Other Systems and Data

- » Travel trends
- » Rail
- » Air transportation
- » Environmental resources
- » Environmental justice
- » ITS
- » Security



Preliminary Financial Assessment

Methods

Funding Source	Assumptions
National Highway Performance Program (NHPP)	<ul style="list-style-type: none"> » No specific sub target » Allocated through established Regional or IM constraints
Interstate Maintenance (IM)	<ul style="list-style-type: none"> » NHPP replaced IM but still tracked
Urban/Regional	<ul style="list-style-type: none"> » Projects for NDDOT Urban or Regional System » 50/50 split between 2 programs » Urban Grant Program allocation from Urban share
Transportation Alternatives and Recreational Trails (TA and RTP)	<ul style="list-style-type: none"> » Projects that support bicycle, pedestrian, or trail projects
Local Sources	<ul style="list-style-type: none"> » Nothing established yet
Operations and Maintenance (O&M)	<ul style="list-style-type: none"> » No discrimination between funds split between expansion and O&M

Scenarios

Scenarios	Notes
Revenue forecasts from Envision 2040	» Little substantiation, but used a TIP analysis from 2007 to 2014
Committed projects from first year of 2015, 2016, 2017, and 2018 TIP/STIP	<ul style="list-style-type: none"> » Assumes first year projects from each TIP/STIP » Accounts for program variations with MAP-21 and FAST Act and delayed projects
Committed projects from the 2019-2022 TIP/STIP	
Aggregate of 2015-2018 and 2019-2022 TIP/STIP	» Roughly replicates Envision 2040 by taking 8-year rolling average
Population based ratio formula for programmatic assumptions	» Uses population related factors to apply to funding programs.

Financial Forecasts

Program	Envision 2040	2015-2018 TIP/STIP	2019-2022 TIP/STIP	2015-2022 Existing + Committed	Population Based Ratio	Arrive 2045
Urban/Regional	\$8,540,125	\$4,875,000	\$11,003,750	\$7,939,375	\$8,518,192	\$8,518,192
Interstate	\$3,738,125	\$5,968,750	\$4,272,750	\$5,120,750	\$2,505,957	\$4,429,438
NHPP		Accounted for in IM + Urban/Regional				
Safety (State)	\$1,562,125	\$1,299,250	\$400,750	\$699,713	\$275,500	\$699,713
Safety (Urban)		\$1,128,000	\$1,020,500	\$651,250	\$761,250	\$651,250
TA + RTP	\$1,377,355	\$387,500	\$80,000	\$233,750	\$192,000	\$233,750
Total	\$15,217,730	\$13,658,500	\$16,777,750	\$14,644,838	\$12,252,899	\$14,532,342

Arrive 2045 Recommended Scenario

- » **Urban/Regional:** Population/ratio formula and programmatic assumptions
- » **Interstate:** Average of Envision 2040 + 2015-2022 E+C project lists
- » **Safety (both State and Urban):** 2015-2022 E+C project lists
- » **TA + RTP:** 2015 – 2022 E+C project lists



Futures Summit Workshops

Futures Summit

Arrive 2045 Transportation Futures Summit

October 9, 2018

6:00 to 8:00 PM
Lincoln City Hall
74 Santee Road
Lincoln, ND

October 10, 2018

9:00 to 11:00 AM
Bismarck State College
National Energy Center for
Excellence - Room #431
1200 Schafer Street
Bismarck, ND

October 10th, 2018

6:00 to 8:00 PM
Mandan City Hall
205 2nd Avenue NW
Mandan, ND



Futures Summit

› FAST Act Goal Prioritization

- 10 votes per participant

› Performance Area Prioritization

- 10 votes per participant

- Pavements
- Bridges
- Safety
- Reliability
- Active Transportation
- Public Transportation

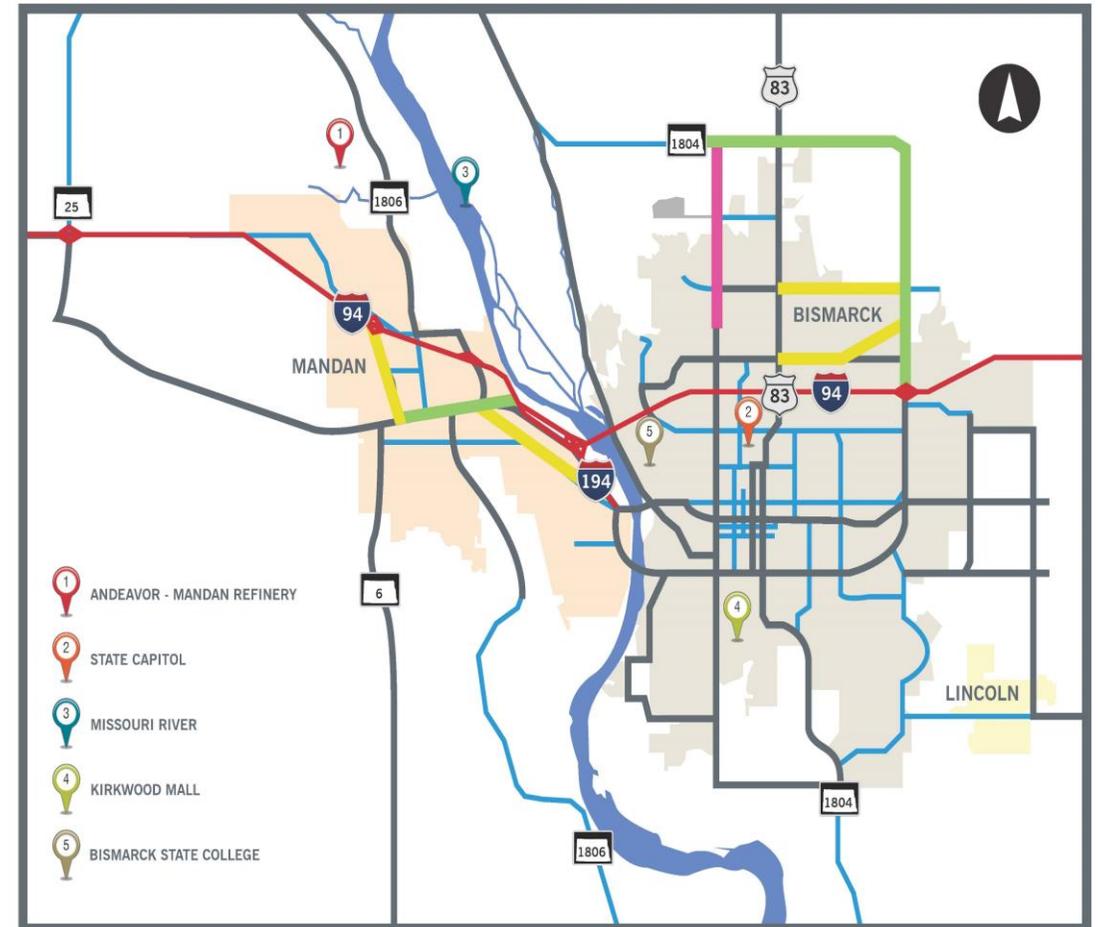
Arrive 2045 Transportation
Futures Summit



Futures Summit Table Exercise

- » Scalable Map
- » Allocate Available funding

New Construction/Reconstruction (Collector & Arterial)	Cost per Mile
2 Lane	\$6M
2 Lane (rural section)	TBD
4 Lane	\$10M
6 Lane	\$15M
Widen from 2 lanes to 4 lanes	\$5M
Widen from 4 lanes to 6 lanes	\$5M
New Construction/Reconstruction (Interstate)	Cost/Item
Auxiliary Lane (interstate) - One Direction	\$2M
Widen one lane - both directions	\$4M
Spot Improvements/Projects	Cost/Item
Missouri River Bridge	40M
Railroad Grade Separation (new)	\$35M
Railroad Grade Separation (replacement)	\$15-\$20M
New/Reconstructed Interchange	25M
Major Interchange Modification	\$12.5M
Intersection Capacity Improvement (new through/turn lane)	TBD
Safety Project	TBD
Active Transportation Corridor	n/a
Transit Intensive Corridor	n/a



Next Steps

MEETING SIGN IN

Name	Organization	Email
Gabe Schell	City of Bismarck	gschelle@bismarcknd.gov
Richard Duran	FHWA	richard.duran@dot.gov
Wade Kline	KW	
Bethany Brandt	KW	
Rachel Drentow	MPO	rdrentow@bismarcknd.gov
Sharda Miller	Bis-Man Transit	shardas.bisman@midconetwork.com
Natalie Pierce	Morton County	n.pierce@mortonnd.org natalie.pierce@mortonnd.org
Mark Berg	City of Bismarck	mberg@bismarcknd.gov
Marcus S. Hall	Burleigh Co.	mahall@nd.gov
JUSTIN FROSETH	CITY OF MANDAN	jfroseth@cityofmandan.com
John Van Dyke	City of Mandan	John.VanDyke@cityofmandan.com
Jeff Salemsaas	Bismarck PD	jsalemsaas@bismarcknd.gov

Meeting:



MEETING SIGN IN

Name	Organization	Email
Peggy Harter	Stantec	peggy.harter@stantec.com
Richard Duran	FHWA	richard.duran@dot.gov
John Saiki	Morton County	john.saiki@mortonnd.org
Larry Gangl	ND DOT - Bismarck	lgangl@nd.gov
Cole Higlin	Mandan Park District	chiglin@mandanparks.com

Meeting:



Bismarck-Mandan Metropolitan Transportation Plan

Date: September 25, 2018
Time: 1 0:00 a.m.
Location: Bis-Man Transit Training Room
Re: Steering Committee Meeting #3

Agenda

- » Welcome and Introductions
 - Rachel Drewlow welcomed everyone to the meeting and asked everyone to do a round of introductions.
 - Wade Kline provided copies of the Existing System Performance report to those that needed it and reviewed the agenda for today's meeting.
- » Project Updates
 - Progress that has been completed since the last meeting includes a draft baseline conditions report waiting for additional data from the transit plan and the travel demand model results; marketing efforts for the Arrive 2045 plan and the upcoming first round of public input meetings including the project website, social media, newsletters, news media, and Dakota Access; and progress preparing for the 1st round of public input meetings.
- » Review Performance Management Elements of MTP
 - Peggy Harter discussed what it means to have a performance based transportation plan. She first reviewed the transportation legislation that has identified the need for DOT's and MPO's to have a performance-based plan.
 - Add text here.

MEETING AGENDA

» Demographic Growth and Forecasting

- Wade Kline reviewed the demographic forecasts for the MPO area. By 2030, we are projecting an additional 22,900 people and by 2045 an additional 50,200 people. That has been broken down into five-year increments by household growth and job growth. All of this input will go into our travel demand model, so we can see how the growth will affect our transportation system. We will look at this for both the Existing + Committed (E+C) network in 2030 and for 2045. It will identify how and when the transportation system will begin to have issues with the projected growth and where there will be future needs on our transportation system. Wade then reviewed the 2045 household and job growth maps to show where the growth is anticipated throughout the MPO area.
- Natalie Pierce questioned the availability of the model. Rachel responded that the base year and 2030 E+C model will be completed by the end of this week.

» System Performance Overview – Wade introduced the

- Pavements – Wade and Peggy reviewed the pavement results and explained the difference for the NHS system v. the non-NHS roadways. The NHS system uses the IRI to score the pavement conditions and the non-NHS uses PCI to score the pavement system.
- Gabe – PCI map should not include the “Local” classification roadways if that data is not represented in the data. Either remove them from the map or verify that the data is included. **ACTION ITEM** – Update the map in the system performance report.
- Bridges within the MPO boundary – Peggy Harter noted that the % of good/poor bridges shown are not just those on the state system but within the entire MPO area.
- Gabe – Update the map to say structures on Figure 4.10 – change the data to only show the actual bridges so that not all structures are included. **ACTION ITEM** – ensure that all bridges showing up on Figure 4.10 are actual bridges and not just structures showing up in the data based.
- Safety – Peggy Harter reviewed the safety performance measures and targets and discussed the Federal measures, State Targets and adjustments made for the targets to apply the % rate of reduction from NDDOT to apply to the MPO.
- Gabe felt that the local safety targets should either all apply the same to the state targets. He questioned how we can reduce the target for the total number of crashes but not adjust the rates? Peggy and Gabe discussed this at length and will continue the discussion further. **ACTION ITEM** Peggy further discuss safety targets with Gabe. Also, the MPO targets were input incorrectly into the .ppt presentation but are correct in the draft report.



- Marcus noted that since safety was number one identified by the steering committee members that it appears as the first item in the report. **ACTION ITEM** -refine report so that safety shows up first.
 - Wade discussed the other elements of the Existing System Performance report including transit, bicycles and pedestrians.
 - Bethany discussed a “Level of Traffic Stress” that evaluates pavement condition, facility width, buffer type and width, number of travel lanes, land use, functional class, daily traffic, speed, and lighting. and applies them a rating of 1 through 4 for bicycles and pedestrians. **ACTION ITEM** – Figure 4.26 – Level 1 data for the pedestrian stress level is missing on the map and in the legend.
 - Wade reviewed the Freight system and discussed that it will be updated based on the results of the outcomes of the Freight plan.
 - Other items identified within the report include travel trends, rail, air transportation, environmental resources, environmental justice, ITS, and Security.
 - Justin Froseth noted that the PCI data from 2016 shows McKenzie Drive which was actually improved in 2017 so it should be removed as “Unsatisfactory” from the map. **ACTION ITEM** – Figure 4.8 should be updated with data available to the end of 2018 and include projects completed in 2017. Follow up with Justin and Gabe to receive this data and make updates as applicable. Gabe will have updated PCI data through the end of 2018.
 - Justin Froseth – Table 4.13, 1st row in discussing sidewalks – update to say “Bismarck and Mandan.”
ACTION ITEM
 - Wade Kline noted that all SC members should provide comments on the Draft Existing System Performance report by Friday September 28, 2018.
- » Preliminary Fiscal Constraint Analysis
- Wade Kline discussed the preliminary financial assessment. He then reviewed the funding sources and assumptions for each funding source. Specifically, he reviewed the National Highway Performance Program (NHPP), Interstate Maintenance (IM), Urban/Regional, Transportation Alternatives (TA), Recreational Trails Program (RTP), Local Sources, and Operations & Maintenance (O&M).
 - Wade then reviewed five possible scenarios for developing the fiscal constraint portion of the MTP. The five scenarios include the following:
 - Scenario 1 would look at the process used in Envision 2040
 - Scenario 2 would include looking at committed project from 2015-2018
 - Scenario 3 would look at committed project for 2019-2022
 - Scenario 4 would be an aggregate of 2015-2018 and 2019-2022
 - Scenario 5 would include a population-based ration formula for programmatic assumptions
 - Wade showed a table of how the dollar values compare for the five scenarios with a recommendation of which scenario to apply for each specific funding source. The funds are broken out to a “per year” funding amount.

- Gabe questioned how the Fargo-Moorhead Metropolitan area becoming a TMA will impact the funding available to the other state MPO's. Rachel responded that NDDOT noted there are too many variables in the situation, so they should plan based on historical funding levels.
 - Discussion incurred on the TA and RTP funding pots. Rachel noted that the MPO doesn't have a lot of influence or comments on the projects that apply for the TA and RFP funding.
 - Justin Froseth discussed the drafted Prairie Dog Bill that discusses giving cities and counties state money for infrastructure projects including transportation, utilities, etc. The funding source would come from future oil revenues.
 - Wade asked if the committee is comfortable with what we are proposing for the fiscal constraint. No additional comments were provided. Wade again asked for final comments by this Friday September 28, 2018.
- » Future Summit Workshops
- Review Format and Content
 - We have three meetings coming up on October 9th and 10th, 2018. One in Lincoln, one in Bismarck, and one in Mandan. Wade noted that the open houses will be similar in all three locations as this is a metropolitan transportation plan, so anyone can attend any of the three meetings.
 - Wade reviewed the activities that will be completed at the workshop including goals prioritization and a hands-on activity of letting the communities determine how they would spend the funding within a fiscally constrained amount of dollars.
 - Committee Workshop on 9/9 (early morning or early afternoon) with the steering committee members to show them how this exercise works so that they can be involved in the process at the public input meetings. Wade will follow up with a doodle poll to check on availability for each public input meeting.
- » Wrap up and next steps
- We are looking for comments on the background report and financial summary by this Friday.
 - We will be sending out a doodle poll for public input meeting attendance at the SC meeting.
 - Once we get the TDM data, we will send out updated chapters of the report to the SC as soon as possible.
 - All material at the PIM will be stamped as Draft.

Bismarck-Mandan Metropolitan Transportation Plan

Date: December 5, 2018

Time: 2:00 p.m.

Location: Bis-Man Transit Training Room

Re: Steering Committee Meeting #4

Agenda

- » Welcome and Introductions
- » Review Public Input Meeting Summary
 - Summary of Prioritization/Weighting Exercises
 - Summary of Arrive 2045 Futures Summit Table Maps
 - Preliminary Public Survey Results
- » Update on Travel Demand Model
- » Review and Discuss Preliminary Alternatives Development and Evaluation Process
- » Performance Based Plan Development
 - Status of MAP-21/FAST Act PM Development
 - Consider Preliminary Public Input
 - Project Prioritization & Scoring –
 - small group meeting
- » Schedule of Events (Now through End of May)
- » Wrap up and next steps



Bismarck-Mandan Metropolitan Transportation Plan

Steering Committee Meeting #4
December 5, 2018



Agenda

- » Welcome and introductions
- » Review Public Input Summary
- » Update on Travel Demand Model
- » Review and Discussion Alternative Development Phase of MTP
- » Update on Performance Based Elements of MTP
- » Next Steps & Schedule Update



Project Update

- » Completed PIM#1 (+ associated outreach)
- » 4 (of 10) Steering Committees
- » Performance Measures Development (Envision 2040)
- » Goal & Objectives (preliminary)
- » Completed Preliminary Financial Analysis
- » Initiate Alternatives Analysis
- » On Schedule!

CRITICAL MILESTONES	2018									
	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
Existing and Projected Conditions	[Progress bar from Apr to Oct]									
Goals and Objectives	[Progress bar from Jun to Oct]									
Performance Measures	[Milestone diamond in Jun, Progress bar from Aug to Dec]									
Public Involvement	[Milestone diamond in Oct, PIM #1 label in Aug]									
Steering Committee	[Milestone diamonds in Apr, Jun, Aug, Oct, Nov, Dec]									
Website/Social Media	[Progress bar from Aug to Oct]									
Newsletters	[Progress bar from Aug to Oct]									
TAC/Policy Board Updates	[Milestone diamonds in Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec]									
Alternatives Analysis	[Progress bar in Dec]									
Financial Analysis	[Progress bar from Aug to Oct]									
Project Prioritization										
Approvals										
MTP Development										
Project Management/QC/QA	[Progress bar from Apr to Dec]									

Public Input Summary

Public Outreach Campaign



Arrive 2045 Transportation
Futures Summit



- » Webpage launch (late summer)
- » Social media (early fall)
 - Coordinated Facebook with partners agencies
- » Outreach through community groups/organizations
- » Public Service Messages (KDAK)

Futures Summit

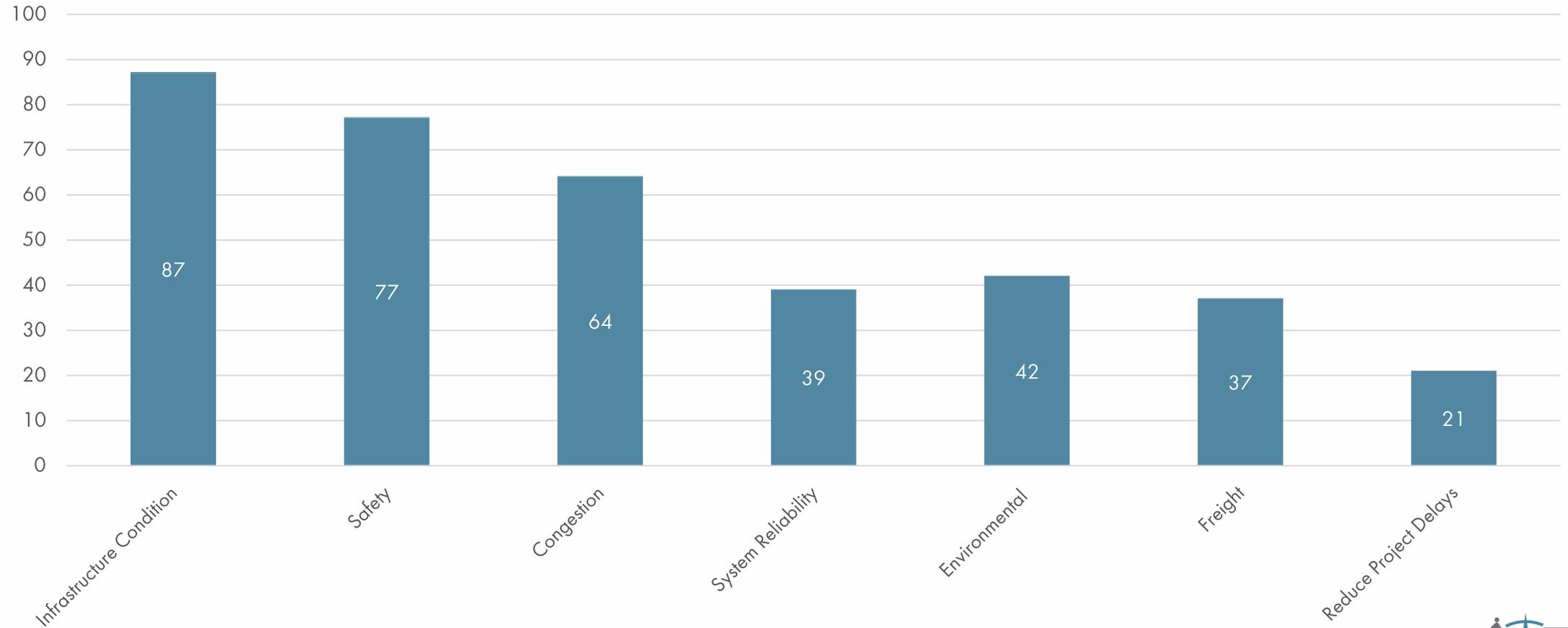


- » **Lincoln City Hall**
 - » 16 attendees

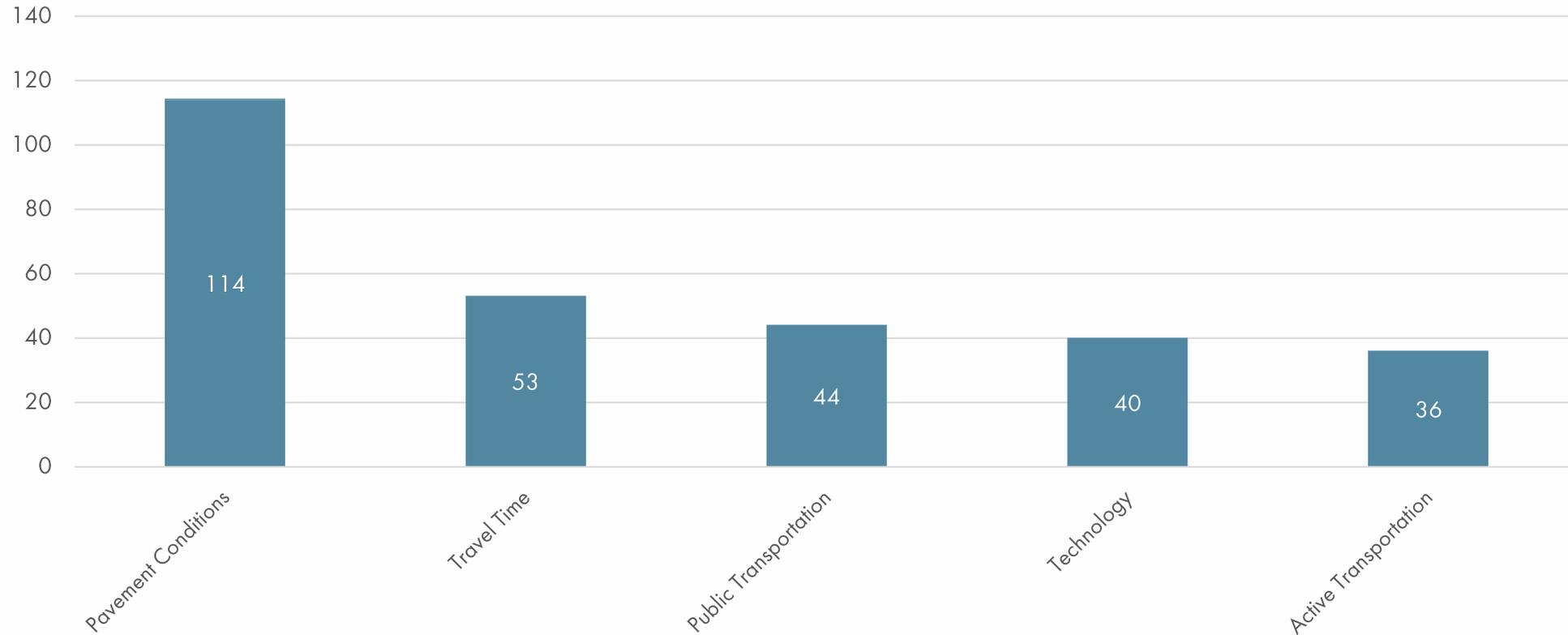
- » **Bismarck State College**
 - » 30 attendees

- » **Mandan City Hall**
 - » 15 attendees

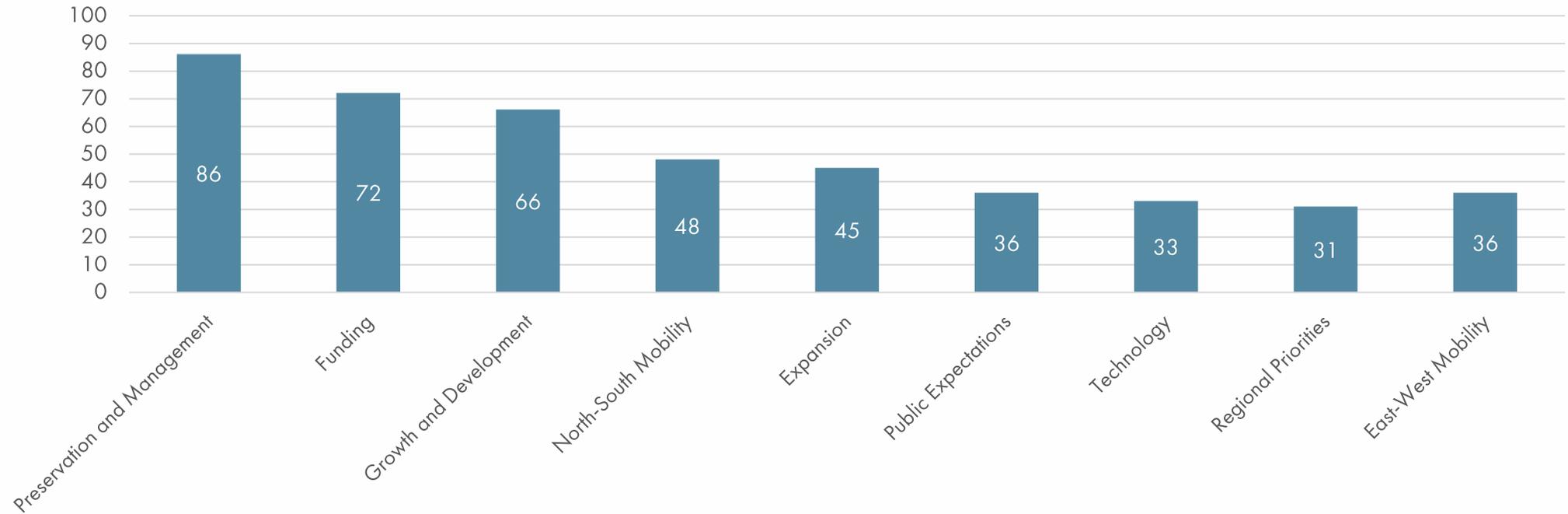
Goal Prioritization



Performance Areas



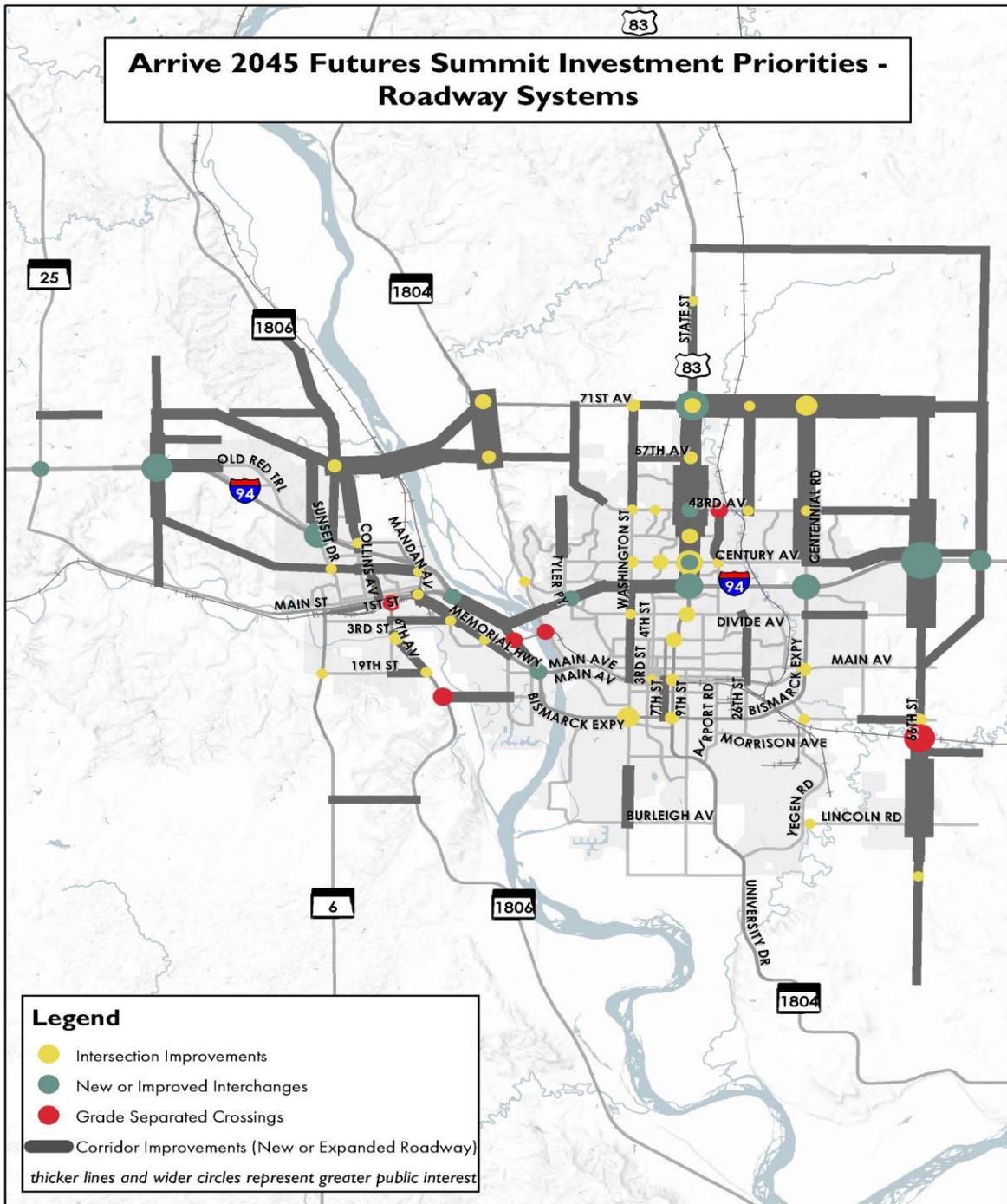
Emerging Issues



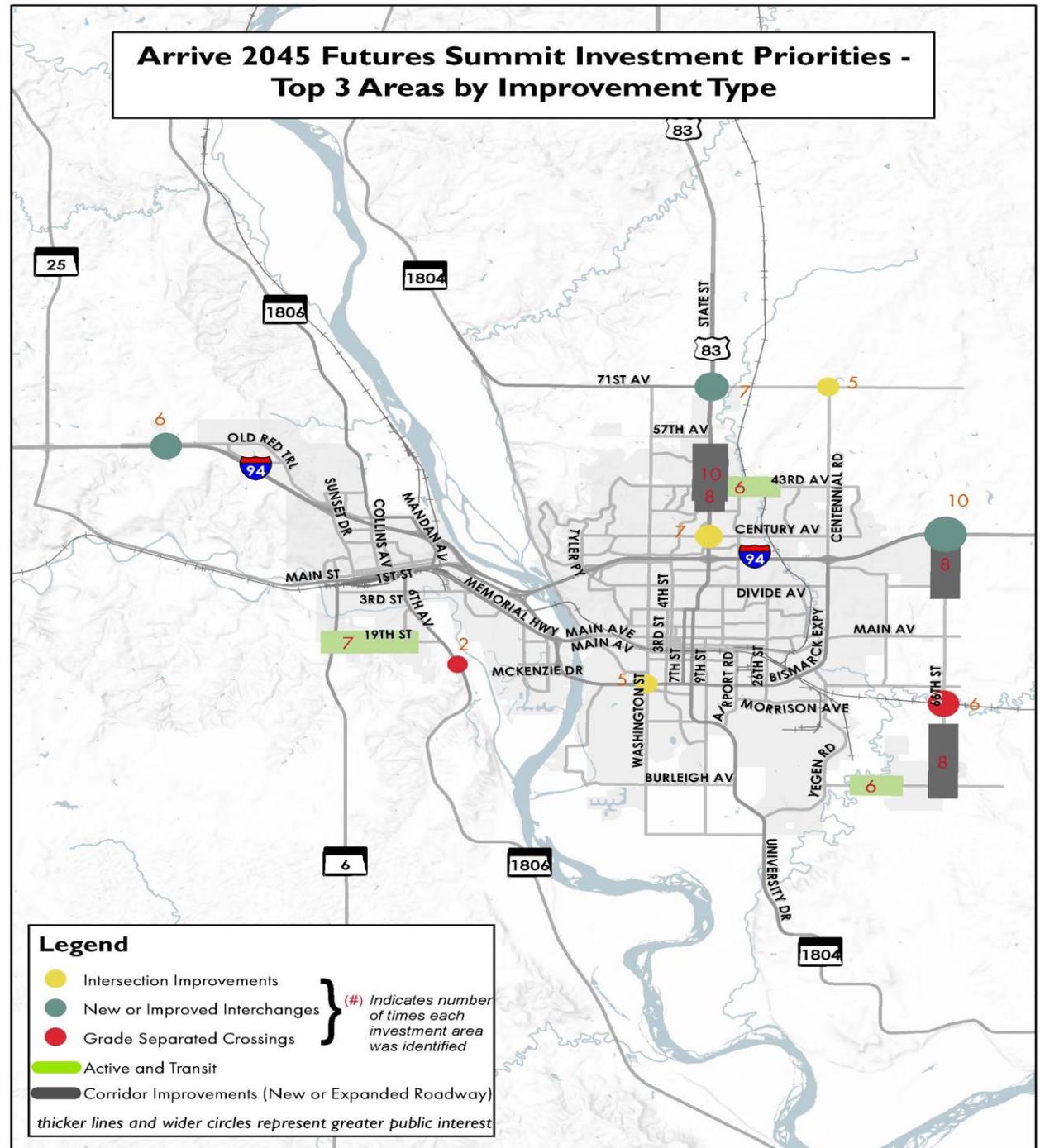


Summit Mapping ...

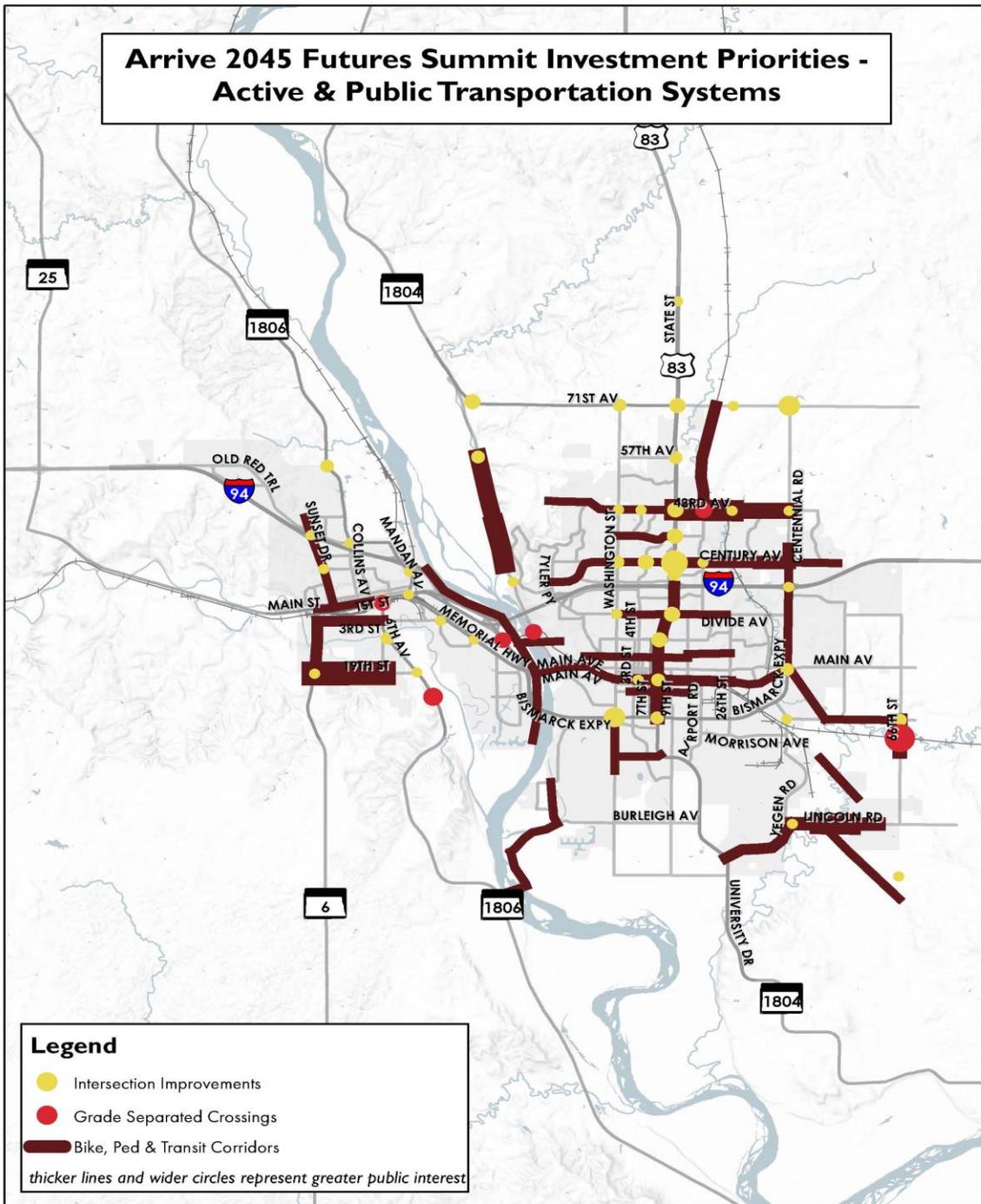
Arrive 2045 Futures Summit Investment Priorities - Roadway Systems



Arrive 2045 Futures Summit Investment Priorities - Top 3 Areas by Improvement Type



Arrive 2045 Futures Summit Investment Priorities - Active & Public Transportation Systems



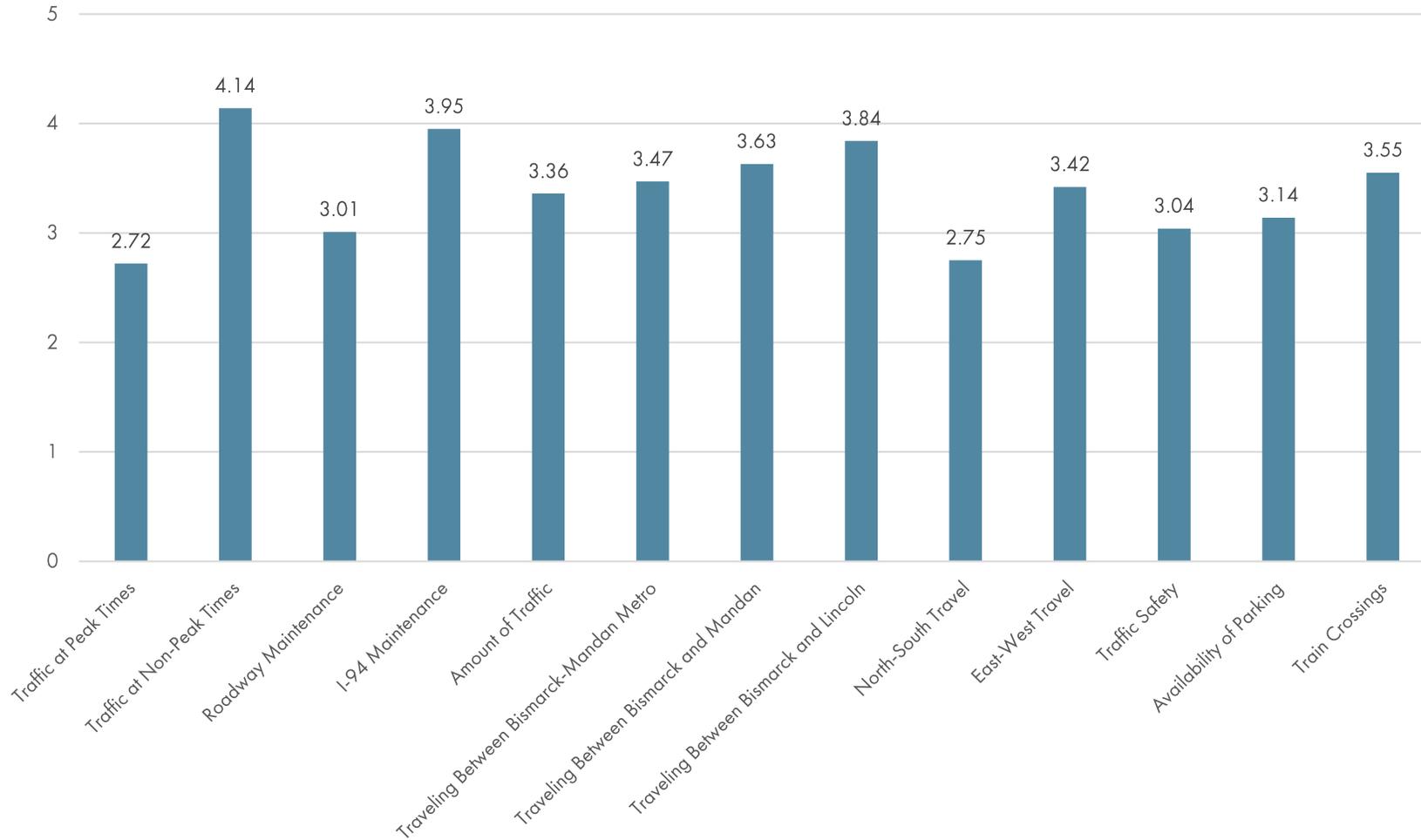
Legend

- Yellow circle: Intersection Improvements
- Red circle: Grade Separated Crossings
- Dark red line: Bike, Ped & Transit Corridors

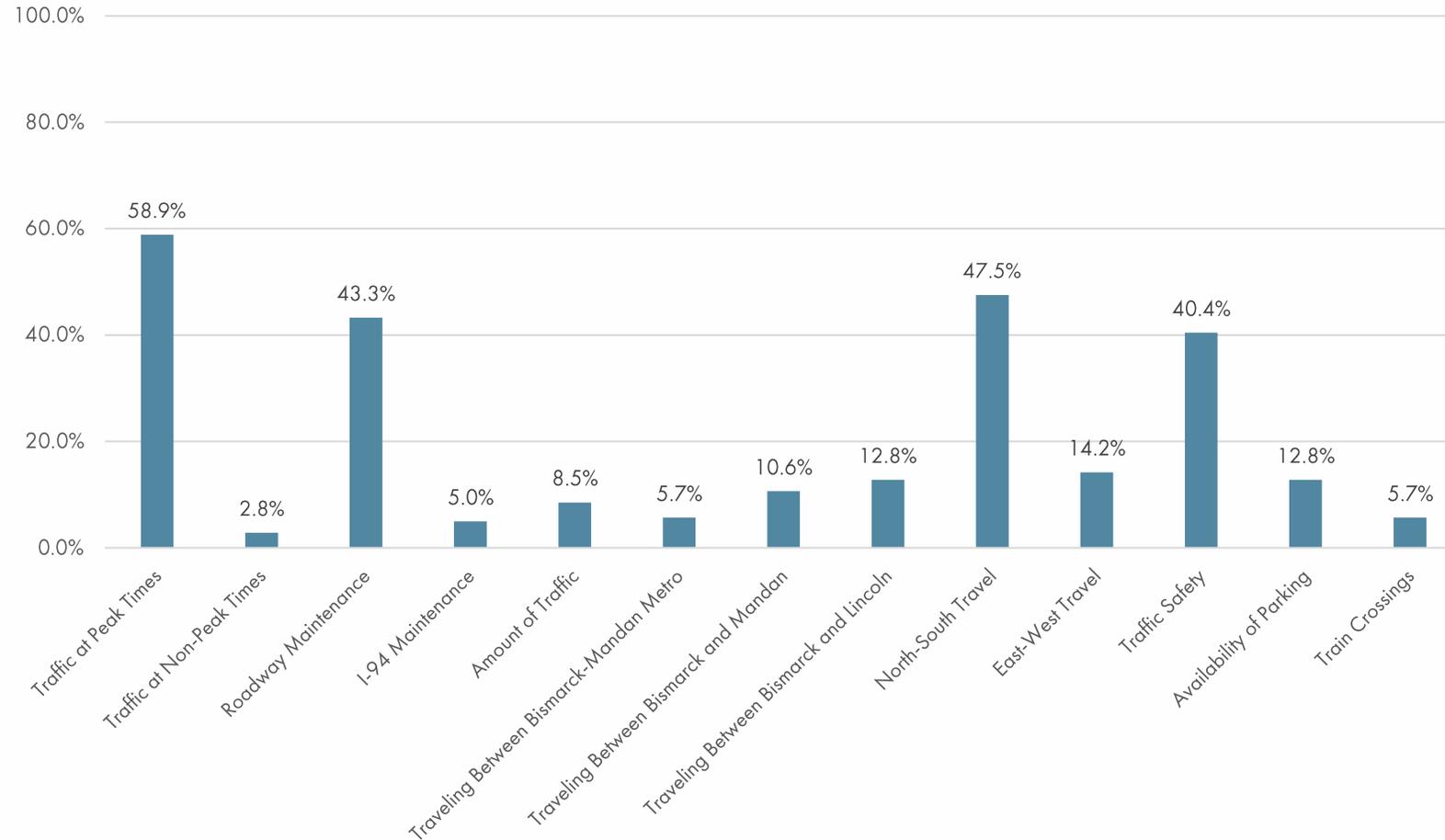
thicker lines and wider circles represent greater public interest



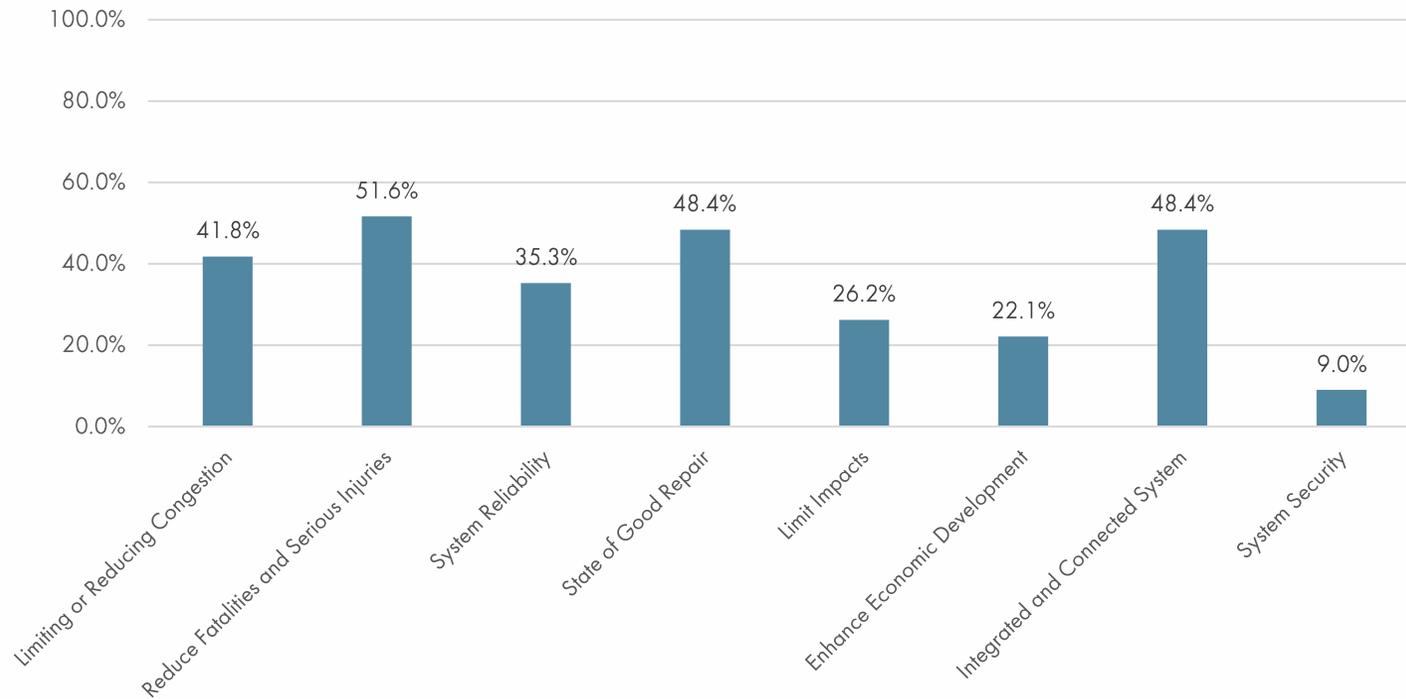
Perceptions of Current Issues



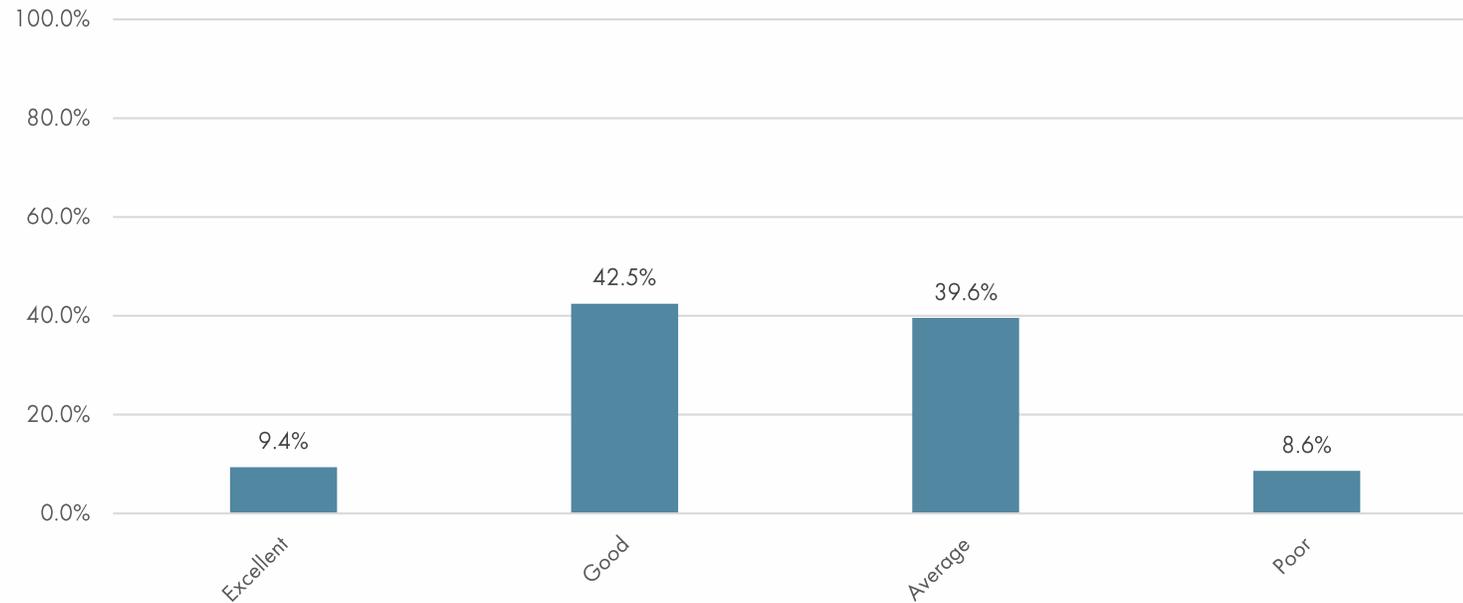
Top Three Transportation Issues



Top Three Transportation Goals

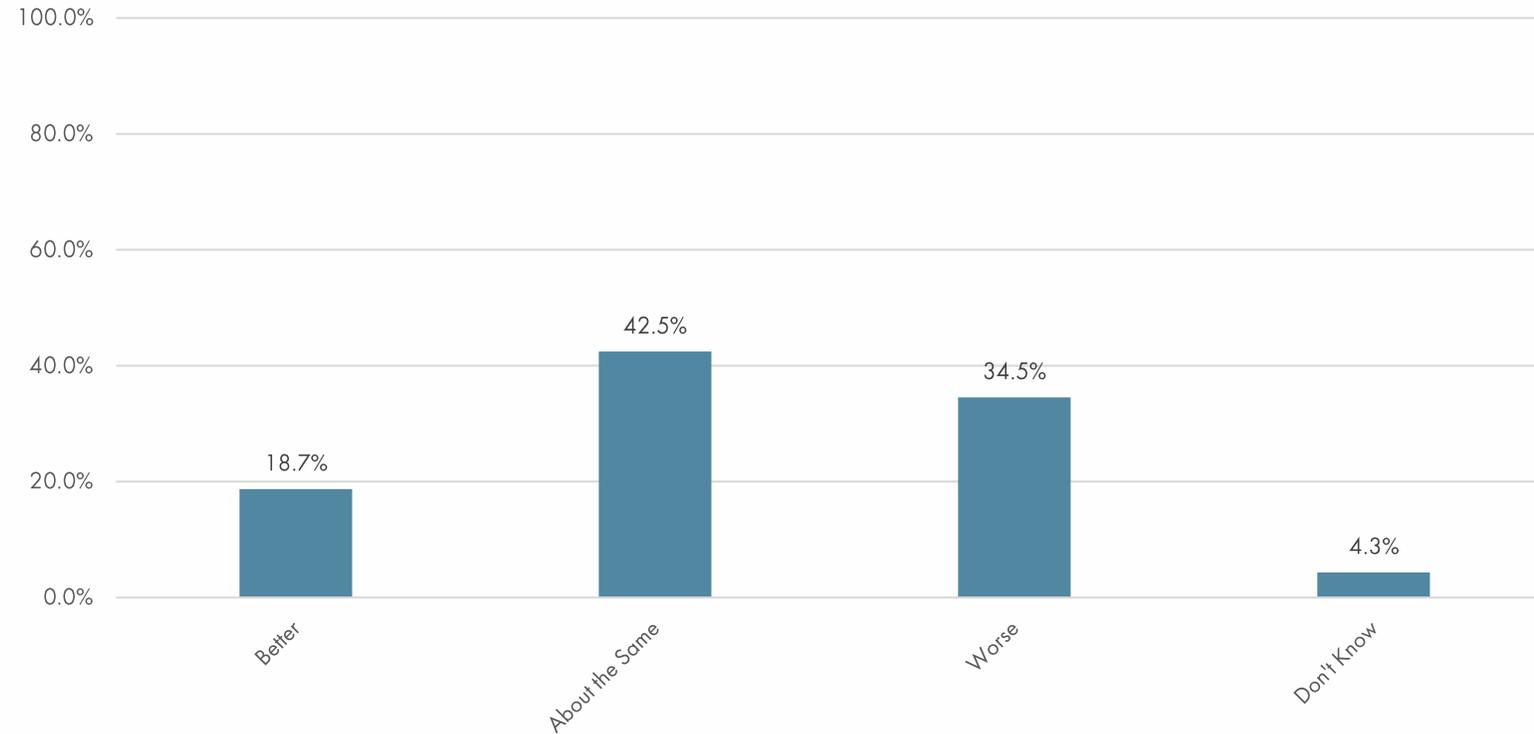


Rate the Bismarck-Mandan Street System



Peak hour congestion in Bismarck-Mandan

(compared to cities of the same size)



Preliminary Synthesis

» Major System Focus

- Infrastructure Condition & Preservation
- Safety
- Congestion (peaks)
- North-South Mobility

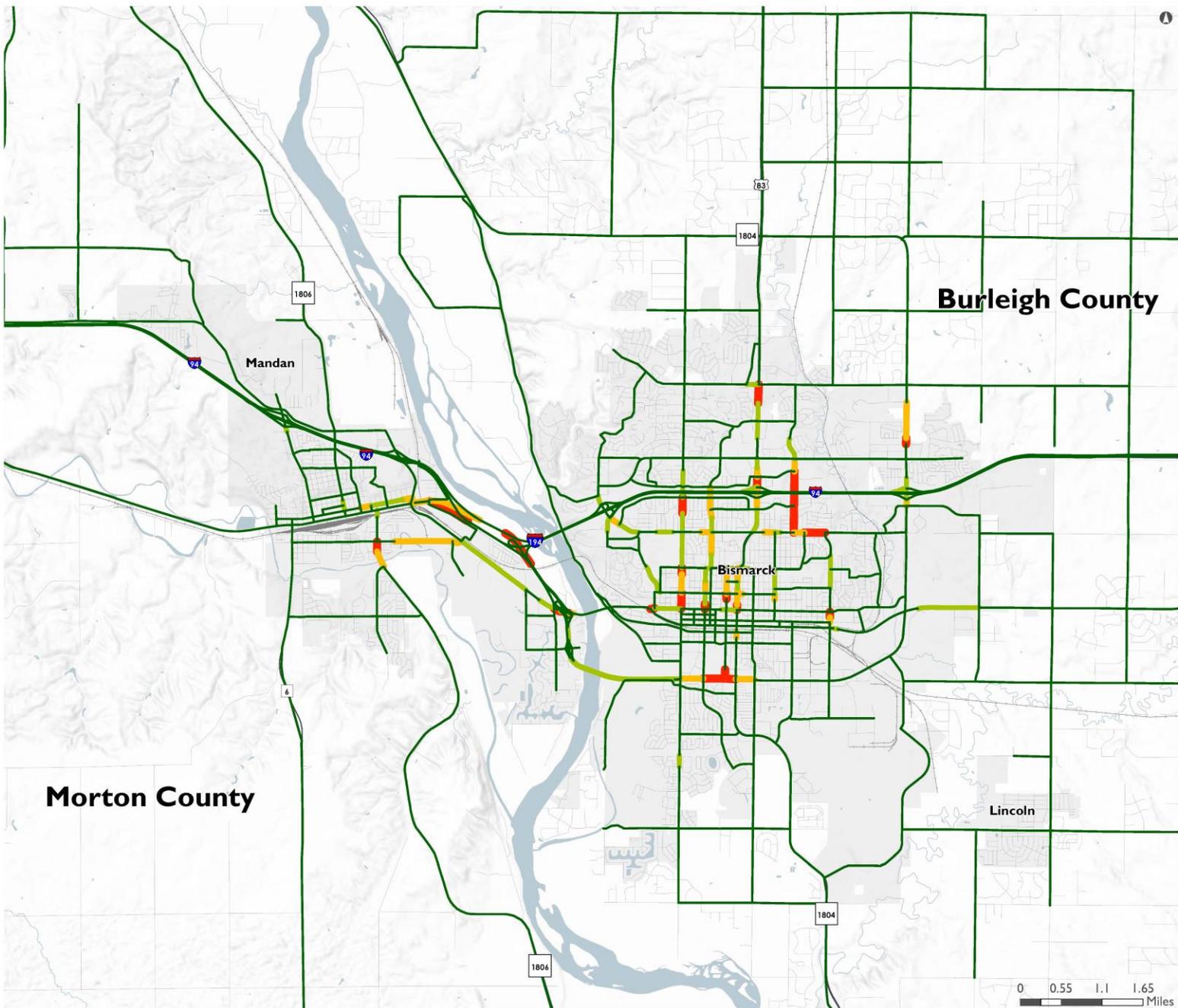
» Lesser Focus

- Integration
- Balanced Approach
- New/Expansion
- Regional Priorities



Update on Travel Demand Model

- » KJ complete a summary review looking at some very cosmetic elements.
- » HDR has completed detailed operational evaluation of the model (Final report pending).
- » Ready to start to use the Travel Demand Model (TDM) in cooperation with ATAC!

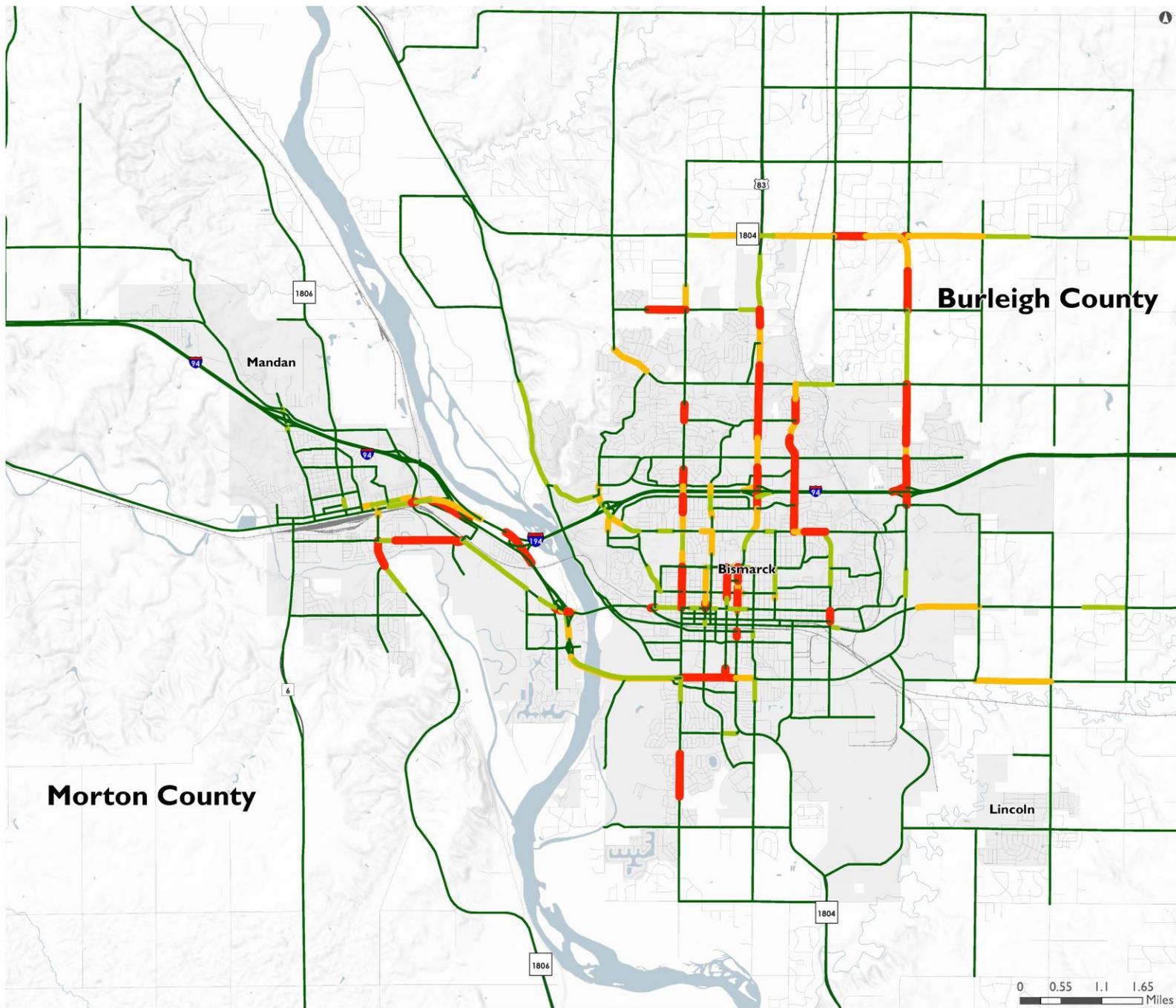


Level of Service 2015

LOS 2015

- █ F
- █ E
- █ D
- █ A - C



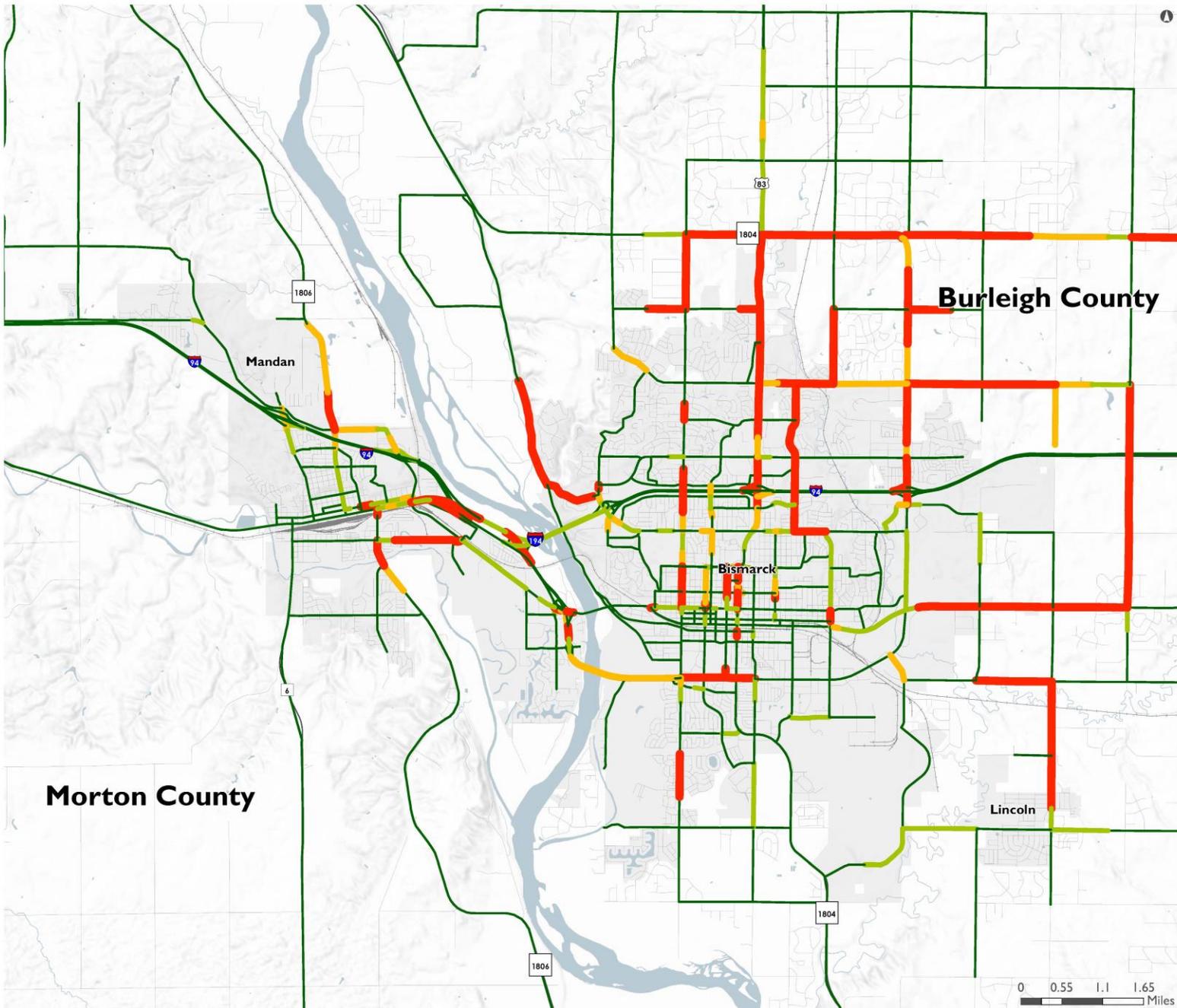


Level of Service 2030

LOS 2030

- █ F
- █ E
- █ D
- █ A - C



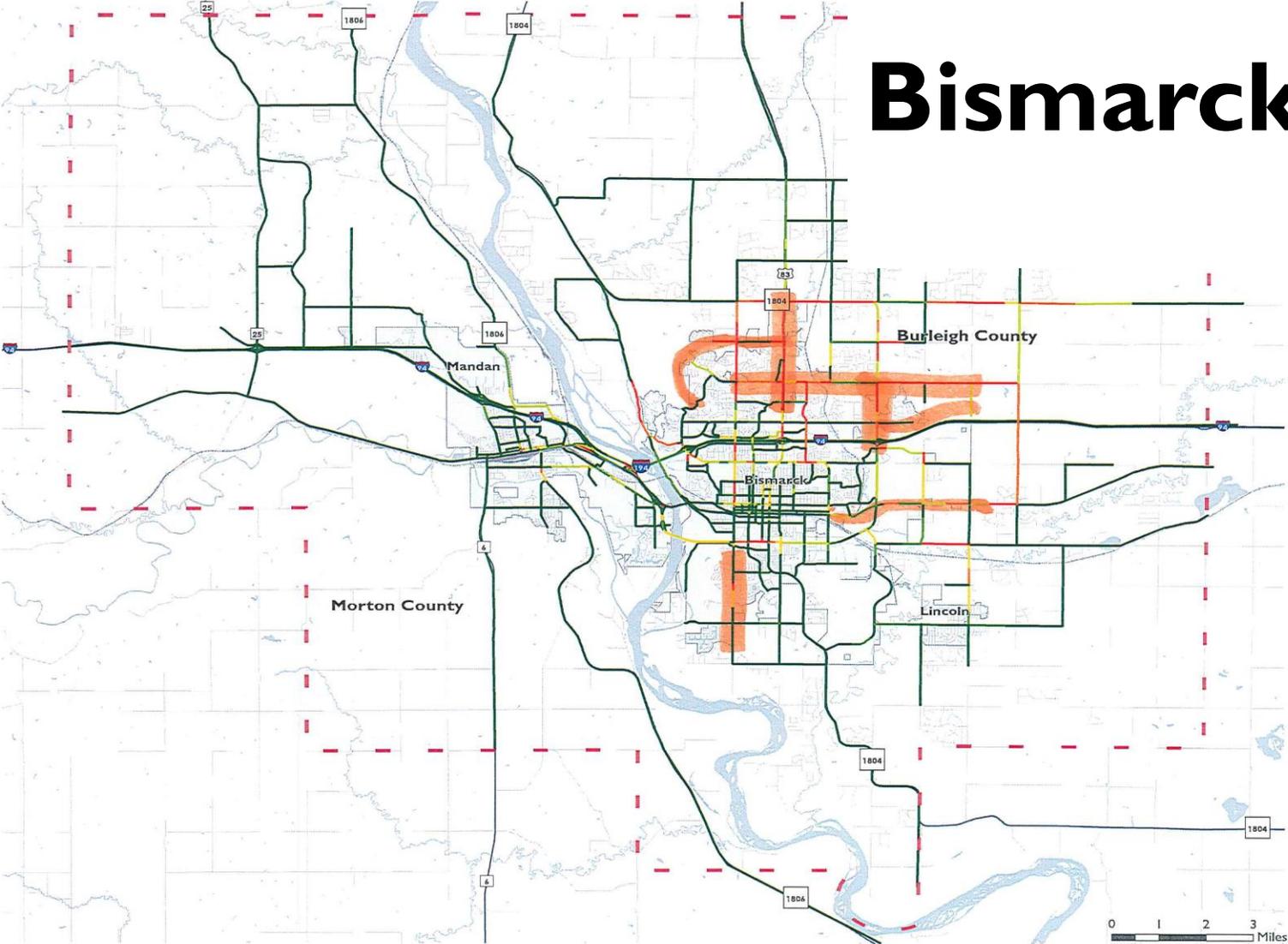


Level of Service 2045

- LOS 2045
- █ F
 - █ E
 - █ D
 - █ A - C



Bismarck Sales Tax



- LOS 2045**
- A
 - B
 - C
 - D
 - E
 - F
- Metropolitan Planning Organization Boundary**
- Boundary



Alternatives Evaluation

Alternatives Analysis – Preliminary Outline

» Identification of Project Clusters

- Respond to larger “project concepts” which are likely to compete against one another.

» Scenario Testing

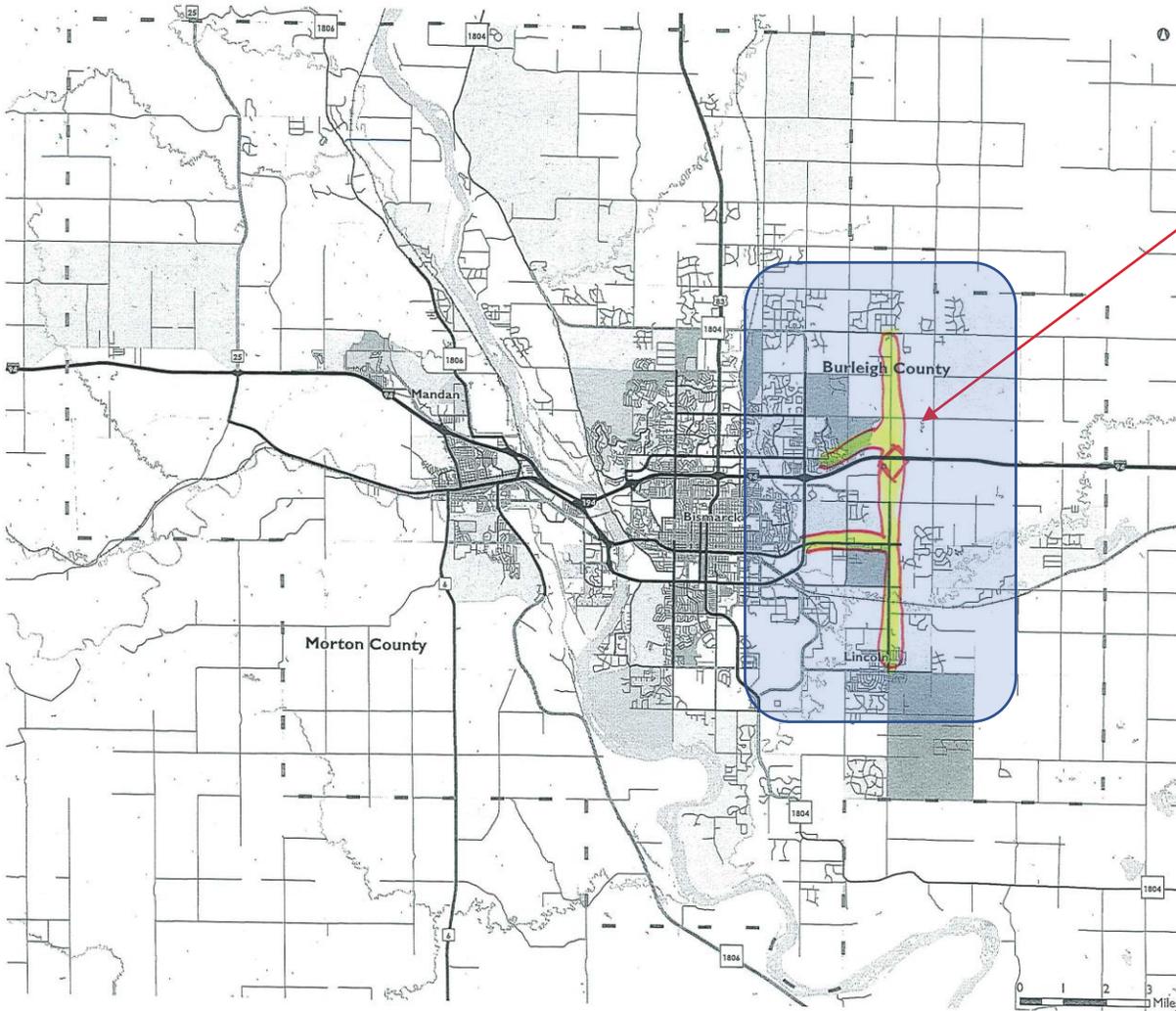
- Changes to shared mobility, autonomous vehicles and mode share.

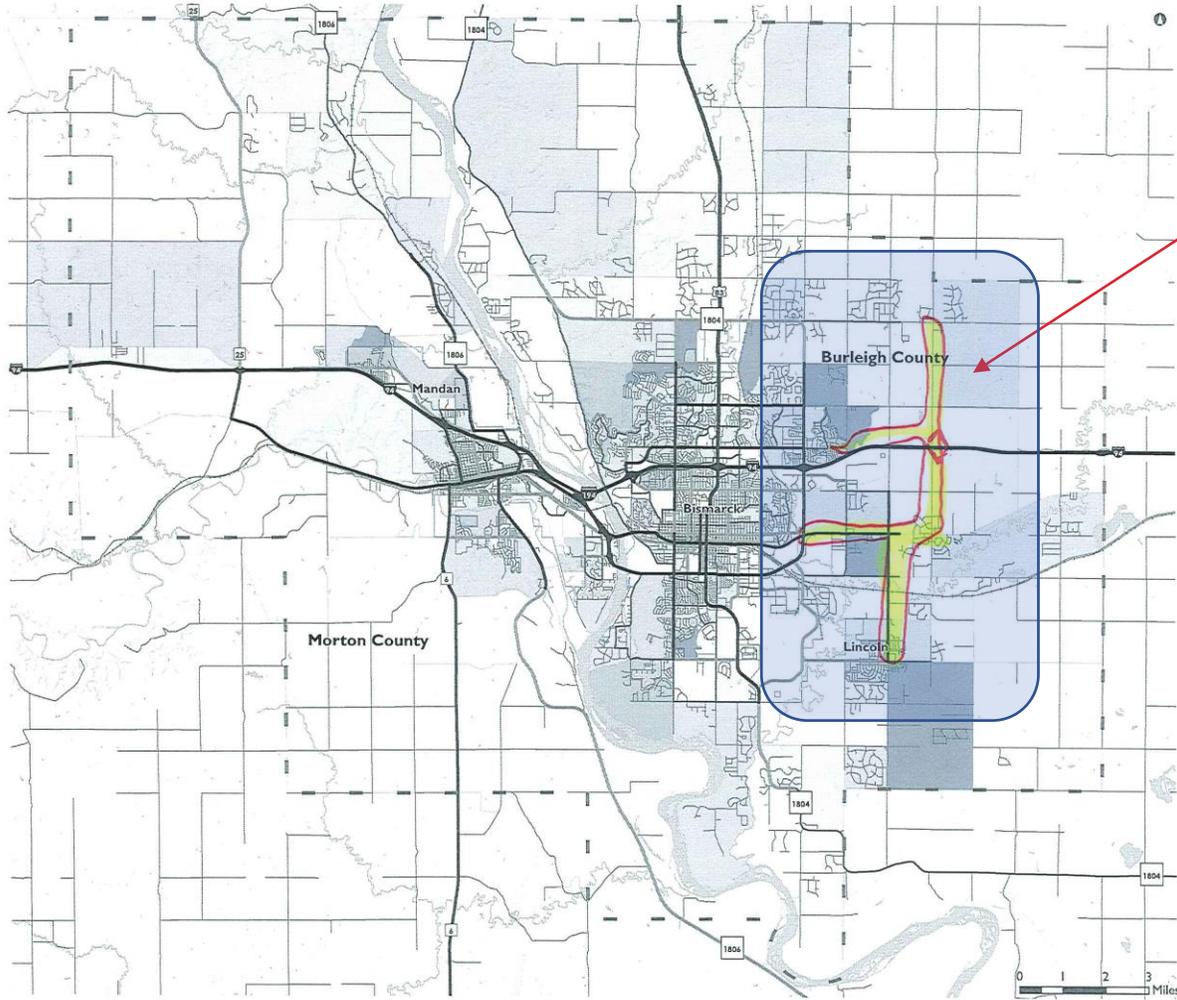
» Project/Corridor Level Evaluation and Refinement

- Six (6) “Hot spots”

» 66th Street Corridor

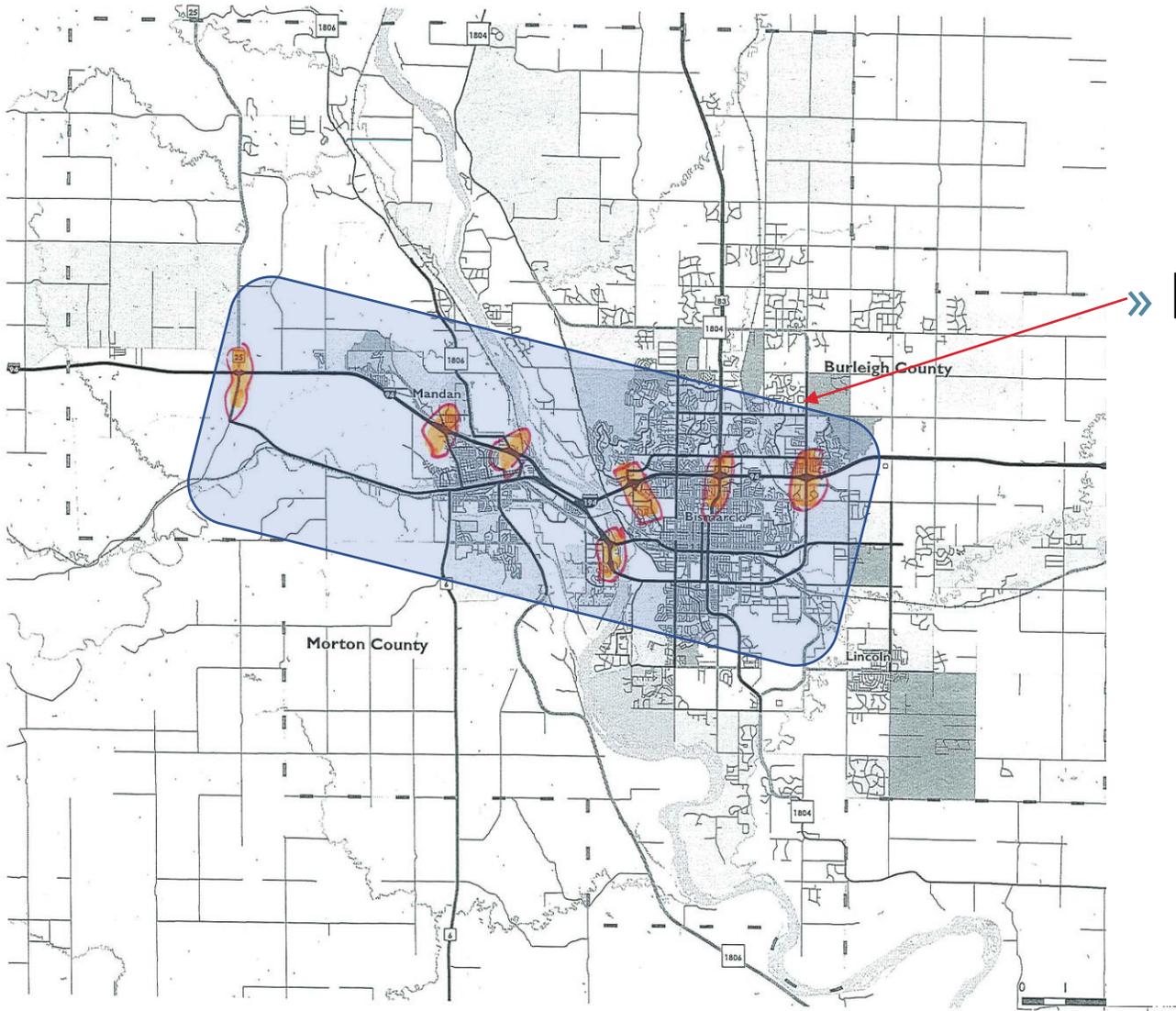
- 71st to Lincoln Road
- Century Avenue Extension
- Improve Main Avenue
- With and out Grade Sep. and Interchange





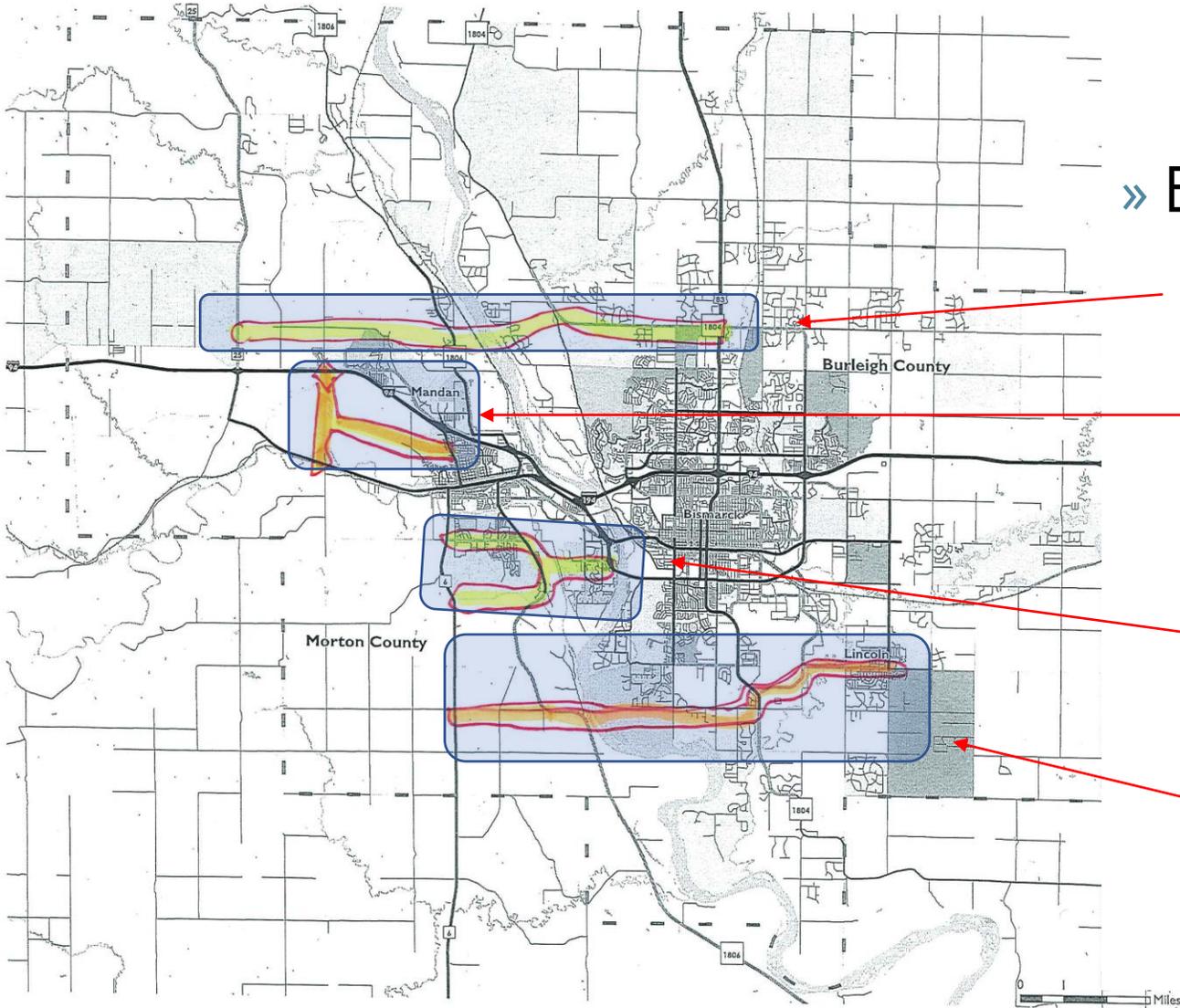
» 80th Street Corridor

- Century Avenue Extension
- Main Avenue Improvements
- Shift to Lincoln Rd.
- With and Without Interchange



» Interstate/Arterial

- Improve existing interchanges
- Improve perpendicular arterials (1/2 mile north and south)
- No new interchanges



» East- West Improvements

- Northern Bridge Corridor
- Mandan Interchange + Arterial Addition
- McKenzie Road Extension
- South Bridge Corridor

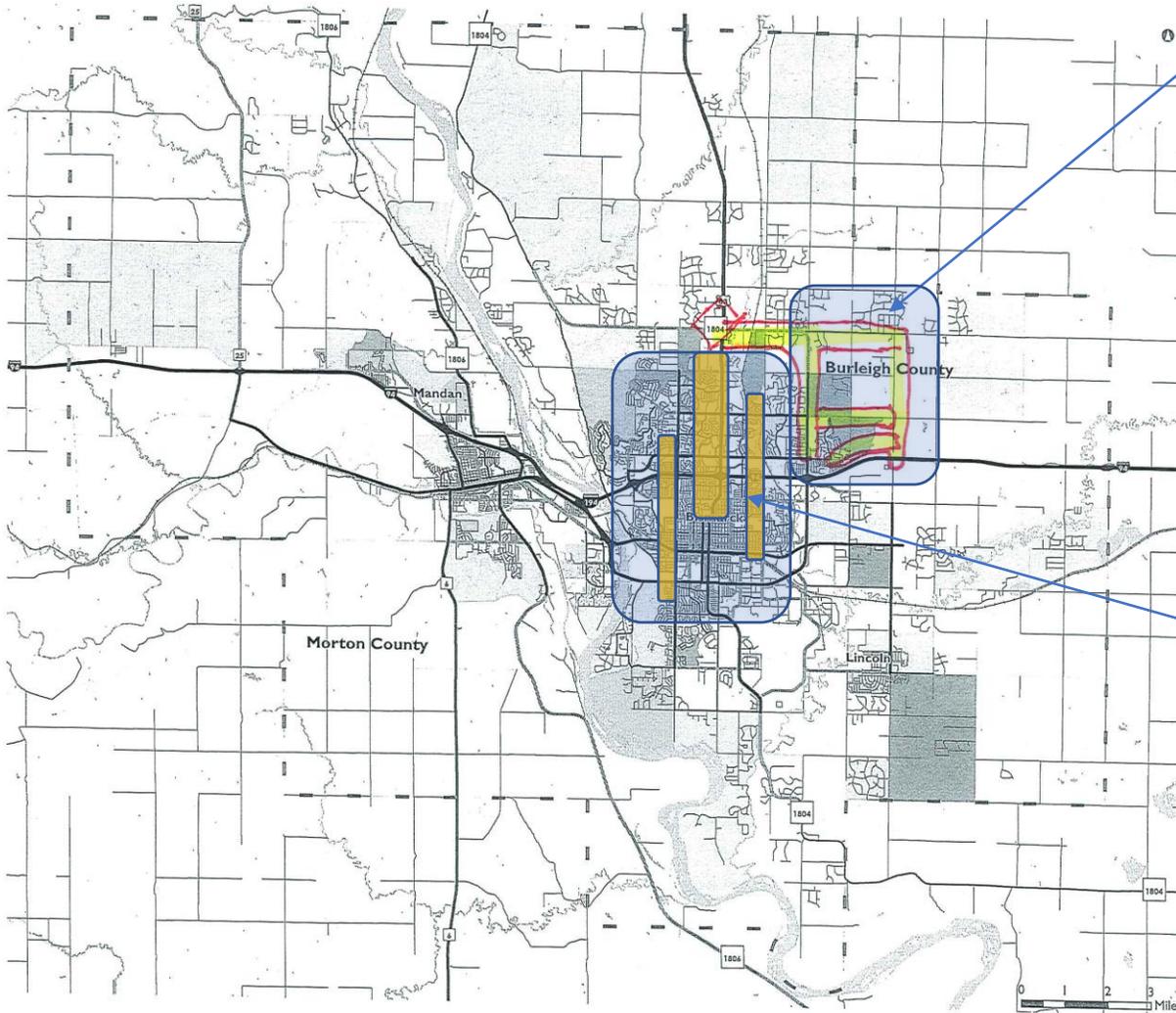
» NE Bismarck

■ Improve Major Arterial Corridors

- Centennial (Jerico to 71st)
- 71st Avenue (66th to State)
- Century Avenue (extend & widen)
- 43rd Avenue (widen)
- Interchange @ State & 71st

» State Street & Local Relievers

- Integrate outcomes of the corridor study



Project Concept Clusters

- » **66th Street Corridor** – Improve 66th Street corridor from 71st Avenue to Lincoln Road; modeled with and without an I-94 grade separation and interchange.
- » **80th Street Corridor** – Improve 80th Street from Main Avenue to 71st Avenue modeled. Model corridor with and without an I-94 interchange.
- » **NE Bismarck Arterial Improvements** – Improve Century Avenue, 43rd Avenue 71st Avenue to five lane arterial roadways from Centennial Road to 66th Street; improve Centennial Road to a five-lane arterial from Jericho to 71st Avenue. assumes 66th Street is fully connected from Century Avenue to 71st Avenue. Include a grade separated interchange at 71st and State Street.

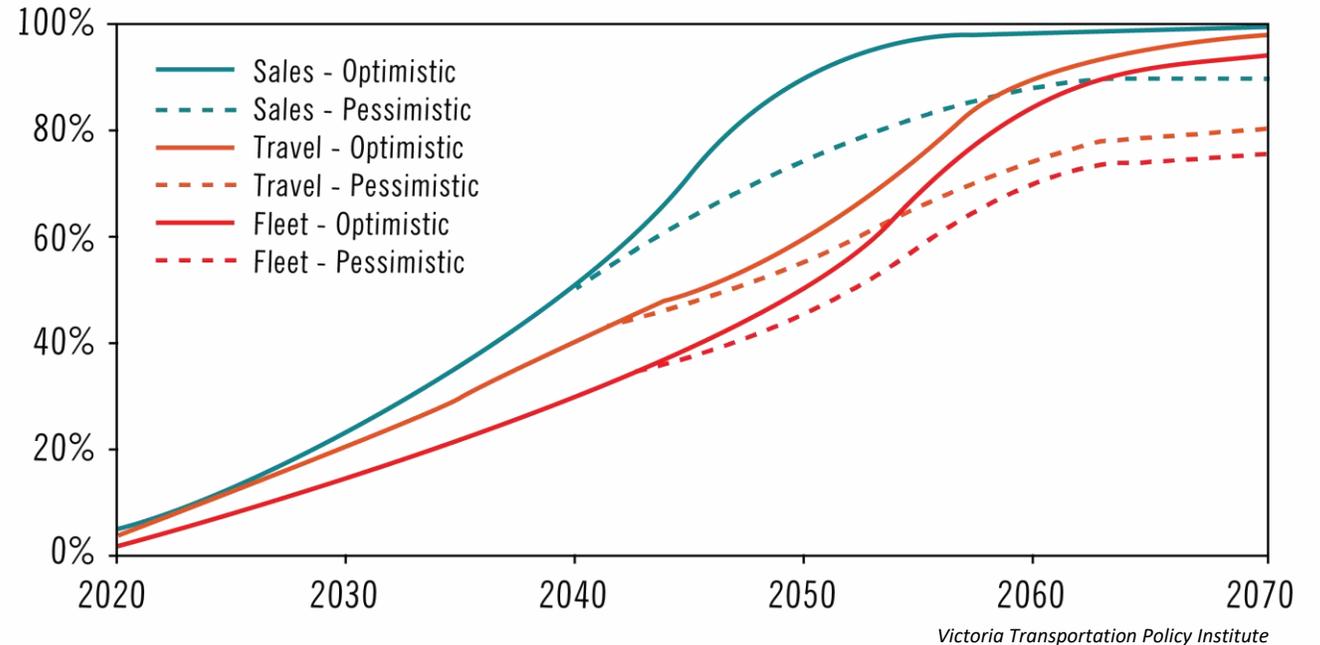
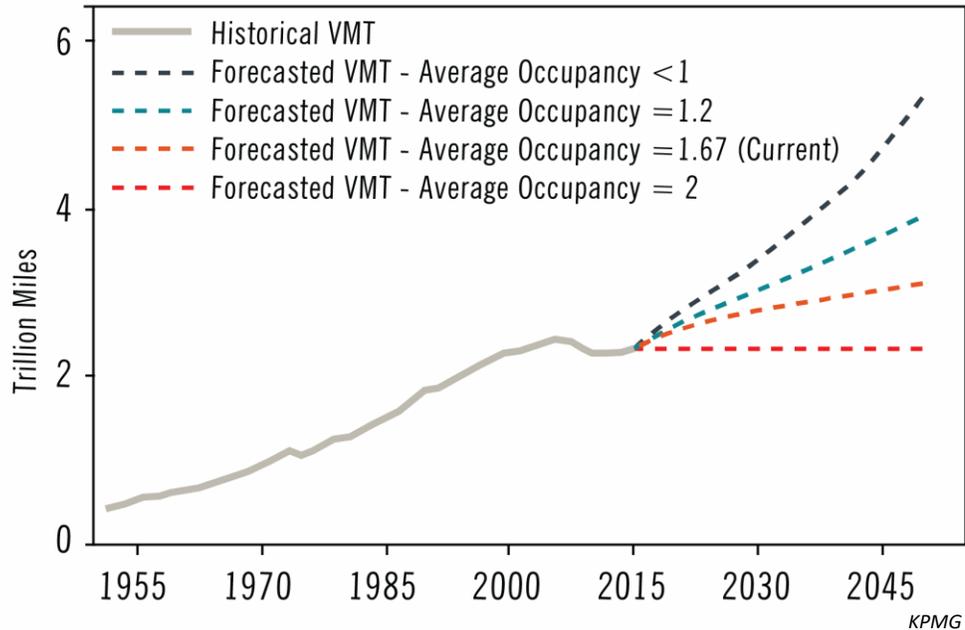
Project Concept Clusters

- » **Southern Bridge Corridor** – Start in Lincoln follow Lincoln Road, Airway Ave., 48th Ave., assume Missouri River bridge and then junction with ND 1806; additional consideration given to a continuation to ND 6.
- » **Northern Bridge Corridor** – Develop a corridor from State Street to ND 1806, assume Missouri River bridge; continue corridor generally west along 37th Street and junction with ND 25.
- » **South Mandan Arterial Corridor** - McKenzie Drive Corridor from Bismarck Expy. to ND 1806; and improved connection on 19th Street and/or new east-west corridor from ND 1806 to ND 6.

Project Concept Clusters

- » Interstate/Arterial Improvement – Improve each existing interchange and perpendicular arterial roadway (1/2 mile north and south). Make no accommodations for other interstate access, E.g. 66th Street, 80th Street, etc.
- » Mandan Interchange Addition – Add a new interchange at approximately 56th Avenue and Old Red Trail in Mandan. Assume an extension of Division Street to approximately a future southern extension of 56th Avenue, which will run south into the 94 Business Loop/West Main.
- » State Street – Integrate various improvements considered from US 83 Alternatives Study + Bismarck in Town Arterial Improvements.

Scenario Planning



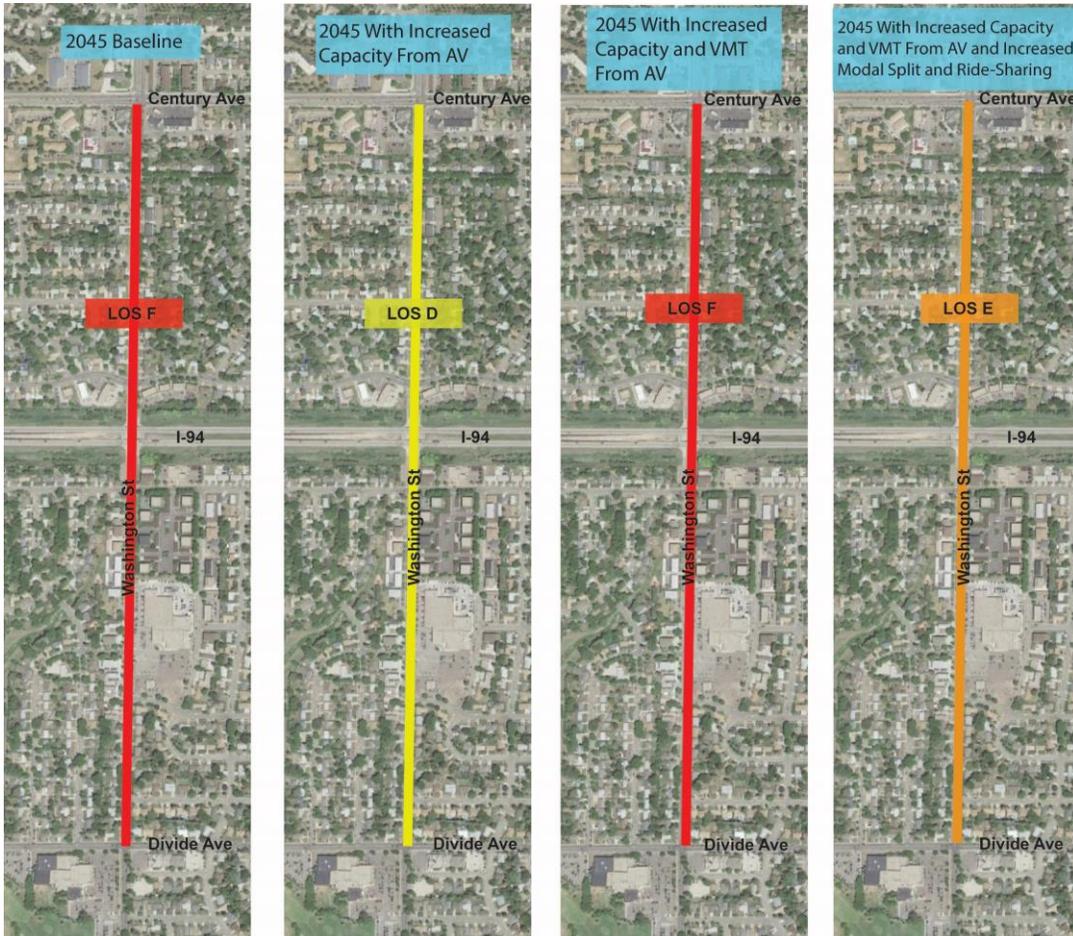
Our **BEST** Estimates Can Vary by 4 Trillion VMT



Scenario Planning

AV Population	Carpool/ Ride-Share	Modal Split	Assumptions and Model Changes
0% by 2045	11%	3%	» 2045 E+C base model with existing travel behavior
25% by 2045	17%	6%	» Adjust trip generation rates to increase VMT expected with AVs » Adjust vehicle occupancy to account for increased ride-sharing/carpooling » Increase internal capture rates to replicate increased mode split for short trips » Adjust roadway capacity to respond to reduced headways between AVs
50% by 2045	11%	3%	
75% by 2045	11%	3%	
75% by 2045	17%	6%	
100% by 2045	11%	3%	

Scenario Planning



	Base Model	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Base Network						
Project Cluster 1						
Project Cluster 2						
Project Cluster 3						

- » Use model outputs (VMT and VHT)
- » High level planning costs
- » Benefit/Cost Analysis

Performance Based Planning

Summary of Goals Ranking

Goal	Lincoln PIM	Mandan PIM	Bismarck PIM	SCM	Total	Ranking
Safety	24	17	36	10	87	#2
Infrastructure condition	15	20	52	9	96	#1
Congestion reduction	24	18	22	6	70	#3
System reliability	10	8	21	5	44	#4
Freight movement and economic vitality	12	6	19	4	41	#6
Environmental sustainability	9	11	22	1	43	#5
Reduced project delivery delays	6	2	13	2	23	#7
Total Votes	100	82	185	37	404	

Summary of Performance Areas Ranking

Goal	Lincoln PIM	Mandan PIM	Bismarck PIM	SCM	Total	Ranking
Active Transportation	7	8	21	1	37	#5
Pavement Conditions	32	20	62	6	120	#1
Public Transportation	13	10	21	6	50	#3
Travel Time	12	14	27	4	57	#2
Technology	6	10	24	7	47	#4
Total	70	62	155	24	311	

Summary of Issues Ranking

Goal	Lincoln PIM	Mandan PIM	Bismarck PIM	SCM	Total	Ranking
Funding	18	13	41	10	82	#2
Regional Priorities	3	10	18	5	36	#8 (Tie)
Preservation	20	20	46	5	91	#1
Growth & Development	25	12	29	5	71	#3
North-South Mobility	12	12	24	7	55	#4
East-West Mobility	4	13	19	0	36	#8 (Tie)
Expansion	13	12	20	3	48	#5
Public Expectations	12	5	19	5	41	#6
Technology	7	8	18	4	37	#7
Total	114	105	234	44	497	

Performance Measures Update

» PM 1: Safety – MPO Adopted May 2018

- Measures can apply to MPOs System
- NDDOT Performance Targets apply to State's system
- This is the one PM where we feel it would make sense for the MPO to adopt their own targets.

Safety Performance Measure	NDDOT Performance Target 5 Year Average	MPO Performance 5 Year Average
(1) Number of Fatalities	138.0	4.6
(2) Rate of Fatalities per 100 million VMT	1.366	0.647
(3) Number of Serious Injuries	516.0	37.2
(4) Rate of Serious Injuries per 100 million VMT	5.088	5.232
(5) Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	34.8	4.6

Performance Measures Update

» PM 2: Infrastructure Condition – Pavements and Bridges

Pavement Conditions				
Measure	Interstate Good	Interstate Poor	Non-Interstate NHS Good	Non-Interstate NHS Poor
Target Condition	75.6%	3%	58.3%	3%
Existing Condition (NDDOT)	80.2%	0.1%	62.8%	0.3%
Bridge Conditions				
Measure	Structure Good		Structures Poor	
Target Condition	60%		4%	
Existing Condition (NDDOT)	64.44%		3.67%	

Performance Measures Update

» PM 3: System Reliability – Travel Time and Freight Reliability

Measure	Travel Time Reliability Non-Interstate NHS	Travel Time Reliability Interstate	Freight Reliability Index
Target Condition	85%	85%	3.0
Existing Condition (NDDOT – 2017)	91.6%	99.4%	1.15

- MPO adopted state targets for both PM 2 and 3 in 2018
- The targets for PM 2 and PM 3 are specific to the State NHS system (Regional System and Interstate System)

Performance Measures Update

- » Pull forward PM 1, PM2 and PM3 into Arrive 2045
 - Evaluate as MTP update unfolds
- » PMs relate primarily to Interstates and NHS.
- » Will Arrive 2045 measure performance and adopt measures and targets for the non-state roadway system (Local and Urban Roads System)?

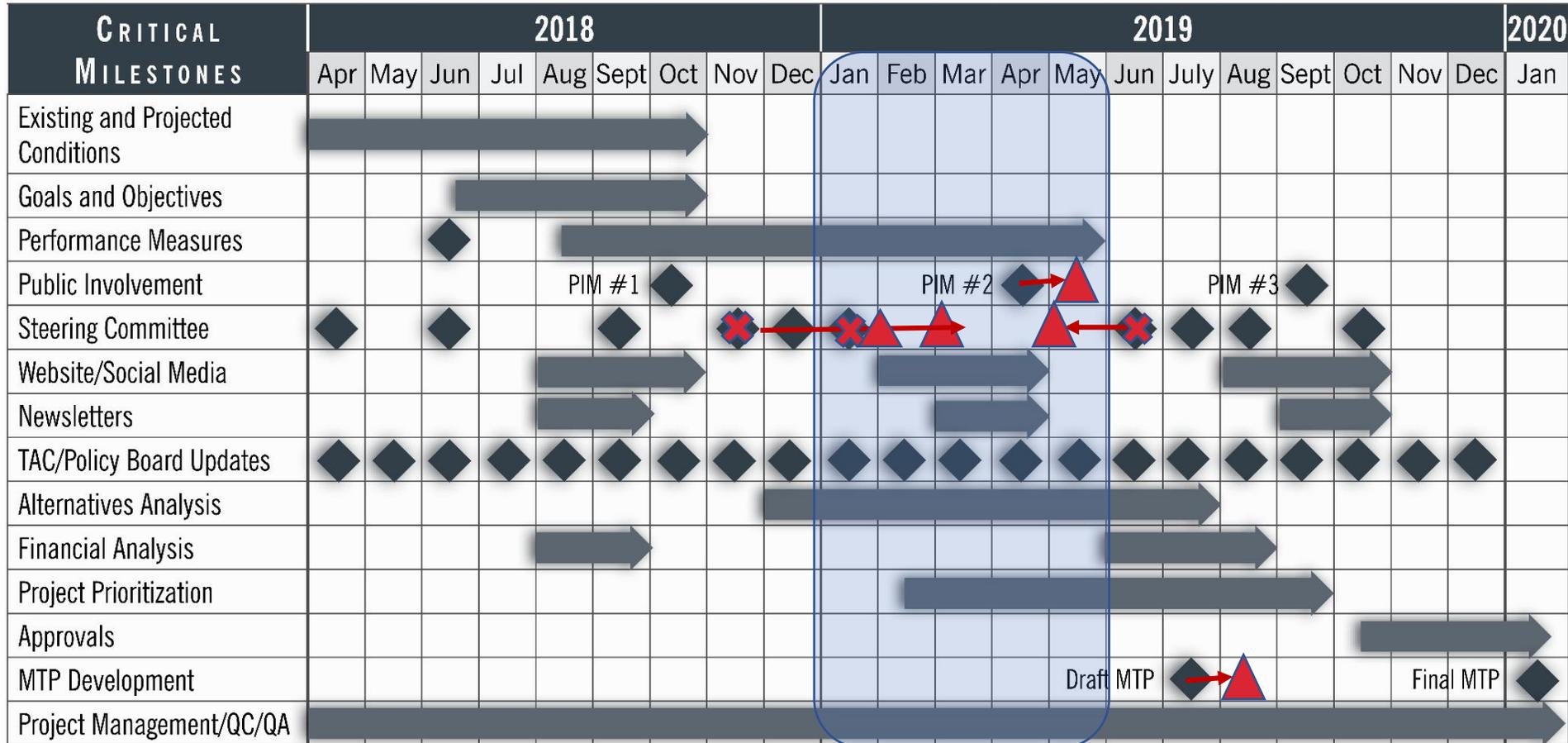


Goals, Objectives, & PMs – Next Steps

- » Meet with smaller technical group
 - Discuss objectives to support planning goals
 - Discuss need for PM's specific to non-state system
 - Discuss project ranking process based on goal rankings



Next Steps





PROJECT SCM #4
SHEET NO. Bismarck - Mandan
CALCULATED BY _____ DATE _____
CHECKED BY [Signature] DATE 12/5/2018

Name

Representing

Peggy Harter

Stantec

Rachel Drewlow

BM MPO

Jeff Solemsaas

Bismarck P.D.

Mark A Berg

Bis Engineering

Kim Lee

Bismarck Planning

Marcus S. Hall

Burleigh County

Natalie Pierce

Morton County P+Z

Gabe Schell

Bis. Engineering

John Van Dyke

City of Mandan

Week KLJ

KLJ

Bismarck-Mandan Metropolitan Transportation Plan

Date: December 5, 2018
Time: 2:00 p.m.
Location: Bis-Man Transit Training Room
Re: Steering Committee Meeting #4

Meeting Attendees:

See Sign in Sheet

Meeting Summary

- » Welcome and Introductions – Rachel Drewlow kicked off the meeting with introductions and provided an update as to where we are at in the MTP project. Wade Kline then reviewed the agenda for the meeting and reviewed the project schedule.
- » Review Public Input Meeting Summary – a written summary of the public input meeting was sent out to the SRC members. We launched the project website late summer and this fall made a huge push through our project webpage and other social media to get the message out to the public to link the public to the project public input meetings, webpage, and the online survey.
 - Summary of Prioritization/Weighting Exercises – We had a goal prioritization exercise during the meeting. Each attendee could put seven votes between the goals. The priority from the public (Highest to Lowest) was infrastructure condition, safety, congestion, system reliability, environmental, freight, and reduced project delays. We also asked the public to rank performance areas and again highest to lowest results were pavement conditions, travel time, public transportation, technology, and active transportation. Finally, we asked them to score emerging issues and they were ranked as preservation and management, funding, growth and development, north-south mobility, expansion, public expectations, technology, regional mobility, and east-west mobility.

- Summary of Arrive 2045 Futures Summit Table Maps – The results of the table top map exercise are shown on pages 5, 6 and 7 of the public input memo. To summarize the results of the table maps, we compiled the input on top of one another to see collectively how the input added up. The maps were summarized to show roadway system priorities for intersection improvements, new or improved interchanges, grade separated or river crossings, corridor improvements and active transportation; top 3 areas of improvements by project types; and a map that shows all active and public transportation system projects.

Action Item – Move the Heart River Crossing on the Top 3 Areas of Improvement Types Map.

Comment from Marcus – noted that the public weighed in heavily on O&M and system preservation.

- Preliminary Public Survey Results**

Wade discussed the current survey results that we have received ahead of the random sample going out and reviewed some of the higher issues that were identified for areas of focus (perception of current issues). When asked, “What are the top three issues?” the results included: traffic at peak times, roadway maintenance, north-south travel and traffic safety.

Gabe questioned if there was a discussion within the survey if there was an explanation of the “top three goals”. Wade responded that there wasn’t an in-depth explanation but a summary that we felt was intuitive to the public.

Wade noted that we can now compare the survey results from this MTP update to the previous LRTP completed five years ago to gain public satisfaction/dissatisfaction with differing elements for the system.

Based on the overall public input results, we have synthesized the results to “major focuses” and “lesser focuses” as follows:

- Major Focuses
 - Infrastructure Condition and Preservation
 - Safety
 - Congestion (peak hour)
 - North-South Mobility
- Lesser Focuses
 - Integration
 - Balanced Approach
 - New and Capacity Expansion
 - Regional Priorities

Jon with the City of Mandan is concerned that the public results aren’t reflecting Mandan’s need for new roadways to serve future development. Since the region is disproportionately populated and more developed east of the Missouri

River, that this will possibly be the case. They may not have as much representation with the public input process. If the public priorities are used to weight the prioritization of projects, Mandan may not have equal representation.

Gabe suggested that we separate out New Roadways and Capacity Expansion as they are really two separate items. **Action Item**

The group suggested that “regional priorities” may not have been understood by the public as they placed their dots and votes low on the term regional priorities but put a lot of regional priorities on their maps showing the north bridge crossing, heart bridge crossing, new interchanges, connections to Lincoln, etc. The SRC feels collectively that regional priorities are important. Gabe feel there is great connection across the river connecting the communities of Bismarck and Mandan.

Wade noted that the random sample element of the public input survey is pending and will be mailed out soon to areas that haven’t currently had a high survey response.

- » Review and Update on Travel Demand Model – Wade noted that KJ is completing a summary review looking at some of the cosmetic elements of the TDM. Currently we have the existing LOS results for 2015, LOS results for 2030 for an E+C network and a 2045 for an E+C network. We will now use these models as we look at projects to see how they impact the overall system. Our next step is that we will be developing an overall TDM memo to give the SRC members an opportunity to review it. The results as we have reviewed them are currently making sense where we are seeing existing and future congestion issues. This memo will likely come out to the SRC in early January.
- » Bismarck Sales Tax – since this is a new form of transportation revenue since we completed our financial discussion, we will want to be sure and incorporate this into the MTP financial plan and as a mean for our future projects.

Gabe noted that as part of the MTP project, we may only be able to recognize the availability of the money but will not be able to commit to what projects will be completed with the money. The dollars must be used on one of the 8 identified major corridors.

- » Revised and Discussion of Alternatives Development and Evaluation Process

Wade discussed this as three phases:

1. Identification of project clusters projects. Respond to project concepts which are likely to compete against one another.
2. Scenario Testing including changes to shared mobility, AV, and mode share.
3. Project/Corridor Level Evaluation and Refinement – we will also look at six (6) hot spots as part of our project scope.

1. Project Cluster #1: 66th Street Corridor extension from 71st to Lincoln Road, an extension of Century Avenue, improvements to Main Avenue, and look at this scenario cluster both with and without a grade separation and interchange with I-94.
2. Project Cluster #2: 80th Street Corridor to include Century Avenue extension, Main Avenue improvements, shift to Lincoln Road and look at this with and without an interchange.
3. Project Cluster #3: Interstate/Arterial Improvements to include improving our existing interchanges, improve perpendicular arterials (1/2 mile north and 1/2 mile south) and assume no new interchanges with I-94.
4. Project Cluster #4: East-West Corridor Improvements to include a Northern Corridor Bridge, New Mandan Interchange and arterial connections, McKenzie Road Extension, and a South Bridge Corridor.
Action Item – change the map to show the south bridge corridor where it is already being preserved.
5. Project Cluster #5: NE Bismarck improvement to Major Arterial Corridors including Centennial, 71st Avenue, Century Avenue, 43rd Avenue and an interchange at State and 71st Avenue.
6. Project Cluster #6: State Street and Local Reliever Routes: Integrate outcomes of the US 83 Corridor Study.

Rachel is concerned that a south bridge corridor may not be viable, so wondering if this should be part of this scenario. She also noted that the MPO has already basically eliminated a future interchange at 80th.

Mark asked if we can look at how optimizing signal systems can affect the region as opposed to adding capacity.

Wade reviewed our scenario planning discussion based on how autonomous vehicle and modal changes can greatly affect our daily vehicle trips in our model. Rachel and Mark both suggested that they felt it would be better to identify the infrastructure needs to be ready for AV.

Gabe is concerned that it will be difficult to identify how to “truly” change our model assumptions based on the AV and modal split scenario planning. We need to clearly layout our assumptions so that they can be adjusted if need be with the next model update.

The SRC agreed that we should reduce the number of scenarios based on their influence factor. Once we identify the influence factors we can solidify which scenarios to use. **Action Item**

» Performance Based Plan Development

- Peggy provided a status update of the three Performance Measures and Targets that have currently been adopted by the Bismarck-Mandan MPO.



- Peggy discussed that PM 2 (Pavement and Bridge Infrastructure Condition) and PM 3 (Travel Time Reliability) have targets that are specific to the NHS state roadway system (NHS Interstate and NHS non-interstate). So, the performance targets aren't currently developing targets for the rest of the MPO's functionally classified system that is not on the NHS system. Peggy noted that since the performance measures and their targets are a way for the MPO to evaluate the performance of their system, a special meeting will be scheduled in January with a smaller group of the SC members to review and discuss how additional performance targets could be adopted as part of the MTP process to apply to the non-NHS functionally classified system.
- Peggy reviewed the public input results for the ranking of the performance-based goals that will ultimately be the transportation goals for the plan. She discussed how she will be preparing "objectives" to support each of the seven performance-based goals that will help the MPO meet the performance measure targets that are developed. A review and discussion of the objectives developed to support the performance goals will also occur at the small group meeting in January.
 - Project Prioritization & Scoring – Peggy discussed that toward the end of the plan, we will be evaluating the projects for prioritization. She discussed the methodology that the MPO is currently using to evaluate and score the urban roads grant projects. The process to evaluate and score the proposed projects may be like the process currently being completed. Therefore, it is important to revise the objectives so that the projects can be scored and compared fairly for like funding categories. Methodology may also be considered for the scoring to ensure that projects that do show the need for future bicycle and pedestrian facilities in the rural areas, aren't scored negatively against the urban facilities, since they aren't ignoring a need, but these facilities aren't identified as a long-range need in the bicycle and pedestrian plan.
- » Schedule of Events – Wade discussed the next steps within the project schedule that will occur now through the end of Map. He specifically emphasized that the committee would see a poll come out soon for availability for a meeting in January to discuss performance measure targets for the non-NHS system, objectives to support the performance goals and discussion on evaluation and scoring of projects.

Bismarck-Mandan Metropolitan Transportation Plan

Date: May 23, 2019

Time: 10:00 a.m.

Location: Mandan City Hall – Veterans Conference Room

Re: Steering Committee Meeting #5

Agenda

1. Welcome and Introductions
2. Review Draft Macro Level Project Cluster Analysis – **Attachment 1**
 - a. Discuss Final Inputs from US 83 Alternatives Study
3. Review & Discuss Preliminary Universe of Projects – **Attachment 2**
4. Review Revised Final Draft Goals, Objectives & Performance Measures – **Attachment 3**
5. Overview of Project Specific Evaluation Process – *No Attachment*
6. Review Draft Fiscal Constraint & Financial Analysis – **Attachment 4**
7. Public Input Meeting #2 – *No Attachment*
 - a. July 9-10: Lincoln, Bismarck and Mandan
 - b. Discuss Format and Content
8. Wrap up and next steps
 - a. Smart Cities Workshop – **Attachment 5**

Attachment 1

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee

From: KLJ and Stantec

Date: May 23, 2019

Re: Project Cluster Analysis

PROJECT CLUSTER CONCEPTS

There are a series of major project concepts that would address some of the most significant transportation issues through the Bismarck-Mandan metro area. These concepts are “clusters” of individual projects representing a collection of generally coordinated improvements to the transportation system and designed to be constructed over time as funding is available. Many of these clusters were included in the Envision 2040 Long Range Transportation Plan and received support at the Futures Summit (the first public meeting). The alignments shown were identified from previous planning efforts, but any project that moves into programming will require additional planning and engineering to determine a final alignment. The final alignment may deviate from the alignments shown in this memo and MTP.

This analysis focuses on technical information and does not consider any environmental or funding challenges. It is simply to help facilitate discussions of if, and when, these concepts should be programmed.

Concept Analysis Methodology

Ten concept clusters were independently modeled, including various sub-options within each scenario and then analyzed and tested against the following methodology.

Each concept has a tabular summary of its impacts, as well as a graphical representation of the traffic impacts compared against the 2045 Existing + Committed (E+C) network.

Benefit/Cost Ratio

Benefit/cost ratios help establish whether a project provides more benefit to the transportation network than it costs over its entire lifetime. To identify the concept clusters that provide the most benefit for the Bismarck-Mandan MPO transportation network, the following process will be used to establish a benefit/cost ratio.

- » **Determine network-wide Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT).** These elements are outputs of the travel demand model. VMT and VHT will be calculated for the 2015 base model, 2030 Existing and Committed network (E+C) model, 2045 E+C model and the 2030 E+C and 2045 E+C models with each concept cluster. Using these outputs, the VHT and VMT reductions can be calculated and monetized to determine total benefits. These benefits will assume construction in 2025 for 20 years of total benefits within the MTP's study horizon.
- » **Determine costs.** The construction costs are based on the cost estimates discussed above. Annual maintenance costs will also be incorporated and compared to the base E+C network. The remaining capital value will be subtracted from the total cost based on the expected useful life (25 years for roadways, 50 years for bridges).
 - Monetization rates will be based on MnDOT recommended economic values (https://www.dot.state.mn.us/planning/program/appendix_a.html).
 - Maintenance costs were extrapolated from the 2012-2015 MnDOT Statewide Highway Systems Operation Plan (<https://www.dot.state.mn.us/maintenance/hsop/pdf/report.pdf>).
 - Cost estimates were developed and inflated to 2025, using a four percent inflation rate.

Any project with a benefit/cost ratio greater than one will be carried forward for further analysis.

Cost-Effectiveness

The cost-effectiveness analysis identifies when the projects' benefits outweigh its costs, similar to a benefit/cost ratio, but focuses on whether a project provides value within the planning horizon (by 2045). This analysis simply removes the remaining service life from the benefit/cost calculations.

Any project with a cost-effectiveness ratio greater than one will be carried forward for further analysis.

Returned Equity

The returned equity calculation identifies when the network-wide benefits of a project cluster can cover the infrastructure cost. It begins with construction costs, adding the net benefits from changes to VMT and VHT each year after construction minus the estimated maintenance cost. For example, if a project had a 2025 construction cost of \$1 million and net benefits of \$100,000 each year after, it would take 10 years for a project to breakeven and reach its returned equity point.

Concepts

Scenario I: Southern Bridge Corridor

The Southern Bridge Corridor concept would establish an east-west corridor with a new river crossing on the south side of the metro area. This concept would start in Lincoln, following Lincoln Road, Airway Avenue, and 48th Avenue, include a new Missouri River bridge, and then connect to ND 1806.

A sub-option was also considered that added a connection between ND 1806 and ND 6.

Summary of Impacts: Southern Bridge Corridor to ND 1806

The travel demand model projects more than 6,600 vehicles per day would use a southern bridge corridor with a connection to ND 1806 in 2045, creating the following impacts:

- » Attracts vehicles off I-94 and Memorial Highway.
- » Creates additional/increased congestion on north-south corridors south of the Bismarck Expressway.
- » Reduces vehicle hours traveled by 17.3 percent by 2045.
- » Reduces vehicle miles traveled by 0.9 percent by 2045.
- » Has a total estimated 2025 construction cost of \$84.1 million.
- » Has a benefit/cost ratio of 14.4.
- » Has a cost-effectiveness ratio of 8.2.
- » Returns equity in eight years.

The analysis summary for this scenario is shown in Table 1, with the impacts to average daily traffic shown in Figure 1.

Table 1: Summary of Scenario 1A: Southern Bridge Corridor to ND 1806

Scenario 1A	2030	2045
VHT Change	-5.2%	-17.3%
VMT Change	0.2%	-0.9%
AADT	6,509	8,374
% of Links Over Capacity	1.7%	6.9%
Construction Cost	\$84.1 M	
Total Benefits	\$619.1 M	
Benefit/Cost Ratio	14.4	
Cost-Effectiveness	8.2	
Returned Equity	8 Years	

Summary of Impacts: Southern Bridge Corridor to ND 6

The travel demand model projects nearly 8,800 vehicles per day would use a southern bridge corridor with a connection to ND 6 in 2045, creating the following impacts:

- » Attracts vehicles off I-94.
- » Creates additional/increased congestion on north-south corridors south of the Bismarck Expressway.
- » Reduces vehicle hours traveled by 17.1 percent by 2045.
- » Reduces vehicle miles traveled by 0.9 percent by 2045.
- » Has a total estimated 2025 construction cost of \$100.6 million.
- » Has a benefit/cost ratio of 11.0.
- » Has a cost-effectiveness ratio of 6.8.
- » Returns equity in eight years.

The analysis summary for this scenario is shown in Table 2, with the impacts to average daily traffic shown in Figure 2.

Table 2: Summary of Scenario 1B: Southern Bridge Corridor to ND 6

Scenario 1B	2030	2045
VHT Change	-5.5%	-17.1%
VMT Change	0.2%	-0.9%
AADT	6,508	8,377
% of Links Over Capacity	1.6%	7.1%
Construction Cost	\$100.6 M	
Total Benefits	\$622.4 M	
Benefit/Cost Ratio	11.0	
Cost-Effectiveness	6.8	
Returned Equity	8 Years	

Figure 1: Scenario 1A 2045 Traffic Changes

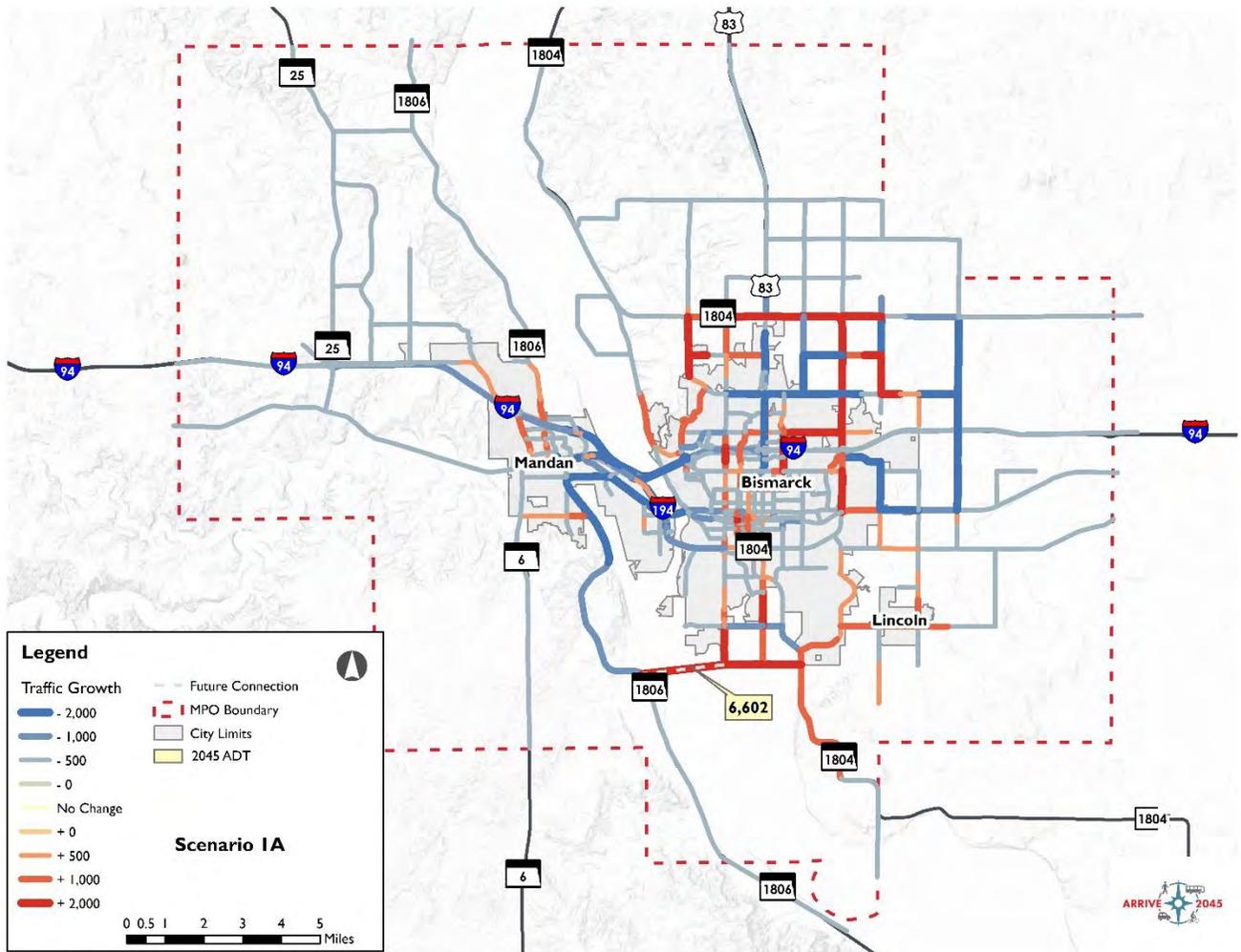
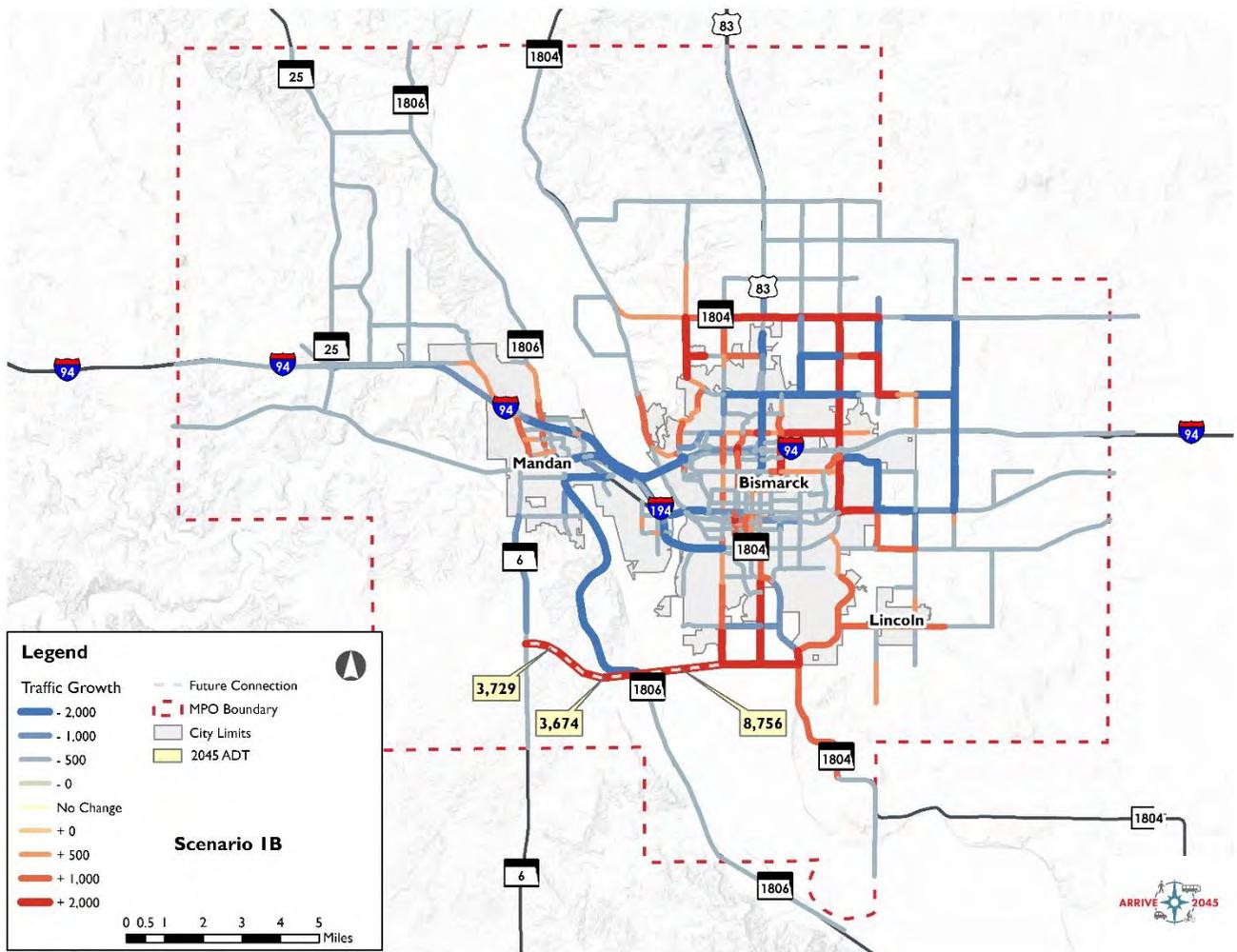


Figure 2: Scenario 1B 2045 Traffic Changes



Scenario 2: Northern Bridge Corridor

The Northern Bridge Corridor concept would establish an east-west corridor with a new river crossing on the north side of the metro area. It would generally follow 71st Avenue in Bismarck, with the new river crossing connecting Burnt Creek Loop in Bismarck and 38th Street in Mandan, then following 37th Street, ending at ND 25.

Summary of Impacts: Northern Bridge Corridor

The travel demand model projects more than 11,400 vehicles per day would use a northern bridge corridor with a connection to ND 25 in 2045, creating the following impacts:

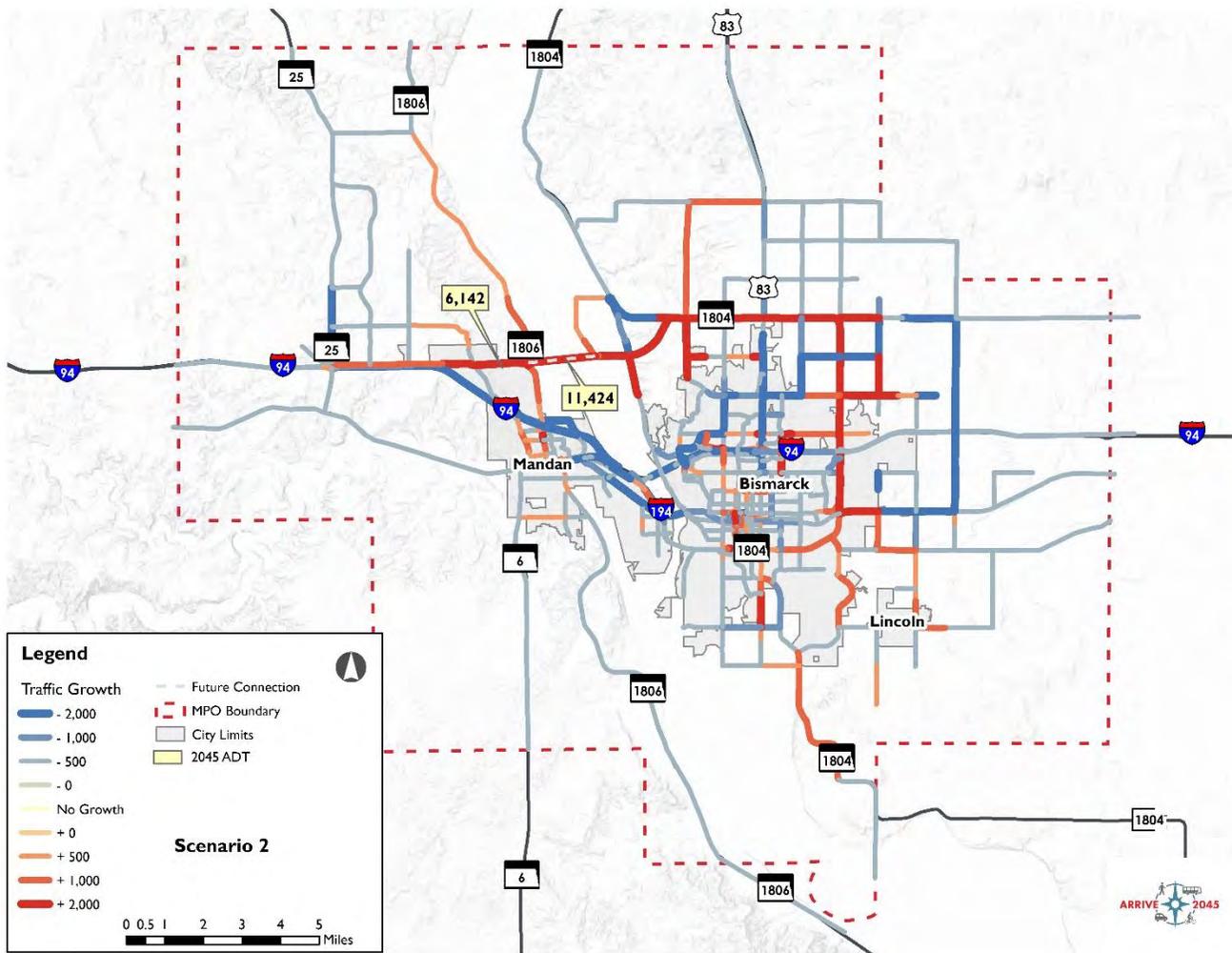
- » Effectively creates a northern bypass, attracting vehicles off I-94, onto State Street and then 71st Avenue to ND 1806 and I-94 on the western edge of Mandan.
- » Reduces volume/capacity ratios on I-94 by six percentage points, on average.
- » Adds significant congestion to State Street and 71st Avenue corridors.
- » Reduces vehicle hours traveled by 17.2 percent by 2045.
- » Reduces vehicle miles traveled by 0.7 percent by 2045.
- » Has a total estimated 2025 construction cost of \$122.9 million.
- » Has a benefit/cost ratio of 8.8.
- » Has a cost-effectiveness ratio of 5.4.
- » Returns equity in 10 years.

The analysis summary for this scenario is shown in Table 3, with the impacts to average daily traffic shown in Figure 3.

Table 3: Summary of Scenario 2: Northern Bridge Corridor

Scenario 2	2030	2045
VHT Change	-5.2%	-17.2%
VMT Change	0.7%	-0.7%
AADT	6,539	8,391
% of Links Over Capacity	0.0%	8.4%
Construction Cost	\$122.9 M	
Total Benefits	\$596.2 M	
Benefit/Cost Ratio	8.8	
Cost-Effectiveness	5.4	
Breakeven	10 Years	

Figure 3: Scenario 2 2045 Traffic Changes



Scenario 3: South Mandan Arterial Corridor

The South Mandan Arterial Corridor concept would extend McKenzie Drive from I-194 to ND 6.

Summary of Impacts: South Mandan Arterial Corridor

The travel demand model projects 13,500 vehicles per day would use a south Mandan arterial corridor in 2045, creating the following impacts:

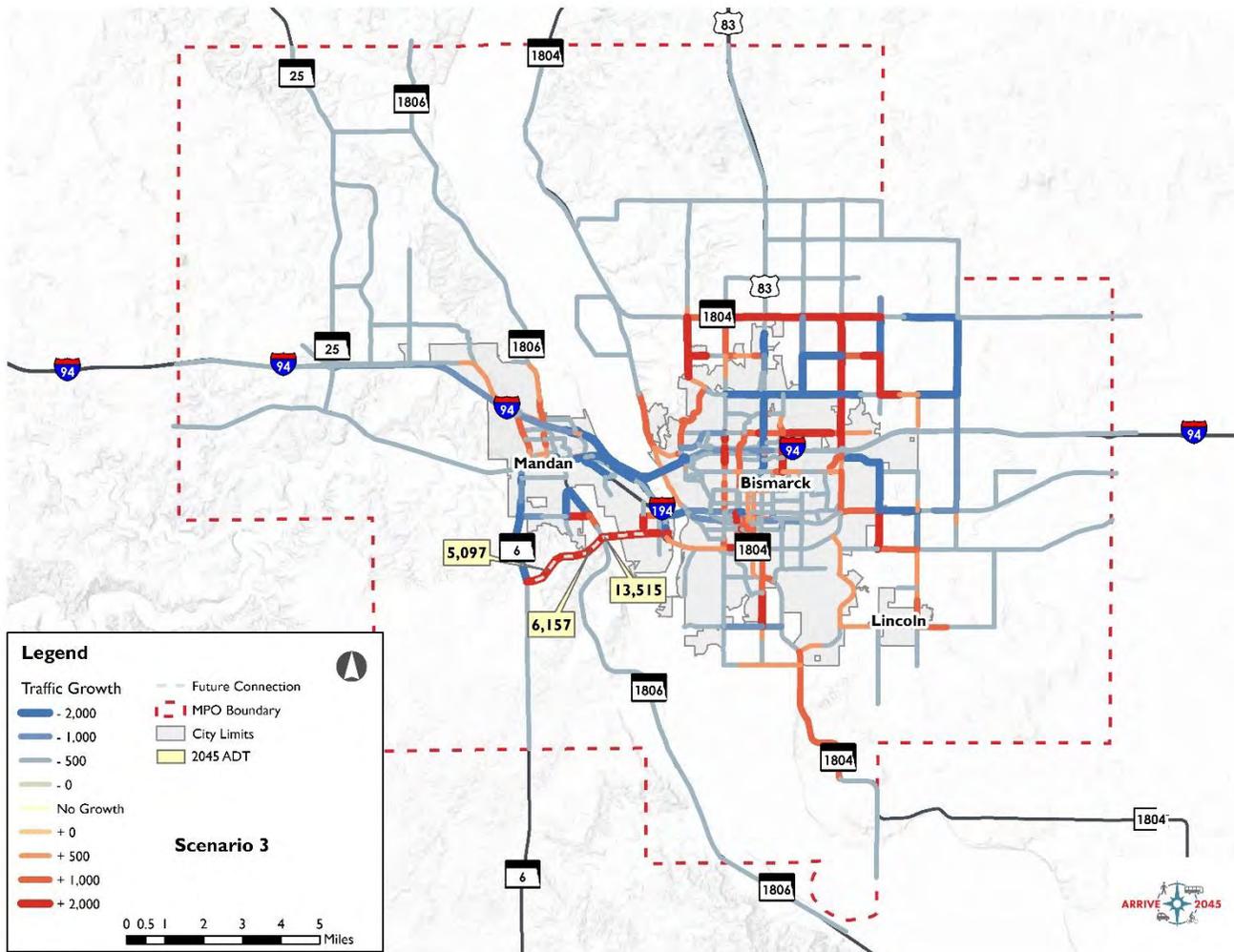
- » Alleviates emerging congestion on Mandan Memorial Highway/Grant Marsh Bridge and I-94 river crossings.
Reduces average daily traffic on each river crossing around 2,800 vehicles per day.
- » Worsens congestion on the Bismarck Expressway.
- » Reduces vehicle hours traveled by 16.4 percent by 2045.
- » Reduces vehicle miles traveled by 0.6 percent by 2045.
- » Has a total estimated 2025 construction cost of \$29.4 million.
- » Has a benefit/cost ratio of 21.6.
- » Has a cost-effectiveness ratio of 18.3.
- » Returns equity in nine years.

The analysis summary for this scenario is shown in Table 4, with the impacts to average daily traffic shown in Figure 4.

Table 4: Summary of Scenario 3: South Mandan Arterial Corridor

Scenario 3	2030	2045
VHT Change	-2.3%	-16.4%
VMT Change	0.4%	-0.6%
AADT	6,521	8,403
% of Links Over Capacity	1.6%	7.4%
Construction Cost	\$29.4 M	
Total Benefits	\$489.2 M	
Benefit/Cost Ratio	21.6	
Cost-Effectiveness	18.3	
Returned Equity	9 Years	

Figure 4: Scenario 3 2045 Traffic Changes



Scenario 4: Northeast Bismarck Arterial Improvements

The Northeast Bismarck Arterial Improvement Corridor concept would include improvements to multiple corridors in northeast Bismarck, including 66th Street, Century Avenue, 43rd Avenue, and 71st Avenue. Improvements include additional capacity on

- » Century Avenue between Centennial Road and 66th Street
- » 43rd Avenue between Centennial Road and 66th Street
- » 71st Avenue between Centennial Road and 66th Street
- » 66th Street between Centennial Road and Century Avenue (Scenario 4a)
 - 66th Street between Centennial Road and Lincoln Road (Scenario 4b and Scenario 4c)
- » Centennial Road from Jericho Road to 71st Avenue

Two sub-options were also considered.

- » The first sub-option (4b) includes a 66th Street grade separation of I-94 with a continuous corridor to Lincoln Road.
- » The second sub-option (4c) includes a 66th Street interchange of I-94 with a continuous corridor to Lincoln Road.

Summary of Impacts: Northeast Bismarck Arterial Improvements (4a)

The travel demand model projects the following impacts with the Northeast Bismarck Arterial Improvements by 2045:

- » Segments of 43rd Avenue, 71st Avenue, 66th Street, and 80th Street maintain acceptable volume/capacity ratios through 2045.
- » Creates capacity constraints on Century Avenue.
- » Reduces vehicle hours traveled by 15.8 percent by 2045
- » Reduces vehicle miles traveled by 0.6 percent by 2045
- » Has a total estimated 2025 construction cost of \$131.6 million.
- » Has a benefit/cost ratio of 4.8.
- » Has a cost-effectiveness ratio of 4.1.
- » Returns equity in 12 years.

The analysis summary for this scenario is shown in Table 5, with the impacts to average daily traffic shown in Figure 5.

Table 5: Summary of Scenario 4(a): Northeast Bismarck Arterial Improvements

Scenario 4A	2030	2045
VHT Change	-3.2%	-15.8%
VMT Change	0.6%	-0.6%
AADT	6,532	8,404
% of Links Over Capacity	2.0%	5.5%
Construction Cost	\$131.6 M	
Total Benefits	\$493.2 M	
Benefit/Cost Ratio	4.8	
Cost-Effectiveness	4.1	
Returned Equity	12 Years	

Summary of Impacts: Northeast Bismarck Arterial Improvements with I-94 Grade Separation (4b)

The travel demand model projects the following impacts with the Northeast Bismarck Arterial Improvements with an I-94 overpass by 2045:

- » Reduces extreme capacity constraints on State Street/US 83 around 7.5 percentage points. Many of the links remain over capacity.
- » Most of Centennial Road remains significantly over capacity.
- » Nearly 15,000 vehicles per day would use an I-94 overpass at 66th Street.
- » Reduces vehicle hours traveled by 14.3 percent by 2045.
- » Vehicle miles are unchanged by 2045.
- » Has a total estimated 2025 construction cost of \$179.5 million.
- » Has a benefit/cost ratio of 3.2.
- » Has a cost-effectiveness ratio of 2.6.
- » Returns equity in 14 years.

The analysis summary for this scenario is shown in Table 6, with the impacts to average daily traffic shown in Figure 6.

Table 6: Summary of Scenario 4(b): Northeast Bismarck Arterial Improvements with I-94 Grade Separation

Scenario 4B	2030	2045
VHT Change	-3.1%	-14.3%
VMT Change	0.9%	0.0%
AADT	6,550	8,452
% of Links Over Capacity	2.0%	5.3%
Construction Cost	\$179.5 M	
Total Benefits	\$433.4 M	
Benefit/Cost Ratio	3.2	
Cost-Effectiveness	2.6	
Breakeven	14 Years	

Summary of Impacts: Northeast Bismarck Arterial Improvements with I-94 Interchange (4c)

The travel demand model projects the following impacts with the Northeast Bismarck Arterial Improvements with an I-94 interchange by 2045:

- » Estimates up to 21,000 vehicles per day would use the interchange.
- » Reduces volume/capacity ratios for major east-west corridors including 43rd Avenue, Highway 10, and Apple Creek Road.
- » Increases traffic on I-94 up to 14,200 vehicles per day (both directions) but does not indicate any emerging congestion.
- » Reduces vehicle hours traveled by 13.3 percent by 2045
- » Vehicle miles traveled are nearly unchanged by 2045.
- » Has a total estimated 2025 construction cost of \$154.4 million.
- » Has a benefit/cost ratio of 3.4.
- » Has a cost-effectiveness ratio of 2.1.

» Returns equity in 15 years.

The analysis summary for this scenario is shown in Table 7, with the impacts to average daily traffic shown in Figure 7.

Table 7: Summary of Scenario 4(c): Northeast Bismarck Arterial Improvements with I-94 Interchange

Scenario 4C	2030	2045
VHT Change	-2.4%	-13.3%
VMT Change	0.9%	0.1%
AADT	6,555	8,461
% of Links Over Capacity	1.8%	5.1%
Construction Cost	\$195.3 M	
Total Benefits	\$377.5 M	
Benefit/Cost Ratio	2.7	
Cost-Effectiveness	2.1	
Returned Equity	15 Years	

Figure 5: Scenario 4A 2045 Traffic Changes

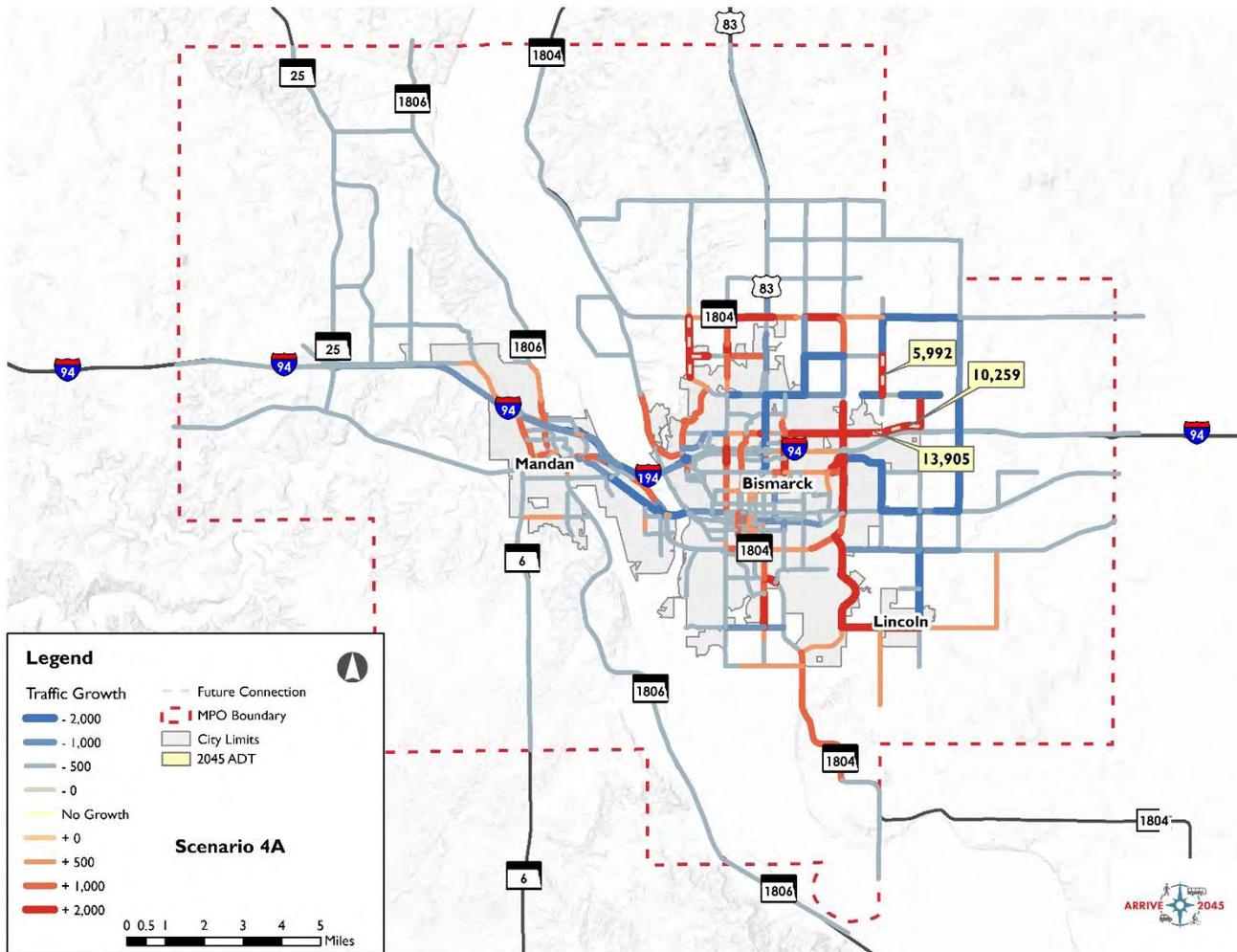


Figure 6: Scenario 4B 2045 Traffic Changes

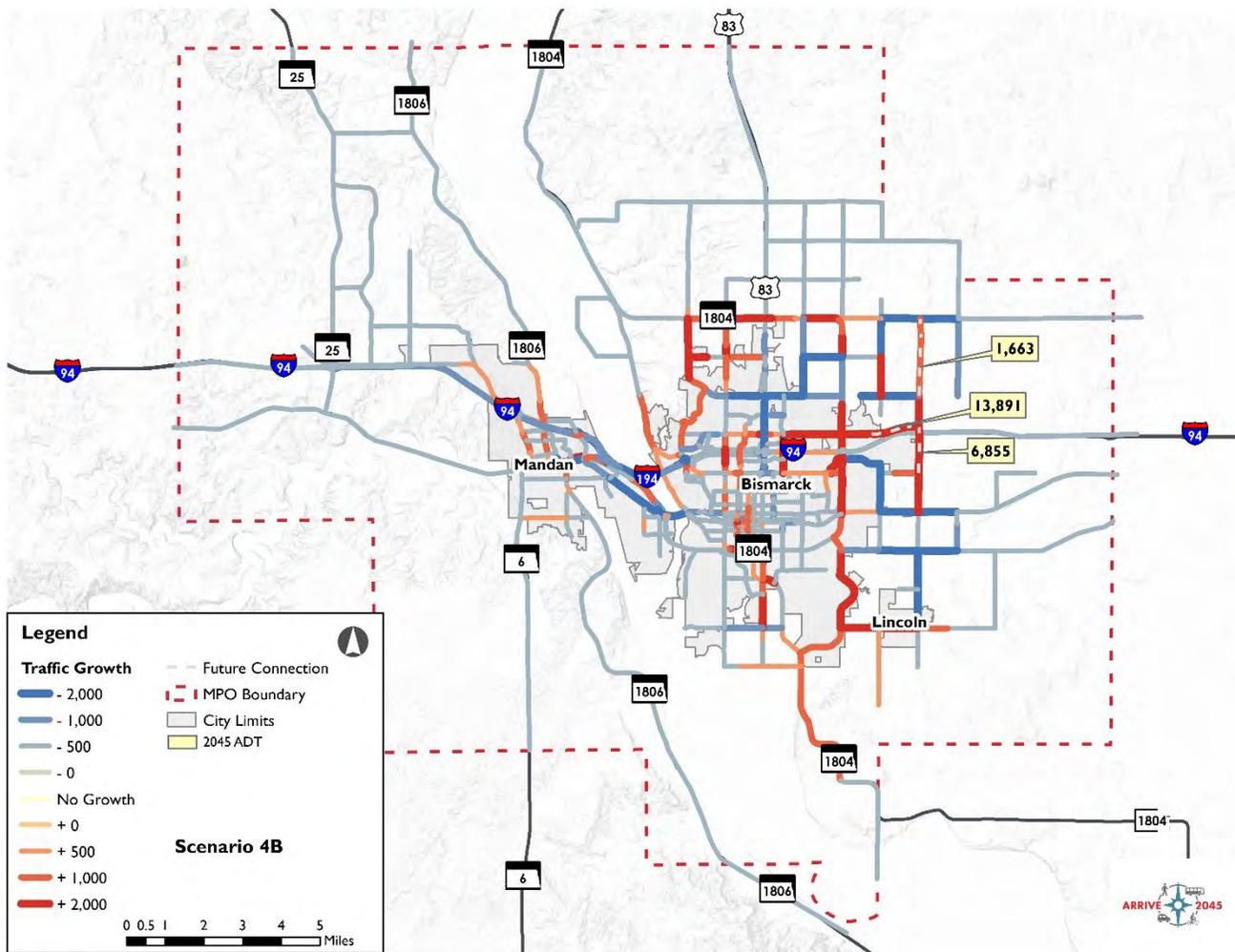
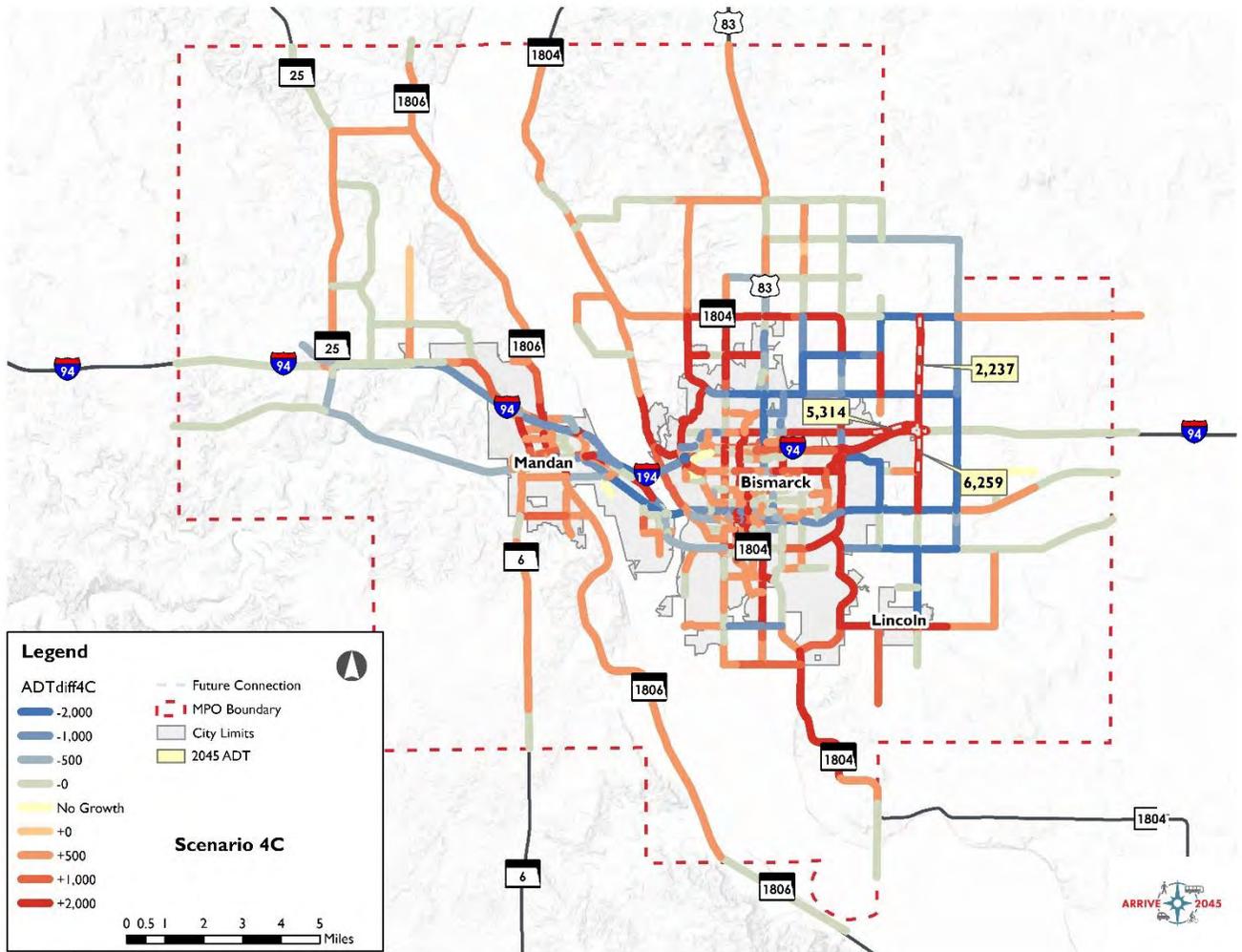


Figure 7: Scenario 4C 2045 Traffic Changes



Scenario 5: West Mandan

The West Mandan Interchange concept includes a new interchange at 56th Avenue in Mandan with an extension of Division Street and extension of 56th Avenue to West Main Street. While this was modeled as an extension of Division Street, this would also likely be the same conditions for the extension of Boundary Road, which is a more logical east-west connector route.

Summary of Impacts: West Mandan

The travel demand model projects around 5,000 vehicles per day would use a west Mandan interchange in 2045, creating the following impacts:

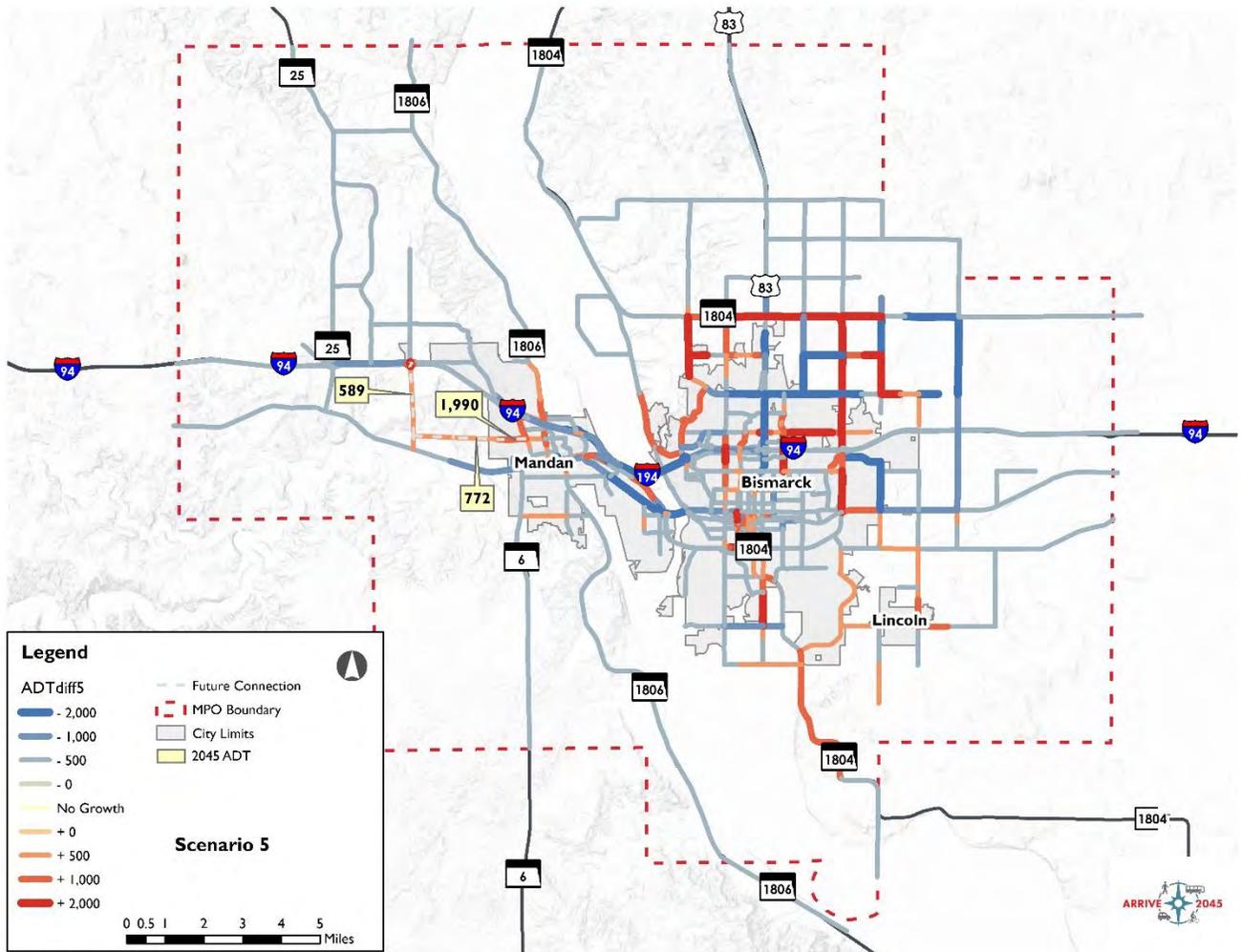
- » Does not have a significant impact on vehicle/capacity ratios in Mandan.
- » Reduces vehicle hours traveled by 15.6 percent by 2045.
- » Vehicle miles traveled are nearly unchanged by 2045.
- » Has a total estimated 2025 construction cost of \$79.6 million.
- » Has a benefit/cost ratio of 10.1.
- » Has a cost-effectiveness ratio of 7.1.
- » Returns equity in nine years.

The analysis summary for this scenario is shown in Table 8, with the impacts to average daily traffic shown in Figure 8.

Table 8: Summary of Scenario 5: West Mandan

Scenario 5	2030	2045
VHT Change	-4.4%	-15.6%
VMT Change	0.6%	-0.1%
AADT	6,534	8,441
% of Links Over Capacity	1.8%	7.2%
Construction Cost	\$79.6 M	
Total Benefits	\$518.5 M	
Benefit/Cost Ratio	10.1	
Cost-Effectiveness	7.1	
Returned Equity	9 Years	

Figure 8: Scenario 5 2045 Traffic Changes



Scenario 6: State Street Improvements

The State Street (US 83) Improvements concept includes a series of improvements identified in the US 83 Alternatives Study currently being completed by the Bismarck-Mandan MPO. Generally, these improvements include:

- » At grade improvements at the Calgary Avenue, Harvest Lane, Century Boulevard, Interstate Avenue, 43rd Avenue, 71st Avenue intersections
- » Access management at the Holiday Inn driveway.
- » Traffic control at 57th Avenue.
- » Capacity enhancements on 4th Street and 19th Street from Divide Avenue and Century Avenue.
- » Roadway expansion on US 83 to 71st Avenue.
- » I-94 Interchange reconfiguration.

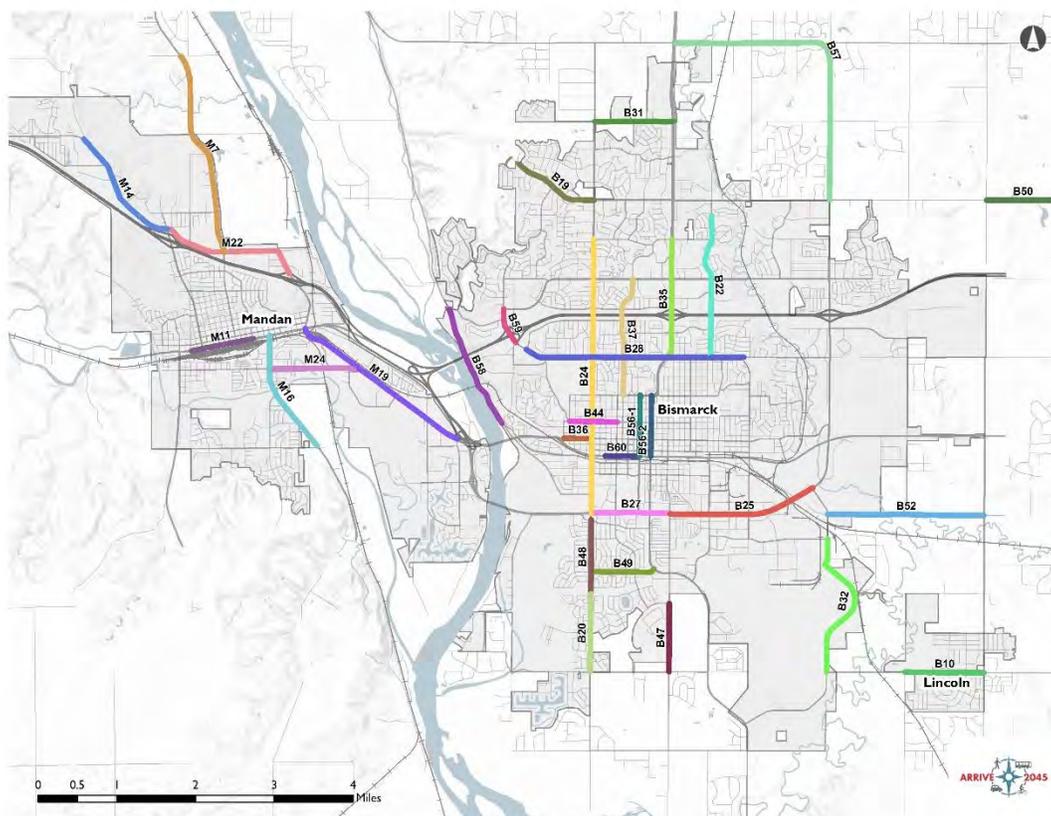
Summary of Impacts: State Street Improvements

This concept has not been modeled yet and is contingent on additional approvals. Analysis is forthcoming.

Scenario 7: Transportation System Management and Operations Improvements

The Transportation System Management and Operations Improvements concept includes a collection of projects which are aimed at managing system operations through low-impact fixes. These projects include turn lanes, traffic control, and access management applied to roadways with deficient levels of service by 2030 and 2045, as shown in Figure 9.

Figure 9: TSMO Scenario Candidate Projects



Summary of Impacts: Transportation System Management and Operations Improvements

This concept has varying impacts across the transportation network through 2045, creating the following impacts.

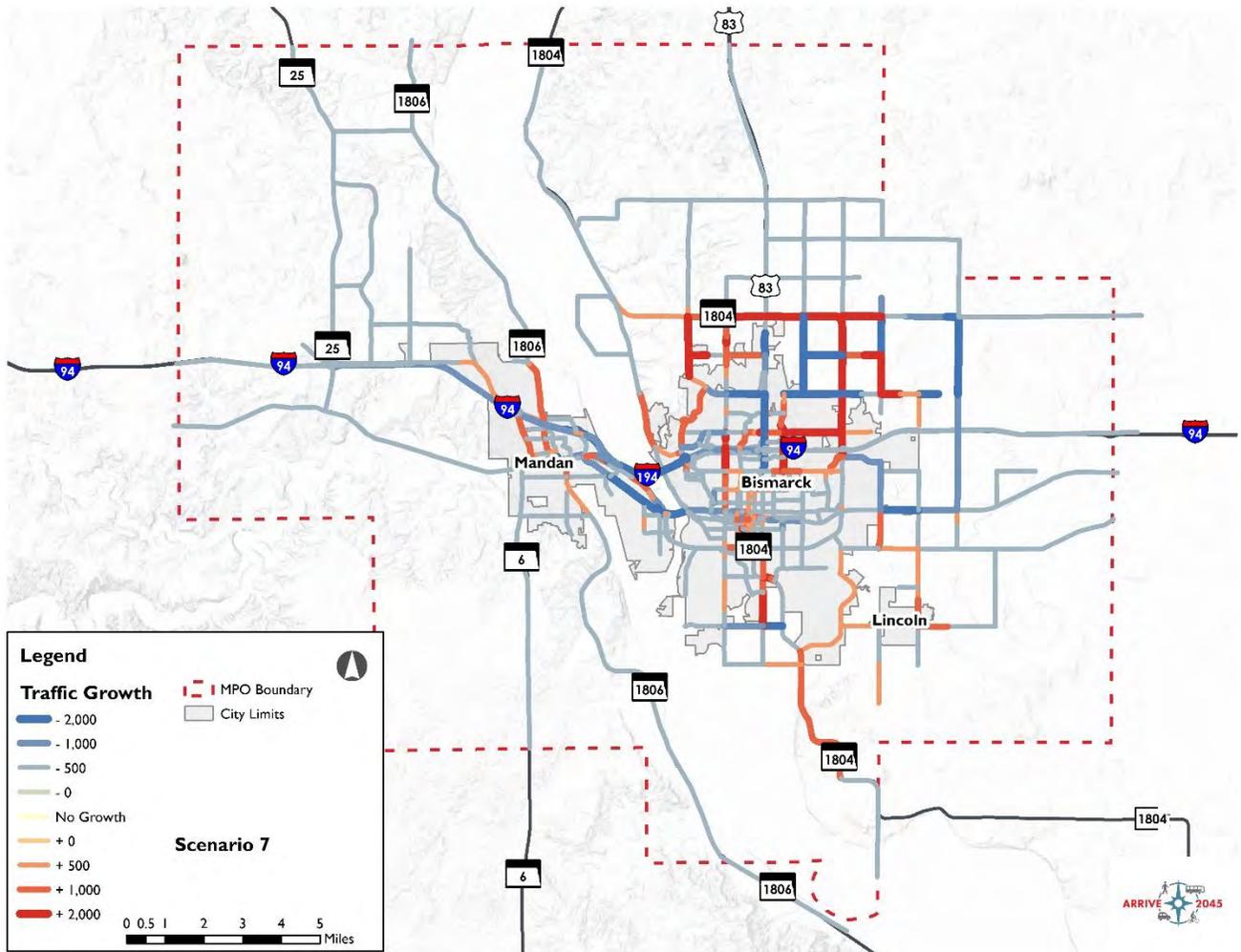
- » Alleviates congestion on east-west corridors (43rd Avenue, 57th Avenue, 71st Avenue east of State Street/US 83) with modest volume/capacity reductions on I-94 and Mandan Memorial Highway.
- » Congestion remains on most north-south corridors, especially around the I-94 interchange locations.
- » Reduces vehicle hours traveled by 16.0 percent by 2045.
- » Vehicle miles traveled are nearly unchanged by 2045.
- » Has a total estimated 2025 construction cost of \$41.5 million.
- » Has a benefit/cost ratio of 16.0.
- » Has a cost-effectiveness ratio of 13.5.
- » Returns equity in eight years.

The analysis summary for this scenario is shown in Table 9, with the impacts to average daily traffic shown in Figure 10.

Table 9: Summary of Scenario 7: Transportation System Management and Operations Improvements

Scenario 7	2030	2045
VHT Change	-4.0%	-16.0%
VMT Change	0.9%	0.1%
AADT	6,553	8,464
% of Links Over Capacity	1.7%	6.9%
Construction Cost	\$41.5 M	
Total Benefits	\$498.8 M	
Benefit/Cost Ratio	16.0	
Cost-Effectiveness	13.5	
Returned Equity	8 Years	

Figure 10: Scenario 7 2045 Traffic Changes



Summary of Project Concept Clusters

Each of the project concept clusters provides different benefits and impacts to the network, as summarized in Table 10, and below:

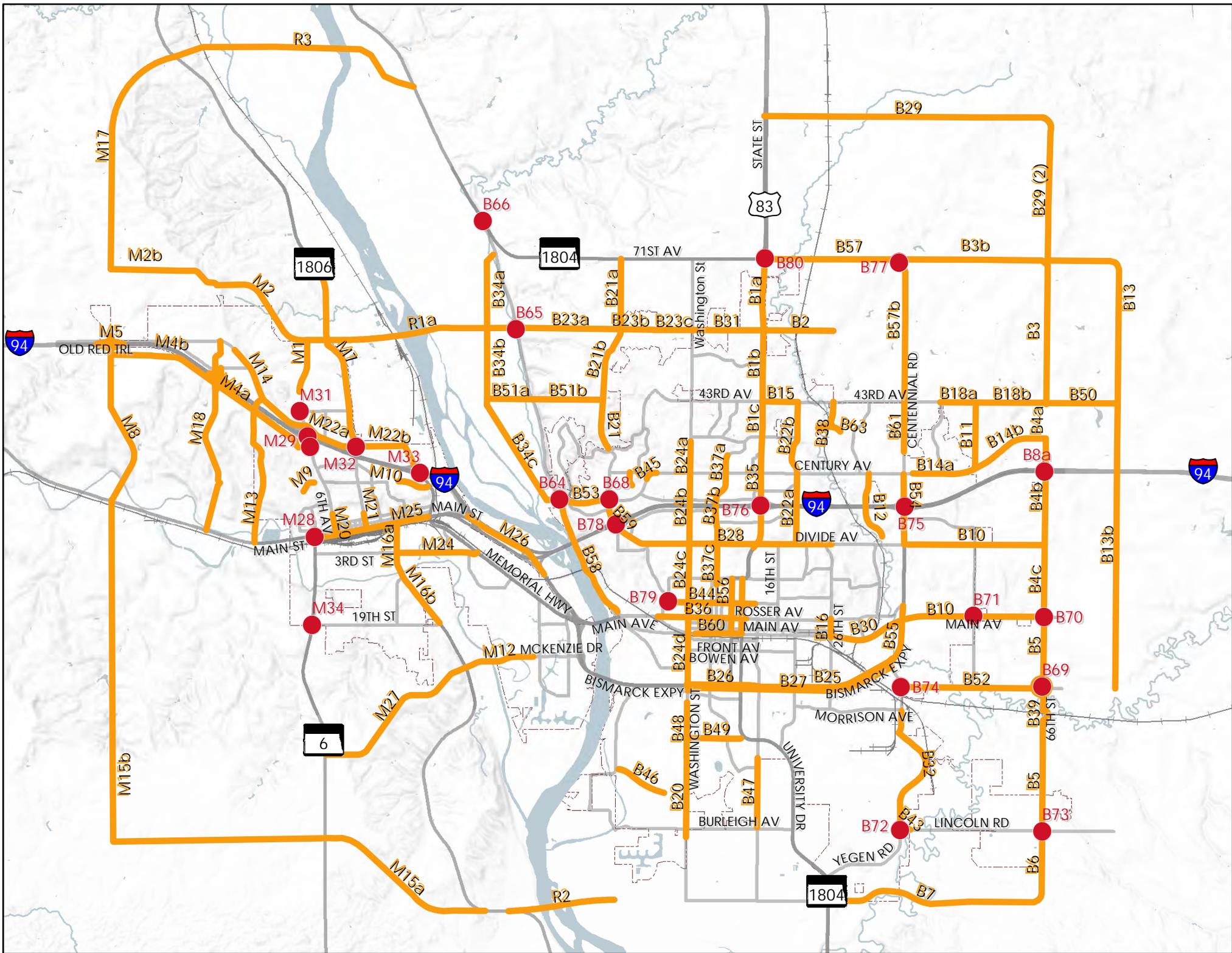
- » The Southern Bridge Corridor to ND 1806 (Scenario 1a) provides the highest reduction to VHT and VMT and the shortest time period to return equity invested.
- » The South Mandan Arterial Improvements (Scenario 3) provides the highest benefit/cost and cost-effectiveness ratio, primarily due to the lowest expected construction cost.
- » The Northern Bridge Corridor (Scenario 2) does provide congestion relief through the network, but not to the extent the other concept clusters do.
- » The Northeast Bismarck Arterial Improvements with I-94 Interchange (Scenario 4c) provides the greatest relief to network-wide congestion, reducing the percent of links over capacity in 2045 to 5.1 percent (from 13.6 in the 2045 E+C network), but comes with the highest construction cost, lowest total benefits, lowest benefit/cost ratio, lowest cost-effectiveness ratio, and the longest time to return equity.

The summary of the concepts and all the analysis is shown in Table 10.

Table 10: Summary of Project Concept Clusters

Concept Cluster	2045 VHT Change	2045 VMT Change	2045 Links Over Capacity	Construction Cost	Total Benefits	B/C Ratio	C/E	Returned Equity	Rank
2045 Existing and Committed Network	-	-	13.6%	-	-	-	-	-	-
Scenario 1A: Southern Bridge Corridor to ND 1806	-17.3%	-0.9%	6.9%	\$84.1 M	\$619.1 M	14.4	8.2	8 Years	1
Scenario 1B: Southern Bridge Corridor to ND 6	-17.1%	-0.9%	7.1%	\$100.6 M	\$622.4 M	11.0	6.8	8 Years	2
Scenario 2: Northern Bridge Corridor	-17.2%	-0.7%	8.4%	\$122.9 M	\$596.2 M	8.8	5.4	10 Years	6
Scenario 3: South Mandan Arterial	-16.4%	-0.6%	7.4%	\$29.4 M	\$489.2 M	21.6	18.3	9 Years	4
Scenario 4(a): Northeast Bismarck Arterial Improvements	-15.8%	-0.6%	5.5%	\$131.6 M	\$493.2 M	4.8	4.1	12 Years	7
Scenario 4(b): Northeast Bismarck Arterial Improvements with I-94 Grade Separation	-14.3%	0.0%	5.3%	\$179.5 M	\$433.4 M	3.2	2.6	14 Years	8
Scenario 4(c): Northeast Bismarck Arterial Improvements with I-94 Interchange	-13.3%	0.1%	5.1%	\$195.3 M	\$377.5 M	2.7	2.1	15 Years	9
Scenario 5: West Mandan Interchange	-15.6%	-0.1%	7.2%	\$79.6 M	\$518.5 M	10.1	7.1	9 Years	5
Scenario 6: State Street Improvements	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Scenario 7: Transportation System Management and Operations	-16.0%	0.1%	6.9%	\$41.5 M	\$498.8 M	16.0	13.5	8 Years	3

Attachment 2



Project ID	Location	Termini	Termini	Description	Comments	Verification Required (Completed or Still Justified?)
B1	State Street	Interstate Ave	71st St	TBD		
B2	57th Ave	State St	26th St	Extend 57th Avenue as Arterial Roadway between US 83/State Street. Likelly 3 section	1 mile of rural raodway	
B3	66th St	Century Ave	71st Ave	Construct 66th Street from 43rd Avenue to 71st Avenue	Build as Three lane (grade for 5)	
B3b	71st St	Centennial Rd	66th St	Construct 71st Avenue from Centennial to 66th Street	Build as three lane (grade for 5)	
B4	66th St	Highway 10 / Main Ave	Century	Construct as three lane urban section; includes overpass of I-94	preserve ROW for five lane urban	
B5	66th St	Lincoln Rd	Highway 10 / Main Ave	widened to three lane section	preserve ROW for five lane section	
B6	66th St	Lincoln Rd	48th Ave S	Reconstruct 66th as urban section		
B7	48th Ave S	University Dr	66th St	Construct rural section between 66th Street and University Dr.	small structure cost for Apple Creek crossing	
B8a	I-94	66th St	66th St	Construct new interchange at I-94	Assume estimate as a new interchange	
B8b	I-94	66th St	66th St	Modified 66th Street Overpass to full interchange	Assume estimate for a modification of overpass to full interchange	
B9	Divide Ave	Bismarck Expwy	66th St	Extend Divide Avenue	Either 3 or 5 lane	
B10	Main Ave	Bismarck Expwy	66th St	Widen Main Avenue	4 Lane divided	
B10	Lincoln Rd	52nd St	66th St	New turn lanes, roundabout @ 52nd	assume three lane urban section	
B11	52nd St	Century Ave	43rd Ave	Extend 52nd Street	Assume 3 lane urban	
B12	Hamilton St/Channel	Century Ave	Divide Ave	Exetend as grade seperation of I-94	Assume overpass + 3 lane urban section	
B13	80th St	71st Ave	43rd Ave	Improve Section	Assume 3 lane rural	

B13b	80th St	43rd Ave	Apple Creek Rd	Improve Section	Assume 3 lane rural	
B14a	Century Ave	Centennial Rd	52nd Street	Five lane urban section	reconstruct	
B14b	Century Avenue	52nd St	66th Street	Three lane urban section	new corridor	
B15	43rd Ave	State	19th	Urban 3 or 5 lane section	missing gap between two recent improvement projects	
B16	26th St	Rosser Ave	Main Ave	improve signal timing and progression	assumed limited cost	
B17	I-94	80th St		Interchange	Suggest this project be dropped	X
B18a	43rd Ave	Roosevelt	52nd St	Five Lane Urban Section		
B18b	43rd Ave	52nd St	66th St	Five Land Urban		
B19	Ash Coulee Dr			Widened to three lane urban arterial	1.1 mi of 3 lane urban reconstruction/widening	
B20	Washington St	Drainage Channel	Burleigh Ave	Reconstruct as three lane urban arterial	1 mile of 3-lane urban	
B21	Tyler Parkway	Valley Dr	64th St	New Roadway		X
B22	19th St	Divide Ave	Yucca Ave	Restripe as 3-lane between Divide and Yucca. Add NB right turn lane at Shiloh School. Reconstruct to 3-lane urban between Yucca and 43rd.	1 new turn lane, signing and striping for 2 miles	
B23	57th Ave	Washington St	River Rd	Extend as 3 or 5 lane.	first 1/2 mile complete. 2 mi new rural 2-lane. Consider merging with B64	X

B24	Washington St	Calgary Ave	Bismarck Expwy	Upgrade corridor signal system and timing improvements along corridor from Calgary to Expressway. Add Turnlane at Calgary to Century. Stripe for 3-Lane: Century to Avenue D, add turn lanes at key intersection south fo Ave D.	More details possible in Corridors Improvement Study (2016, HDR)	
B25	Bismarck Expwy	12th St	Yegen Rd	Implement 3/4 access control; add right turn at Airport Rd.	2 turn lanes, inteserction reconstruction for acess control	
B26	Bismarck Expwy	Washington St	12th St	Widen Expy to 6-lane divided	1 mi of 6-lane reconstruction	
B27	Bismarck Expwy	Washington St	12th St	Signal systems + ITS; various turn lane improvements	upgrade 7 signals	
B28	Divide Ave	Turnpike Ave	26th St	Restripe Divide as 3-lane	2.9 mi of striping and signing	
B29	97th Ave	US 83	66th St			X
B29 (2)	66th St	71st Ave	97th Ave			X
B30	Main Ave	26th St	Bismarck Expwy	Add turnlane at key intersections	Assumes three new turn lanes	
B31	57th Ave	Washington St	State St	Add turn turn lanes at key intersections		
B32	Yegen Rd	Lincoln Rd	Morrison Ave	add turn lanes in key locations	assume 6 new turn lanes; widening where necessary	
B33	Yegen Rd	Bismarck Expwy	Apple Creek Rd	Widen to 4 lane section		
B34	Fernwood Dr	71st Ave / Highway 1804	Burnt Boat	Extend from 71st Ave to Burnt Boat Rd	3.9 mi of new 2-lane rural. 3 phases	X
B35	State St	Calgary Rd	Divide Ave	Signal system upgrades; turn lane aditions and access management		
B36	Rosser Ave	Main Ave	Washington St	Restrip as 3 lane		

B37	4th St	Century Ave	Boulevard Ave	4th Street signal timing Improvements, stripe turn lanes at key intersections, potential new signal at Turnpike.	1 new signal + .5 mi of striping	
B38	26th St	Calgary Ave	43rd Ave	Extend 26th St		
B39	66th St	BNSF		Rail Grade Separation		
B43	Lincoln Rd	Yegen Rd	Yegen Rd	<i>Intersection Improvement</i>		X
B44	Avenue C	Ward Rd	3rd St	Restripe Avenue C for left turns at major intersections including Ward Rd and EB 3rd St	.2 mi of urban 3-lane	
B45	Interstate Ave	Country West Road		Extend Interstate Ave	.2 mi of urban 2 lane	
B46	London Ave	Riverwood Rd	Washington St	Extend London Ave	3/4 mi of 2 lane rural	
B47	12th St	Santa Fe Ave	Burleigh Ave	add turn lanes at Santa Fe and Burleigh Ave	add 4 turn lanes	
B48A	Washington St	Denver Ave	Drainage Channel	Restripe south of Reno as 3-lane	.7 miles of striping/signing	
B48B	Washington St	Denver Ave	Drainage Channel	Restore 4-lane and widen to add turn lanes at Wachter and Reno.	6 new turn lanes	
B49	Wachter Ave	Washington St	University Ave	Add left turn lanes on Wachter at collector inresections.	.2 mi of signing and striping	
B50	43rd Ave	66th St	80th St	add turn lanes at 66th and 80th	assume 6 new turn lanes	
B51	43rd Ave	Fernwood Dr	Tyler Parkway	Extend 43rd Avenue	1.6 mi of new 2-lane rural	
B52	Apple Creek Rd	Yegen Rd	66th St	Turn lane and intersection improvements at 66th, 55th, 52nd and Yegen		
B53	Century Ave	Tyler Parkway	River Rd	Extend Century Ave to River Road	1/2 mile of new 2 lane urban	
B54	Bismarck Expwy	Century Ave	Divide Ave	widen to 6 lane section		
B55	Bismarck Expwy	Yegen Rd	Main Ave	Future dual SB left turns at Hwy 10; accleratio lane coming out of Yegen to NB Expressway		

B56	7th St	Boulevard Ave	Main Ave	Signal timing improvements	No cost	
B56 (2)	9th St	Boulevard Ave	Main Ave	Signal timing improvements	No cost	
B57	71st Ave	State St	Centennial Rd	Widening to three-lane rural section		
B57b	Centennial Rd	71st Ave	43rd Ave	Widened to three lane rural section		
B58	River Rd	Burnt Boat Rd	Fraine Barracks	add turn lanes between Burnt Board and Fraine Barracks		
B59	Tyler Parkway	Century Ave	Schafer Rd	Turn lane additions + Safety Improvements.	See I-94 Corridor Study (2014, SRF); Corridors Improvement study (2016, HDR)	
B60	Main Ave	1st St	7th St	Restripe Main Ave as a 3-lane roadway		X
B61	Centennial Rd	Jericho Rd	43rd Ave	Extend 5 lane urban section		
B63	Calgary Ave	Railroad	Hay Creek	Extend Calgary Across DMVW RR		
B64	Burnt Boat	River Rd		1-lane roundabout		
B65	Burnt Creek Loop South (57th Ave)	River Rd		1-lane roundabout	Associated with B23	
B66	Burnt Creek Loop North / River Road	ND 1804		1-lane roundabout or signal		
B68	Century Avenue	Tyler Parkway		Signalize Intersection		
B69	Apple Creek Rd	66th St		Roundabout		
B70	Highway 10	66th St		Intersection Improvement		X
B71	Highway 10	52nd St		signalize (or roundabout)		
B72	Lincoln Rd	Yegen Rd		Intersection improvements	Connected to B43	X
B73	Lincoln Rd	66th St		Intersection Improvement		X
B74	Apple Creek Rd / Yegen Rd Intersection	Yegen Rd		Signalize (or roundabout)		

B75	Bismarck Expwy / Centennial Rd	I-94		Reconstruct interchange		
B76	State St	I-94		Reconstruct Interchange		
B77	71st Ave	Centennial Rd		Intersection Improvement		
B78	Tyler Parkway / Divide Ave	I-94		Reconstruct Interchange		
B79	Avenue C	Ward Rd		Turn lanes to SB Ward and WB Ave C	2 turn lanes	
B80	71st St	State St		Intersection improvement (at grade or grade seperation) TBD		
B81	Washington St	Calgary Ave		Signalize intersection		
M1	Sunset Dr	Middle School	38th St	Extend Sunset Dr. to 38th St	3/4 mi new 2 lane urban.	
M2	37th St NW	ND 1806	56th Avenue	2 lane urban section along 37th Street between ND 25 and ND 1806	Assume three lane urban section. Old project limits stop at Highland Rd. Extend to 56th St	
M2b	37th St NW	56th Avenue	ND 25	2 lane urban section along 37th	Phase 2 ext. to ND 25	
M3	38th St NW	Collins / Highway 1806	Old Red Trail	Connection between Old Red Tr. And ND 1806		
M4	Boundary Rd	End of Existing Roadway	56th Street/I-94 Interchange	Extend Boundary Rd. as a three lane urban section	We modeled Division; however we will cost estimate as though this was Boundary.	
M5	56th Ave NW Interchange	I-94		Construct new interchange at I-94.		
M6	32nd Ave NW Interchange	Old Red Trail	extended Boundary Rd	New Interchange or Grade Seperation		
M7	Highway 1806	37th St	Old Red Trail	Add turn lanes at key intersections (eg. 27th Beretta, 39th, 38th, Sioud and 37th. Assume minor intersection improvements to match M2.	Add 8 turn lanes	

M8	56th Ave NW	Old Red Trail	I-94 Business Loop (Main)	Construction of new three lane urban roadway from I-94 to Main (94B).	2.2 mi of 2-lane rural roadway. New Heart River Bridge. Difficult terrain.	
M9	Division St	Lohstreter Rd	Schools Building / Park	Extend Division St	.6 mi of new 3-lane urban roadway	
M10	Division St	8th Ave E	Mandan Ave	Extend Division St	.5 mi new 3-lane urban	
M11	Main St	8th Ave W	3rd Ave E	Restrip Main as 3-lane	assume .2 mi of restriping/signing	X
M12	McKenzie Rd	39th Ave E	Highway 1806	Extend McKensie across Heart River to ND 1806 as rural 2 lane. New Bridge across Heart River. Add signals at McKenzie/Expressway ramps and at McKensie/40th Avenue	1 mi of new rural 2-lane road, 2 turn lanes, 3 new traffic signals and bridge over Heart River.	
M13	31st Street	Old Red Trail	I-94 Business Loop (Main)	New Corridor + Overpass I-94		X
M14	Old Red Trail	Highland Rd	Sunset Ave	Restripe Old Red Tr. With center left turn lane.	1.5 mi of striping. 1 new signal.	
M15a	Extension of Southside bridge corridor	ND 6	Highway 1806	New roadway connection from ND 6 to ND 1806.	assume rural section	
M15b		ND 6	Main Street (94B)	new roadway connection from ND 6 to Main Street (94B)	assume rural section	
M16	Highway 1806	19th St	Main St	Add turn lanes and signals at 8th Avenue and 19th Street. Northbound turnbound turn lane at Main.	2 signals and turn lanes	
M17	NW Mandan Beltway	37th St	Highway 1806	New Corridor		X
M18	33rd Ave W	Boundary Rd (Future)	I-94 Business Loop (Main)	Construct new roadway between Boundary Rd (future) and Main Ave. Grade Separation with I-94	2 mi of new 2-lane rural. New Heart River bridge + New Grade Separation of I-94	X
M20	6th Ave W	3rd St N	Main St	Corridor Modifications		X

M21	Collins Ave	1st St	Main St	Corridor modifications		X
M22	Old Red Trail	Sunset Ave	Mandan Ave Interchange	Reconstruct Old Red Trail as three lane urban section between Collins and Mandan. Restripe for 3-lane between Sunset and Collins.	Assume 4-turn lanes	
M24	3rd St	9th Ave SE	11th Ave SE	Restripe with center turn lane between 9th and 11th Avenue SE and Riverwood Ave to Memorial Highway	assume .4 mi striping	
M25	Main St	Collins Ave	3rd Ave W	Corridor Modifications		X
M26	I-94	Main St	I-194	Reconstruct I-94 between Main St and I-194		
M27	McKenzie Rd	Highway 1806	Highway 6	Extend McKenzie Rd. as two lane rural section		
M28	10th Ave W	Main St Intersection		Intersection Improvement - Turn lanes + Signalize		
M29a	Sunset Dr Interchange at I-94			Signalize ramp terminals		X
M29b	Sunset Dr Interchange at I-94			Reconstruct interchange		
M30	Boundary Rd	Sunset Dr		Signalize and stripe turn lanes on all approaches		
M31	27th St N / Sunset Dr Intersection	Sunset Dr		Intersection Improvement		X
M32	Old Red Trail	Collins Ave		Add turn lanes - all approaches + Signalize		X
M33a	Mandan Ave	I-94		Ramp reconstruction + signals at ramp terminals		X
M33b	Mandan Ave	I-94		reconstruct bridge to add left turn lane		X
M34	19th St	ND 6		WB right turn lane + SB left turn lane		

R1	Northern Bridge Corridor	38th St Mandan	57th Ave Bismarck	corridor between 38th St (Mandan) and 28th Street (Bismarck) and River Crossing	assume three lane urban section + new bridge crossing (40.0M)	
R2	Southern Bridge	48th St Mandan	48th Ave S Bismarck	Bridge corridor between 46th Street (Mandan) and 48th Avenue (Bismarck)		
R3	Northern Bridge Corridor	34th St Morton County	110th Ave Burleigh County	Corridor Development		X

Attachment 3



**Vision, Goals, Objectives, and
Performance Measures**

Bismarck-Mandan **Metropolitan Transportation Plan**

May 2019 DRAFT



VISION, GOALS, OBJECTIVES & PERFORMANCE MEASURES

TRANSPORTATION VISION

The future of the transportation system in the Bismarck-Mandan metropolitan area will be driven by the vision, goals, objectives, and performance measures developed for Arrive 2045. The vision for Arrive 2045 has been developed as follows:

Arrive 2045 is focused on **preserving** the transportation infrastructure of the Bismarck-Mandan MPO Area. The development of new **funding strategies** will be critical. Future investments in system preservation must be balanced against thoughtful implementation of **new infrastructure** which serve to **expand transportation capacity**. Arrive 2045 establishes a set of **regional priorities** to **balance public expectations** for improved **regional mobility**. Arrive 2045 recognizes the future contains many opportunities to channel **technology** to influence transportation mobility.

FEDERAL AND STATE TRANSPORTATION LEGISLATION AND PLANNING

The Moving Ahead for Progress in the 21st Century Act, MAP-21, is a funding and authorization to govern United States federal surface transportation spending. It was signed into law on July 6, 2012.

The Federally-defined scope of the metropolitan transportation planning process is that "The metropolitan transportation planning process shall be continuous, cooperative, and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address the MAP-21 planning factors.

Map 21 Planning Factors

- » Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- » Increase the safety of the transportation system for motorized and non-motorized users;
- » Increase the security of the transportation system for motorized and non-motorized users;
- » Increase accessibility and mobility of people and freight;
- » Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
- » Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- » Promote efficient system management and operation; and
- » Emphasize the preservation of the existing transportation system.

A key feature of MAP-21 was the establishment of a performance and outcome-based program. The objective of this performance and outcome-based program is for States and MPOs to invest resources in projects that, collectively, will make progress toward the achievement of the national goals.

The Fixing America's Surface Transportation (FAST) Act governs United States federal surface transportation spending. It was signed into law on December 4, 2015. The FAST Act continues MAP-21's overall performance management approach, within which States invest resources in projects that collectively will make progress toward national goals. The FAST Act makes no changes to the performance management provisions established by MAP-21, with a few minor exceptions. The main change applicable to the State DOTs and MPOs was to adjust the timeframe in which the metropolitan planning organizations (MPOs) make progress toward meeting their performance targets.

DEVELOPING A PERFORMANCE-BASED TRANSPORTATION PLAN

Performance Measures

“What is a performance-based transportation plan?” To truly understand what it means to have a performance-based transportation plan, we have further defined the six elements that make up a performance-based transportation plan by defining the entire performance management process:



Develop Goals and Objectives

Arrive 2045 is developed upon the seven key national performance goals as defined under MAP-21. The seven, MAP-21 national performance-based goals are further defined below:

Goal Area	National Goal
Safety	To achieve significant reduction in traffic fatalities and serious injuries on all public roads
Infrastructure Condition	To maintain the highway infrastructure asset system in a state of good repair
Congestion Reduction	To achieve significant reduction in congestion on the National Highway System
System Reliability	To improve the efficiency of the surface transportation system
Freight Movement and Economic Vitality	To improve the nation freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
Environmental Sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment
Reduce Project Delivery Delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies’ work practices

Additionally, the FAST Act requires that the planning process consider projects and strategies to improve the resilience and reliability of the transportation system, stormwater mitigation, and enhance travel and tourism.

Objectives are strategies that can be implemented to meet our planning goals. Arrive 2045 developed multiple objectives to respond to each one of the transportation planning goals. Historically, objectives have been used when evaluating projects to determine whether a proposed project will help to meet our transportation planning goals and in kind our performance targets for our transportation system. We have developed two kinds of objectives for Arrive 2045: Policy Based Objectives (PBO) – used to guide decision making – and Scoring Metric Objectives (SMO) – used to score and evaluate potential projects.

Performance measures are specified areas in which Arrive 2045 will measure the performance of the transportation system. Historically, all MTPs include analysis and reporting on the existing and forecast year conditions of the transportation system. A performance-based transportation plan will continue this but will ensure that it includes specifically measuring the performance of the transportation system. The performance measure areas listed in Figure 3.1 and include the minimum requirements for State DOTs and MPOs to include within their long-range transportation plans per MAP-21 and the FAST Act. Most of the Federally required performance measure areas currently only apply to the National Highway System (NHS).

Performance measures will measure the existing performance of our transportation system and will assist in identifying the needs of our transportation system as projects are developed as part of Arrive 2045 and evaluated over time. The measured performance of the BMMPO transportation system is including within Chapter 4 – Existing System Performance Report for Arrive 2045.



Setting Performance Targets

Targets are typically the first step in a cycle of using performance measures. Targets make a specific commitment to working to achieve a level of performance for our transportation system. As an example, throughout 2018, the BMMPO consented to support performance targets established by the North Dakota Department of Transportation (NDDOT) for a series of performance measures outlined by the FAST Act. These are required Performance Targets. Through Arrive 2045, the BMMPO has the autonomy to voluntarily establish additional performance targets which are non-binding. These non-binding performance targets establish a desired trend line within specific areas of the local transportation system. They demonstrate to the public a desired trend line for the performance of various system attributes not otherwise required by the FAST Act.

The BMMPO will continue to measure the performance of their transportation system either annually as part of their annual monitoring report or every five years with the update of Arrive 2045. This will provide a continuous evaluation of how the BMMPO’s transportation system is performing with respect to both required and voluntary performance targets.



Allocate Resources

Resource allocation is the next step in the performance-based cycle and should be inclusive of both budgets and staff time. Resource allocation should consider tradeoffs across program areas and potential performance outcomes.



Measure, Evaluate, and Report Results

Reporting and evaluation typically follow resource allocation. This step is critical to ensure transparency of the performance management approach, by providing insight into the progress an agency is making toward its targets and goals. This is an opportunity to identify what is working and what is not working and how the performance management process can be updated.

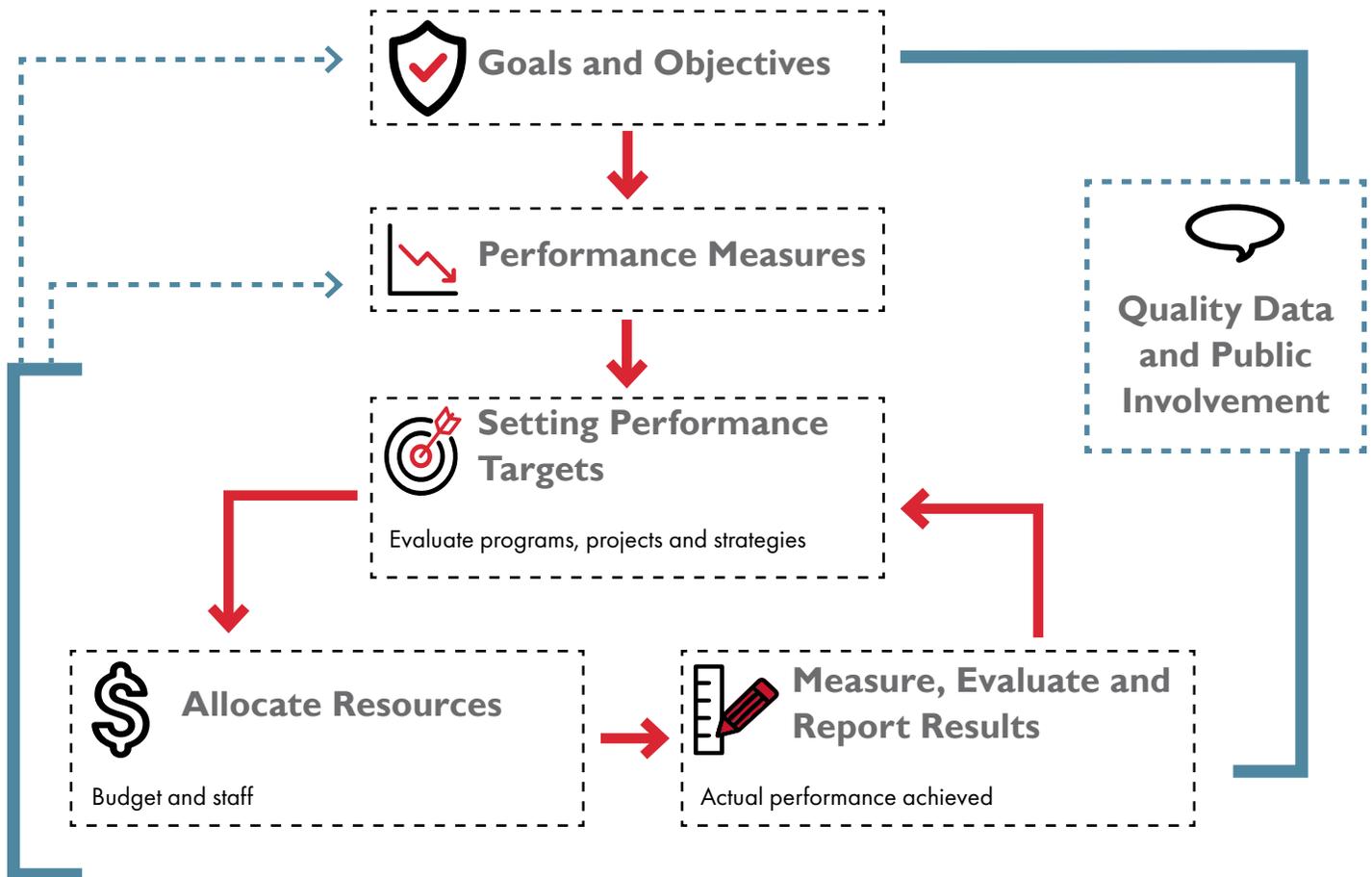
A prioritized list of projects to be programmed for implementation are the final product of Arrive 2045. It is important to understand how the key elements of the performance-based MTP are cyclical in nature as shown in the Figure below. In summary, we begin by evaluating the performance of the transportation system to identify our needs and we end by evaluating the performance of the transportation system to determine how our prioritized projects and transportation investments met our performance goals and targets. As this cycle occurs every five years with the update of the MTP, the BMMPO evaluates how transportation projects met the goals and performance targets. If goals and performance targets are not being met or if they change, the BMMPO can then adjust their strategies to prioritize projects to better meet targets.



Quality Data and Public Involvement

The entire performance management process is fed by quality data and public involvement, and is set up as a regular, reoccurring process. The public involvement portion of this element is reflective of the community values of the region and is based on input received by project stakeholders and the general public.

TPM Framework



ARRIVE 2045 GOALS, OBJECTIVES & PERFORMANCE MEASURES

The goals developed for Arrive 2045 reflect guidance from MAP-21 planning factors, MAP-21 and FAST Act National Performance Goals, the NDDOT statewide transportation plan, and input from project stakeholders and community outreach. The graphic below depicts how the performance measure areas are set as part of MAP-21 and the FAST Act and the requirements for which measures and targets are to be set for NDDOT’s Statewide Transportation Plan and the MPO’s MTP – Arrive 2045.

Again, the graphic is inclusive of the required performance measure areas. Additional performance measures and desired target trendlines have been set by the MPO as part of Arrive 2045 that pertain specifically to the MPO’s system.

Figure 3.1: Performance Measure Categories included in Various Plans

Federal Performance Measure Categories	REQUIRED FOR NDDOT STATEWIDE TRANSPORTATION PLAN		REQUIRED FOR MPO MTP – ARRIVE 2045		ARRIVE 2045 ADDITIONAL LOCAL PERFORMANCE MEASURES
PAVEMENT CONDITION ⁽¹⁾	→	✓	→	✓	→ ✓
PERFORMANCE ⁽¹⁾	→	✓	→	✓	→ ✓
BRIDGE CONDITION ⁽²⁾	→	✓	→	✓	→ ✓
SAFETY – FATALITIES & SERIOUS INJURY ⁽³⁾	→	✓	→	✓	→ ✓
TRAFFIC CONGESTION ⁽⁵⁾	→	✓	→	OPTIONAL	→ ✓
ON-ROAD MOBILE SOURCE EMISSIONS ⁽⁵⁾	→	✓	→	OPTIONAL	→ NOT INCLUDED
FREIGHT MOVEMENT ⁽⁴⁾	→	✓	→	✓	→ NOT INCLUDED

Roadways “Required” for the Federal Performance Categories:

- (1) Required for Interstate and Non-Interstate NHS Roadways
- (2) Required for all NHS Roadways
- (3) Required for all Public Roadways
- (4) Required for Interstate System Roadways
- (5) Required Roadways Not Specified



ARRIVE 2045 GOAL I:

SAFETY & SECURITY

Goal 1 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goal for safety
- » National Performance Measure for Safety - Fatalities and Serious Injuries
- » MAP-21 Planning Factors to increase the safety of the transportation system for motorized and non-motorized users and to increase the security of the transportation system for motorized and non-motorized users.

All transportation improvements should be developed with safety of the traveling public in mind. Safety should be considered when developing transportation projects for all modes of motorized and non-motorized transportation. These improvements should consider reducing both the severity and overall number of crashes.

Security of the transportation system includes ensuring users of the transportation system are protected from natural or human disaster (ie flooding, acts of terrorism). Security measures for transportation system users are often considered for public transit riders and non-motorized users of the trail systems. Security of our transportation system also considers the mobility of our emergency service vehicles.

PERFORMANCE MEASURES Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Safety Performance Measure	NDDOT 5-Year Average (2013 - 2017)	2019 NDDOT 5-Year Average Target
Number of Motorized Fatalities	128.6	127.3
°Rate of Fatalities per 100 million VMT	1.283	1.271
Number of Motorized Serious Injuries	486.8	486.2
°Rate of Serious Injuries per 100 million VMT	4.801	4.848
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	35.6	34.6

° The MPO will adapt current NDDOT targets for rate calculated goals

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Safety Performance Measure	MPO 5-Year Average (2013 - 2017)
Number of Motorized Fatalities	4.4
Rate of Fatalities per 100 million VMT	0.619
Number of Motorized Serious Injuries	32.8
Rate of Serious Injuries per 100 million VMT	4.613
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	4.6

**Desired Target:
Reduction in crashes**

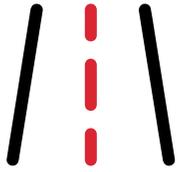


HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **1A:** Reduce the incidence of all motor vehicle and non-motor vehicle (pedestrian and cyclist) crashes, with an emphasis on serious injury and fatal crashes. This may include implementing improvement that are both proven Crash Reduction Measures at location with an existing crash history or at locations without an existing crash history as a proactive improvement. (SMO)
- » **1B:** Provide a safe and secure environment for transit system riders (SMO)
- » **1C:** Enhance transportation security and reliability by developing strategies to address critical transportation assets identified that will facilitate the rapid movement of first responders and support incident management during times of emergency (SMO)
- » **1D:** Support North Dakota’s State Highway Safety Plan (SHSP) “Vision Zero” as a goal to move toward zero fatal resultant crashes (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective



ARRIVE 2045 GOAL 2:

INFRASTRUCTURE CONDITION

Goal 2 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for the infrastructure condition of pavements and bridges.
- » National Performance Measure Categories of bridge condition and pavement condition
- » MAP-21 Planning Factors to emphasize the preservation of the existing transportation system and to promote efficient system management and operations.

As our transportation system ages, maintenance of our existing system is continuously needed to ensure that the condition of our pavements, bridges, bicycle and pedestrian facilities, transit facilities, and any other components of our existing transportation system are maintained and repaired to serve our traveling public. The challenges with maintaining our existing transportation system typically revolve around funding. The cost of transportation maintenance is continuously rising and there is often a competition between maintenance and operations costs of our existing system versus new facilities.

PERFORMANCE MEASURES

Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

Pavement Conditions Measures and Targets

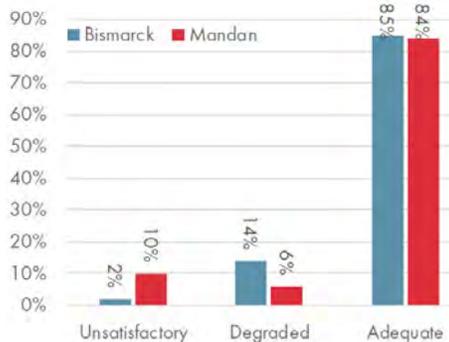
NDDOT Conditions Performance Measure	Existing Condition	Target Condition
Interstate Good	80.2%	75.6%
Interstate Poor	0.1%	3%
Non-Interstate Good	62.8%	58.3%
Non-Interstate Poor	0.3%	3%

Bridge Conditions Measures

Conditions Performance Measure	Structures Good	Structures Poor
Target Condition (NDDOT)	60%	4%
Existing Condition (NDDOT)	64.44%	3.67%

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Pavement Conditions Measures



Desired Target:
Decrease Percent of Unsatisfactory/Degraded Pavement



Bridge Conditions Measures

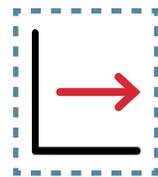
Structures Good:

77.8%

Structures Poor:

5.6%

Desired Target:
Maintain Bridges



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **2A:** Maintain pavement quality and bridges at acceptable levels (SMO)
- » **2B:** Maintain street signage and visibility (SMO)
- » **2C:** Maintain the current bicycle & pedestrian system (SMO)
- » **2D:** Maintain transit fleet, equipment, and facilities in a state of

SMO: Scoring Metric Objective | PBO: Policy Based Objective

- » good repair as identified within the Transit Development Plan (TDP) (SMO)
- » **2E:** Maintain traffic signals and other transportation assets at acceptable levels (SMO)
- » **2F:** All MPO participating jurisdictions should cost participate in the data collection of pavement system condition on a 5-year cycle (PBO)



ARRIVE 2045 GOAL 3:

CONGESTION REDUCTION

Goal 3 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for congestion reduction and system reliability
- » National Performance Measure Categories of traffic congestion and freight movement.
- » MAP-21 Planning Factor to enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

Mobility and connectivity of the transportation system allows users to move from one place to another in a direct route with reduced travel times and reduced delays. Connectivity allows people to make decisions based on traffic conditions, access, and desired trip destinations. Connectivity is not only about a direct route from an origin to a destination, it should also allow users to choose multiple transportation modes and to interchange between the modes in a safe and efficient manner.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Vehicle Miles Traveled (VMT) Per Capita

County	Population ^a	2017 Annual VMT ^b	Resultant Annual VMT per Capita ^c
Burleigh	95,273	739,236,000	7,800
Morton	31,095	446,409,000	14,500

^a Data Source: American Community Survey (ACS) 2018 Population Estimates

^b Data Source: 2017 NDDOT Annual Traffic Report per County

^c Rounded to the nearest 500 miles

Desired Target:
Reduction of VMT per Capita



Vehicle Hours Traveled (VHT) Per Capita

MPO Population ^c	VHT ^d	VHT per Capita
100,306	47,100	0.47 hours 28.2 minutes

^c Data Source: Bismarck Mandan MPO Monitoring Report - US Census, 2010

^d Data Source: 2015 Travel Demand Model

Desired Target:
Reduction of VHT per Capita

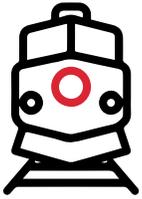


HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **3A:** Implement project and programs that will reduce travel delays on corridors that have an existing or proposed Level of Service (LOS) D or worse, to a LOS C or better after the improvement is made (SMO)
- » **3B:** Provide and maintain corridors functionally classified as minor arterials and above that facilitate longer-distance travel within the region (SMO)
- » **3C:** Improve the continuity of the multimodal systems for pedestrians, cyclists, or transit riders; through improved network connections and reduction of system gaps (SMO)
- » **3D:** Support future development that would result in reduced motor vehicle trips (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective



ARRIVE 2045 GOAL 4:

SYSTEM RELIABILITY FOR FREIGHT MOVEMENT AND ECONOMIC VITALITY

Goal 4 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for system reliability and freight movement and economic vitality.
- » National Performance Measure Category of Freight Movement
- » MAP-21 Planning Factors to support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; enhance the integration and connectivity of the transportation system, across and between modes, for people and freight; and increase accessibility and mobility of people and freight.

A transportation system that provides good access for all modes of transportation can promote future development and employment opportunities which will in return stimulate the region’s local economy.

A well connected and efficient transportation system that facilitates the movement of goods between freight modes and facilitates the movement of goods and freight to commercial and industrial centers can lower the cost of doing business. This can both support existing business and attract new business to support and enhance the local economy.

PERFORMANCE MEASURES

Existing Metrics and Targets:

STATE SYSTEM FEDERAL REQUIREMENTS

System Performance for the Interstate and Non-Interstate NHS

Conditions Performance Measure	Travel Time Reliability Non-Interstate National Highway System (NHS)	Travel Time Reliability Interstate	Freight Reliability Index
Target Condition	85%	85%	3.0
Existing Condition (NDDOT - 2017)	91.6%	99.4%	1.15

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

There is not an MPO desired performance measure or target for this goal.

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **4A:** Enhance the efficient and safe movement of freight and goods including investments in congestion reduction and safety improvements on the critical urban freight corridors and other designated freight corridors (SMO)
- » **4B:** Support transportation investments as identified in the most recent Bismarck-Mandan MPO Regional Freight Study (PBO)
- » **4C:** Promote transportation investments that enhance the local economy (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective



ARRIVE 2045 GOAL 5:

ALTERNATIVE TRANSPORTATION MODES TO AUTOMOBILE TRAVEL

Goal 5 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for congestion reduction, system reliability and environmental sustainability.
- » National Performance Measure Categories of traffic congestion and on-road mobile source emissions.
- » MAP-21 Planning Factors to increase accessibility and mobility of people and freight; protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic

development patterns; and enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

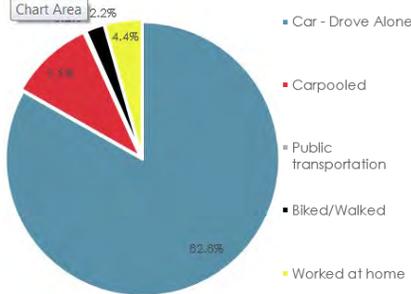
More people are choosing to use alternate modes of transportation to live a healthier lifestyle, reduce their environmental footprint, or spend less money out of their budget on transportation costs. Also, due to various social justice issues, certain portions of the population also are dependent on public transportation or non-motorized transportation. Regardless of the reason, it is important to provide a well-balanced transportation system that supports modes other than a single occupancy motor vehicle. This includes supporting alternative modes of transportation for users of all ages and all abilities.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

Mode Share

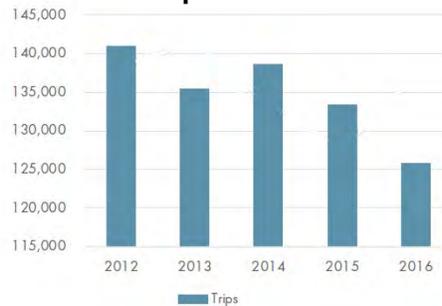


Desired Target:

Decrease single vehicle use

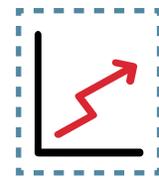


CAT Ridership



Desired Target:

Increase fixed route transit ridership

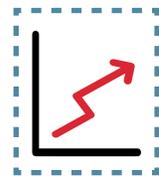


Miles of Facilities

Facility Type	Miles	
	Bismarck	Mandan
Multi-use Trails	52 miles	18 miles
Bicycle Lanes	4 miles	0 miles
Shared-Use Routes	5 miles	0 miles

Desired Target:

Increase miles of bicycle facilities

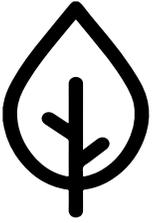


HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **5A:** Improve transit route efficiency, system productivity, and community awareness by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Transit Development Plan (TDP) (SMO)
- » **5B:** Improve transit and rideshare opportunities for travelers commuting into Bismarck-Mandan from outside the urban area (PBO)
- » **5C:** Improve bicycle and pedestrian system accessibility and connectivity opportunities while maintaining safety by implementing transportation investments identified in the most recent Bismarck-Mandan MPO Bicycle and Pedestrian Plan (SMO)
- » **5D:** Improve the awareness and safety of bicycling, and educate both bicyclists and motorists on rules and responsibilities (PBO)

SMO: Scoring Metric Objective | PBO: Policy Based Objective



ARRIVE 2045 GOAL 6:

ENVIRONMENTAL SUSTAINABILITY

Goal 6 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goal for environmental sustainability.
- » National Performance Measure Category for on-road mobile source emissions.
- » MAP-21 Planning Factor to promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.

Air quality is affected by mobile source emissions resulting from vehicle miles traveled (VMT). Air quality impacts can be reduced through roadway improvements that reduce VMT or provide for transportation modes other than single occupancy vehicles. New and expanded transportation facilities can also negatively impact the environment such as impacting wetlands, historical and cultural resources, existing neighborhoods or properties, and many other potential environmental impacts.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

The performance measures and targets for reduction in VMT/Capita and VHT/Capita as identified in Goal 3 Congestion Reduction, will also support environmental sustainability through reduced on-road mobile source emissions. Please see Goal 3 Congestion Reduction for the performance measures, current system performance, and targets.

HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **6A:** Minimize the transportation system's impacts on the natural and built environment (SMO)
- » **6B:** Ensure that projects located within Environmental Justice (EJ) areas have no negative impacts or have identified mitigation measures (SMO)
- » **6C:** Promote transportation investments that support infill, mixed use development patterns (PBO)
- » **6D:** Provide transportation infrastructure design guidance that fits within the context of the built environment (PBO)
- » **6E:** Plan for and address multimodal transportation system impacts/sufficiency when planning new developments (PBO)



ARRIVE 2045 GOAL 7:

REDUCED PROJECT DELIVERY

Goal 7 incorporates the following goals, performance measures, and planning factors:

- » National Performance Goals for reduced project delivery delay.
- » MAP-21 Planning Factors to support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; promote efficient system management and operation; and emphasize the preservation of the existing transportation system.

A well developed MTP will consider fiscal constraint and develop, prioritize, and program projects to ensure they are within the means of each jurisdiction’s transportation budget. This first includes consideration of maintenance and operation costs of the existing transportation system.

Secondly, lower cost alternatives should be considered to improve the performance of the transportation system before more expensive projects such as extending and widening the system are considered.

PERFORMANCE MEASURES

Existing Metrics and Targets:

LOCAL MPO SYSTEM OPTIONAL REQUIREMENTS

There is currently no data available for this performance measure. The MPO, when able, will commit to collecting these data following the completion of this plan. Baseline data will be available in 2020.

Possible Performance Measures:

- » Track the number of projects that are delivered on time (as scheduled).

Possible Desired Target:

Reduction of the number of delayed projects



HOW WILL WE ACHIEVE OUR GOAL?

Objectives:

- » **7A:** Identify Non-Federal funding opportunities (public or private) to support transportation needs to fund entire projects or greater than the required Federal project match (SMO)
- » **7B:** Leverage the existing transportation system by emphasizing low-cost, high impact solutions that may include incremental system improvements, system preservation, and technology applications to achieve congestion in lieu of more expensive projects such as roadway widening (SMO)
- » **7C:** Develop policies to support consistent application of development-related improvement requirements and streamlined project development (PBO)

EVALUATING PROJECTS BASED ON PRIORITIZATION OF GOALS AND PERFORMANCE MEASURES

Historically, the MPO has utilized the goals and their supporting objectives to evaluate projects when selecting projects for Federal Aid funding programs. This is a good methodology to evaluate competitive projects within an MPO area. We have completed a breakdown of the goals and more specifically the objectives that support each goal, in the table below, identifying which Federal Aid funding source each objective should be applied to during the evaluation process. Only the scoring metric objectives (SMOs) are included within the table below.

Performance Goals and performance measurement areas were prioritized throughout the entire community outreach and public involvement process—through project stakeholders and partners, during community-wide surveys and at the first round of public involvement meetings. The results of the prioritized goals and performance measure areas are included in the table below.

The goals and corresponding objectives under each goal area will be multiplied by the prioritization weight that was developed based on the community outreach and public involvement process. The number one goal ranking received a maximum of 5 prioritization weight points and each subsequent goal is based on the percentage of votes received as compared to the #1 Goal Priority Ranking.

Federal Aid Funding

Arrive 2045 Goals and Objectives	FEDERAL AID FUNDING SOURCE CATEGORIES			
	Urban & Regional Projects	Highway Safety Improvement Program (HSIP)	Transportation Alternatives (TA)	Transit
Goal 1: Safety & Security	1A, 1C	1A	1A	1B
Goal 2: Infrastructure Condition	2A, 2E	2B	2C	2D
Goal 3: Congestion Reduction	3A, 3B, 3C,		3C	3C
Goal 4: System Reliability for Freight Movement & Economic Vitality	4A	4A		
Goal 5: Alternative Transportation Modes to Automobile Travel	5C		5C	5A
Goal 6: Environmental Sustainability	6A, 6B	6A, 6B	6A, 6B	6A, 6B
Goal 7: Reduced Project Delays	7A, 7B	7A, 7B	7A	7A

Prioritized Goal Results

Arrive 2045 Goals and Objectives	Total Votes	Goal Ranking	Prioritization Weight
Goal 1: Safety & Security	87	#2	4.5
Goal 2: Infrastructure Condition	96	#1	5
Goal 3: Congestion Reduction	70	#3	3.6
Goal 4: System Reliability for Freight Movement & Economic Vitality	44	#4	2.3
Goal 5: Alternative Transportation Modes to Automobile Travel	41	#6	2.1
Goal 6: Environmental Sustainability	43	#5	2.2
Goal 7: Reduced Project Delays	23	#7	1.2



Bismarck-Mandan Metropolitan Transportation Plan

Re: Calculating Baseline Conditions for Local Performance Measures

The purpose of this memo is to provide a process for calculating the baseline conditions of the local performance measures used in the Bismarck-Mandan Metropolitan Transportation Plan. This memo will provide a detailed explanation of the process, document data sources, and provide examples from the most recent update.

Arrive 2045 Goal I: Safety and Security

General Data Needs

- Request crash data from the NDDOT for the past 5-years for the Bismarck Mandan MPO Metropolitan Planning area (see attached MPO boundary map). In your request, ask for this data to be separated by “all motorized vehicle crashes” and “all non-motorized vehicle crashes” with a further break out into bicycle and non-bicycle crashes.
- The current NDDOT crash request contact is Shawn Kuntz at skuntz@nd.gov

Number of Motorized Fatalities

Sources:

1) NDDOT Requested Crash Data

- Using a spreadsheet software, sort the data for motorized vehicles crashes by crash severity type “fatal” and the year of data you are filling in. Do this for the past 5 years of data.
- See example for 2013 to 2017:

Safety Performance Measure	2013	2014	2015	2016	2017	Total	5 Year Average
Number of Motorized Fatalities	1	3	6	7	5	22	4.4

Rate of Fatalities per 100 million VMT

Sources:

- 1) NDDOT Highway Performance Management System (HPMS) Extent and Travel Report, Urbanized Area Summary → for VMT
- 2) FHWA Road Safety Information Analysis
(https://safety.fhwa.dot.gov/local_rural/training/fhwasa1210/lrro_data.pdf) → for Crash Rate Equation

- Find the Vehicles Miles Traveled (VMT) for the Bismarck Mandan MPO Area. This data can be found from the HPMS Extent and Travel Report for the Urbanized Area Summary (see attached example from 2017). Note: VMT shown in the report are in Daily VMT.
- Calculate the Rate per 100 million VMT using the following equation from FHWA:

The crash rate for road segments is calculated as:

Where:

$$R = \frac{100,000,000 \times C}{365 \times N \times V \times L}$$

R = Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (VMT).

C = Total number of crashes in the study period.

N = Number of years of data.

V = Number of vehicles per day (both directions).⁹

L = Length of the roadway segment in miles.

- See example for 2017

Where C = 5, N = 1, V X L = VMT = 1,948,135

$$R = \frac{100,000,000 \times 5}{365 \times 1 \times 1,948,135} = 0.703$$

Safety Performance Measure	2013	2014	2015	2016	2017	Total	5 Year Average
Rate of Fatalities per 100 million VMT	0.141	0.4219	0.844	0.984	0.703	3.094	0.619

Number of Motorized Serious Injuries

Sources:

1) NDDOT Requested Crash Data

- Using a spreadsheet software, sort the data for motorized vehicle crashes by crash severity type, incapacitating injury, and the first year of data you collected. Do this for the past 5 years of data.
- See example for 2013 to 2017:

Safety Performance Measure	2013	2014	2015	2016	2017	Total	5 Year Average
Number of Motorized Serious Injuries	34	26	43	29	32	164	32.8

Rate of Serious Injuries per 100 million VMT

Sources:

1) NDDOT Highway Performance Management System (HPMS) Extent and Travel Report, Urbanized Area Summary → for VMT

2) FHWA Road Safety Information Analysis

(https://safety.fhwa.dot.gov/local_rural/training/fhwas1210/lrro_data.pdf) → for Crash Rate Equation

- Find the Vehicles Miles Traveled (VMT) for the Bismarck Mandan MPO Area. This data can be found from the HPMS Extent and Travel Report for the Urbanized Area Summary (see attached example from 2017). Note: VMT shown in the report are in Daily VMT.
- Calculate the Rate per 100 million VMT using the following equation from FHWA:

The crash rate for road segments is calculated as:

Where:

$$R = \frac{100,000,000 \times C}{365 \times N \times V \times L}$$

R = Crash rate for the road segment expressed as crashes per 100 million vehicle-miles of travel (VMT).

C = Total number of crashes in the study period.

N = Number of years of data.

V = Number of vehicles per day (both directions).⁹

L = Length of the roadway segment in miles.

- See example for 2017

Where C = 32, N = 1, V X L = VMT = 1,948,135

$$R = \frac{100,000,000 \times 32}{365 \times 1 \times 1,948,135} = 4.500$$

Safety Performance Measure	2013	2014	2015	2016	2017	Total	5 Year Average
Rate of Fatalities per 100 million VMT	4.782	3.656	6.047	4.078	4.500	23.063	4.613

Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries

Sources:

1) NDDOT Requested Crash Data

- Using a spreadsheet software, sort the data for non-motorized vehicle crashes by crash severity type, fatal and incapacitating injury, and the first year of data you collected. Do this for the past 5 years of data.
- See example for 2013 to 2017:

Safety Performance Measure	2013	2014	2015	2016	2017	Total	5 Year Average
Number of Motorized Serious Injuries	2	3	6	6	6	23	4.6

Arrive 2045 Goal 2: Infrastructure Condition

Pavement Condition Measures

Sources:

- 1) PCI data from various sources → PCI Data
- 2) 2012 Dynatest MicroPAVER Implementation and PCI Survey Project for the cities of Bismarck and Mandan
→ PCI Ranges for Pavement Condition

- Request available Pavement Condition Index (PCI) data from the City of Bismarck, City of Mandan (if any available), and the Upper Great Plains Transportation Institute (UGPTI).
- Using GIS software, sort the PCI data to include only the classified roadways, no local road classifications should be included.
- Using the below PCI Ranges, designate the roadway segments by adequate, degraded, and unsatisfactory.

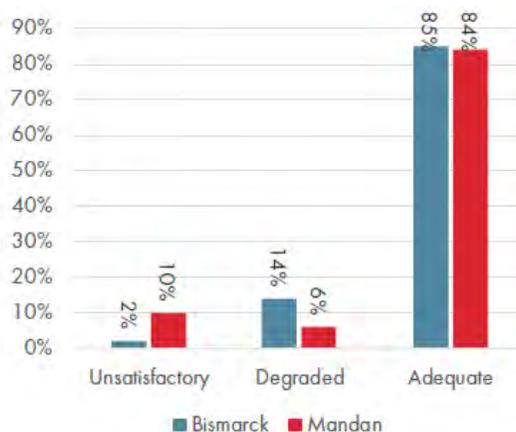
Pavement Condition	PCI Value
Adequate	71 - 100
Degraded	56 - 70
Unsatisfactory	0 - 55

- Calculate a percentage of each pavement condition for each city using the total centerline miles for each city.
- See example for the City of Bismarck, Adequate PCI

Total classified roadway centerlines miles with PCI data = 127.47 miles

Total adequate ranked roadway within the City of Bismarck = 107.95 miles

$$\% \text{ Adequate Bismarck} = \frac{107.95 \text{ miles}}{127.47 \text{ miles}} = 85\%$$



Bridge Condition Measures

Sources:

- 1) FHWA National Bridge Inventory (NBI) Database (<https://www.fhwa.dot.gov/bridge/nbi/ascii.cfm>) → Bridge Data

Bridge Data:

- 2) FHWA 1995 Recording and Coding Guide for Structure Inventory and Appraisal of the Nation's Bridges (<https://www.fhwa.dot.gov/bridge/mtguide.pdf>) → Coding Guide for NBI Data
- 3) FHWA Pavement and Bridge Condition Performance Measures Final Rule (<https://www.federalregister.gov/documents/2017/01/18/2017-00550/national-performance-management-measures-assessing-pavement-condition-for-the-national-highway>) → Bridge Condition Rating

- Download the most recent data available from the NBI for the state of North Dakota.
- Using GIS software map the bridge locations and create a data set for the bridges only within the Bismarck Mandan MPO boundary.
- Using a spreadsheet software, locate the owner column for the bridges within the MPO boundary bridges, and using the 1995 FHWA Recording and Coding Guide for Structure Inventory and Appraisal of the Nation's Bridges note the ownership of the bridge.
- For local Performance Measures only review the bridge data for those bridges owned by a county or city (sort out any NDDOT owned bridges).
- Review the condition ratings for the bridge deck, superstructure, substructure, or culvert (if applicable). Analyze the lowest rating among these components and classify them according to the FHWA Pavement and Bridge Condition Performance Measures Final Rule which is:

Lowest Deck, Superstructure, Substructure, or Culvert Rating	Structure Condition
≥ 7	Good
6 - 5	Fair
≤ 4	Poor

- Calculate the percentage of good and poor bridges within the Bismarck Mandan MPO boundary and owned by the county or city.
- See example for the percent of good bridges for the local system
 Total County and City Owned Bridges (Burleigh County, Morton County, City of Bismarck, and City of Mandan) = 36 Bridges
 Total County and City Owned Bridges in Good Condition = 28 Bridges
 Percent Structures in Good Condition = $\frac{28}{36} = 77.8\%$

Arrive 2045 Goal 3: Congestion Reduction

Vehicle Miles Traveled (VMT) per Capita

Sources:

1) US Census, American Community Survey (2018 estimates)

<https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

2) North Dakota 2017 Traffic Report – VMT Data by County

- Identify County Population for Burleigh and Morton Counties using US ACS 2018 estimates
- Identify 2017 Annual Vehicle Miles Traveled for Burleigh and Morton Counties in the NDDOT 2017 Traffic Report
- Determine Annual VMT per Capita = 2017 Annual VMT/County Population
 - Burleigh County Annual VMT per Capita = $\frac{739,236,000}{95,273} = 7,759$
 - Morton County Annual VMT per Capita = $\frac{446,309,000}{31,095} = 14,353$
- Round to nearest 100 or 500
 - Burleigh County Annual VMT per Capita = 7,800
 - Morton county Annual VMT per Capita = 14,500

Vehicle Hours Traveled (VHT) per Capita

Sources:

1) Bismarck-Mandan MPO Monitoring Report (2019)

https://www.bismarcknd.gov/DocumentCenter/View/33078/People_March2019

2) US Census, 2010 <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

3) Bismarck-Mandan MPO 2015 Travel Demand Model

- Identify MPO population size through Bismarck-Mandan MPO Monitoring report and/or US Census 2010
- Identify Vehicle Hours traveled through 2015 Travel Demand Model
- Determine VHT per Capita = VHT/MPO Population = $\frac{47,100}{100,306} = 0.47$ hours
- Determine VHT per Capita in Minutes = 0.47 hours * 60 minutes = 28.2 minutes

Arrive 2045 Goal 5: Alternative Transportation Modes to Automobile Travel

Mode Share

Source:

1) US Census, American Community Survey (2011-2015)

<https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

- Download income data for Burleigh County and Morton County – commute mode to work
- Using a spreadsheet software:
 - Add data from two counties for each mode
 - Add all mode data together
 - Divide mode data by total to identify a percentage for each mode type

CAT Ridership

Source:

1) Bismarck-Mandan MPO Transit Development Plan (2019, Bismarck-Mandan MPO and Bis-Man Transit CAT)

https://www.transitplanbisman.com/wp-content/uploads/2019/04/Final-Report_04302019.pdf

- Ridership Data is included in Table 5: Capital Area Transit Fixed Route Service Operating Statistics and Performance Measures

Miles of Facilities

Source:

1) Bismarck-Mandan Bicycle and Pedestrian Plan (2017, Bismarck-Mandan MPO)

https://www.bismarcknd.gov/DocumentCenter/View/30610/BismarckMandan_BikePedPlan_FINAL_121917?bidId=

2) City of Bismarck GIS Data

3) City of Mandan GIS Data

- This Plan included GIS mapping to identify the miles of sidewalk, trail, and bicycle facilities in Bismarck and Mandan. GIS data was obtained from the City of Bismarck and the City of Mandan. Mileage was determined by adding lengths of trail or facility segments using ArcGIS.
- The MPO conducted an in-person count of bike racks, referenced in the Plan as well.

Arrive 2045 Goal 7: Reduced Project Delivery

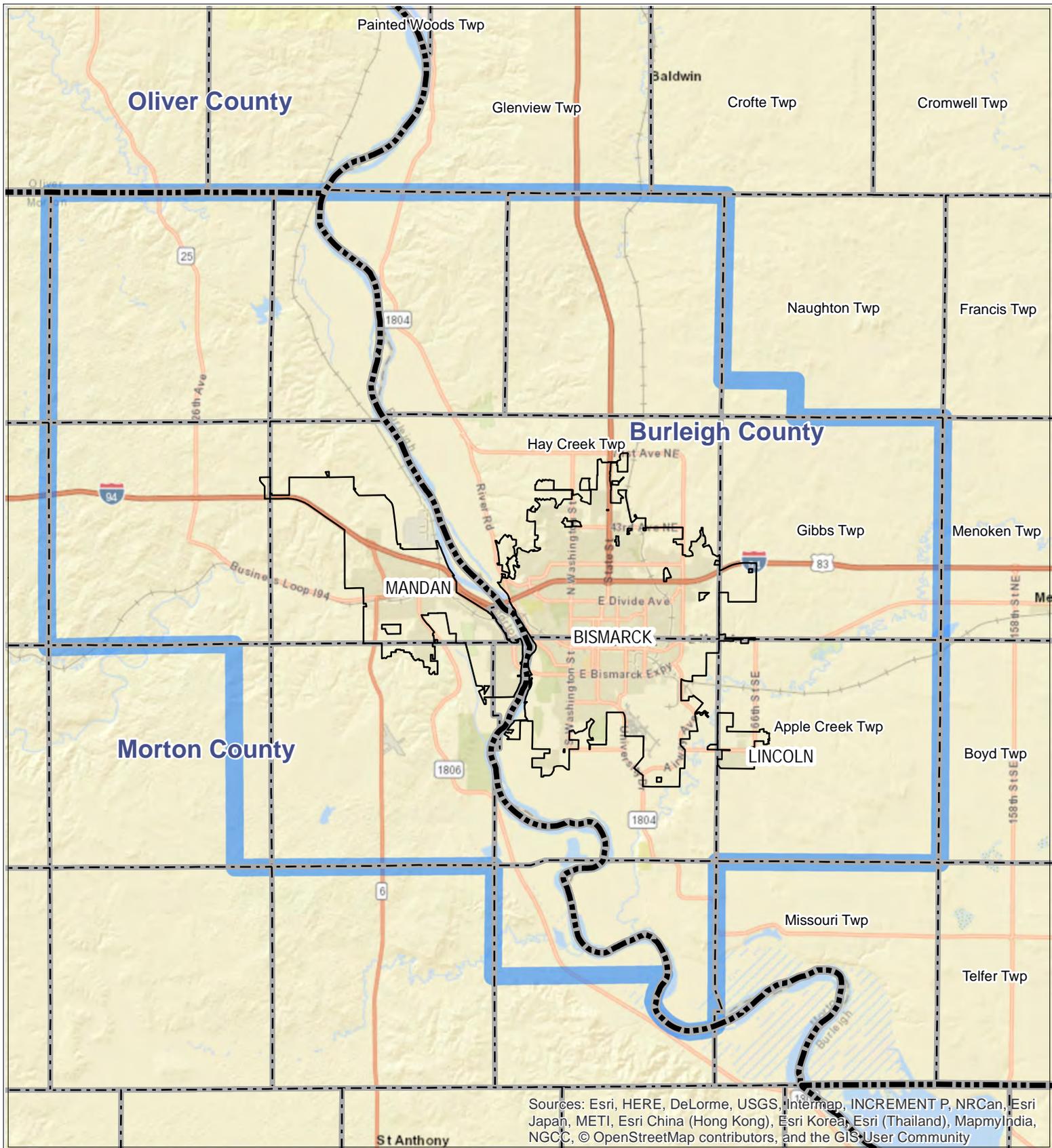
Projects Completed on Time

- » There is currently no data available for this performance measure, but the MPO is collecting data in 2019 and baseline data will be available in 2020.
- » As part of the MPO's annual monitoring report, the agency should request that the local jurisdictions identify the total number of projects within the Transportation Improvement Plan (TIP) delivered within that year as proposed or those that were delayed. For delayed projects, local jurisdictions should include a reason for the project delay.

Future Sources:

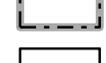
1) Bismarck-Mandan MPO TIP

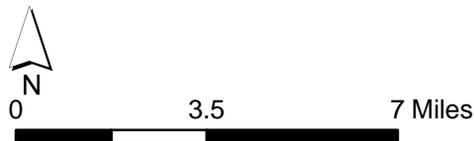
- City of Bismarck
- City of Mandan
- City of Lincoln
- Burleigh County
- Morton County



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Bismarck-Mandan Metropolitan Planning Area (MPO)

-  MPO Boundary
-  County Boundary
-  Civic Township Boundary
-  Mandan, Bismarck and Lincoln Corporated Limits



May 21, 2018



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Extent and Travel Report Urbanized Area Summary

Stage: National
Year: 2017
State: 38 - North Dakota
Date: 08/17/2018

	Miles			Lane Miles			Daily Vehicle Miles		
	2017	2016	% Change	2017	2016	% Change	2017	2016	% Change
All Areas									
1 - Interstate	570.92	570.92	0.00%	2,300.51	2,296.54	0.17%	5,717,338.66	5,773,226.02	-0.97%
2 - PA - Other Freeways and Expressways	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
3 - PA - Other	3,151.04	3,151.00	0.00%	7,579.05	7,569.10	0.13%	8,537,901.53	8,547,318.94	-0.11%
4 - Minor Arterial	2,841.24	2,839.22	0.07%	5,745.26	5,737.39	0.14%	4,090,442.82	4,005,585.71	2.12%
5 - Major Collector	12,303.84	12,287.85	0.13%	24,613.97	24,582.00	0.13%	3,750,583.50	3,761,251.32	-0.28%
6 - Minor Collector	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
7 - Local	68,821.39	68,548.18	0.40%	137,642.78	137,096.35	0.40%	4,525,203.00	4,522,478.00	0.06%
Total	87,688.4	87,397.2	0.33%	177,881.6	177,281.4	0.34%	26,621,469.5	26,609,860.0	0.04%
7921 - Bismarck, ND									
1 - Interstate	16.37	16.37	0.00%	65.48	65.48	0.00%	380,925.16	352,935.51	7.93%
2 - PA - Other Freeways and Expressways	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
3 - PA - Other	61.48	61.47	0.02%	188.51	184.35	2.26%	752,870.94	743,425.32	1.27%
4 - Minor Arterial	62.55	62.63	-0.11%	140.91	141.06	-0.11%	368,058.49	359,821.43	2.29%
5 - Major Collector	78.53	78.46	0.09%	160.36	160.23	0.08%	230,945.78	225,414.90	2.45%
6 - Minor Collector	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
7 - Local	535.82	528.59	1.37%	1,071.64	1,057.18	1.37%	215,335.00	210,000.00	2.54%
Total	754.8	747.5	0.97%	1,626.9	1,608.3	1.16%	1,948,135.4	1,891,597.2	2.99%
29089 - Fargo, ND--MN									
1 - Interstate	22.54	22.54	0.00%	106.99	103.01	3.86%	835,580.61	833,239.65	0.28%
2 - PA - Other Freeways and Expressways	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
3 - PA - Other	28.53	28.53	0.02%	96.93	97.96	-1.05%	549,537.77	542,946.18	1.21%
4 - Minor Arterial	96.08	95.92	0.16%	218.38	215.87	1.16%	783,569.47	765,599.72	2.35%
5 - Major Collector	74.63	75.43	-1.06%	149.59	151.19	-1.06%	255,688.73	253,659.80	0.80%
6 - Minor Collector	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
7 - Local	548.00	509.53	7.55%	1,095.99	1,019.06	7.55%	715,071.00	698,000.00	2.45%
Total	769.8	732.0	5.17%	1,667.9	1,587.1	5.09%	3,139,447.6	3,093,445.4	1.49%

Extent and Travel Report Urbanized Area Summary

Stage: National
Year: 2017
State: 38 - North Dakota
Date: 08/17/2018

	Miles			Lane Miles			Daily Vehicle Miles		
	2017	2016	% Change	2017	2016	% Change	2017	2016	% Change
34219 - Grand Forks, ND--MN									
1 - Interstate	6.08	6.08	0.00%	24.30	24.30	0.00%	79,489.56	78,203.77	1.64%
2 - PA - Other Freeways and Expressways	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
3 - PA - Other	20.07	20.05	0.10%	72.09	71.80	0.40%	338,933.95	336,974.07	0.58%
4 - Minor Arterial	35.61	35.05	1.61%	73.69	72.55	1.57%	164,358.55	159,767.00	2.87%
5 - Major Collector	37.11	37.13	-0.06%	74.40	74.44	-0.06%	98,174.35	96,905.43	1.31%
6 - Minor Collector	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
7 - Local	163.37	174.16	-6.20%	326.74	348.32	-6.20%	108,028.00	107,000.00	0.96%
Total	262.2	272.5	-3.75%	571.2	591.4	-3.42%	788,984.4	778,850.3	1.30%
99998 - Small Urban									
1 - Interstate	16.20	16.20	0.02%	64.82	64.80	0.02%	139,084.45	154,904.37	-10.21%
2 - PA - Other Freeways and Expressways	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
3 - PA - Other	99.99	96.90	3.18%	334.24	313.71	6.54%	892,047.98	878,811.78	1.51%
4 - Minor Arterial	121.39	120.05	1.12%	261.09	256.76	1.68%	463,220.21	459,692.57	0.77%
5 - Major Collector	136.08	134.88	0.89%	272.17	269.77	0.89%	227,190.66	228,611.34	-0.62%
6 - Minor Collector	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
7 - Local	712.26	746.02	-4.53%	1,424.52	1,492.05	-4.53%	398,645.00	400,437.00	-0.45%
Total	1,085.9	1,114.1	-2.53%	2,356.8	2,397.1	-1.68%	2,120,188.3	2,122,457.0	-0.11%
99999 - Rural									
1 - Interstate	509.73	509.74	0.00%	2,038.93	2,038.94	0.00%	4,282,258.89	4,353,942.72	-1.65%
2 - PA - Other Freeways and Expressways	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
3 - PA - Other	2,940.98	2,944.05	-0.10%	6,887.27	6,901.28	-0.20%	6,004,510.89	6,045,161.60	-0.67%
4 - Minor Arterial	2,525.60	2,525.58	0.00%	5,051.20	5,051.15	0.00%	2,311,236.11	2,260,704.98	2.24%
5 - Major Collector	11,977.48	11,961.95	0.13%	23,957.44	23,926.37	0.13%	2,938,583.98	2,956,659.85	-0.61%
6 - Minor Collector	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%
7 - Local	66,861.94	66,589.87	0.41%	133,723.89	133,179.74	0.41%	3,088,124.00	3,107,041.00	-0.61%
Total	84,815.7	84,531.2	0.34%	171,658.7	171,097.5	0.33%	18,624,713.9	18,723,510.2	-0.53%

Attachment 4

Bismarck-Mandan Metropolitan Transportation Plan

To: MTP Steering Committee
From: Wade Kline, KLJ
Date: May 21, 2019
Re: Fiscal Constraint Methodology & Projected System Revenues to Support MTP

Fiscal Constraint Program Methods

Development of the project list for Arrive 2045 must be based on an established fiscal constraint agreed to between the Bismarck-Mandan MPO and NDDOT. Development of a fiscal constraint can be based on a variety of scenarios and data points regarding transportation funding programs and there are a range of best practices and techniques for developing a fiscal constraint. It is important that locally sourced and reliable data be used that show both historic and potential future funding trends when developing a fiscal constraint analysis.

Development of the fiscal constraint for Arrive 2045 is based on the following programming assumptions.

- » **National Highway Performance Program (NHPP):** No specific NHPP sub target is assumed for the BMMPO for Arrive 2045. Rather, NHPP funds for the BMMPO are assumed to be allocated through constraints established for the Regional portion of the Urban/Regional funding. Additional NHPP funds allocated for Interstate related projects are assumed to come through the Interstate Maintenance constraint.
- » **Interstate Maintenance (IM):** The Interstate Maintenance (IM) program was replaced by the NHPP program. However, NDDOT still tracks expenses to this program separately in the STIP. Therefore, it is assumed constraints established for the IM program are part of the NHPP funds allocated to the BMMPO for Arrive 2045.
- » **Urban/Regional:** Funding for projects on either the NDDOT Urban or Regional system. The constraint for Arrive 2045 for this program would likely be split roughly 50/50 between the two programs. Future programming for the new NDDOT Urban Grant Program would come from the Urban share of these program funds, since eligibility requirements are nearly identical.

- » **Transportation Alternative & Recreational Trails (TA + RTP):** Program funds awarded for the use of alternative transportation projects supporting bicycle, pedestrian, or recreational trail projects. This includes both Transportation Alternatives (TA) and Recreational Trails Program (RTP). For ease of project selection, these programs are combined.

Local Sources

Funds in this analysis currently only reflect federal program dollars. To this point, no analysis has been completed on the local sources to support these federal programs. These programs are assumed to be “matched” by the respective recipient entity: NDDOT, City of Bismarck, City of Lincoln, City of Mandan or either Burleigh or Morton County.

As Arrive 2045 moves into project identification and prioritization, more detailed analysis on local funding capacity to match these federal funds will be developed. However, local match identification is best developed once a prioritized list of projects have been preliminarily identified.

Based on guidance from the BMMPO, consideration will be given to the following potential sources: 1) General funds; 2) Sales tax; 3) State funds; and 4) Prairie Dog. As projects are identified, locally sourced matched revenue assumptions will be determined.

Fiscal Constraint Scenarios

Working with the project Study Committee (SC), a total of five data points were established to develop a preliminary fiscal constraint for Arrive 2045:

1. *Revenue forecasts from Envision 2040* which used a TIP analysis for the year 2007 to 2014:
 - a. Little additional substantiation is available on this data other than in Envision 2040 which assumes a general 8-year average of funds in the BMMPO TIP.
2. *Committed projects from the first year of the 2015, 2016, 2017 and 2018 TIP/STIP:*
 - a. Assumes first year of each TIP/STIP.
 - b. Accounts for program variations with MAP-21 and FAST Act; and potential for delayed projects (e.g. project showing up in two consecutive years).
3. *Committed projects from the 2019-2022 TIP/STIP.*
4. *Aggregate of from 2015-2018 and 2019-2022 TIP/STIP:*
 - a. Roughly replicates approach for Envision 2040 by taking an eight-year rolling average.
5. *Population/ratio formula based and programmatic assumptions:*
 - a. Use population related factors and applies to various program assumptions.
 - b.
 - c. The detailed formulas used for the population/ratio formula and programmed assumptions are as follows:

- i. **Urban:** Based on the percent of North Dakota's urban population for Bismarck-Mandan (21.9 percent). Apply 0.75 factor to match historic allocation plus \$500,000 to account for Urban Grant Program (UGP). Base program amount taken down from Urban Highway Construction Program (NHPP and STBG/CMAQ) of the 2020 year of the 2019-2020 STIP.
- ii. **Regional:** Based on percent of North Dakota's urban population (21.9 percent). Base program amount taken down from Urban Highway Construction Program (NHPP and STBG/CMAQ) of the 2020 year of the 2019-2022 STIP.
- iii. **Interstate Maintenance:** Average of IM funds in NDDOT 2019-2022 STIP adjusted to reflect the BMMPO area's percent of North Dakota's urban Population (21.9 percent).
- iv. **Safety (Urban):** Assumes 25 percent of NDDOT HSIP Program (per 2019-2022 STIP) allocated to urban area, BMMPO gets 21.9 percent (prorated share of urban area population).
- v. **Safety (State):** BMMPO receives 1.9 percent (percent of NDDOT Federal aid roads in BMMPO Area) of the Statewide HSIP Program.
- vi. **TA plus RTP:** Assumes two (2) TAP projects at \$0.28M each, every five years and two (2) RTP projects at \$0.200M each, every five years.

Table 1 – Fiscal Constraint Scenarios

Program	Envision 2040	2015-2018 TIP/ STIP	2019-2022 TIP/ STIP	2015-2022 Existing + Committed	Population Based Ratio	Arrive 2045
Urban/ Regional	\$8,540,125	\$4,875,000	\$11,003,750	\$7,939,375	\$8,518,192	\$8,518,192
Interstate	\$3,738,125	\$5,968,750	\$4,272,750	\$5,120,750	\$2,505,957	\$4,429,438
NHPP			Accounted for in IM + Urban/ Regional			
Safety (State)	\$1,562,125	\$1,299,250	\$400,750	\$699,713	\$275,500	\$699,713
Safety (Urban)		\$1,128,000	\$1,020,500	\$651,250	\$761,250	\$651,250
TA + RTP	\$1,377,355	\$387,500	\$80,000	\$233,750	\$192,000	\$233,750
Total	\$15,217,730	\$13,658,500	\$16,777,750	\$14,644,838	\$12,252,899	\$14,532,342

Development of the Fiscal Constraint

Based on a review of all five potential scenarios, funding for each core program area was selected for Arrive 2045. Assumptions for Arrive 2045 were based as follows by major funding programs:

- » **Urban/Regional:** Population/ratio formula and programmatic assumptions used to establish fiscal constraint. Total base assumptions were split between Urban and Regional Program as follows:
 - **Urban – \$3,936,368 (base)**

As noted, the Urban program balance does account Urban Grant Program (UGP). Therefore, constraint analysis for Arrive 2045 can reflect projects which may be considered eligible for UGP. Those projects would be listed in the Urban program list, however they could be denoted as specifically related to the UGP.

- **Regional – \$4,581,188 (base unadjusted); \$2,981,734 (adjusted base 2024-2031); \$5,471,074 (adjusted base 2032-2045)**

To account for the three phased construction of Memorial Highway, the base allocation of Regional funds for the MTP was reduced by \$15,000,000 (assumes 50% of the total project). This sum was prorated annually against the available Regional program for the years 2024-2031. This reduces the annual available constraint for Regional program funds by \$1,875,000 for the short-range element of the MTP.

Given the significant size of the operations and maintenance element of the Regional system in the BMMPO Study Area, NDDOT O&M assumptions from the 2019-2022 TIP were used to further reduce the available balance of Regional funds. Total base year estimates for the Regional program were further reduced by \$1,022,004 (annually and then adjusted 4% for inflation) to account for O&M requirements as defined with in the approved BMMPO 2019-2022 TIP.

To balance future investment between Interstate and Regional roadways in the BMMPO Study Area, the Regional program balance was adjusted upward through a 5% fund transfer from the Interstate program. This is to account for a potentially larger share of Regional system needs during the life of the MTP. This adjustment is feasible given the National Highway Performance Program (NHPP) assumptions discussed earlier for the constraint analysis regarding the Interstate program.

- » **Interstate:** Average of Envision 2040 and 2015 through 2022 existing and committed project lists used to set fiscal constraint. This assumption provides for a base year allocation of \$4,429,438 (unadjusted) in Interstate program funds.

As noted with in the Regional program discussion, the base year of Interstate funds was reduced by 5% and assumed transferred to the Regional system. To account for ongoing O&M needs on the Interstate system, as defined by the BMMPO 2019-2022 TIP, available Interstate system revenues were reduced to reflect a base year estimate of \$724,320 in required O&M on the Interstate system through the BMMPO study area. Adjusted base year for Interstate program is proposed to be \$3,772,340.

- » **Safety (both State and Urban):** 2015 through 2022 existing and committed project lists. Based on approved assumptions for establishing the fiscal constraint for the
- » Safety program, the follow base year estimates of available revenue would be available for the MTP development:

- **Urban** – \$651,250 – For ease of constraining safety projects, these funds are proposed to be added to the overall Urban constraint.
 - **State** – \$699,713 – For ease of constraining safety projects, these funds are proposed to be split 75%/25% between the Regional and Interstate System.
- » **TA + RTP:** 2015 through 2022 existing and committed project lists. Base year estimates for TA + RTP fiscal constraint would be \$233,750. Projects will be extracted from the approved BMMPO Bike and Pedestrian Plan to establish a first round of potential constrained projects for these funds.

Table 2 shows projected fiscal constraint for Arrive 2045 for each Federal aid program. Projected revenues are banded into three ranges:

- **Short Range:** Represents the 8 years past the next TIP developed by the BMMPO;
- **Medium range:** Years 2032-2038;
- **Long Range:** Year 2039 – 2045.

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Table 2 – Projected Fiscal Constraint

Year	Urban	Regional	Interstate	Safety (State)	Safety (Urban)	TA + RTP
2024	\$4,172,550	\$2,158,273	\$3,772,340	\$741,695	\$690,325	\$247,775
2025	\$4,235,138	\$2,191,861	\$3,811,413	\$752,821	\$700,680	\$251,492
2026	\$4,298,666	\$2,225,339	\$3,850,686	\$764,113	\$711,190	\$255,264
2027	\$4,363,145	\$2,258,218	\$3,889,832	\$775,575	\$721,858	\$259,093
2028	\$4,428,593	\$2,290,445	\$3,928,820	\$787,208	\$732,686	\$262,979
2029	\$4,495,022	\$2,321,965	\$3,967,619	\$799,016	\$743,676	\$266,924
2030	\$4,562,447	\$2,352,719	\$4,006,195	\$811,002	\$754,831	\$270,928
2031	\$4,630,884	\$2,382,646	\$4,044,512	\$823,167	\$766,154	\$274,992
Subtotal	\$35,186,444	\$18,181,466	\$31,271,417	\$6,254,597	\$5,821,400	\$2,089,447
2032	\$4,700,347	\$4,286,683	\$4,082,532	\$835,514	\$777,646	\$279,117
2033	\$4,770,852	\$4,314,762	\$4,120,217	\$848,047	\$789,311	\$283,303
2034	\$4,770,852	\$4,337,787	\$4,081,025	\$848,047	\$789,311	\$283,303
2035	\$4,842,415	\$4,363,677	\$4,116,765	\$860,768	\$801,150	\$287,553
2036	\$4,842,415	\$4,384,301	\$4,074,375	\$860,768	\$801,150	\$287,553
2037	\$4,915,051	\$4,407,692	\$4,107,936	\$873,679	\$813,168	\$291,866
2038	\$4,915,051	\$4,425,591	\$4,062,087	\$873,679	\$813,168	\$291,866
Subtotal	\$33,756,983	\$30,520,491	\$28,644,937	\$6,000,502	\$5,584,903	\$2,004,562
2039	\$4,988,777	\$4,446,143	\$4,093,216	\$886,784	\$825,365	\$296,244
2040	\$5,063,608	\$4,465,171	\$4,123,620	\$900,086	\$837,746	\$300,688
2041	\$5,139,563	\$4,482,577	\$4,153,240	\$913,587	\$850,312	\$305,198
2042	\$5,216,656	\$4,498,262	\$4,182,015	\$927,291	\$863,066	\$309,776
2043	\$5,294,906	\$4,512,119	\$4,209,881	\$941,201	\$876,012	\$314,423
2044	\$5,374,329	\$4,524,040	\$4,236,770	\$955,319	\$889,153	\$319,139
2045	\$5,454,944	\$4,533,910	\$4,262,613	\$969,648	\$902,490	\$323,926
Subtotal	\$36,532,784	\$31,462,223	\$29,261,356	\$6,493,916	\$6,044,144	\$2,169,395
Total	\$105,476,211	\$80,164,180	\$89,177,709	\$18,749,015	\$17,450,447	\$6,263,404

Operations & Maintenance (O&M) Assumptions

Pursuant to 23 CFR 450.324, the Arrive 2045 MTP needs to contain a financial plan that accounts for required operations and maintenance of the Federal aid highways as defined by 23 U.S.C. 101(a)(5).

Per the approved BMMPO 2019-2022 TIP, O&M is defined as a system level estimate of expenses to maintain routine and regular maintenance activities to keep the existing transportation system safe and working efficiently. Assumed investments meeting the BMMPO TIP O&M definition include the following roadway maintenance investments:

- Pavement management including chip and crack seals;
- Graveling and grading;
- Concrete pavement repairs;
- Signage (repair and replacement);
- Lighting;
- Traffic Signalization including repairs, timing and maintenance.

The assumed O&M requirement of the BMMPO TIP applies specifically to Federal aid highways including the following corridors:

- I-94 & I-94 Business Loop;
- US 83;
- Bismarck Expressway;
- Highway 810;
- Memorial Highway;
- Mandan Main Street;
- 7th Street/9th Street (Bismarck);
- ND 1804;
- ND 1806;
- ND 6;
- ND 25;

Arrive 2045 builds upon the methodology of the approved O&M methods from the BMMPO 2019-2022 TIP. This ensures consistency in long range assumptions developed for the MTP specifically related to cost take downs for O&M. This ensures O&M costs are established and accounted for within the fiscally constrained element of the MTP. The baseline assumptions for the O&M element of Arrive 2045 MTP are as follows.

Table 3 shows total base year assumptions from the 2019-2022 TIP for required investments in roadway systems in the BMMPO Study Area. Costs are further split out between required investments in defined Federal aid highways and the balance of the system. The balance of system reflects all other roadway O&M investments.

Table 3 - Operations & Maintenance Requirements

Entity	Base (Total)	Federal Aid Highways	Balance of System
Bismarck	\$2,155,052	\$144,388	\$2,010,664
Mandan	\$390,146	\$25,555	\$364,592
Morton County	\$26,541	\$0	\$26,541
Burleigh County	\$1,050,349	\$0	\$1,050,349
NDDOT	\$2,386,172	\$2,386,172	\$0

For the purposes of constraining available Federal revenues for the Arrive 2045 MTP it was assumed that identified shares of Federal Aid Highway O&M costs attributable to the City of Bismarck and Mandan would represent local match to ongoing projects and would therefore not be used to further reduce projected available Federal revenues available to the Arrive 2045 MTP.

Burleigh County and Morton County are not currently assumed to be directly responsible for O&M investments on Federal aid highways as defined for this purpose. Federal aid highways within those jurisdictions are the sole responsibility of NDDOT.

Balance of System O&M Requirements

More significant to the City of Bismarck and Mandan, and Burleigh County and Morton County, are anticipated investments to ensure O&M requirements on the Balance of the Systems outside of the defined Federal aid highways.

Table 4 was developed to show locally required costs over the life of Arrive 2045 for projected future year O&M requirements for these four entities. These costs assume a 4% annual inflation rate and need to be accounted for out of local revenues prior to matching future Federal aid projects. These O&M project costs are not subtracted from future available Federal revenue, specifically the Urban program.

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Table 4 – Balance of System Investments in O&M Expense

Balance of System O&M Expenses				
Entity	Bismarck	Mandan	Morton County	Burleigh County
Base Year	\$2,010,664	\$364,592	\$26,541	\$1,050,349
2024	\$2,091,090	\$379,175	\$27,602	\$1,092,363
2025	\$2,174,734	\$394,342	\$28,706	\$1,136,058
2026	\$2,261,723	\$410,116	\$29,854	\$1,181,500
2027	\$2,352,192	\$426,521	\$31,049	\$1,228,760
2028	\$2,446,280	\$443,582	\$32,291	\$1,277,910
2029	\$2,544,131	\$461,325	\$33,582	\$1,329,027
2030	\$2,645,896	\$479,778	\$34,925	\$1,382,188
2031	\$2,751,732	\$498,969	\$36,323	\$1,437,475
Subtotal	\$19,267,777	\$3,493,807	\$254,332	\$10,065,282
2032	\$2,861,801	\$518,928	\$37,775	\$1,494,974
2033	\$2,976,273	\$539,685	\$39,286	\$1,554,773
2034	\$3,095,324	\$561,272	\$40,858	\$1,616,964
2035	\$3,219,137	\$583,723	\$42,492	\$1,681,643
2036	\$3,347,903	\$607,072	\$44,192	\$1,748,909
2037	\$3,481,819	\$631,355	\$45,960	\$1,818,865
2038	\$3,621,091	\$656,609	\$47,798	\$1,891,620
Subtotal	\$22,603,348	\$4,098,643	\$298,361	\$11,807,749
2039	\$3,765,935	\$682,873	\$49,710	\$1,967,284
2040	\$3,916,572	\$710,188	\$51,698	\$2,045,976
2041	\$3,916,572	\$738,596	\$53,766	\$2,127,815
2042	\$4,073,235	\$768,140	\$55,917	\$2,212,927
2043	\$4,073,235	\$798,865	\$58,154	\$2,301,445
2044	\$4,236,165	\$830,820	\$60,480	\$2,393,502
2045	\$4,236,165	\$864,053	\$62,899	\$2,489,242
Subtotal	\$28,217,880	\$5,393,535	\$392,623	\$15,538,192
Total	\$70,089,005	\$12,985,986	\$945,317	\$37,411,223

Establishing NDDOT O&M Distributions on Federal Aid Highways

NDDOT has the most significant investment in O&M expenses on the BMMPO defined Federal aid highway system within Arrive 2045 MTP. This required investment was evaluated and used to adjust future estimates of available revenue to support the Arrive 2045 MTP. This would be most specific to both the Urban State Highway System (Regional System) and Interstate program.

An evaluation of approximate State Highway lane miles was developed to assist with ensuring appropriate distribution of future O&M investments into roadways that NDDOT owns and maintains, and or maintains in partnership with local jurisdictions. This evaluation was conducted on those Federal Aid Highways listed previously.

Table 5 shows the distribution of roadways defined as Federal aid highways in the BMMPO Study Area. For developing the Arrive 2045 MTP, O&M investments for NDDOT were distributed between the three systems show below.

Table 5 – System Distribution – Federal aid highways

NDDOT System	Lane Miles	System %
Interstate	52.8	29.2%
State Highway (Rural)	53.6	29.6%
State Highway Urban (Regional System)	74.5	41.2%
	180.9	100.0%

Table 6 demonstrates the O&M investment projection for NDDOT related to Federal aid highways in the Arrive 2045 MTP study area. Costs between programs are split between State Highway (Rural), State Highway Urban (Regional) and Interstate based on the estimate mileage splits above.

Based on distributed O&M costs between NDDOT systems, these projected future costs were subtracted from the projected future revenues available for constraining projects with in Arrive 2045.

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Table 6 – Distribution of NDDOT Investment in O&M on Federal Aid Highways

	Total	Interstate	Urban (Regional)	Rural
2024	\$2,481,619	\$724,320	\$1,022,004	\$735,294
2025	\$2,580,884	\$753,618	\$1,063,324	\$763,942
2026	\$2,684,119	\$783,763	\$1,105,857	\$794,499
2027	\$2,791,484	\$815,113	\$1,150,091	\$826,279
2028	\$2,903,143	\$847,718	\$1,196,095	\$859,330
2029	\$3,019,269	\$881,626	\$1,243,939	\$893,704
2030	\$3,140,040	\$916,892	\$1,293,696	\$929,452
2031	\$3,265,641	\$953,567	\$1,345,444	\$966,630
Subtotal	\$22,866,198	\$6,676,617	\$9,420,451	\$6,769,130
2032	\$3,396,267	\$991,710	\$1,399,262	\$1,005,295
2033	\$3,532,117	\$1,031,378	\$1,455,232	\$1,045,507
2034	\$3,673,402	\$1,072,633	\$1,513,442	\$1,087,327
2035	\$3,820,338	\$1,115,539	\$1,573,979	\$1,130,820
2036	\$3,973,152	\$1,160,160	\$1,636,939	\$1,176,053
2037	\$4,132,078	\$1,206,567	\$1,702,416	\$1,223,095
2038	\$4,297,361	\$1,254,829	\$1,770,513	\$1,272,019
Subtotal	\$26,824,715	\$7,832,817	\$11,051,783	\$7,940,116
2039	\$4,469,255	\$1,305,023	\$1,841,333	\$1,322,900
2040	\$4,648,026	\$1,357,223	\$1,914,987	\$2,035,835
2041	\$4,833,947	\$1,411,512	\$1,991,586	\$2,117,269
2042	\$5,027,305	\$1,467,973	\$2,071,249	\$2,201,959
2043	\$5,228,397	\$1,526,692	\$2,154,099	\$2,290,038
2044	\$5,437,533	\$1,587,760	\$2,240,263	\$2,381,639
2045	\$5,655,034	\$1,651,270	\$2,329,874	\$2,476,905
Subtotal	\$35,299,495	\$10,307,453	\$14,543,392	\$14,826,545
Total	\$84,990,408	\$24,816,886	\$35,015,626	\$29,535,790

Attachment 5

ARRIVE 2045 SMART CITIES WORKSHOP

WHY

Smart Cities applies to more than fiber connected signals and autonomous vehicles. It's a technology focused, holistic approach to improve quality of life for all people.



Smart Cities expand mobility choices to improve self-sufficiency for ages 8 to 80 with autonomous vehicles and shared mobility services.



Smart Cities improve health and equity by increasing access to jobs, high-speed internet, and health care.



Smart Cities save lives by connecting drivers with technology, minimizing human errors. Studies have found that 94% of traffic fatalities are caused by human error.



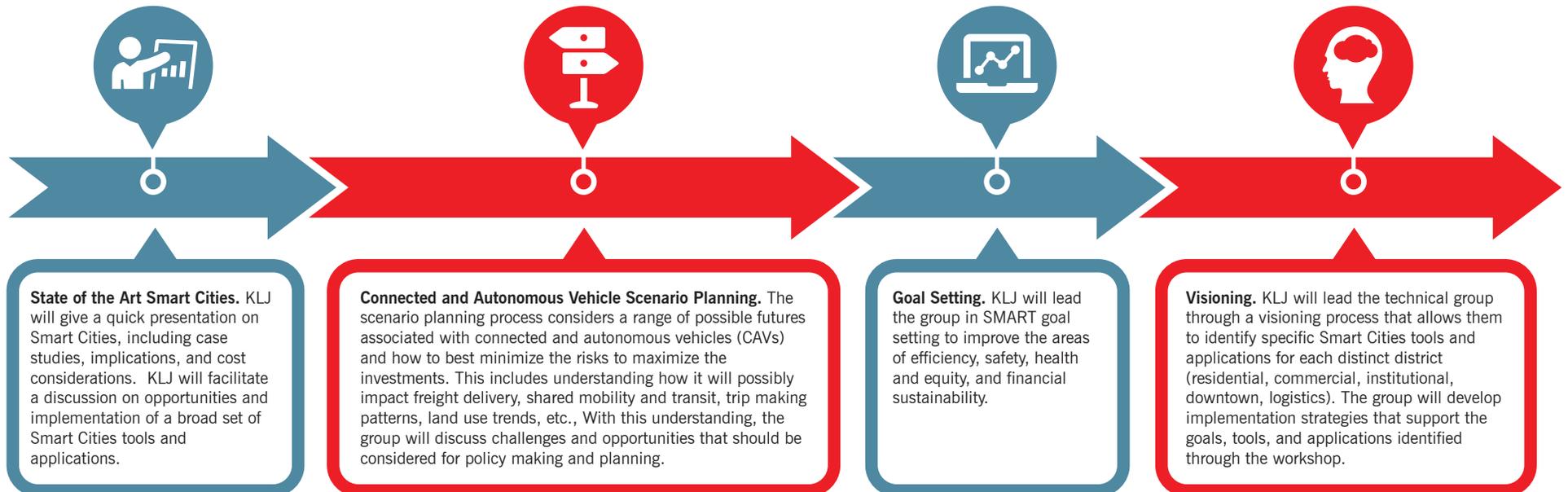
Smart Cities streamline government service delivery by breaking down silos and supporting an open data environment to increase collaboration and efficiency.



Smart Cities save money and the environment by reducing recurring and non-recurring delays. Studies have found that trucks stuck in stop and go traffic cost shippers an estimated \$28 million annually.

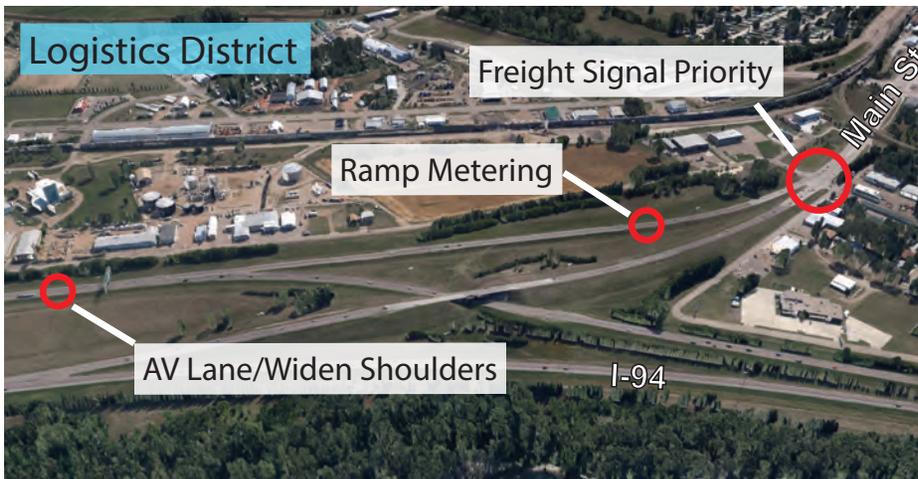
WHAT

Leading communities around the country are focusing transportation budgets on ways to make transportation more efficient, safe, equitable, healthy, and fiscally sustainable through intelligent transportation systems, connected infrastructure, mobility apps, and alike. KLJ's Smart Cities Workshop is targeted toward the technical leadership in each community and would include four key components:



ARRIVE 2045

bismarck mandan Metropolitan Transportation Plan





Bismarck-Mandan Metropolitan Transportation Plan

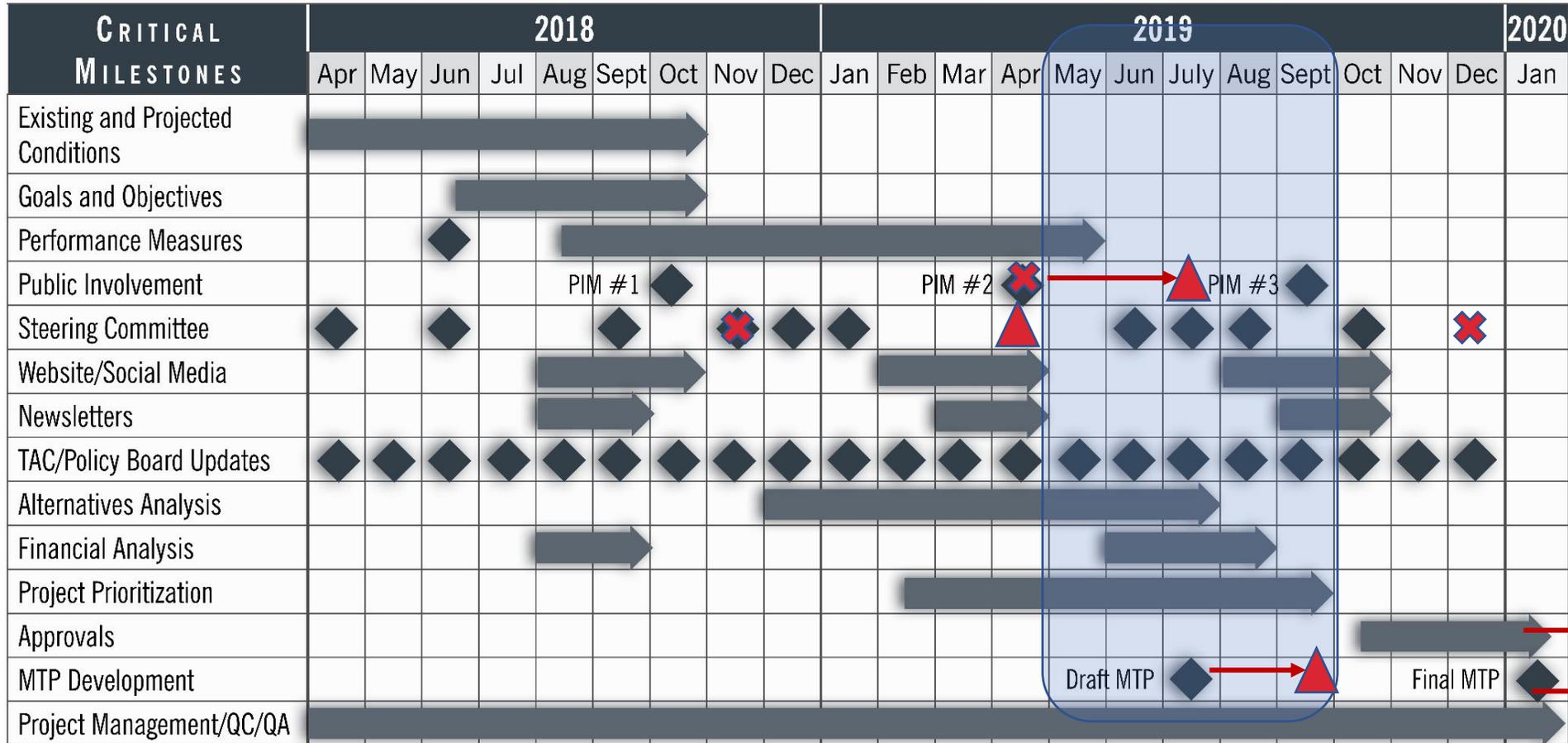
Steering Committee Meeting #5
September 23, 2019



Agenda

- » Review Draft Marco Level Project Cluster Analysis
- » Review & Discuss Preliminary Universe of Projects
- » Goals, Objectives & Performance Measures
- » Overview of Project Specific Evaluation Process
- » Review Draft Fiscal Constraint & Financial Analysis

Current Schedule



MPO has developed a detailed approvals schedule into early 2020



Project Update

- » Completed PIM#1 (+ associated outreach)
- » 5 (of 10) Steering Committees
- » Goal & Objectives – Performance Based Plan
- » Completed Preliminary Financial Analysis
- » Initiate Alternatives Analysis
- » On Schedule!



Alternatives Evaluation

Alternatives Analysis – Major Components

» Identification of Project Clusters

- Respond to larger “project concepts” which are likely to compete against one another.

» Scenario Testing

- Changes to shared mobility, autonomous vehicles and mode share.

Project Clusters

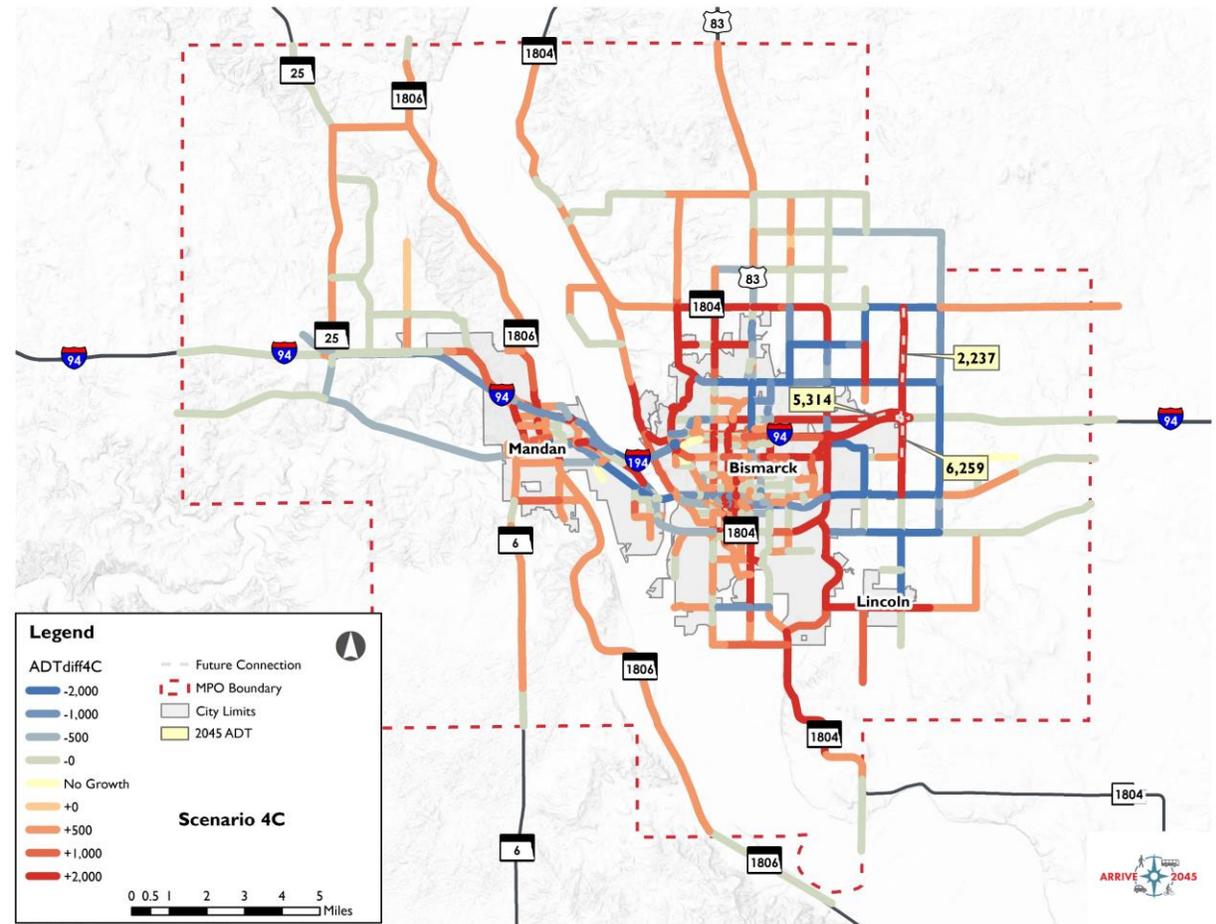
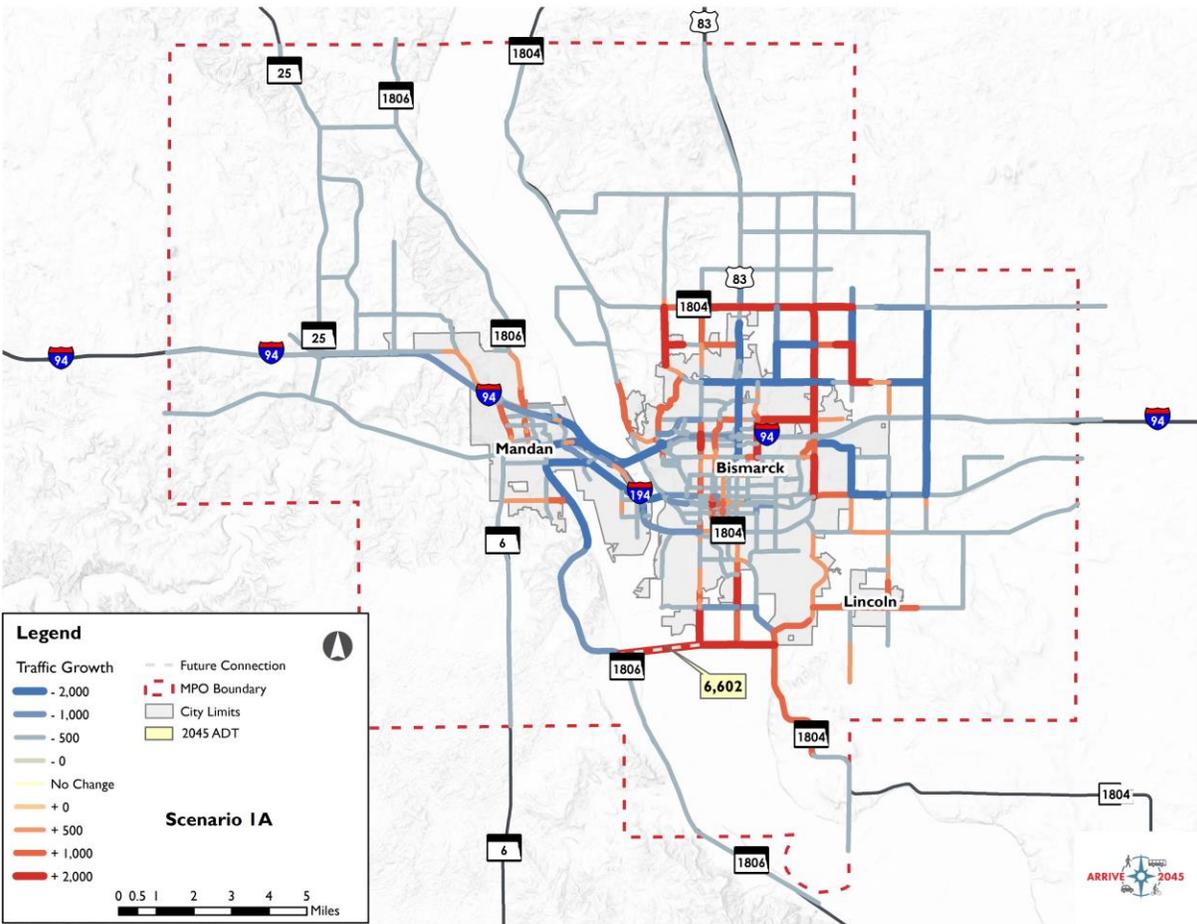
- » Benefit-Cost Analysis
- » Cost-Effectiveness
- » Returned Equity
- » Other Network-Wide Impacts
 - Links over capacity
 - VHT, VMT, AADT changes

Scenario IA	2030	2045
VHT Change	-5.2%	-17.3%
VMT Change	0.2%	-0.9%
AADT	6,509	8,374
% of Links Over Capacity	1.7%	6.9%
Construction Cost	\$84.1 M	
Total Benefits	\$619.1 M	
Benefit/Cost Ratio	14.4	
Cost-Effectiveness	8.2	
Returned Equity	8 Years	

Cluster Summary

Concept Cluster	2045 VHT Change	2045 VMT Change	2045 Links Over Capacity	Construction Cost	Total Benefits	B/C Ratio	C/E	Returned Equity	Rank
2045 Existing and Committed Network	-	-	13.6%	-	-	-	-	-	-
Scenario 1A: Southern Bridge Corridor to ND 1806	-17.3%	-0.9%	6.9%	\$84.1 M	\$619.1 M	14.4	8.2	8 Years	1
Scenario 1B: Southern Bridge Corridor to ND 6	-17.1%	-0.9%	7.1%	\$100.6 M	\$622.4 M	11.0	6.8	8 Years	2
Scenario 2: Northern Bridge Corridor	-17.2%	-0.7%	8.4%	\$122.9 M	\$596.2 M	8.8	5.4	10 Years	6
Scenario 3: South Mandan Arterial	-16.4%	-0.6%	7.4%	\$29.4 M	\$489.2 M	21.6	18.3	9 Years	4
Scenario 4(a): Northeast Bismarck Arterial Improvements	-15.8%	-0.6%	5.5%	\$131.6 M	\$493.2 M	4.8	4.1	12 Years	7
Scenario 4(b): Northeast Bismarck Arterial Improvements with I-94 Grade Separation	-14.3%	0.0%	5.3%	\$179.5 M	\$433.4 M	3.2	2.6	14 Years	8
Scenario 4(c): Northeast Bismarck Arterial Improvements with I-94 Interchange	-13.3%	0.1%	5.1%	\$195.3 M	\$377.5 M	2.7	2.1	15 Years	9
Scenario 5: West Mandan Interchange	-15.6%	-0.1%	7.2%	\$79.6 M	\$518.5 M	10.1	7.1	9 Years	5
Scenario 6: State Street Improvements	To Be Determined								
Scenario 7: Transportation System Management and Operations	-16.0%	0.1%	6.9%	\$41.5 M	\$498.8 M	16.0	13.5	8 Years	3

Cluster Summary



Travel Behavior

Scenario	Year	CAV	Carpool/ Ride-Share	Walking, Biking, Transit	Interstate Capacity	Other Roadway Capacity	Trip Ends Change
Base	2030	0.0%	5.0%	3.0%	No Change	No Change	No Change
	2045	0.0%	7.0%	3.0%	No Change	No Change	No Change
Conservative AV Adoption	2030	10.0%	5.0%	5.0%	+2%	No Change	-6.5%
	2045	20.0%	7.0%	7.0%	+5%	+1%	-8%
Moderate CAV Adoption	2030	25.0%	5.0%	5.0%	+7%	+2%	-2%
	2045	50.0%	7.0%	7.0%	+19%	+7%	+1%
Aggressive CAV Adoption	2030	50.0%	4.0%	4.0%	+19%	+7%	+7.5%
	2045	75.0%	5.0%	5.0%	+40%	+18%	+13%

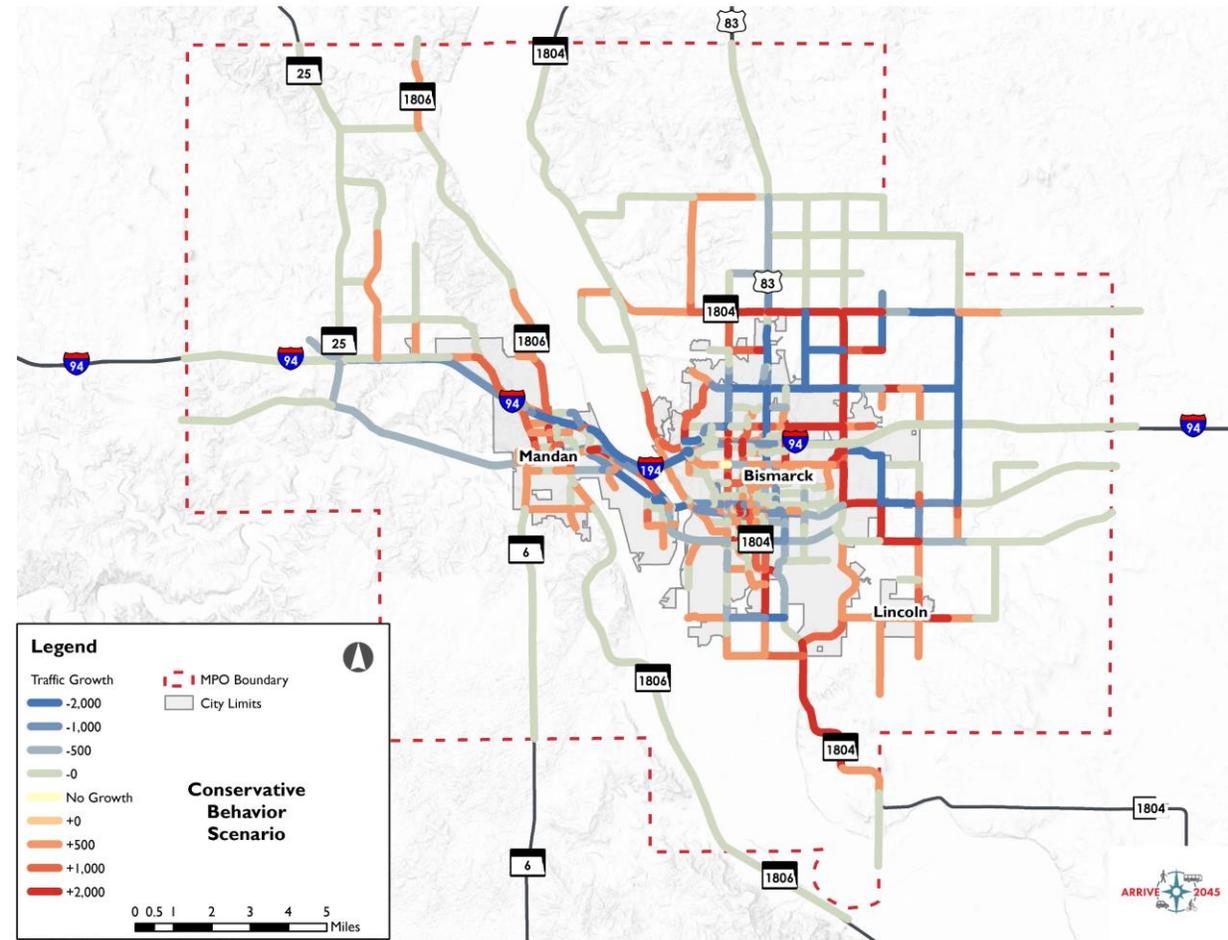
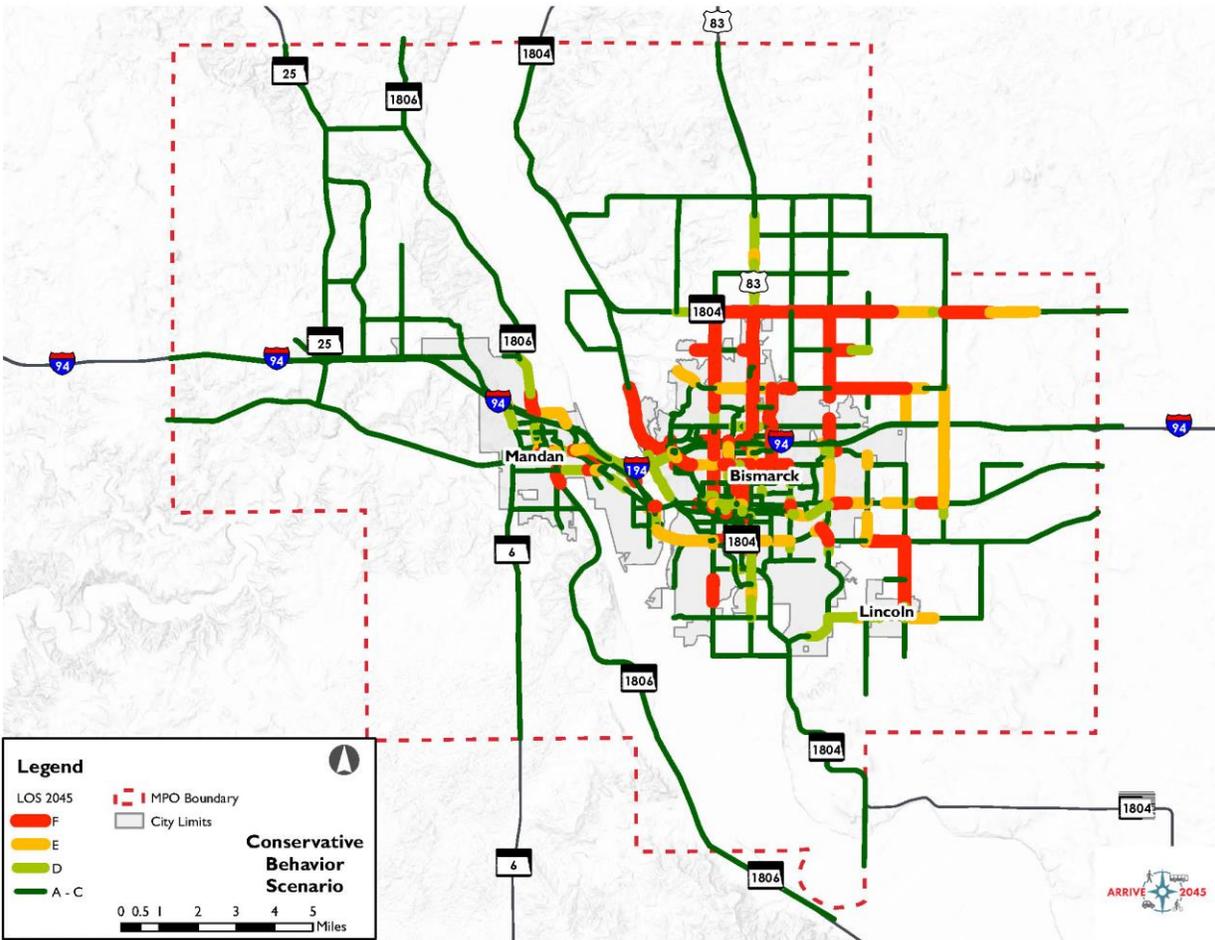
Travel Behavior

	2030 Base Scenario	2030 Conservative CAV Adoption	2015-2030 Percent Change	2045 Base Scenario	2045 Conservative CAV Adoption	2015-2045 Percent Change
VHT	37,265	34,600	-37.8%	55,650	44,420	-20.2%
VMT	2,253,430	2,209,820	-24.6%	2,932,685	8,236,025	-3.3%
% of Links Over Capacity	5.1%	1.8%	-64.7%	13.6%	6.5%	-52.2%

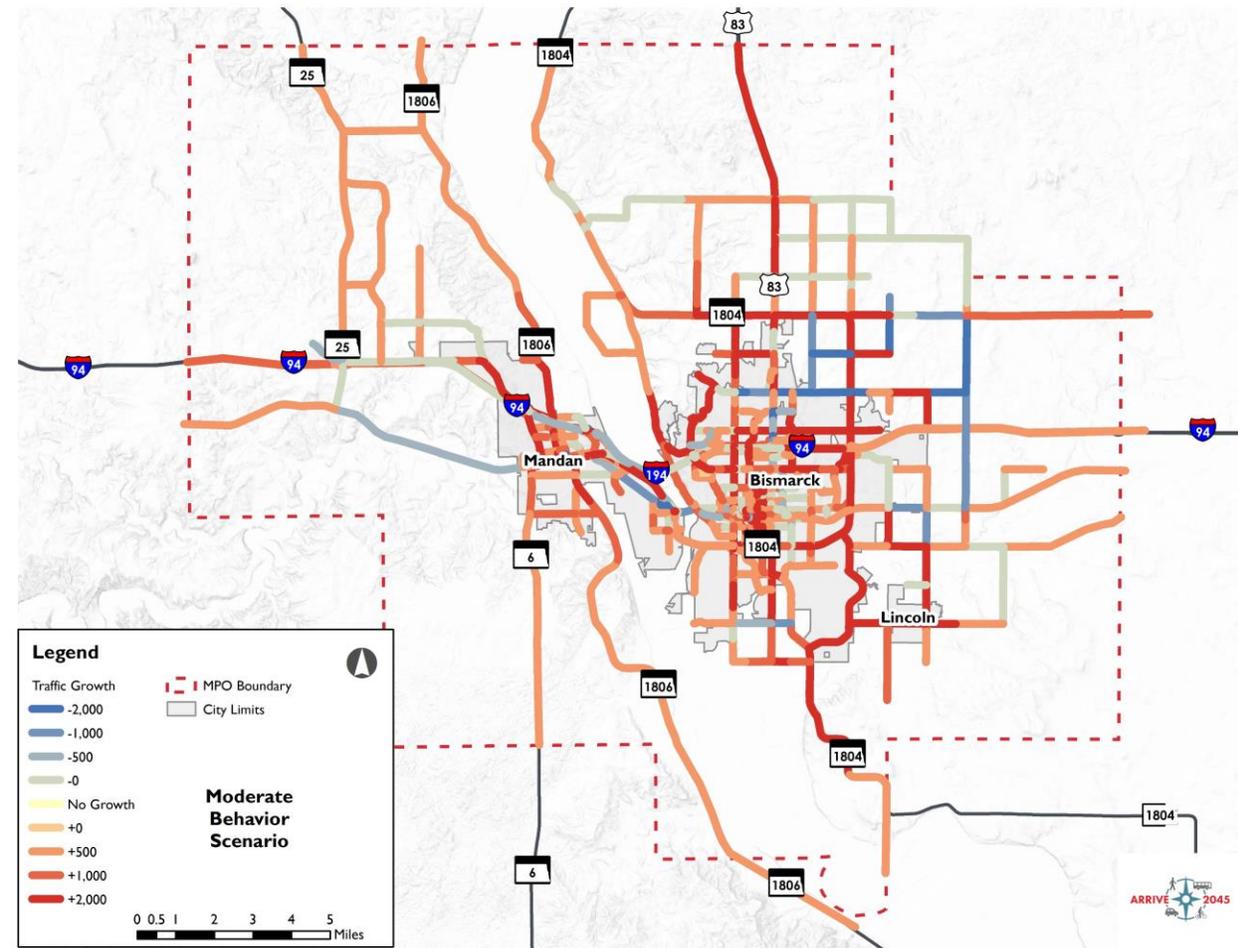
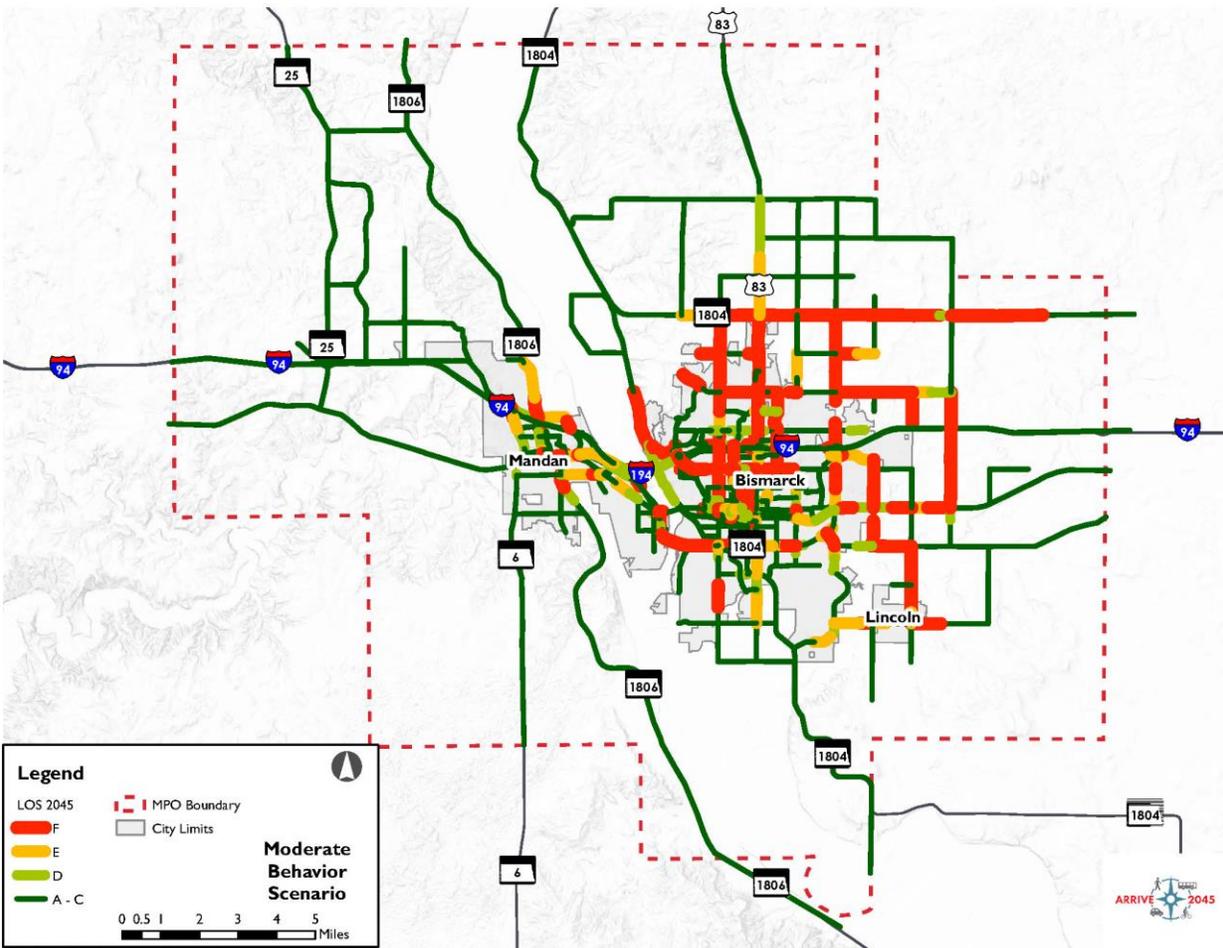
	2030 Base Scenario	2030 Moderate CAV Adoption	2015-2030 Percent Change	2045 Base Scenario	2045 Moderate CAV Adoption	2015-2045 Percent Change
VHT	37,265	36,280	-34.8%	55,650	50,550	-9.2%
VMT	2,253,430	2,307,840	-21.3%	2,932,685	3,119,300	6.4%
% of Links Over Capacity	5.1%	2.0%	-60.8%	13.6%	7.9%	-41.9%

	2030 Base Scenario	2030 Aggressive CAV Adoption	2015-2030 Percent Change	2045 Base Scenario	2045 Aggressive CAV Adoption	2015-2045 Percent Change
VHT	37,265	39,720	-28.6%	55,650	55,475	-0.3%
VMT	2,253,430	2,508,450	-14.5%	2,932,685	3,441,340	17.3%
% of Links Over Capacity	5.1%	2.1%	-58.8%	13.6%	7.1%	-47.8%

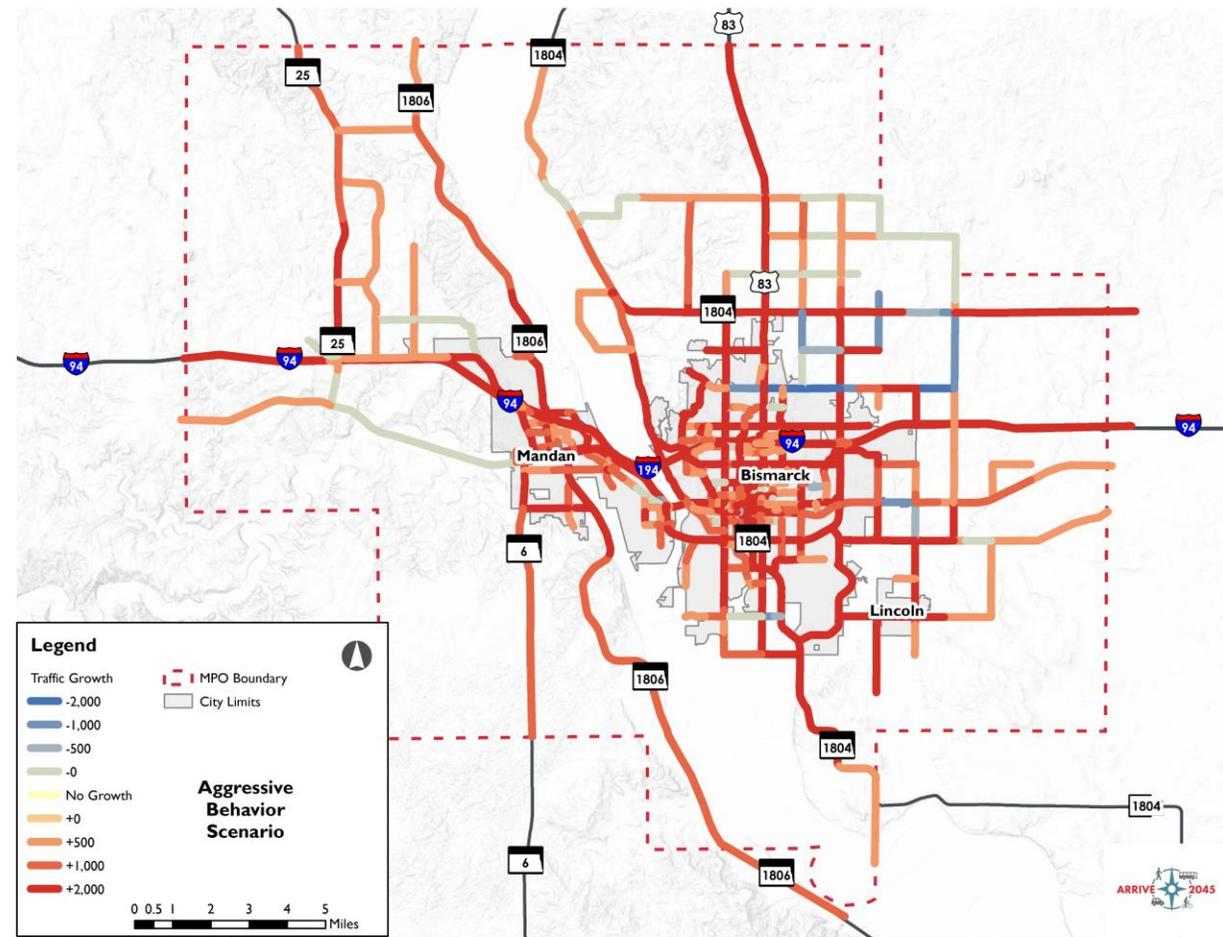
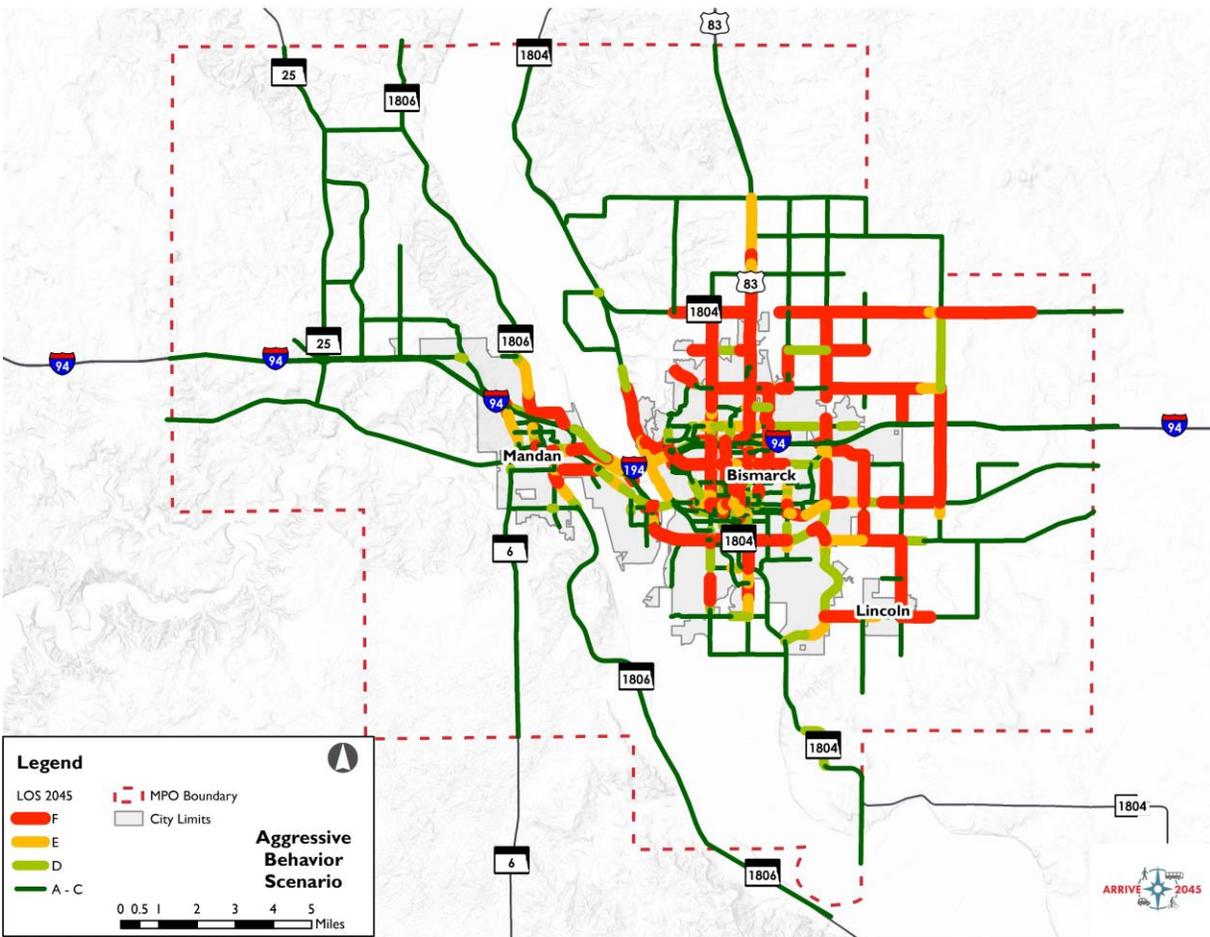
Conservative CAV Adoption



Moderate CAV Adoption

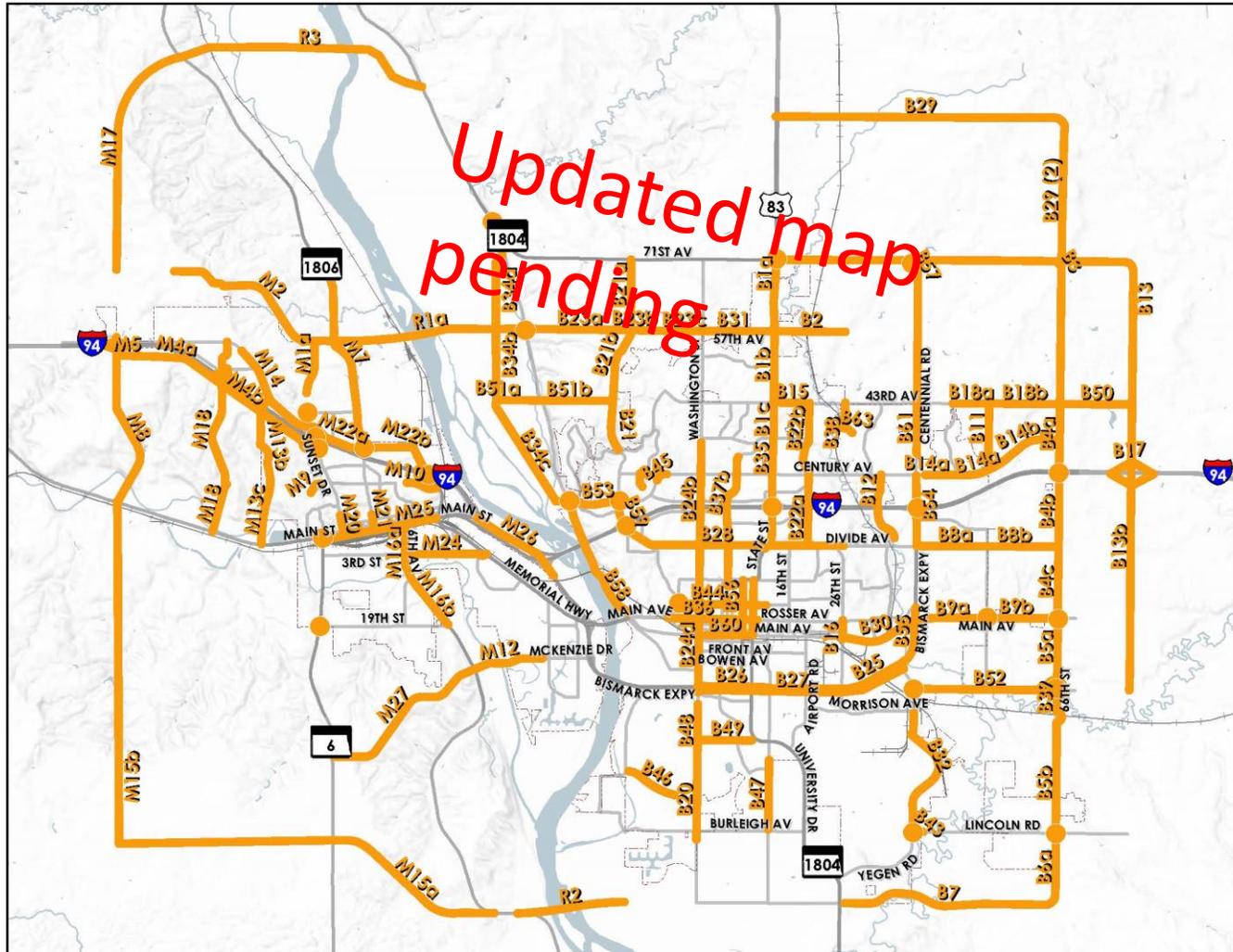


Aggressive CAV Adoption



Universe of Projects

Developing Universe of Projects



- » Building from Envision 2040
- » Removing completed projects;

Project Lists – Sample Page

» Require some additional staff input and refinement

Project ID	Location	Termini	Termini	Description	Comments	Verification Required (Completed or Still Justified?)
B1	State Street	Interstate Ave	71st St	TBD		
B2	57th Ave	State St	26th St	Extend 57th Avenue as Arterial Roadway between US 83/State Street. Likely 3 section	1 mile of rural roadway	
B3	66th St	Century Ave	71st Ave	Construct 66th Street from 43rd Avenue to 71st Avenue	Build as Three lane (grade for 5)	

Performance Based Planning

» *Insert slides from Stantec*



Project Scoring & Evaluation

» *Insert slides from Stantec*



Fiscal Constraint

Methods

Funding Source	Assumptions
National Highway Performance Program (NHPP)	<ul style="list-style-type: none"> » No specific sub target » Allocated through established Regional or IM constraints
Interstate Maintenance (IM)	<ul style="list-style-type: none"> » NHPP replaced IM but still tracked by NDDOT » Constrain for Interstate Project Purposes
Urban/Regional	<ul style="list-style-type: none"> » Projects for NDDOT Urban or Regional System; take down from STIP Urban Highway Construction » Roughly 50/50 split between programs » Urban Grant Program included in Urban/Regional Program
Transportation Alternatives and Recreational Trails (TA and RTP)	<ul style="list-style-type: none"> » Projects that support bicycle, pedestrian, or trail projects » Programs combined
Local Sources	<ul style="list-style-type: none"> » Developed on a project by project basis
Operations and Maintenance (O&M)	<ul style="list-style-type: none"> » Take down of Federal sources to support O&M on Interstate and Regional System (Federal Aid Highways; Local sources for Balance of System)

Scenarios

Scenarios	Notes
Revenue forecasts from <i>Envision 2040</i>	» Little substantiation, but used a TIP analysis from 2007 to 2014
<i>Committed Projects</i> from first year of 2015 to 2018 TIP/STIP	<ul style="list-style-type: none"> » Assumes first year projects from each TIP/STIP » Accounts for program variations with MAP-21 and FAST Act and delayed projects
<i>Committed projects</i> from the 2019-2022 TIP/STIP	
<i>Aggregate</i> of 2015-2018 and 2019-2022 TIP/STIP	» Roughly replicates Envision 2040 by taking 8-year rolling average
<i>Population Based Ratio</i> formula for programmatic assumptions	» Uses population related factors to apply to funding programs.

Baseline System Revenues

Program	Envision 2040	2015-2018 TIP/STIP	2019-2022 TIP/STIP	2015-2022 Existing + Committed	Population Based Ratio	Arrive 2045
Urban/Regional	\$8,540,125	\$4,875,000	\$11,003,750	\$7,939,375	\$8,518,192	\$8,518,192
Interstate	\$3,738,125	\$5,968,750	\$4,272,750	\$5,120,750	\$2,505,957	\$4,429,438
NHPP		Accounted for in IM + Urban/Regional				
Safety (State)	\$1,562,125	\$1,299,250	\$400,750	\$699,713	\$275,500	\$699,713
Safety (Urban)		\$1,128,000	\$1,020,500	\$651,250	\$761,250	\$651,250
TA + RTP	\$1,377,355	\$387,500	\$80,000	\$233,750	\$192,000	\$233,750
Total	\$15,217,730	\$13,658,500	\$16,777,750	\$14,644,838	\$12,252,899	\$14,532,342

Arrive 2045 Recommended Scenario

- » **Urban/Regional:** Population/ratio formula and programmatic assumptions
- » **Interstate:** Average of Envision 2040 + 2015-2022 E+C project lists
- » **Safety (both State and Urban):** 2015-2022 E+C project lists
- » **TA + RTP:** 2015 – 2022 E+C project lists



Time Bands

» *Short Range – 2024-2031:*

- Represents the 8 years past the next TIP developed by the BMMPO;



» *Medium range:*

- Years 2032-2038;

» *Long Range:*

- Years 2039 – 2045.

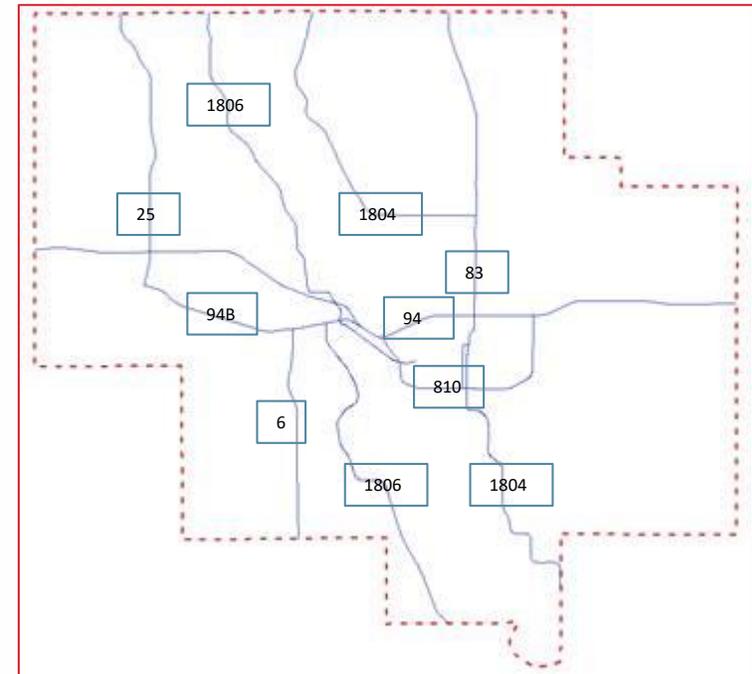


Forecasting Assumptions

- » Extract O&M Methods from 2019-2022 TIP
- » NDDOT O&M Takedown from IM and Regional
- » Regional Program discounted in short range band for 50% of Memorial Highway (1.875M Base Year)
- » 15% Transfer between IM and Regional (\$623,000 Base Year)
- » Local Match Constraint Defined at “Project Level”

Federal Aid Highways Defined

- » I-94 & I-94 Business Loop;
- » US 83;
- » Bismarck Expressway;
- » Highway 810;
- » Memorial Highway;
- » Mandan Main Street;
- » 7th Street/9th Street (Bismarck);
- » ND 1804;
- » ND 1806;
- » ND 6;
- » ND 25;



O&M Defined

- Pavement management including chip and crack seals;
- Graveling and grading;
- Concrete pavement repairs;
- Signage (repair and replacement);
- Lighting;
- Traffic Signalization including repairs, timing and maintenance.



Total O&M System Investments

Operations & Maintenance Requirements

Entity	Base (Total)	Federal Aid Highways	Balance of System
Bismarck	\$2,155,052	\$144,388	\$2,010,664
Mandan	\$390,146	\$25,555	\$364,592
Morton County	\$26,541	\$0	\$26,541
Burleigh County	\$1,050,349	\$0	\$1,050,349
NDDOT	\$2,386,172	\$2,386,172	\$0

» *Federal Aid*

- NDDOT carries majority of costs;
- City/County Assumed to be match on Federal funds.

» *Balance of System*

- Funded with local revenues;
- Address balance of urban and local street O&M;
- Federal aid costs would be “match” on Federal funded project.

NDDOT O&M Allocations

NDDOT System	Centerline Miles	System %
Interstate	26.4	21.6%
State Highway (Rural)	53.6	43.8%
State Highway Urban (Regional System)	42.4	34.6%
	122.4	100.0%

	Total	Interstate	Urban (Regional)	Rural
2024	\$2,481,619	\$535,251	\$843,750	\$1,086,949
2025	\$2,580,884	\$557,471	\$892,986	\$1,130,427
2026	\$2,684,119	\$579,770	\$928,705	\$1,175,644
2027	\$2,791,484	\$602,960	\$965,853	\$1,222,670
2028	\$2,903,143	\$627,079	\$1,004,488	\$1,271,577
2029	\$3,019,269	\$652,162	\$1,044,667	\$1,322,440
2030	\$3,140,040	\$678,249	\$1,086,454	\$1,375,337
2031	\$3,265,641	\$705,378	\$1,129,912	\$1,430,351
Subtotal	\$22,866,198	\$4,938,320	\$7,896,815	\$10,015,395

» *Federal Aid Highways*

- NDDOT O&M Costs splits among NDDOT systems;
- Take down on IM and Regional \$;
- *Example:* Short Range O&M for NDDOT

Short Range Forecasts

Year	Urban	Regional	Interstate	Safety (State)	Safety (Urban)	TA + RTP
2024	\$4,172,550	\$2,761,976	\$3,535,960	\$741,695	\$690,325	\$247,775
2025	\$4,235,138	\$2,792,823	\$3,576,937	\$752,821	\$700,680	\$251,492
2026	\$4,298,666	\$2,838,425	\$3,618,745	\$764,113	\$711,190	\$255,264
2027	\$4,363,145	\$2,883,735	\$3,660,706	\$775,575	\$721,858	\$259,093
2028	\$4,428,593	\$2,928,708	\$3,702,803	\$787,208	\$732,686	\$262,979
2029	\$4,495,022	\$2,973,300	\$3,745,020	\$799,016	\$743,676	\$266,924
2030	\$4,562,447	\$3,017,462	\$3,787,337	\$811,002	\$754,831	\$270,928
2031	\$4,630,884	\$3,061,145	\$3,829,734	\$823,167	\$766,154	\$274,992
Subtotal	\$35,186,444	\$23,257,575	\$29,457,241	\$6,254,597	\$5,821,400	\$2,089,447

» Key Assumptions

- Regional Program discounted 1.875M per year
- 15% Xfer from IM to Regional

Medium & Long Range Forecasts

Year	Urban	Regional	Interstate	Safety (State)	Safety (Urban)	TA + RTP
2032	\$4,700,347	\$4,979,294	\$3,872,191	\$835,514	\$777,646	\$279,117
2033	\$4,770,852	\$5,021,855	\$3,914,685	\$848,047	\$789,311	\$283,303
2034	\$4,770,852	\$5,051,690	\$3,888,745	\$848,047	\$789,311	\$283,303
2035	\$4,842,415	\$5,092,714	\$3,930,215	\$860,768	\$801,150	\$287,553
2036	\$4,842,415	\$5,120,705	\$3,902,159	\$860,768	\$801,150	\$287,553
2037	\$4,915,051	\$5,159,929	\$3,942,454	\$873,679	\$813,168	\$291,866
2038	\$4,915,051	\$5,185,795	\$3,912,108	\$873,679	\$813,168	\$291,866
Subtotal	\$33,756,983	\$35,611,981	\$27,362,557	\$6,000,502	\$5,584,903	\$2,004,562
2039	\$4,988,777	\$5,222,928	\$3,951,065	\$886,784	\$825,365	\$296,244
2040	\$5,063,608	\$5,258,993	\$3,989,817	\$900,086	\$837,746	\$300,688
2041	\$5,139,563	\$5,293,908	\$4,028,330	\$913,587	\$850,312	\$305,198
2042	\$5,216,656	\$5,327,587	\$4,066,567	\$927,291	\$863,066	\$309,776
2043	\$5,294,906	\$5,359,943	\$4,104,490	\$941,201	\$876,012	\$314,423
2044	\$5,374,329	\$5,390,881	\$4,142,059	\$955,319	\$889,153	\$319,139
2045	\$5,454,944	\$5,420,305	\$4,179,232	\$969,648	\$902,490	\$323,926
Subtotal	\$36,532,784	\$37,274,546	\$28,461,560	\$6,493,916	\$6,044,144	\$2,169,395
Total	\$105,476,211	\$96,144,102	\$85,281,358	\$18,749,015	\$17,450,447	\$6,263,404

» Key Assumptions

- Regional Program returns to base
- 15% Xfer from IM to Regional

» Total Fiscal Constraint for Arrive 2045



Public Input Meeting #2



- » Prioritize Options!
- » July 9th and 10th
 - Lincoln – 9th (Evening)
 - Bismarck – 10th (Day)
 - Mandan 10th (Evening)
- » Social media (Mid June)
 - Coordinated Facebook with partners agencies
- » Follow same approach for notifications and outreach

MEETING SIGN IN

Name	Organization	Email
Wade Klune	FLS	
Beknamy Brandt	FLS	
Peggy Harter	Stantec	peggy.harter@stantec.com
Natalie Pierce	Morton P&Z	
John Saiki	Morton County	john.saiki@mortonnd.org
Kim Fetting	City of Mandan	kfetting@cityofmandan.com
Marcus Hall	Burleigh County	mahall@nd.gov
John Van Dehe	City of Mandan	
Tatenda Dzvikora	City of Mandan	dzvikorat@gmail.com
JUSTIN FROSETH	CITY OF MANDAN	jfroseth@cityofmandan.com
Andrew Larson	City of Mandan	andrew.larson@cityofmandan.com
Kim Lee	City of Bismarck	klee@bismarcknd.gov
Rachel Drewlow	BMMPO	rdrewlow@bismarcknd.gov
Greg Hwang	Bismarck Airport	ghwang@bismarcknd.gov
Jeff Solemsoos	Bismarck P.D.	jsolemsoos@bismarcknd.gov
Gabe Schell	Bis Eng	gschell@bismarcknd.gov
Mark Berg	Bis Eng	mberg@bismarcknd.gov

Meeting:



Bismarck-Mandan Metropolitan Transportation Plan

Date: May 23, 2019

Time: 10:00 am

Location: Mandan City Hall – Veterans Conference Room

Re: Steering Committee Meeting #5

Attendees: Natalie Pierce, Morton County Planning and Zoning; John Saiki, Morton County; Kim Fettig, City of Mandan; Marcus Hall, Burleigh County; John Van Dyke, City of Mandan; Tortenda Dzvakora, City of Mandan; Justin Froseth, City of Mandan; Andrew Larson, City of Mandan; Kim Lee, City of Bismarck; Rachel Drewlow, BMMPO; Greg Haug, Bismarck Airport; Jeff Solemsour, Bismarck P.D.; Gabe Schell, Bismarck Engineering; Mark Berg, Bismarck Engineering; Wade Kline, KLJ; Bethany Brandt, KLJ; Peggy Harter, Stantec

-
- » Welcome and Introductions – Rachel Drewlow kicked off the meeting with introductions. Wade Kline then reviewed the agenda for the meeting and reviewed the next project steps and the project schedule.
 - » Review Draft Macro Level Project Cluster Analysis (Attachment 1)
 - Bethany – at the last public input meeting we worked with the public to identify projects that have developed project clusters. We then took those concepts back to ATAC for travel demand modeling analysis so that we could perform analysis on the clusters. The analysis included a Benefit-Cost Analysis, Cost-Effectiveness, Returned Equity, and Other Network-Wide Impacts on the transportation network links. A summary of the concept clusters analyzed are included as Attachment 1 in the packet. Scenarios included:
 - Scenarios 1A and 1B: Southern Bridge Corridor (2 Scenarios) – results show that this project cluster had the best performance evaluation.
 - Scenario 2: Northern Bridge Corridor – Wade noted that this has been identified as an important bridge crossing in the past but ranked 6 overall under the analyses completed. But we likely still should not lose sight of this corridor.

MEETING MINUTES

- Scenario 3: South Mandan Arterial – Extension of McKenzie Drive ranked 4th from the analysis and did show a benefit to the overall transportation system. This resulted in alleviating traffic volumes on Memorial Highway and other major arterial roadways within south Mandan.
- Scenario 4A, 4B, and 4C: Northeast Bismarck Arterial Improvements with Various Scenarios had the lowest performance evaluation of all the project clusters (ranking 7th, 8th and 9th). As you add in the I-94 Grade Separation at 66th Street (4B) and then the I-94 Interchange at 66th Street (4C) the rankings continued to drop. This likely is due to the high cost of investments to make all the arterial improvements identified/needed within the northeast sub area.
- Scenario 5: West Mandan Interchange – This project ranked 5th overall.
- Scenario 6: State Street Improvements – We will evaluate State Street after more information from the US 83 Alternatives Study is provided. It has not been ranked at this time.
- Scenario 7: Transportation System Management and Operations – Ranked 3rd Overall. Ranks out as 3rd and fit in the middle of most of the other scenarios because it was very low cost but didn't have as great of benefits to the system as some of the major projects.
- The following discussion occurred on the scenario analysis results:
 - Ben Ehreth questioned the TDM results for the 0.9% reduction in 2045 VMT and 17.3% reduction in VHT for the Southern Bridge Corridor scenarios. Rachel responded this is likely due to the household growth projections in south Mandan that would use the southern bridge corridor to get anywhere in Bismarck. To check on this, we could look at this as a select link analysis to determine how daily ADT's are reduced on the other River Bridge crossings with the Southern Bridge scenario added.
 - John with the City of Mandan asked if the various analyses were weighted as part of the ranking. Bethany noted that they were not ranked, but each analysis was averaged for their ranking against the other cluster rankings.
 - The group discussed that this exercise is really to look at these "larger" cluster projects that have been discussed at the MPO level for years to see how they impact the MPOs transportation network and how they analyze against one another.
 - Wade Kline noted that if possible, we would like to remove some of these options from further analysis. For example, although the south bridge corridor ranked high, we all know it has a lot of additional right of way costs and archeological issues. Scenario 3 – the South Mandan Arterial or extension of McKenzie Drive has a high benefit for a much lower cost and fewer impacts.
 - Rachel noted that eliminating the Southern Bridge Corridor would align with Morton Counties Comp Plan. Natalie Pierce concurred.

MEETING MINUTES

- Kim Lee noted that on the Bismarck/Burleigh side that they have not been planning for development on their side of the river. So they don't see the development occurring on the east side of the river to support the need for it.
- The question was asked if anyone is concerned that we remove the Southern Bridge Corridor Scenarios from consideration within this plan, Arrive 2045. The group agreed that the Southern Bridge Corridor can be removed from further consideration as part of the Arrive 2045 planning horizon.
- Northern Bridge Corridor – Justin noted that the report should note why we are looking at the "south" alignment of the northern bridge corridor. Gabe added that the "south" alignment for the northern bridge is the current alignment that was supported.
- The group felt that the Northern Bridge Corridor should remain within the Arrive 2045 plan for further analysis. The alignment should be shown as the "south" alignment for the North Bridge Corridor. Gabe noted that we should move forward with some of these projects given that we need to protect the continuity of the roadway for the future crossing as development continues to occur.
- The group discussed eliminating 4B as it seems to make more sense to build 4C (the interchange) and not 4B (overpass only).
- Gabe noted that 4A includes a lot of roadway improvements to the roadway network within the Northeast Sub Area. Could we add an alternative to reduce the number of improvements to the roadway network improvements currently identified under Scenario 4A. Wade Kline responded that this would be the next step if we decide to move 4A forward, that it would be developed as a project list for short, mid- and long-term time frames applied to them.
- Wade noted that we need to refine which alternative we analyze for US 83/State Street as part of the project cluster analysis. The current study is still underway and is laid out in incremental improvements for 2025, 2030, 2035 and 2040. Wade noted that the 2025 improvements noted within the study would need to be run under the Arrive 2045 TDM for the interim year 2030. For the purpose of Arrive 2045, we would propose that the US 83 Study 2030 improvements should simply be the identified at-grade improvements. Then the 2035 and 2040 proposed improvements would need to be modeled for Arrive 2045 as part of the 2045 TDM. The group determined that Scenario 6 State Street Improvements do not need to be analyzed as part of the clusters as we know that improvements need to be made on State Street and later in the process we can still model proposed improvements from the US 83 Study to determine when they are needed as part of the fiscal constraint analysis.

MEETING MINUTES

- Bethany noted that folks should review the full memorandum and provide their input.
 - This analysis also looked at the “Travel Behavior” scenarios if mode shifts were to occur between walking, biking, transit with increased use of CAVs. As CAV use increases it greatly negatively impacts the network from a degraded capacity stand point.
- » Review and Discuss Preliminary Universe of Projects (Attachment 2)
- Wade noted that this project list built on Envision 2040, removed completed or committed projects, and looked at projects resulting from the project clusters. Wade noted that there is a bit of discrepancy between the project list and map and they will fix that. After the meeting, we will send out an excel file to look through the project lists on a high level first brush of projects that may no longer be relevant or needed so that we can begin to reduce the number of projects. Wade noted several projects that can be removed from the list for analysis for Arrive 2045 just by removing the south corridor bridge scenario from the 2045 planning horizon. In summary, which corridors should just be listed as “corridor preservation” and not for full evaluation/analysis as part of the Arrive 2045 planning horizon. **Action Item:** KJ will clean up the full list of projects and corresponding map and then send out the full list of projects to each jurisdiction requesting comments on which corridors should be removed from further consideration, identified as corridor preservation only, and project to evaluate as part of Arrive 2045.
- » Review Revised Final Draft Goals, Objectives & Performance Measures (Attachment 3)
- Peggy Harter reviewed the updated Goals, Objectives & Performance Measures document that has been vetted by the core SRC members multiple times now. She noted that for folks who weren’t in those meetings, she encourages them to review and provide comments but today just wants to give a high-level overview of the document to show how it ties into project specific evaluation.
- » Overview of Project Specific Evaluation Process (Handout)
- Peggy Harter reviewed the project evaluation process based on the SMO’s from the Goals, Objectives and Performance Measures document. Peggy noted that we have developed two options for SMO’s to score Urban and Regional Federal Aid projects. She noted that the difference between the two is SMO’s that are difficult to evaluate at the MTP level before the projects have undergone a scoping document to determine what the full project will include.
 - Wade Kline noted that we need to include at least one SMO for Goal 6 – Environmental Sustainability.
 - Peggy Harter asked the group to review the spreadsheet and provide input on the SMO’s and the ranking scores included at this time.
 - The group agreed that for the MTP, only Urban and Regional Federal aid eligible projects would need to be evaluated. The TA and HSIP funds can still be done on an annual basis and simply be identified as part of this project.

MEETING MINUTES

- Rachel Drewlow asked the SRC members if they would be comfortable not selecting Urban Roads projects this year and save the funds this year until the MTP is completed and a list of evaluated projects and resultant TIP projects have been identified. Gabe questioned if NDDOT will even be soliciting this year.
 - **Action Item:** Peggy will send this table out to the SRC members and also include the weighting component that is inclusive of the public input received.
 - **Action Item:** TA Evaluation process should really consider preservation projects of the existing bicycle and pedestrian/trail system.
- » Review Draft Fiscal Constraint & Financial Analysis (Attachment 4)
- Wade reviewed Attachment 4 for the Fiscal Constraint Methodology. He discussed funding sources and assumptions for each of the funding sources per the information within the memorandum.
 - Gabe wanted to further discuss the Urban Grant program – it is here now, but how long will it be here?? What year would this program be no longer available or funded at a different level? Wade responded that we identified \$0.5M per year throughout our 2045 planning horizon. The group agreed that because we are uncertain if the next governor will support this funding that we instead should only show this available through the year 2030.
 - Wade reviewed previous data discussed regarding the revenue forecast scenarios previously discussed. He then summarized the results of the chosen methodology for each funding source type.
 - Gabe questioned if the Interstate funds are realistic and if they were approved by NDDOT. Wade responded that yes Michael Johnson with NDDOT approved our methodology and available funding. Gabe just wanted to be sure that we weren't over committing ourselves.
 - Wade's final note that the short list of projects resulting from the MTP would be an 8-year list of prioritized projects with a shorter number of years for the mid-range projects.
 - Other items to note include:
 - We are extracting the O&M methods from the 2019-2022 TIP
 - NDDOT O&M takedown from IM and Regional funds
 - Regional Program discounted in short range band for 50% of Memorial Highway (\$1.875 M Base Year)
 - 5% Transfer between IM and Regional program (\$198,554 Base Year)
 - Local Match Constraint Defined at a "Project Level"

MEETING MINUTES

- **NOTE – add the rest of WADE’s O&M Discussion Here.**
 - Gabe noted that the nomenclature of “Federal Aid Highways” seemed confusing to him. Peggy asked if the correct nomenclature is instead “National Highway System.” **Action Item:** Get direction from Michael Johnson for the proper roadway nomenclature and make note that it should match between the MTP and TIP.
 - **Action Item:** Wade is going to take another look at how this process will affect the “Urban” eligible roadways. It would be difficult to discount the “urban” roads dollars based on O&M costs since many of the O&M projects are currently paid for through special assessments.
 - Gabe asked if the 1.5% annual increase for funding sources is realistic? Has NDDOT received an increase of 1.5% of funds annual for all of the funding sources? **Action Item:** Wade will follow up on this with NDDOT based on their historical funding levels.
 - Gabe added that the City of Bismarck’s ½ cent sales tax could move up some high scoring projects that may be federal aid eligible, but the City of Bismarck may instead locally fund. Wade noted that when we get to this step in the process, it needs to be considered.
- » Public Input Meeting #2 (No Attachment)
- July 9-10: Lincoln, Bismarck and Mandan
 - Discuss Format and Content – The public will have the opportunity to review the evaluated alternatives.
- » Wrap up and Next Steps
- Smart Cities Workshop (Attachment 5)

Bismarck-Mandan Metropolitan Transportation Plan

Date: June 19, 2019

Time: 2:00 p.m.

Location: Bismarck City Hall – Blackstead Room

Re: Steering Committee Meeting #6

Agenda

1. Welcome and Introductions
2. Review Draft Project Scoring & Evaluation– ***Attachment 1***
3. Update on Revisions to Draft Fiscal Constraint Analysis
4. Public Input Meeting #2
 - a. July 9-10: Lincoln, Bismarck and Mandan
5. Wrap up and next steps



Bismarck-Mandan Metropolitan Transportation Plan

Steering Committee Meeting #6
June 19, 2019



Meeting Expectations

- » Finalize Approach to Project Scoring & Phasing
 - Materials needed for Public Input Meeting #2

- » Final inputs and Revisions to Universe of Projects
 - Review project specifics
 - Discuss elements still in development

Project Evaluation - Overview

» Priority Scoring Analysis

- Scenario 1: Raw Technical Score
- Scenario 2: Goal Weighted Score
- Scenario 3: Weighted Score + Public Priority
- Scenario 4: Goal Weighted + Public Input + Macro Cluster Analysis

Project Evaluation – Scenario I

» Scenario 1 – Raw Technical Score

- Projects evaluated based on the Scoring Metric Objectives (SMOs)
 - Safety & Security
 - Infrastructure Conditions
 - Congestion Reduction
 - System Reliability
 - Reduce Project Delays
- Provide a raw score of how each project ranks technically.
- Total available points for any given project would be 45.

Project Evaluation – Scenario 2

» Scenario 2 – Goal Weighted Score

- Scenario 2 added the weighted scoring as follows for relevant SMOs Scenario 1 Raw Technical Scores:
 - Safety & Security: Weight by 4.5 multiplier;
 - Infrastructure Conditions: Weight by 5.0 multiplier;
 - Congestion Reduction: Weight by 3.6 multiplier;
 - System Reliability: Weight by a 2.3 multiplier;
 - Reduce Project Delays: Weight by a 1.2 multiplier;
- Reflect raw technical score of each project + relative weighting for each of the SMOs.
- Total available points for any given project would be 166.5.

Project Evaluation – Scenario 3

» Scenario 3 – Weighted Score + Public Priority

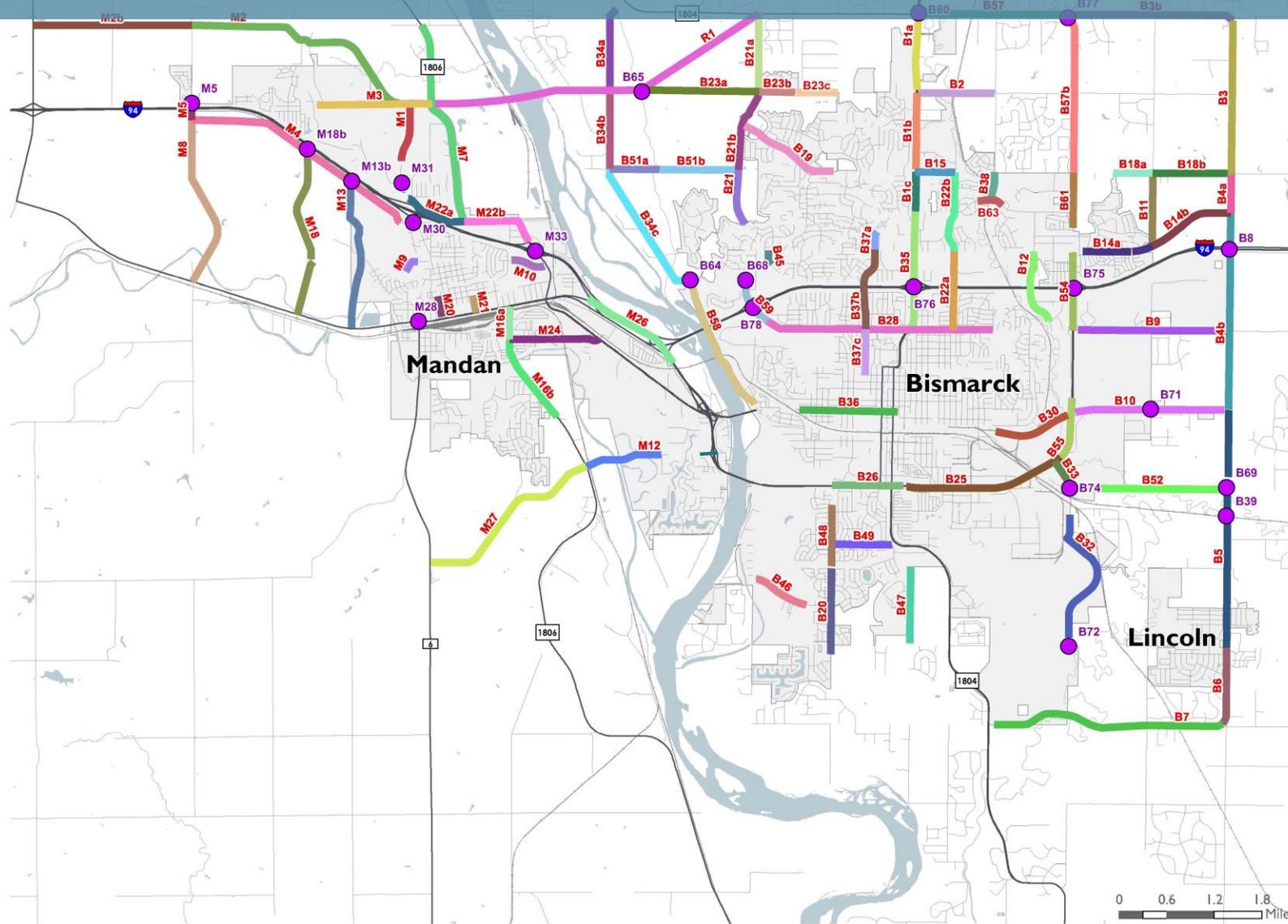
- Adds a bonus for projects which were identified as a public priority/desire during the Futures Summits.
 - Bonus #1 - 10% “bonus” of the total available points if identified project;
 - Bonus #2 - Additional “bonus” of 10%, if a project part of the top 3 projects
- Adds value to “capacity” orientated project identified by the public which may not currently score high on existing technical scoring needs.
- Total available points for any given project would be 199.8 points

Project Evaluation – Scenario 4

» Scenario 4 - Goal Weighted + Public Input + Macro Cluster Analysis

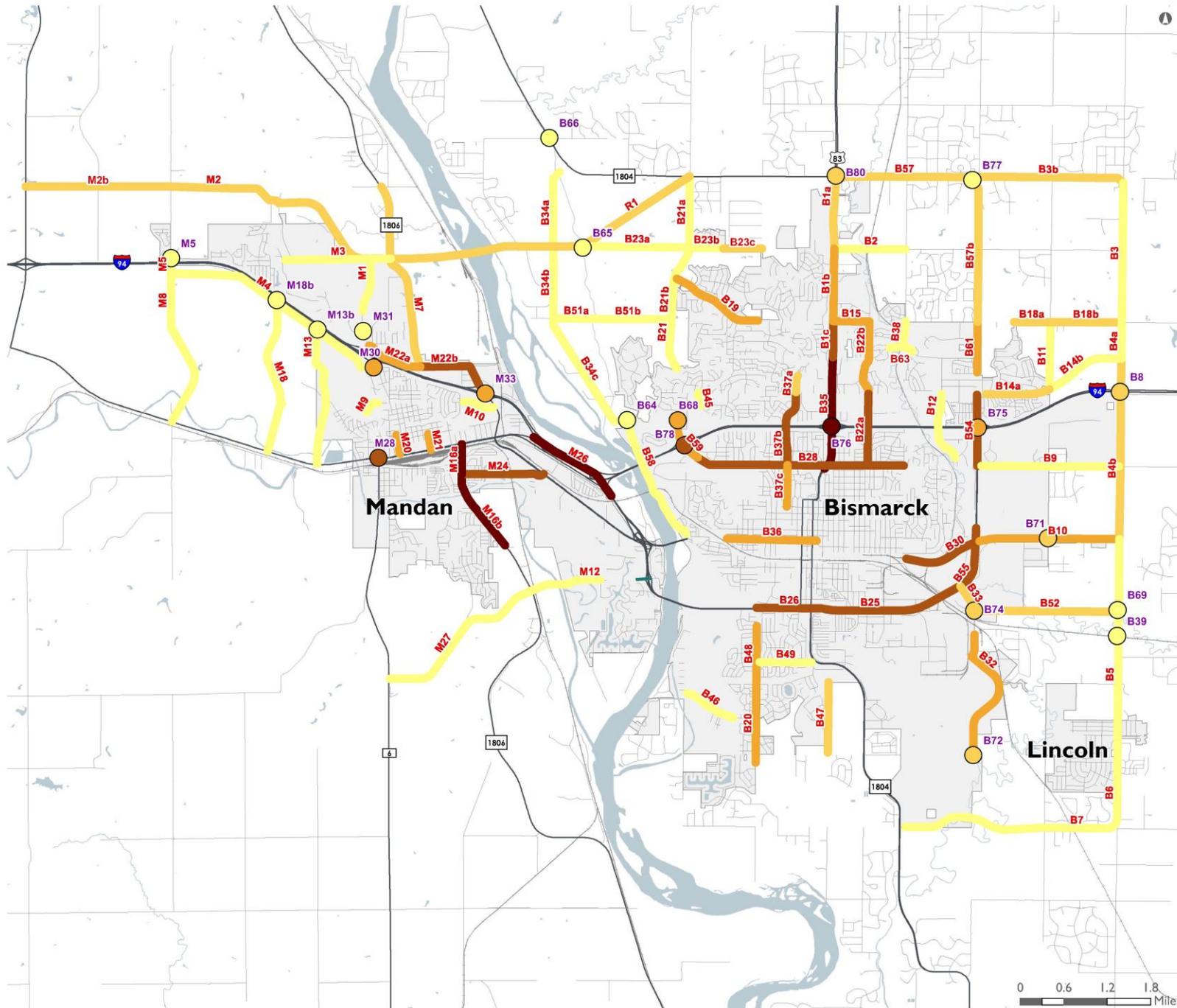
- 10% scoring bonus to individual project components of the top four (4) project clusters evaluated as part of an earlier Macro Level Analysis.
 - South Mandan Arterial;
 - West Mandan Interchange;
 - Northern Bridge Corridor;
 - NE Bismarck.
- Scenario 4 allows projects of regional significance to be further stratify themselves.

Full Universe of Projects...



Routes and Intersections
for Priority Analysis



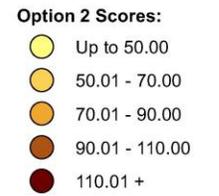
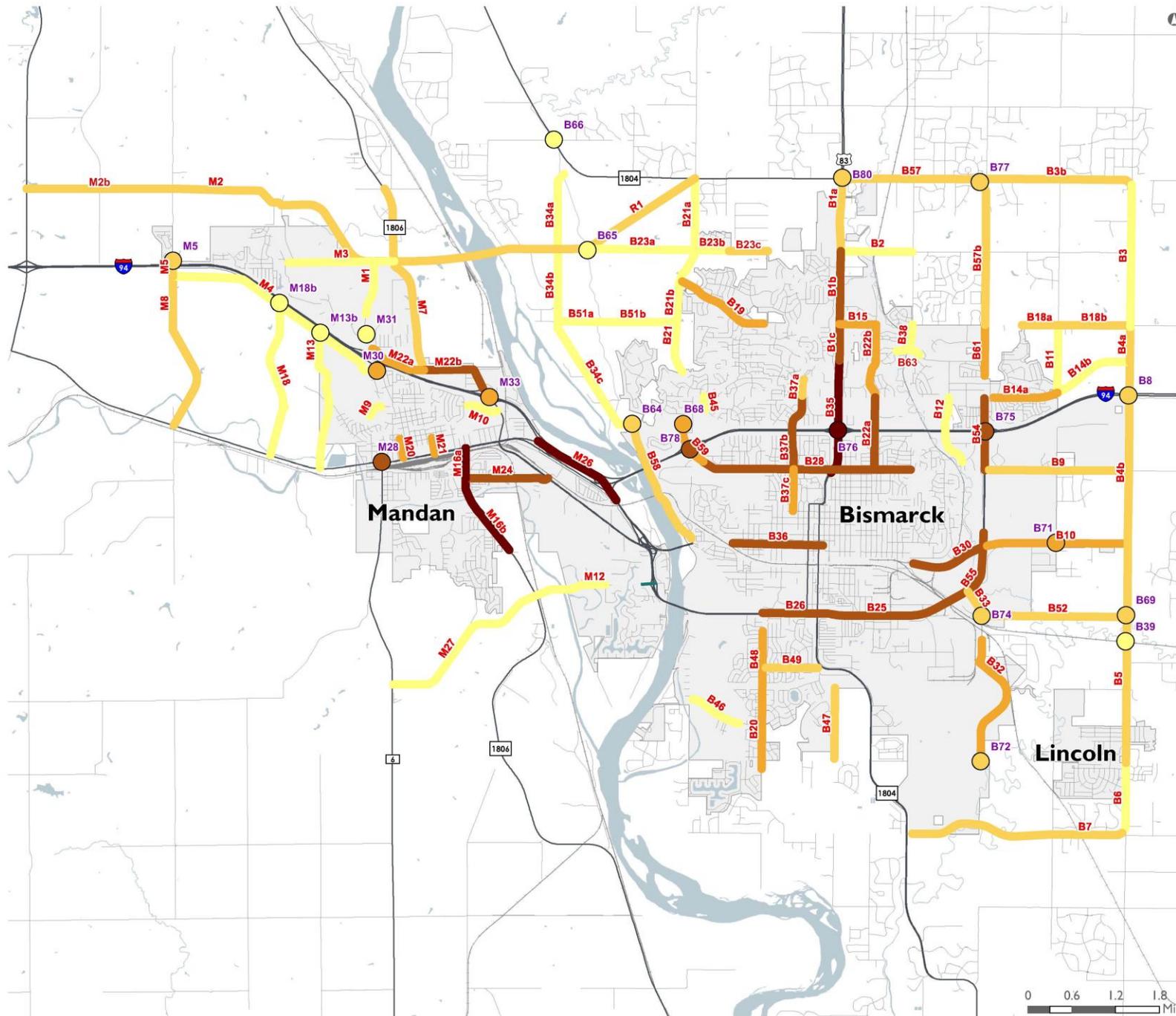


Priority Scenario #1 Raw Technical Score

- Option 1 Scores:
- Up to 15
 - 16 - 20
 - 21 - 25
 - 26 - 30
 - 31 +

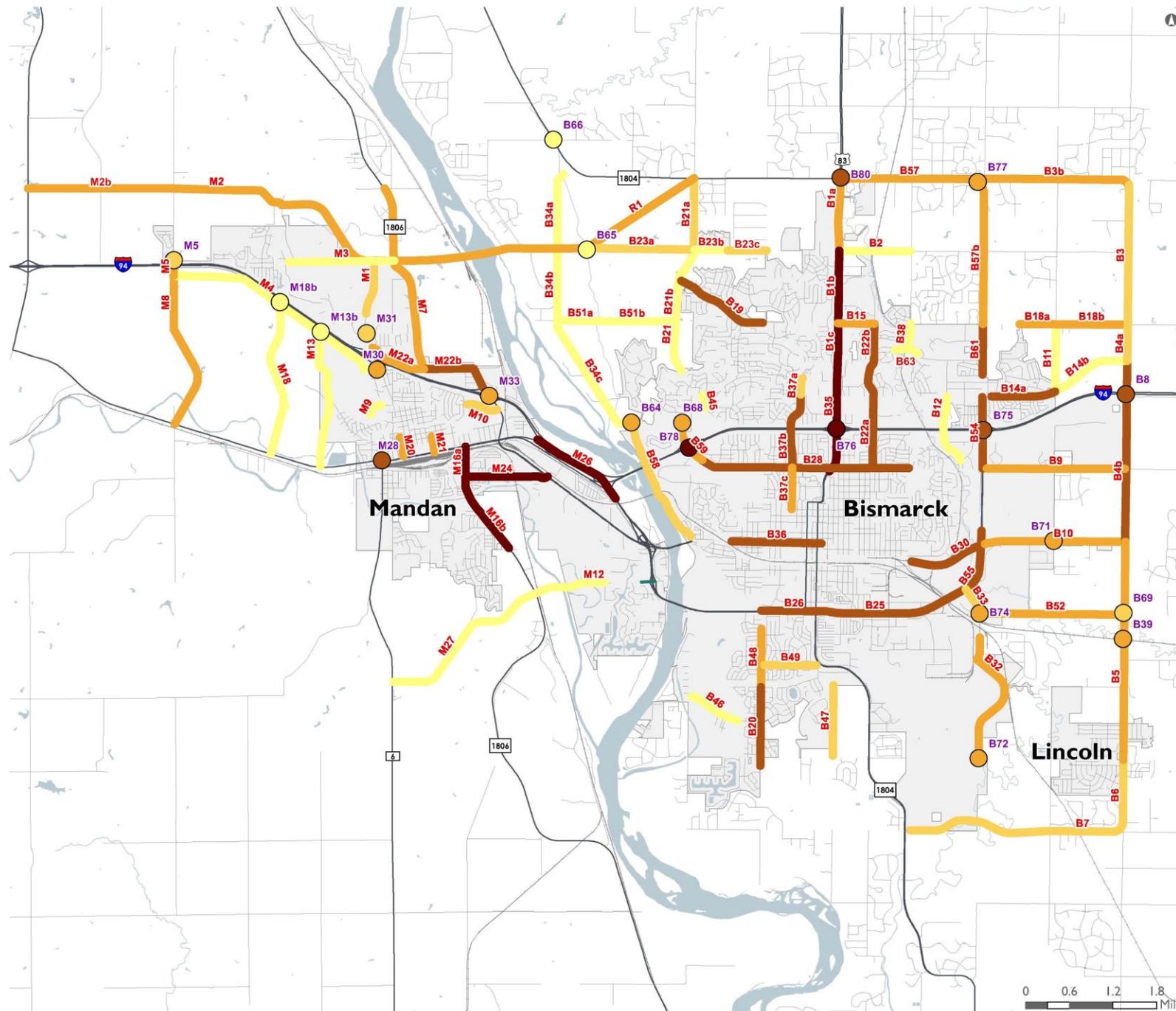


Priority Scenario #2 Technical Score + Goal Weighted Composite

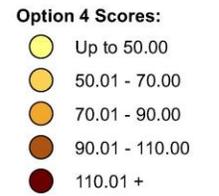
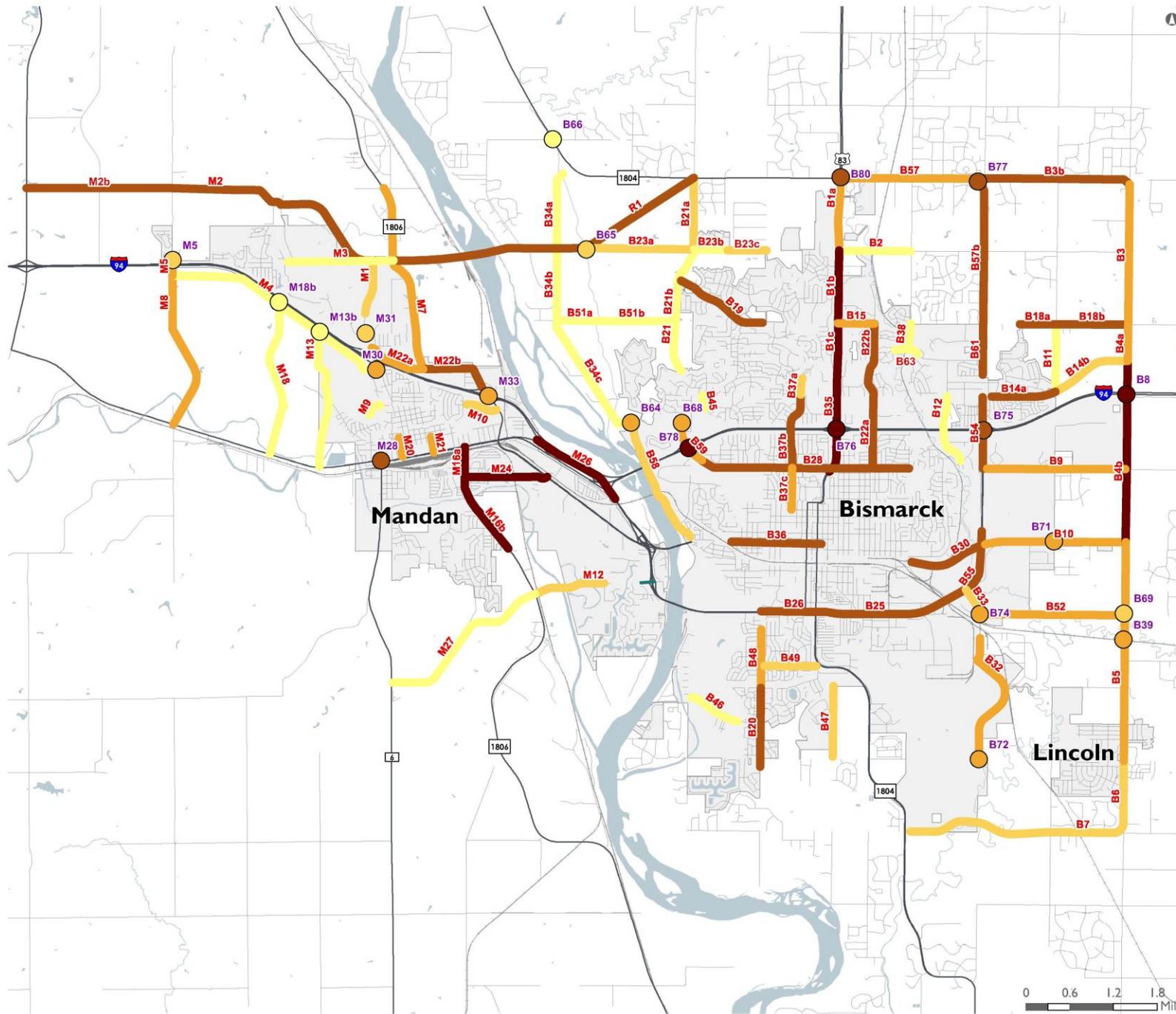


0 0.6 1.2 1.8 Miles

Priority Scenario #3 Technical Scoring + Goal Weighted + Public Input



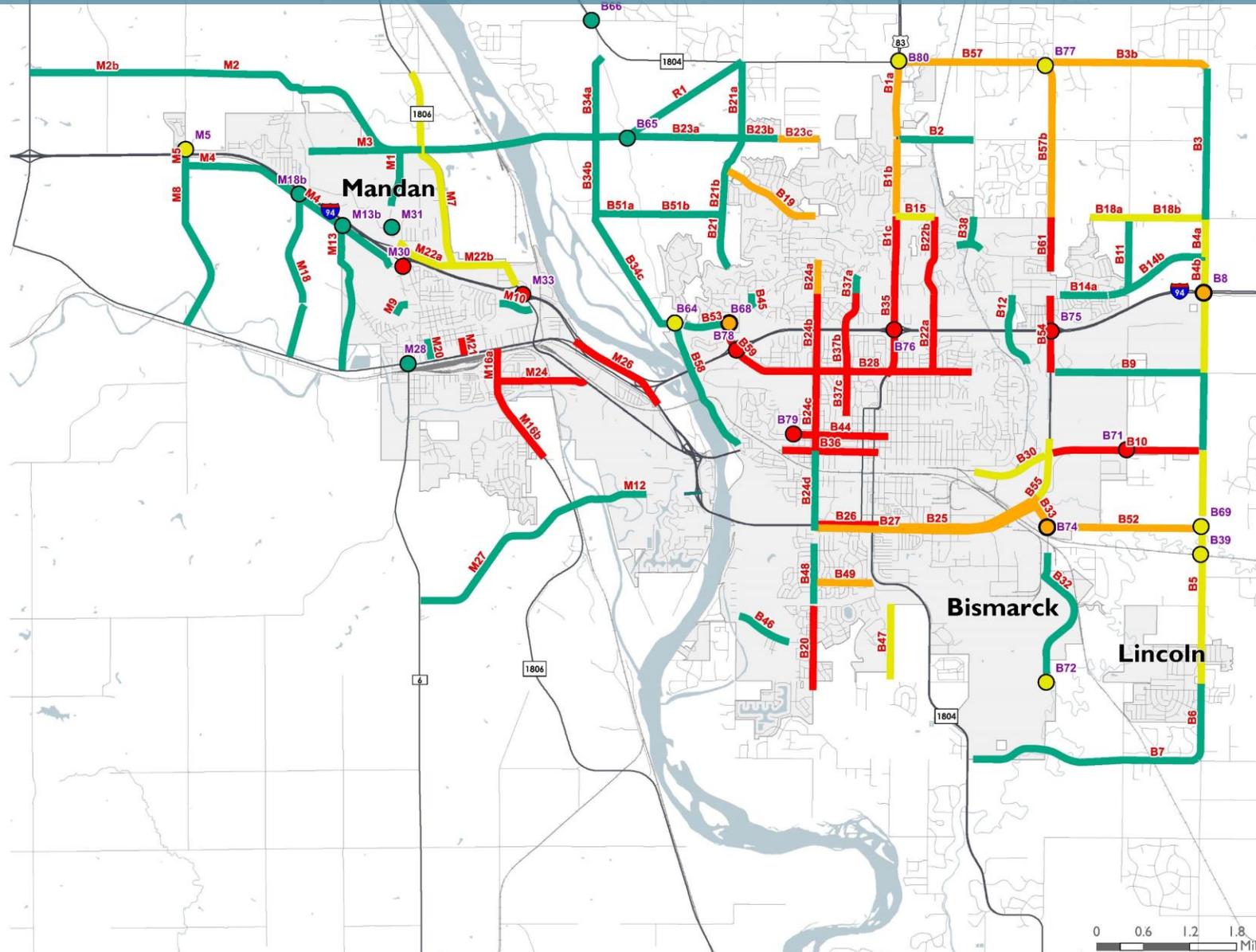
Priority Scenario #4 Technical Scoring + Goal Weighted + Public Input + Macro Cluster Analysis



Project Need (timing)

- » Develop a technical driven approach to establish project need (timing) assumptions
 - E+C LOS for 2015, 2030 and 2045
 - Projected TAZ Growth 2015, 2030 and 2045
 - Project Adjacency (sequencing)
 - Project Connections (fill gaps)

Just Level of Service...

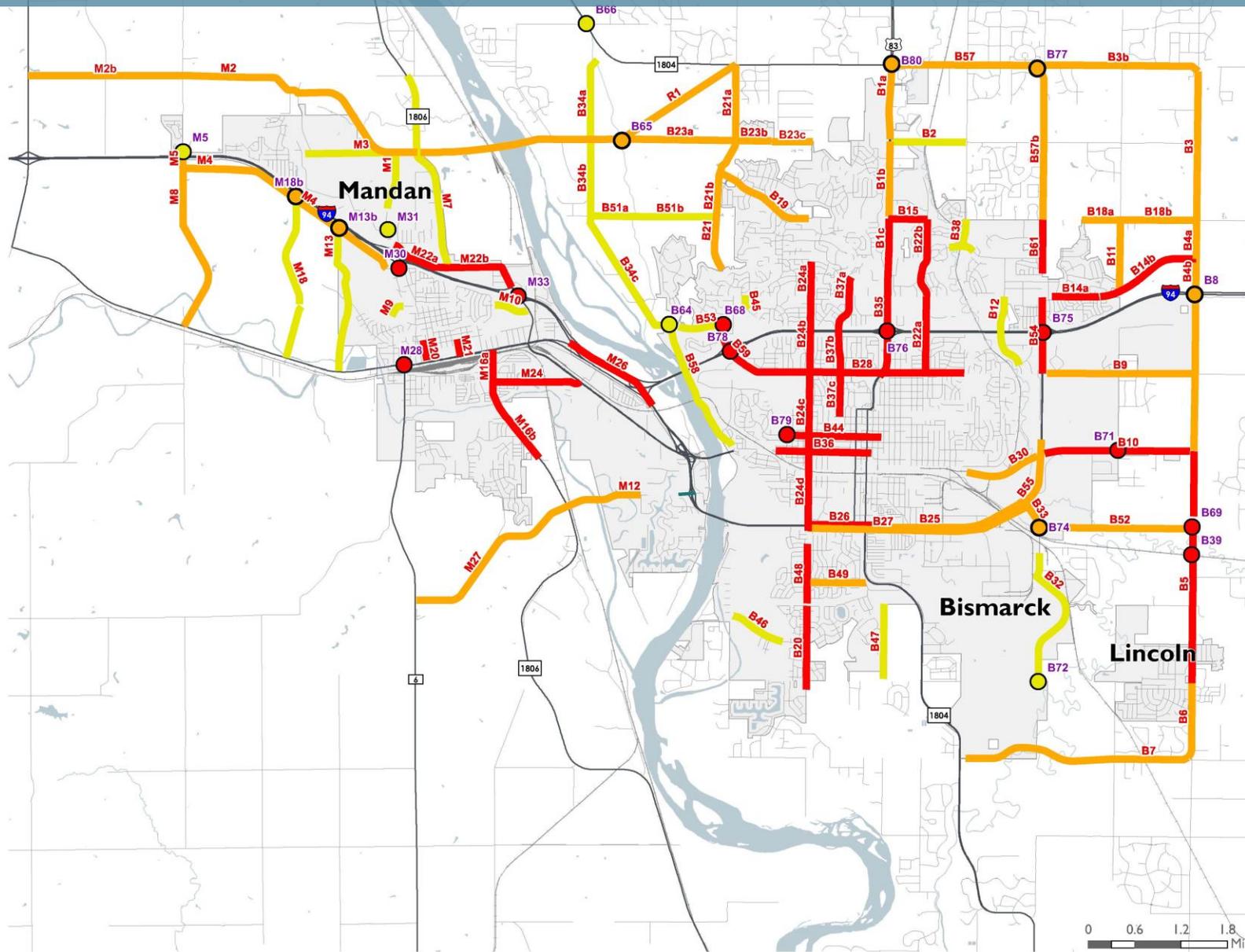


Priority Analysis Timing

- Timing:
- Short Term
 - Mid Term
 - Long Term
 - No Defined Term



... + Adjacency & Connectivity...

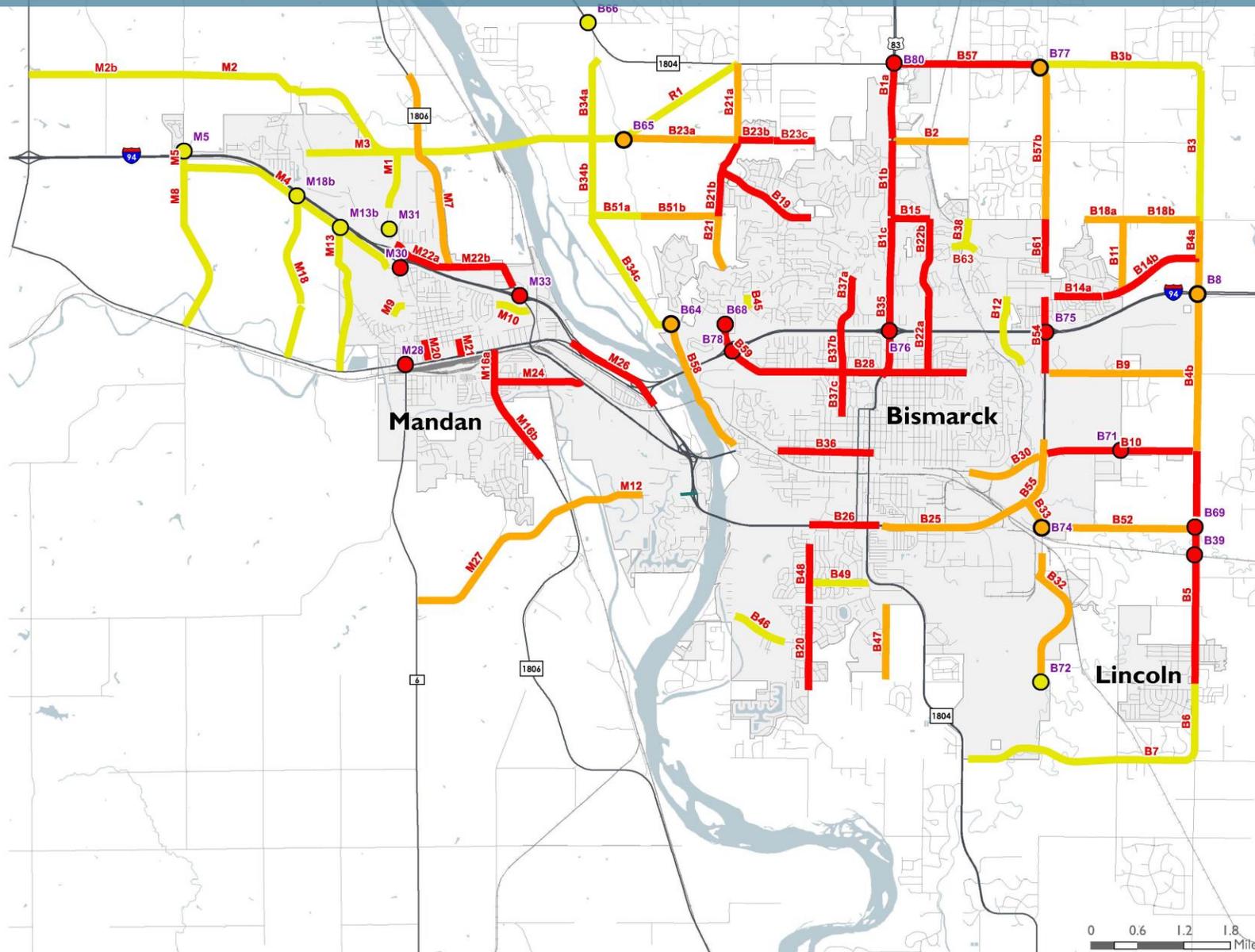


Priority Analysis Timing

- Timing:
- Short Term
 - Mid Term
 - Long Term



...+ Projected Growth Trends...



Priority Needs & Phasing Analysis

- Project Phasing:
- Short Term
 - Mid Term
 - Long Term



Public Input Meeting #2

Arrive 2045 Transportation Futures Summit

PUBLIC INPUT MEETINGS

JULY 9, 2019

6:00 to 8:00 PM
Lincoln City Hall
74 Santee Road
Lincoln, ND

JULY 10, 2019

9:00 to 11:00 AM
Bismarck State College
National Energy Center for
Excellence - Room #431
1200 Schafer Street
Bismarck, ND

JULY 10, 2019

6:00 to 8:00 PM
Mandan City Hall
205 2nd Avenue NW
Mandan, ND



- » Prioritize Options & Needs!
- » Social media Coordinated Facebook with partners agencies
- » Follow same approach for notifications and outreach

Format & Content for Public Meetings



- » Present Goals, Objectives & Performance Measures
- » Present Project Scoring and Phasing
 - Gather public input on priorities and phasing
- » Relevant Background Data (as needed)

MEETING SIGN IN

Name	Organization	Email
John Van Dyke	City of Mandan	John.VanDyke@cityofmandan.com
Natalie Pierce	Morton County Pt2	natalie.pierce@mortonnd.org
Rachel Drewlow	BUMPO	rdrewlow@bismarcknd.gov
Mark Berg	City of Bismarck	mberg@bismarck.gov
Greg Haug	Bismarck Airport	ghaug@bismarcknd.gov
Kim Lee	City of Bismarck	klee@bismarcknd.gov
Steve Saunders	Bis-Man MPO	ssaunders@bismarcknd.gov
John Saiki	Morton County Highway	john.saiki@mortonnd.org
Marcus J. Hall	Burleigh County	mahall@nd.gov
BEN BERTER	CITY OF BISMARCK	belbert@bismarcknd.gov
JUSTIN FROSETH	CITY OF MANDAN	jfroseth@cityofmandan.com
Michael Johnson	ND DOT	
Wade Kline	KLT	
Bethany Bault	KLS	
Reggy Hester	State	

Meeting: SCM#6 – June 19, 2019 Blackstead Room - Bismarck City Hall



Bismarck-Mandan Metropolitan Transportation Plan

Date: June 19, 2019
Time: 2:00 p.m.
Location: Bismarck City Hall – Blackstead Room and Skype
Re: SC Meeting #6

Meeting Attendees:

Wade Kline, KLJ (Skype)
Bethany Brandt, KLJ (Skype)
Peggy Harter, Stantec (Skype)
Rachel Drewlow – Bis-Man MPO
Steve Saunders – Bis-Man MPO
John Saiki – Morton County
Marcus Hall, Burleigh County
Mark Berg – City of Bismarck
John Van Dyke – City of Mandan
Natalie Pierce – Morton County
Kim Lee – City of Bismarck
Greg Haug – Bismarck Airport
Ben Ehreth – City of Bismarck Community Development
Michael Johnson – NDDOT Local Government (Skype)
Justin Froseth – City of Mandan

Meeting Summary

- » Welcome and Introductions – Rachel Drewlow kicked off the meeting with introductions. Wade Kline then reviewed the agenda and the meeting expectations which included the following:
 - Finalizing the approach to project scoring and phasing
 - Final inputs and revisions to universe of projects
- » Review Draft Project Scoring & Evaluation (Attachment 1) – Wade Kline reviewed the priority scoring analysis for the project evaluation. Each scenario is identified and further discussed below:
 - Scenario 1: Raw Technical Score – this scenario included evaluating projects on the Scoring Metric Objectives (SMOs). This provided a raw score of how each project ranks technically. Total available points for each given project would be 45.
 - Scenario 2: Goal Weighted Score – this scenario reflected the raw technical score of each project (Scenario 1) and added in the weighted scoring for each of the SMOs. The total available points for any given project would be 166.5. The weighted scoring is as follows:
 - Safety & Security – 4.5 multiplier
 - Infrastructure Conditions – 5.0 multiplier
 - Congestion Reduction – 3.6 multiplier
 - System Reliability – 2.3 multiplier
 - Reduce Project Delays – 1.2 multiplier
 - Scenario 3: Weighted Score + Public Priority – this scenario adds a bonus to projects which were identified as a public priority during the Futures Summits. This adds value to capacity orientated project identified by the public which may not currently score high on existing technical scoring needs. Total available points for any given project is 199.8. The bonuses applied are as follows:
 - Bonus #1 – 10% “bonus” of the total available points if identified project;
 - Bonus #2 – Additional “bonus” of 10%, if a project part of the top 3 projects

MEETING MINUTES

- Scenario 4: Goal Weighted + Public Input + Macro Cluster Analysis – this scenario adds a 10% bonus to individual project components of the top four (4) project clusters evaluated as part of an earlier Macro Level Analysis. Scenario 4 allows projects of regional significance to be further stratified. The top four (4) project clusters include the following:
 - South Mandan Arterial
 - West Mandan Interchange
 - Northern Bridge Corridor
 - NE Bismarck Subarea
- How the Scenarios Were Applied
 - We started out with the full Universe of Projects that had been reviewed and we received comment on after the May 2019 SC Meeting. We conducted a technical GIS exercise for each of the four (4) evaluation scenarios.
 - Wade Kline then reviewed the maps showing the project scoring results for each of the four (4) evaluation scenarios.
 - Scenario 1 – showed existing system core projects scoring higher
 - Scenario 2 – added a few more projects scoring higher
 - Scenario 3 (which included public involvement) – we start to see the peripheral projects increase in their scoring/ranking
 - Scenario 4 (which included the macro analysis) – increases the higher scoring macro level projects.
 - The following discussions occurred regarding the project evaluation:
 - Rachel Drewlow asked if the State Street corridor was included in the cluster analysis. Wade Kline noted that it was removed from a project to include in the Macro Cluster Analysis during SC Meeting #5. Rachel asked if then using the Marco analysis as an evaluation criterion

negatively impacts the scoring of State Street. Wade Kline responded that State Street is one of the highest scoring projects under all four evaluation scenarios.



MEETING MINUTES

- Rachel asked under Scenario 2 under the weighted scoring, if each objective was scored based on the weighted multiplier or if they were divided by the goal. Wade responded that each objective was weighted with the full weight.
- Natalie Pierce noted that project M27 should be removed from the Universe of Project lists but M12 should be left in. Natalie then asked if removing M27 would impact the evaluation of projects. Peggy responded that the projects were evaluated independently, and the only situation one project would impact another would be when we consider the time frame needs where we considered adjacency and connectivity needs. After discussion, the group agreed to leave the M27 project in to show that it was evaluated and scored low. This way a member of the public or public official that asks about can be shown how it was evaluated and scored.
- Marcus asked if the consultant team recommends using Scenario 4 as a jumping point to continue looking at identifying the project needs. Wade concurred that we recommend using Scenario 4 as a jumping point. Marcus asked if we would then add in input from the next round of public input meetings. Wade replied that we would add additional input to Scenarios 3 and 4 which both include the public input.
- Ben noted that the North Bridge stands out to him as a concern as to how high the project is scoring based on the public input, but they don't understand the cost constraint. Wade responded that the next layer that will be applied is the term needs and then fiscal constraint, so it is highly unlikely that it will be a constrained project in this Arrive 2045 plan.
- Wade asked for concurrence from the SC that we use Scenario 4 to show to the public instead of showing all the multiple scenarios to the public and request the feedback on the Scenario 4 results. The SC members unanimously agreed to using this scenario but to not call it Scenario 4 but instead call it "Preliminary Project Evaluation Results".
- Wade asked the SC members to go through the individual project list to potentially remove some of the individual intersection projects and possibly

MEETING MINUTES

combine them with a corridor project? Also comment on combining, adding or removing any other projects.

- Mark Berg asked specifically if some of the intersection projects should be removed. After discussion the group consensus was to leave the projects in and potentially change the improvement from a specific fix to “intersection improvement.” Whether the projects utilize STP (Urban or Regional) or HSIP funds, they need to be in the MTP and subsequently the TIP to receive any type of Federal Aid.
- Ben asked if generalizing the intersection improvements may make it difficult to identify the costs associated with them as a few turn lanes v. a roundabout v. a new traffic signal may have very different costs. Rachel suggested we get more specific with our scoping of the short-term intersection needs.
- An additional comment was added that intersections with higher functional classification should be considered for their improvement types.
- Wade noted that based on the comments today, we will take another look at how we are defining the intersection improvements.
- Rachel noted that B58 – Needs to be updated for the spelling.
- Mark Berg – Calgary Road should be Calgary Avenue; Schafer Road should be Schafer Street.

- **Action Items:** Additional comments for the project lists are needed by the end of this week.
- **Project Need/Timing:** Short-, Mid-, Long-Term Need, or No Defined Term. We then evaluated the project time frame need based on the following criteria:
 - Level of Service (LOS) Only Needs based on TDM results for 2015, 2030 and 2045 LOS results
 - LOS Needs + Adjacency & Connectivity
 - LOS Needs + Adjacent & Connectivity + Projected Growth Trends – Project Growth Trends looked at HH + Job Growth for the years 2030 & 2045



MEETING MINUTES

- The following discussions occurred regarding the project need and timing:
 - Rachel Drewlow noted that the red, orange, and yellow may not necessarily be matching the timed phases of the MTP but are on a higher level/long-term time frame. Wade concurred with this and suggested we adjust the language on the graphics for the time frame, so it isn't confused with the MTP time frames. **Action Item.**

» Update on Revisions to Draft Fiscal Constraint Analysis

- Wade – We have received comments from SC members and followed up with NDDOT Local Government and are currently updating the fiscal constraint analysis.
- Rachel added that we are working to represent preservation needs better in this plan. We are looking at annual costs of preservation projects – this includes looking at both Federal and local dollars spent on preservation project on Federal Aid eligible roadways. Once Rachel gathers this information, it will be included in the system preservation calculations. This will ensure that we aren't overspending our dollars within the plan.
- Wade noted to Michael Johnson that we have been looking at the past 5 years of historical spending on the Interstate system and asked if we should look back further given that a lot of work was done on I-94 within the past 5 years so it is a bit of an anomaly on the spending. Wade will go back further than 5 years to get a good representative average of Interstate Maintenance (IM) funds spent and get this information back to Rachel and Michael for review.

» Public Input Meeting #2

- July 9-10: Lincoln, Bismarck and Mandan
- We will do all the same methods of advertising as public input meeting #1
- All SC members are encouraged to attend at least 1 of the three public meetings in July.
- Format and Content will include the following
 - Present Goals, Objectives & Performance Measures



MEETING MINUTES

- Present Project Scoring and Phasing and gather public input on priorities and phasing
 - Relevant Background Data as needed
- » Wrap up and Next Steps
- We need input on the project lists from the SC members by the end of this week and then we will update the evaluation based on today's meeting input and this additional input.
 - The consultant team will prepare public input meeting material and distribute to the SC members for review ahead of the public meeting for comment.

Bismarck-Mandan Metropolitan Transportation Plan

Date: September 5, 2019

Time: 10:00 a.m.

Location: Bis-Man Transit Training Room

Re: Steering Committee Meeting #7

Agenda

- » Welcome and Introductions
- » Review and Discuss Progress on Alternatives Analysis (*Attached*)
 - Capacity Enhancements Analysis
 - US 83 Alternatives Refinement
- » Review Public Input Meeting #2 Summary (*Attached*)
 - Summary of Public Priorities Weighting
- » Consider Financial Constraint Analysis (*Attached*)
- » Project Prioritization Discussion
 - Review Updated Final Draft of Project Lists (*Attached*)
- » Reminder: Smart Cities/Mobility Futures Workshop (September 10, 2019)



Bismarck-Mandan Metropolitan Transportation Plan

Steering Committee Meeting #7
September 5, 2019



Agenda

- » Update on Alternatives Analysis
- » Recap PIM#2
- » Financial Analysis
- » Project Prioritization Exercise
 - Revised Projects Lists



PIM#2 Recap

- » Three Open Houses
 - Bismarck, Mandan & Lincoln;
- » 40 Total respondents (tally sheets);
- » Summary Memorandum in packet.



Project Priorities



The map shows a grid of streets in the Bismarck-Mandan area, with various colored lines indicating project priorities. A legend on the right side of the map lists the following categories:

- Light blue circle: 100-1000
- Yellow circle: 1001-1008
- Orange circle: 1009-1016
- Red circle: 1017-1024
- Dark red circle: 1025+

» You Chose!

» Select ten (10) priority projects

- Big Three (Red)
- Another Seven (Blue)

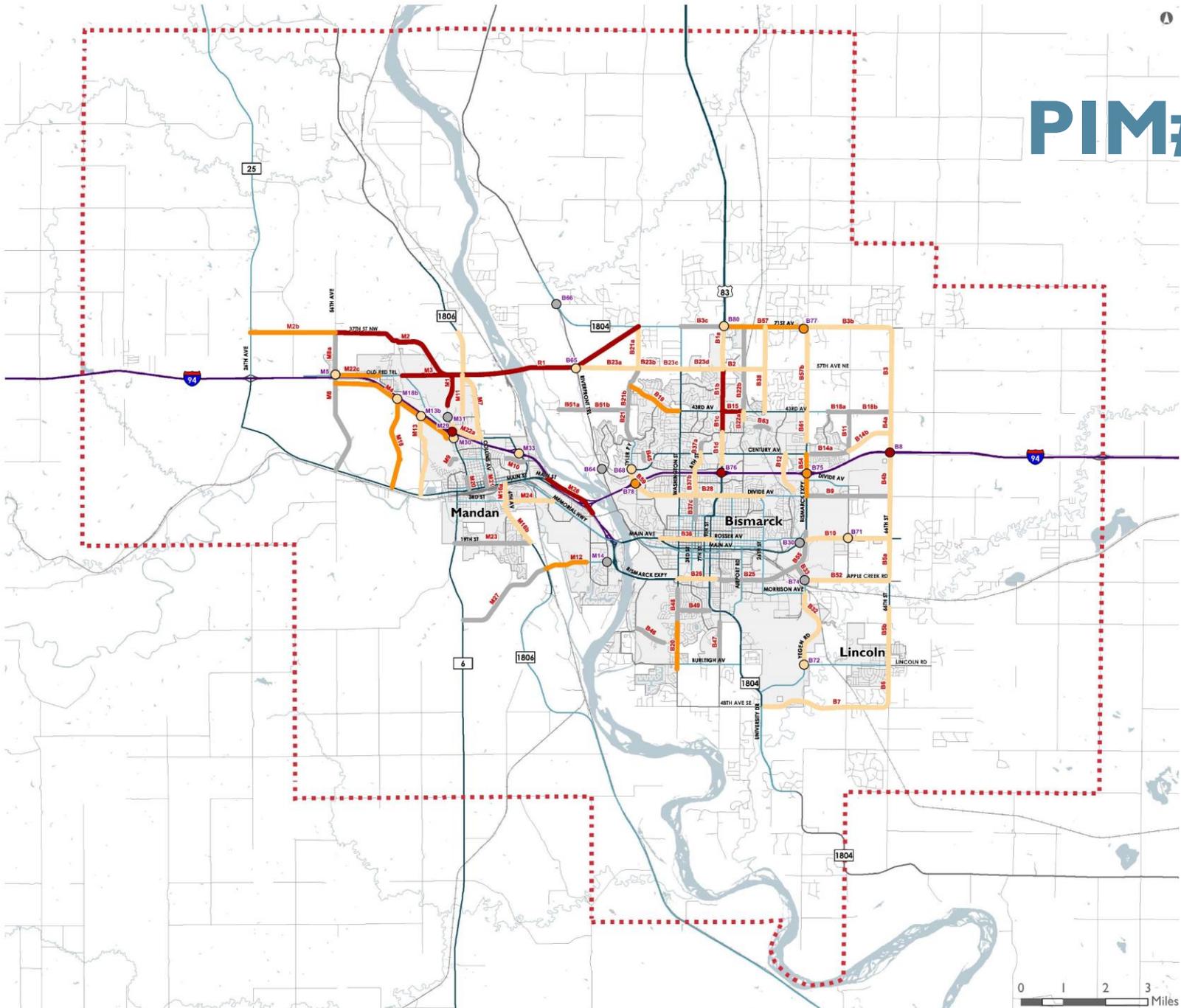


PIM#2 Recap



Public Input Score

- Public Input Scores:
- 0
 - 1 - 5
 - 6 - 10
 - 10+
- Study Area Boundary



Time Bands

» **Short Range – 2024-2031:**

- Represents the 8 years past the next TIP developed by the BMMPO;



» **Medium range:**

- Years 2032-2038;

» **Long Range:**

- Years 2039 – 2045.



Total O&M System Investments

Entity	Bismarck	Mandan	Morton County	Burleigh County	NDDOT
Base Year	\$4,035,181	\$367,750	\$8,471,845	\$7,585,541	\$2,697,468
2024	\$4,196,589	\$382,460	\$8,810,719	\$7,888,962	\$2,805,367
2025	\$4,364,452	\$397,759	\$9,163,147	\$8,204,521	\$2,917,581
2026	\$4,539,030	\$413,669	\$9,163,147	\$8,204,521	\$3,034,285
2027	\$4,720,591	\$430,216	\$9,529,673	\$8,532,701	\$3,155,656
2028	\$4,909,415	\$447,424	\$9,529,673	\$8,532,701	\$3,281,882
2029	\$5,105,792	\$465,321	\$9,910,860	\$8,874,009	\$3,413,158
2030	\$5,310,023	\$483,934	\$9,910,860	\$8,874,009	\$3,549,684
2031	\$5,522,424	\$503,292	\$10,307,295	\$9,228,970	\$3,691,671
Subtotal	\$38,668,316	\$3,524,075	\$76,325,374	\$68,340,395	\$25,849,284
2032	\$5,743,321	\$523,423	\$10,719,586	\$9,598,129	\$3,839,338
2033	\$5,973,054	\$544,360	\$11,148,370	\$9,982,054	\$3,992,912
2034	\$6,211,976	\$566,135	\$11,148,370	\$9,982,054	\$3,992,912
2035	\$6,460,455	\$588,780	\$11,594,305	\$10,381,336	\$4,152,628
2036	\$6,718,873	\$612,331	\$11,594,305	\$10,381,336	\$4,152,628
2037	\$6,987,628	\$636,824	\$12,058,077	\$10,796,589	\$4,318,733
2038	\$7,267,133	\$662,297	\$12,058,077	\$10,796,589	\$4,318,733
Subtotal	\$45,362,442	\$4,134,151	\$80,321,088	\$71,918,087	\$28,767,884
2039	\$7,557,819	\$688,789	\$12,540,400	\$11,228,453	\$4,491,483
2040	\$7,860,132	\$716,341	\$13,042,016	\$11,677,591	\$4,671,142
2041	\$7,860,132	\$744,995	\$13,042,016	\$11,677,591	\$4,671,142
2042	\$8,174,537	\$774,794	\$13,563,696	\$12,144,695	\$4,857,987
2043	\$8,174,537	\$805,786	\$13,563,696	\$12,144,695	\$4,857,987
2044	\$8,501,518	\$838,018	\$14,106,244	\$12,630,483	\$5,052,307
2045	\$8,501,518	\$871,538	\$14,106,244	\$12,630,483	\$5,052,307
Subtotal	\$56,630,192	\$5,440,261	\$93,964,313	\$84,133,990	\$33,654,355
Total	\$140,660,950	\$13,098,487	\$250,610,775	\$224,392,472	\$88,271,522

» Extract assumptions from 2020-2023 TIP

» Grow assumptions to 2045

» Locally funded system maintenance



Total P&M System Investments

Program	Regional	Interstate	Urban
Base Year Average	\$2,455,009	\$2,025,908	\$544,615
2024	\$2,553,209	\$2,106,944	\$566,400
2025	\$2,655,337	\$2,191,222	\$589,056
2026	\$2,761,551	\$2,278,871	\$612,618
2027	\$2,872,013	\$2,370,025	\$637,123
2028	\$2,986,894	\$2,464,826	\$662,608
2029	\$3,106,369	\$2,563,420	\$689,112
2030	\$3,230,624	\$2,665,956	\$716,677
2031	\$3,359,849	\$2,772,595	\$745,344
Subtotal	\$23,525,847	\$19,413,859	\$5,218,938
2032	\$3,494,243	\$2,883,498	\$775,158
2033	\$3,634,013	\$2,998,838	\$806,164
2034	\$3,779,373	\$3,118,792	\$838,410
2035	\$3,930,548	\$3,243,543	\$871,947
2036	\$4,087,770	\$3,373,285	\$906,825
2037	\$4,251,281	\$3,508,217	\$943,098
2038	\$4,421,332	\$3,648,545	\$980,822
Subtotal	\$27,598,560	\$22,774,719	\$6,122,422
2039	\$4,598,185	\$3,794,487	\$1,020,054
2040	\$4,782,113	\$3,946,267	\$1,060,857
2041	\$4,973,397	\$4,104,117	\$1,103,291
2042	\$5,172,333	\$4,268,282	\$1,147,422
2043	\$5,379,227	\$4,439,013	\$1,193,319
2044	\$5,594,396	\$4,616,574	\$1,241,052
2045	\$5,818,171	\$4,801,237	\$1,290,694
Subtotal	\$36,317,822	\$29,969,977	\$8,056,690
Total	\$87,442,229	\$72,158,554	\$19,398,050

» Extract assumptions from 2011-2023 TIP/STIP

» Reduce available revenue to account federal funded P&M

Program	Regional	Interstate	Urban
Total (2011-2023)	\$31,915,114	\$52,673,600	\$3,540,000
Average	\$2,455,009	\$4,051,815	\$272,308
Adjusted	\$2,455,009	\$2,025,908	\$544,615



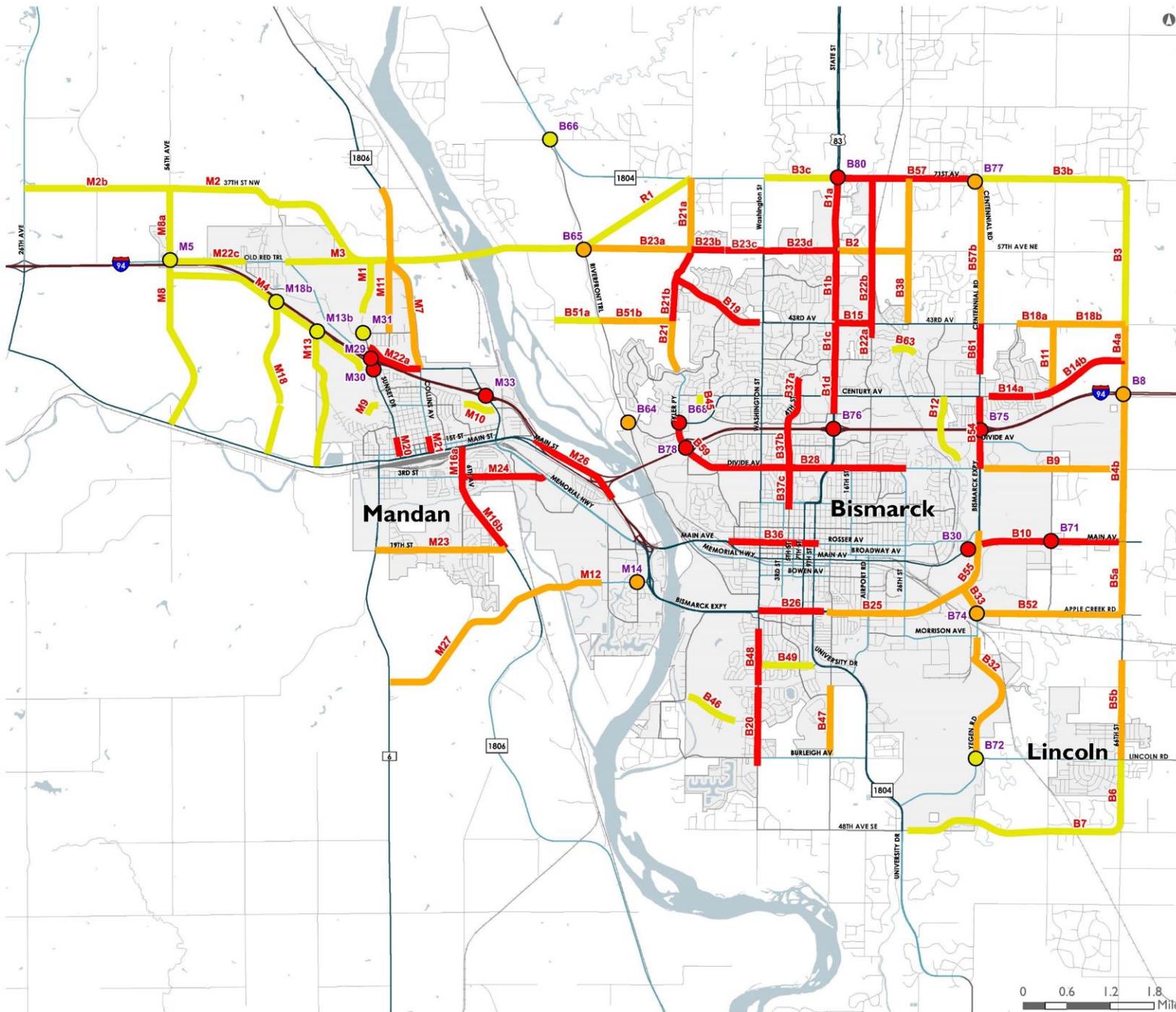
Fiscal Constraint Forecasts

Base Year	\$3,936,368	\$4,581,824	\$5,120,750	\$699,713	\$651,250	\$233,750
Year	Urban	Regional	Interstate	Safety (State)	Safety (Urban)	TA + RTP
2024	\$4,172,550	\$428,524	\$3,321,051	\$741,695	\$690,325	\$247,775
2025	\$4,235,138	\$399,247	\$3,318,193	\$752,821	\$700,680	\$251,492
2026	\$4,298,666	\$366,977	\$3,313,186	\$764,113	\$711,190	\$255,264
2027	\$4,363,145	\$331,568	\$3,305,912	\$775,575	\$721,858	\$259,093
2028	\$4,428,593	\$292,866	\$3,296,250	\$787,208	\$732,686	\$262,979
2029	\$4,495,022	\$250,712	\$3,284,073	\$799,016	\$743,676	\$266,924
2030	\$4,562,447	\$204,939	\$3,269,248	\$811,002	\$754,831	\$270,928
2031	\$4,630,884	\$155,372	\$3,251,638	\$823,167	\$766,154	\$274,992
Subtotal	\$29,967,507	\$2,430,206	\$26,359,550	\$6,254,597	\$5,821,400	\$2,089,447
2032	\$4,700,347	\$1,976,831	\$3,231,098	\$835,514	\$777,646	\$279,117
2033	\$4,770,852	\$1,919,128	\$3,207,477	\$848,047	\$789,311	\$283,303
2034	\$4,842,415	\$1,857,064	\$3,087,523	\$848,047	\$789,311	\$283,303
2035	\$4,915,051	\$1,790,436	\$3,055,866	\$860,768	\$801,150	\$287,553
2036	\$4,988,777	\$1,719,029	\$2,926,125	\$860,768	\$801,150	\$287,553
2037	\$5,063,608	\$1,642,620	\$2,885,684	\$873,679	\$813,168	\$291,866
2038	\$5,139,563	\$1,560,977	\$2,745,356	\$873,679	\$813,168	\$291,866
Subtotal	\$28,298,190	\$12,466,086	\$21,139,129	\$6,000,502	\$5,584,903	\$2,004,562
2039	\$5,216,656	\$1,473,859	\$2,695,322	\$886,784	\$825,365	\$296,244
2040	\$5,294,906	\$1,381,012	\$2,640,890	\$900,086	\$837,746	\$300,688
2041	\$5,374,329	\$1,282,174	\$2,581,847	\$913,587	\$850,312	\$305,198
2042	\$5,454,944	\$1,177,072	\$2,517,971	\$927,291	\$863,066	\$309,776
2043	\$5,536,769	\$1,065,420	\$2,449,034	\$941,201	\$876,012	\$314,423
2044	\$5,619,820	\$946,920	\$2,374,794	\$955,319	\$889,153	\$319,139
2045	\$5,704,117	\$821,264	\$2,295,002	\$969,648	\$902,490	\$323,926
Subtotal	\$30,144,852	\$8,147,721	\$17,554,860	\$6,493,916	\$6,044,144	\$2,169,395
Total	\$88,410,549	\$23,044,013	\$65,053,539	\$18,749,015	\$17,450,447	\$6,263,404

» Total Federal forecast - P&M forecasts = Fiscal Constraint

	Urban	Regional	Interstate
Expansion	82.0%	20.9%	47.4%
P&M	18.0%	79.1%	52.6%





Priority Needs & Phasing Analysis

Project Phasing:

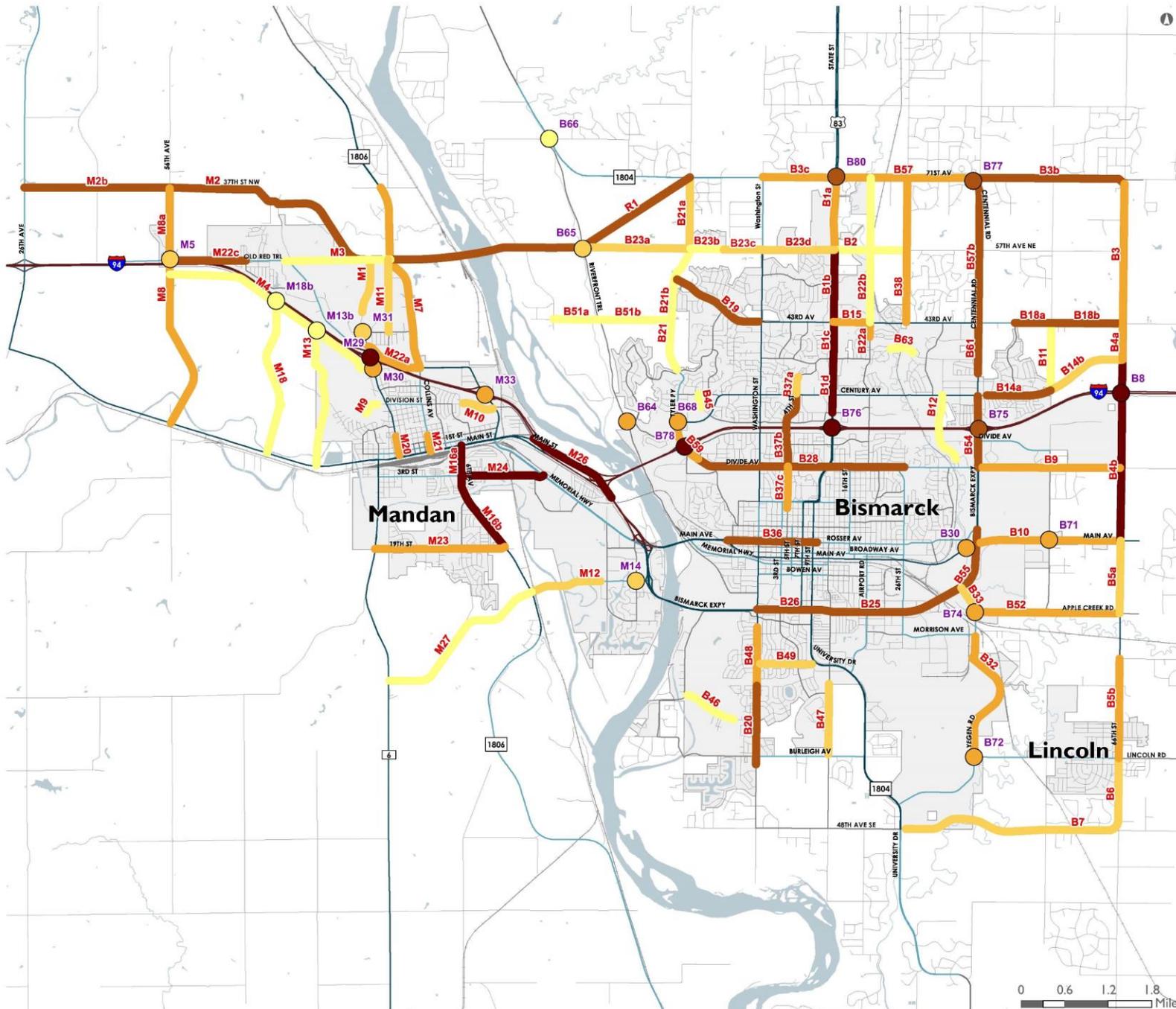
- Short Term
- Mid Term
- Long Term



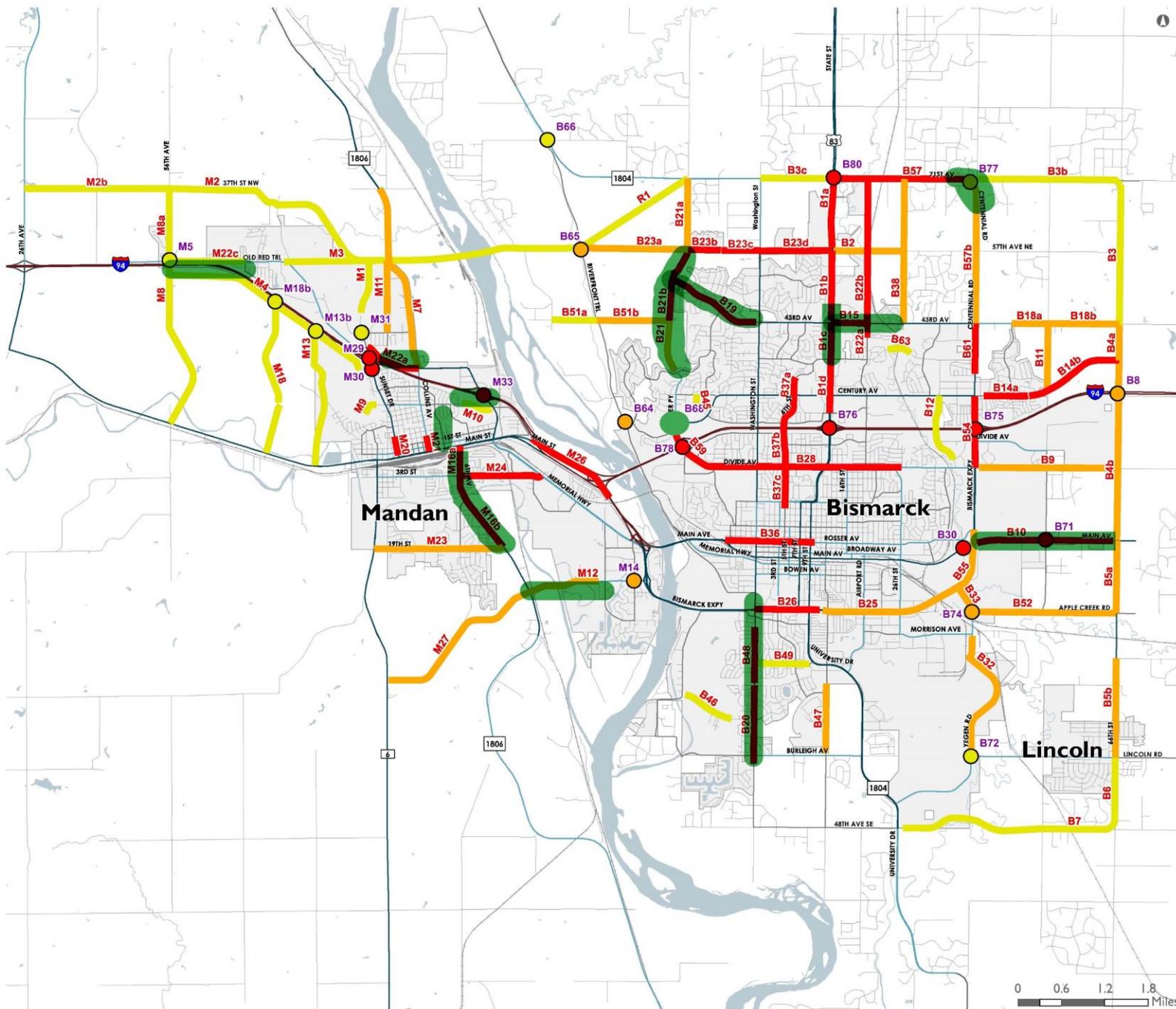
Priority Scenario #4 Technical Scoring + Goal Weighted + Public Input + Macro Cluster Analysis

Option 4 Scores:

- Up to 50.00
- 50.01 - 70.00
- 70.01 - 90.00
- 90.01 - 110.00
- 110.01 +



0 0.6 1.2 1.8 Miles



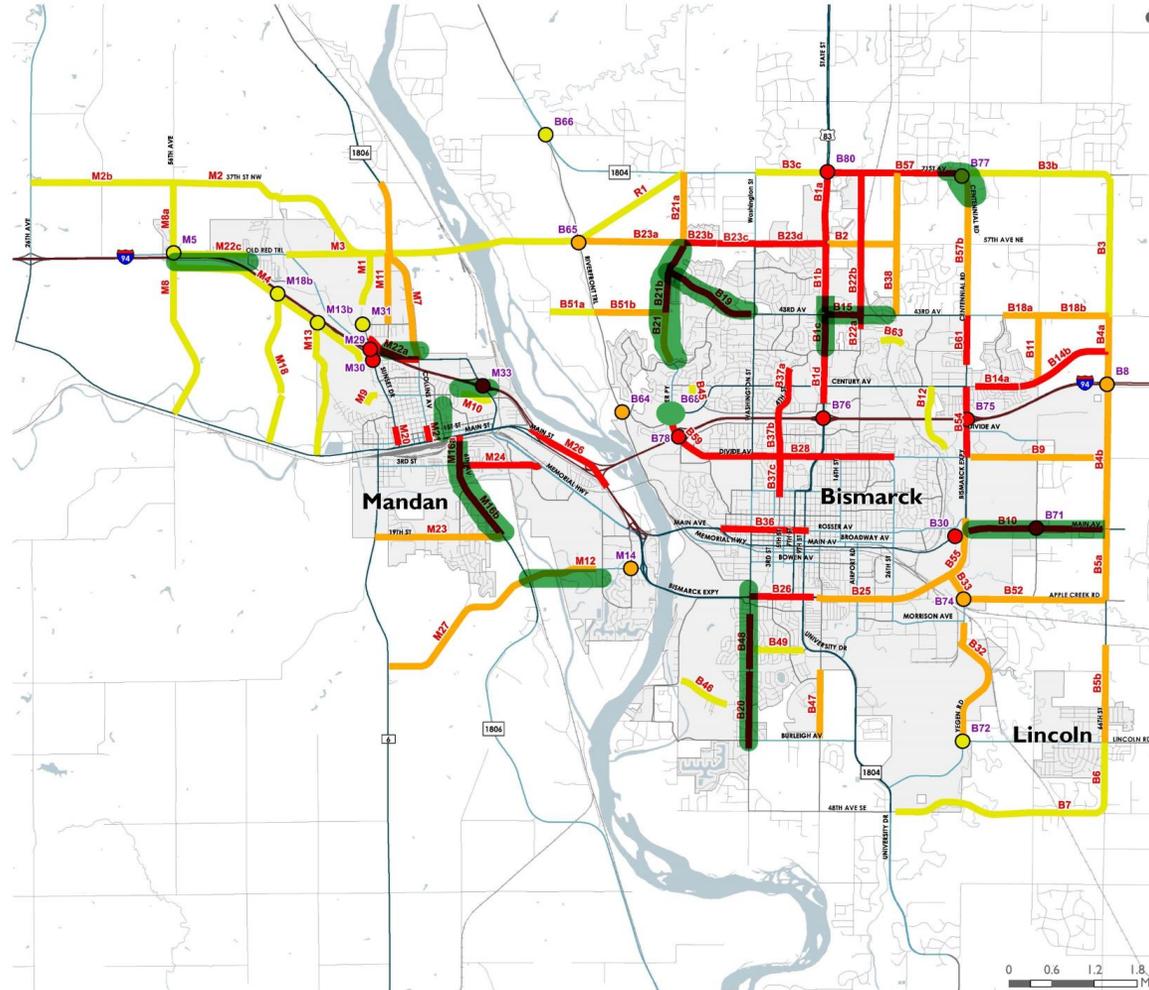
Priority Needs & Phasing Analysis

- Technical Need
- Short
 - Medium
 - Long
- MTP Phase
- Short Term



New ID	Previous Project ID	Location	Termini	Termini	Description	Source
Urban						
6	M22c	Old Red Trail	56th Ave	40th Ave NW	Reconstruct as 3-lane urban section	Urban
TBD	-	3rd Ave NE	Main St	5th St	Reconstruct as 2-lane urban	Urban
18	M22a	Old Red Trail	Sunset Dr.	1806/Collins	Restripe for 3-lane section	Urban
24	M10	Division St	8th Ave E	Mandan Ave	Construct as 2-lane urban section	Urban
32	M12	McKenzie Rd	Highway 1806	39th Ave E	Construct as 2-lane rural section. Include new Bridge across Heart River. Add signals at McKenzie/Expressway ramps and at McKenzie/40th Avenue	Urban
35	B20	Washington St	Burleigh Ave	Drainage Channel	Reconstruct as 3-lane urban arterial	Urban
50	B10	Main Ave	Bismarck Expwy	66th St	Widen from 2-lane to 4-lane section	Urban
66	B68	Century Avenue	Tyler Parkway		Intersection Capacity Improvement	Urban
69	B21	Tyler Parkway	Valley Dr	43rd Ave	Construct as 2-lane urban section	urban
72	B21b	Tyler Parkway	43rd	57th Ave	Construct as 2-lane urban section	Urban
73	B19	Ash Coulee Dr	Tyler Parkway	Washington St	Widen from 2-lane to 3-lane urban section	Urban
89	B15	43rd Ave	State St	26th St	Construct 3-lane or 5-lane urban section	Urban
90	B22a	19th St	North Valley Lane/Loop	43rd Ave	Reconstruct as 3-lane urban section	Urban
95	B77	71st Ave	Centennial Rd		Intersection Capacity Improvement	Urban
TBD	-	Citywide Overlays				Urban
TBD	-	Citywide Concrete Pavement Repair				Urban
TBD	-	Citywide Signal Systems				Urban
Regional						
26	M16a	Highway 1806	3rd St S	Main St	Reconstruct as 4-lane urban section	Regional
29	M16b	Highway 1806	19th St	3rd St S	Add turn lanes and signals at 8th Avenue and 19th Street.	Regional
86	B1c	State Street	Calgary	43rd Ave	Intergrade recommendations from US 83 Study	Regional
TBD	-	State Street	Calgary	57th	Shared Use Path	Regional
TBD	-	Citywide Overlays				Regional
TBD	-	Citywide Concrete Pavement Repair				Regional
Safety						
TBD	-	Washington St	Bismarck Expressway		Intersection Improvements	Safety
36	B48	Washington St	Drainage Channel	Denver Ave	Turn lane improvements including restripe south of Reno as 3-lane	Safety

Short Range List - Preliminary



Priority Needs & Phasing Analysis

- Technical Need
- Short
- Medium
- Long
- MTP Phase
- Short Term



Next Steps

» X



MEETING SIGN IN

Name	Organization	Email
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Natalie Pierce	Morton County	natalie.pierce@mortonnd.org
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John Van Dyke	City of Mandan	John.VanDyke@cityofmandan.com
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Marcus J. Hall	Burleigh Co.	mahall@nd.gov
Wade Kli	KLJ	
Mike Biltner	KLJ (phone)	
Peggy Harte	Stentec (phone)	
JUSTIN FROSETH	CITY OF MANDAN	jfroseth@cityofmandan.com

Meeting: SCM#7 – September 6, 2019 Blackstead Room - Bismarck City Hall



Bismarck-Mandan Metropolitan Transportation Plan

Date: October 24, 2019
Time: 10:00 a.m.
Location: Blackstead Conference Room – Bismarck City Hall
Re: MTP Small Group Meeting

Agenda

- » Welcome and Introductions
- » Review and Discuss Progress on Alternatives Analysis
- » Update on Project Prioritization
- » Discuss Status of Draft MTP
- » Next Steps
 - Full Draft MTP + Prioritized Project Lists
 - Final Constrained 2030 and 2045 Models
 - NDDOT Management Meeting – November 21st, 2019 @ 10:00 am



Bismarck-Mandan Metropolitan Transportation Plan

Meeting Title
Date



Agenda

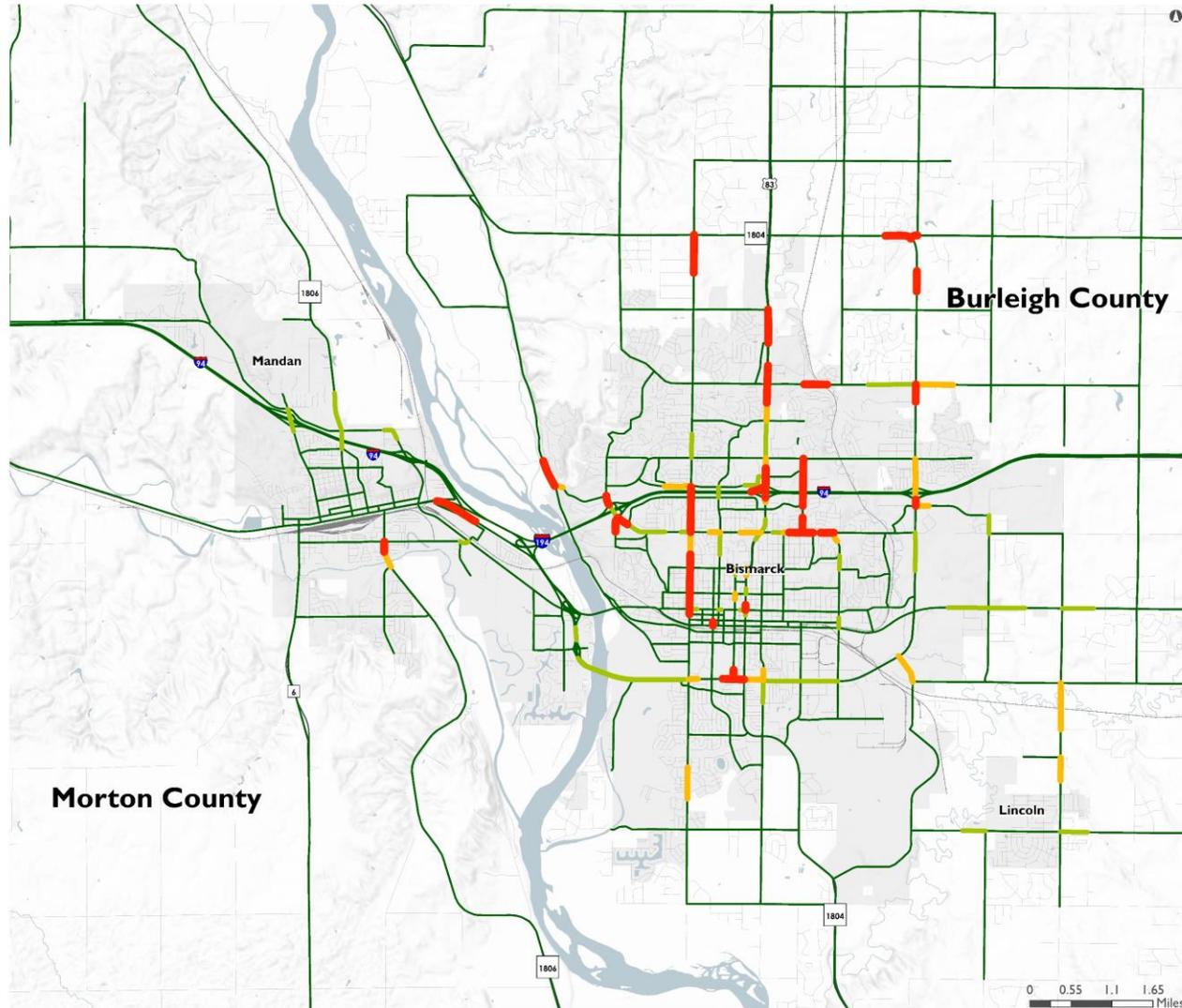
- » Welcome and introductions
- » Alternatives Analysis
- » Project Prioritization
- » Next Steps



Interstate Operations Analysis

Needs

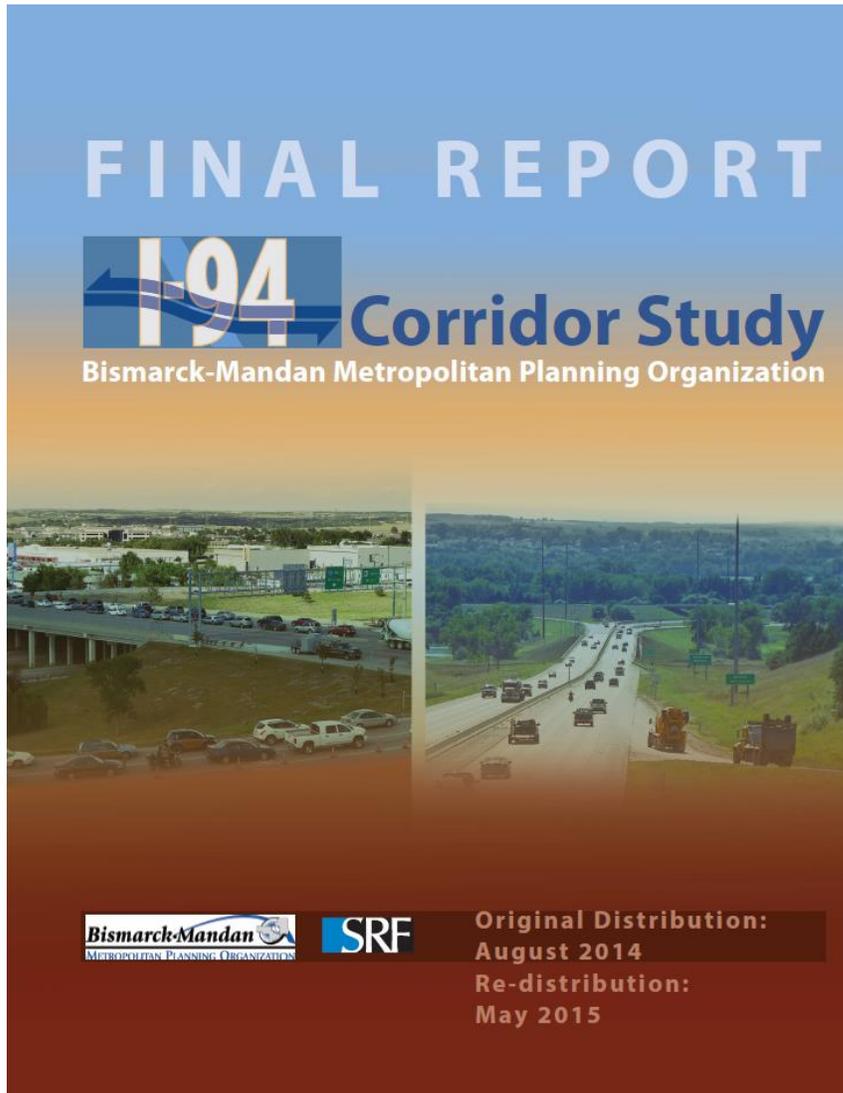
- » 7 Locations with Deficient LOS
- » 6 Projects in Top 12%
- » 9 Projects in top 50%



Level of Service 2045

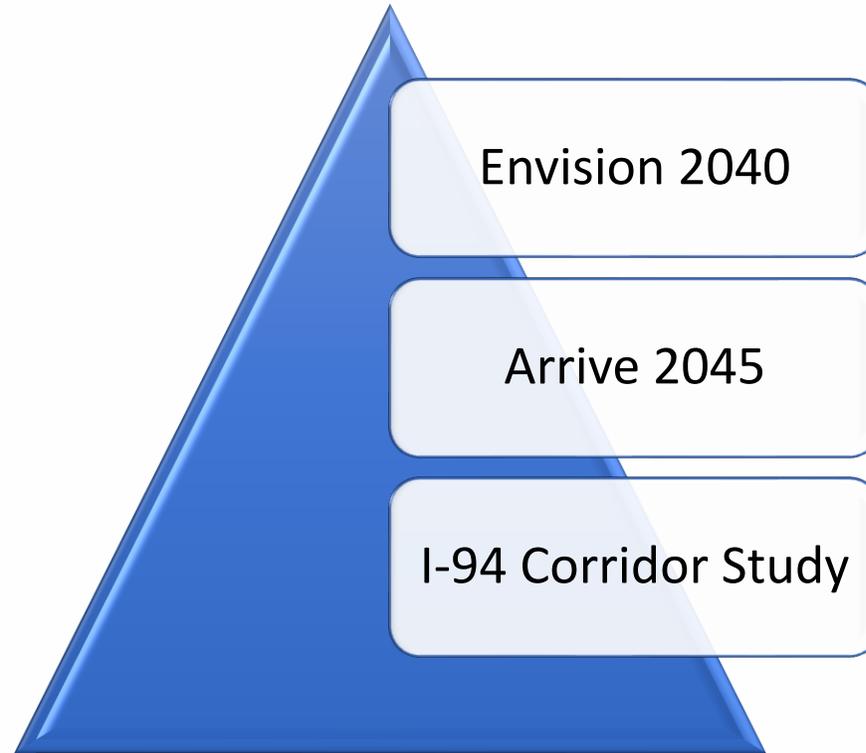
- Level of Service
- LOS F
 - LOS E
 - LOS D
 - LOS A-C

Needs

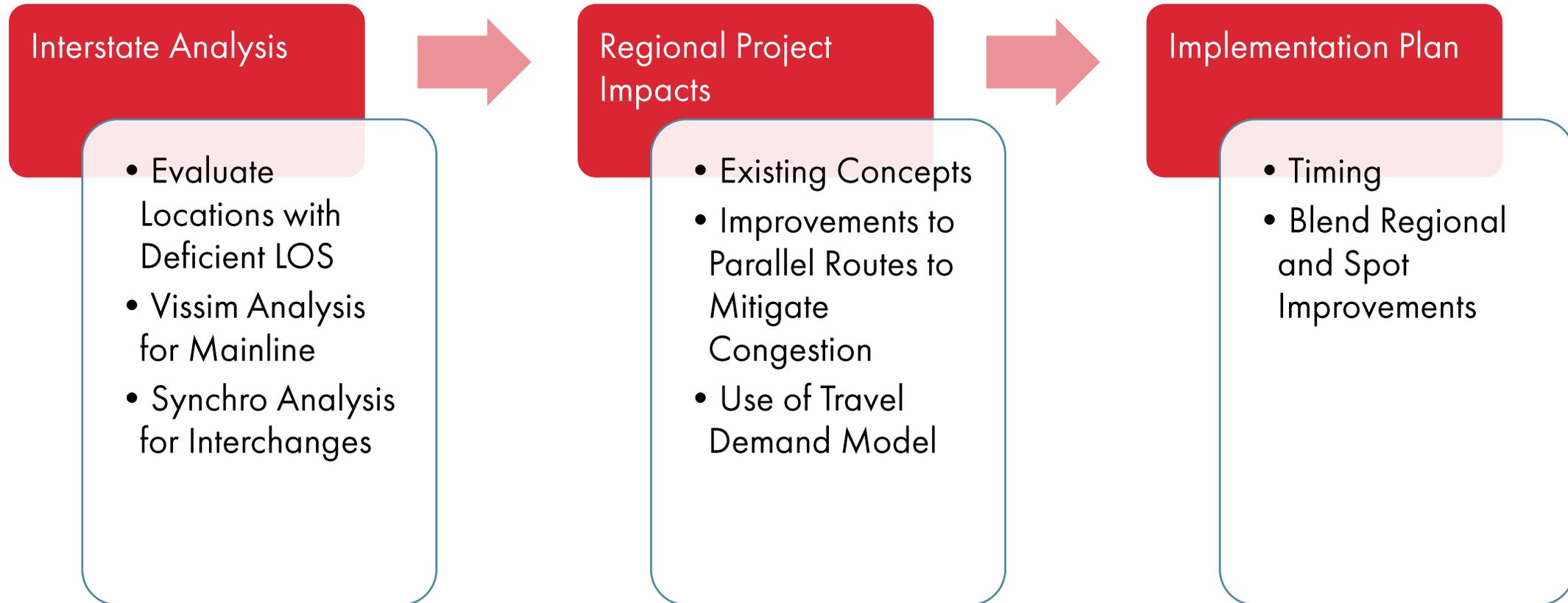


» I-94 Corridor Study

- 2010 Turning Movements
- 2040 Forecasts
- No Programmed Improvements

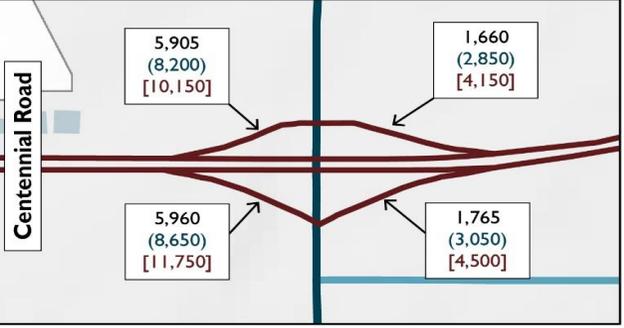
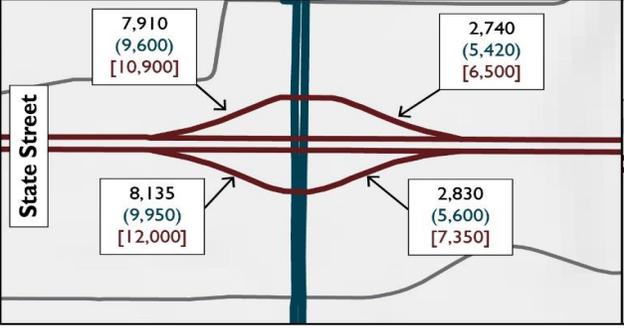
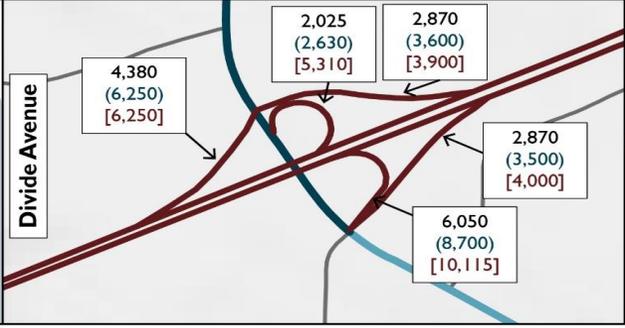
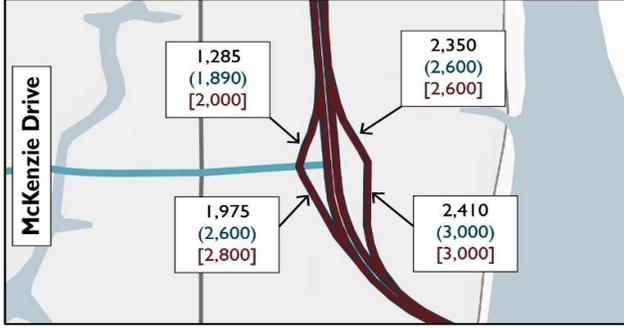
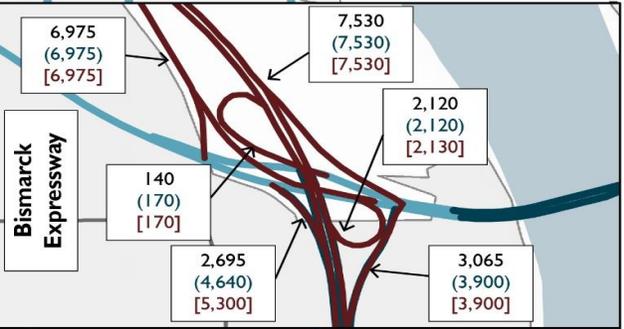
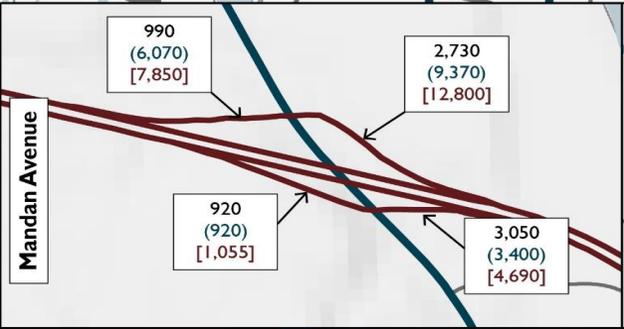
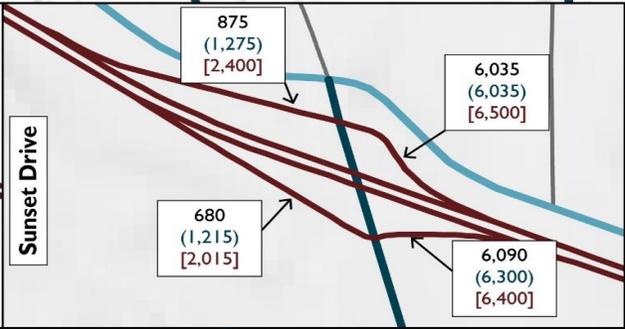
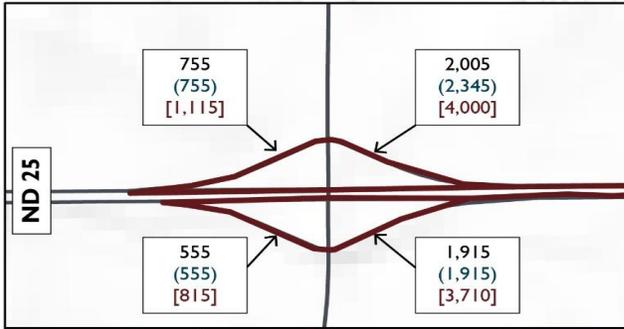
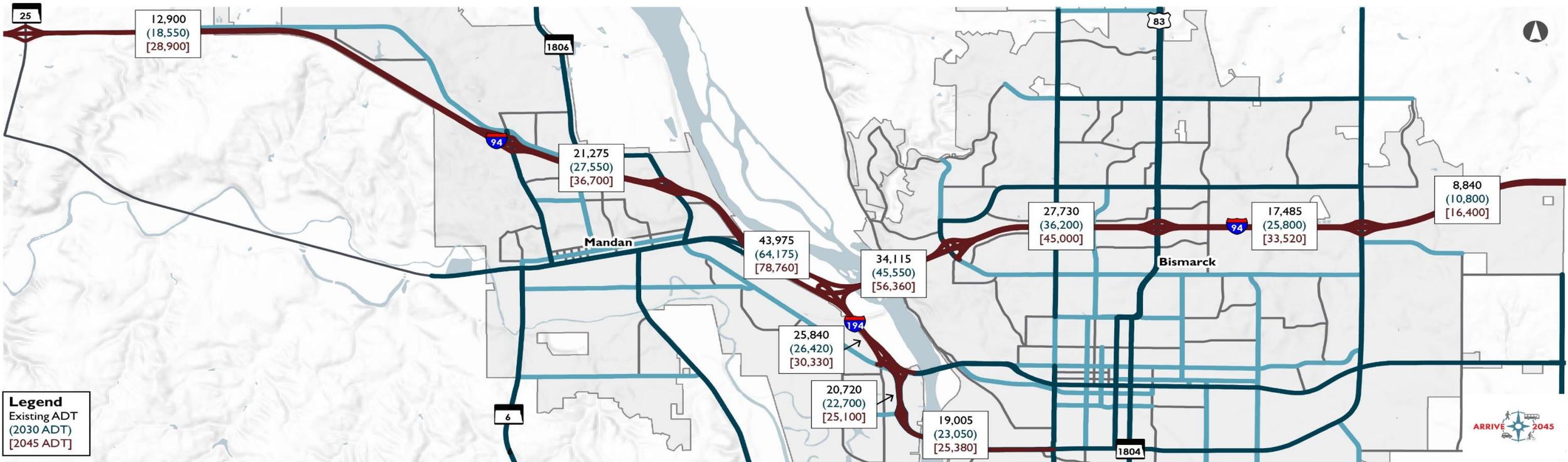


Approach



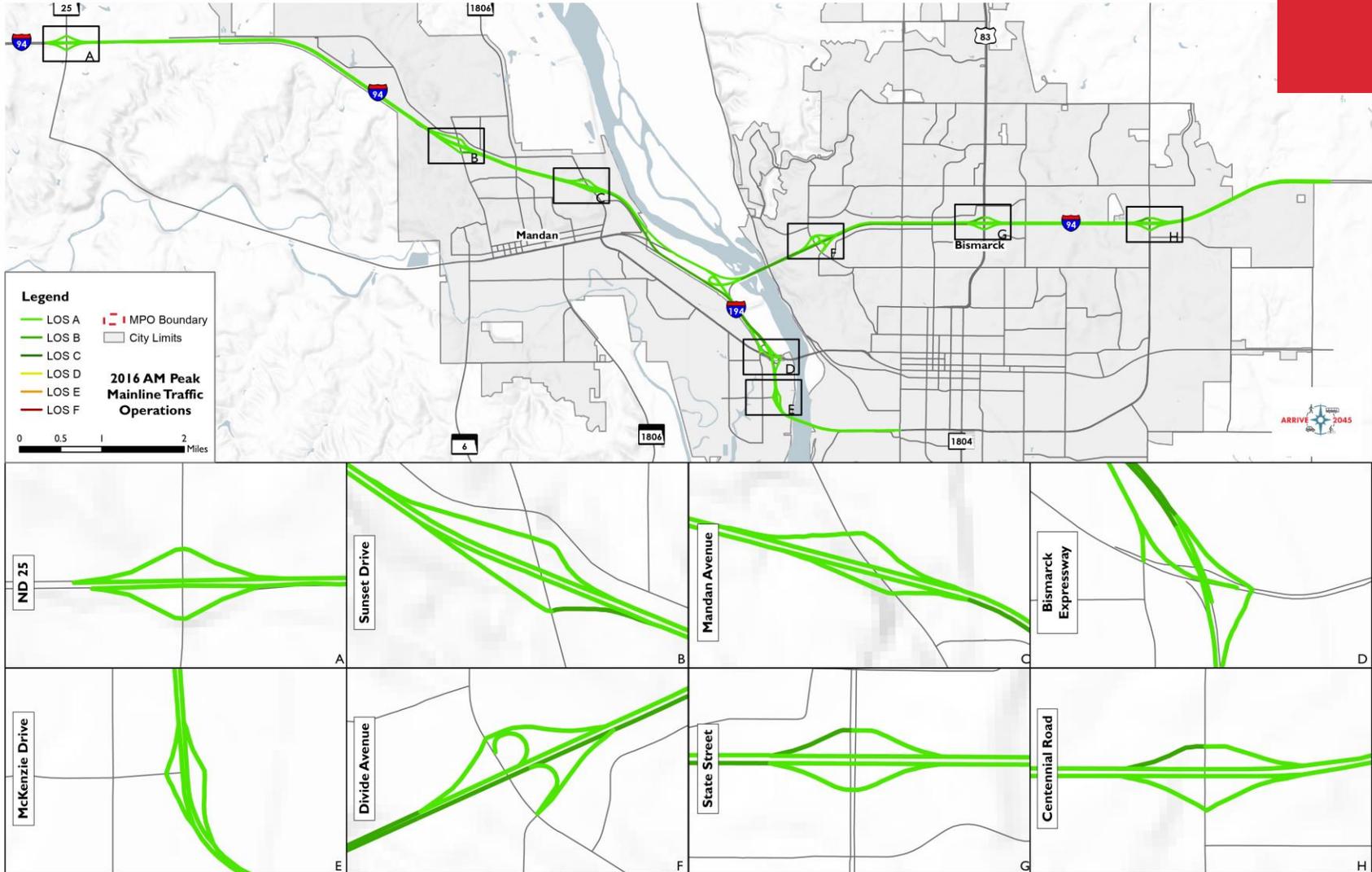
Interstate Operations Analysis

Mainline Traffic Operations



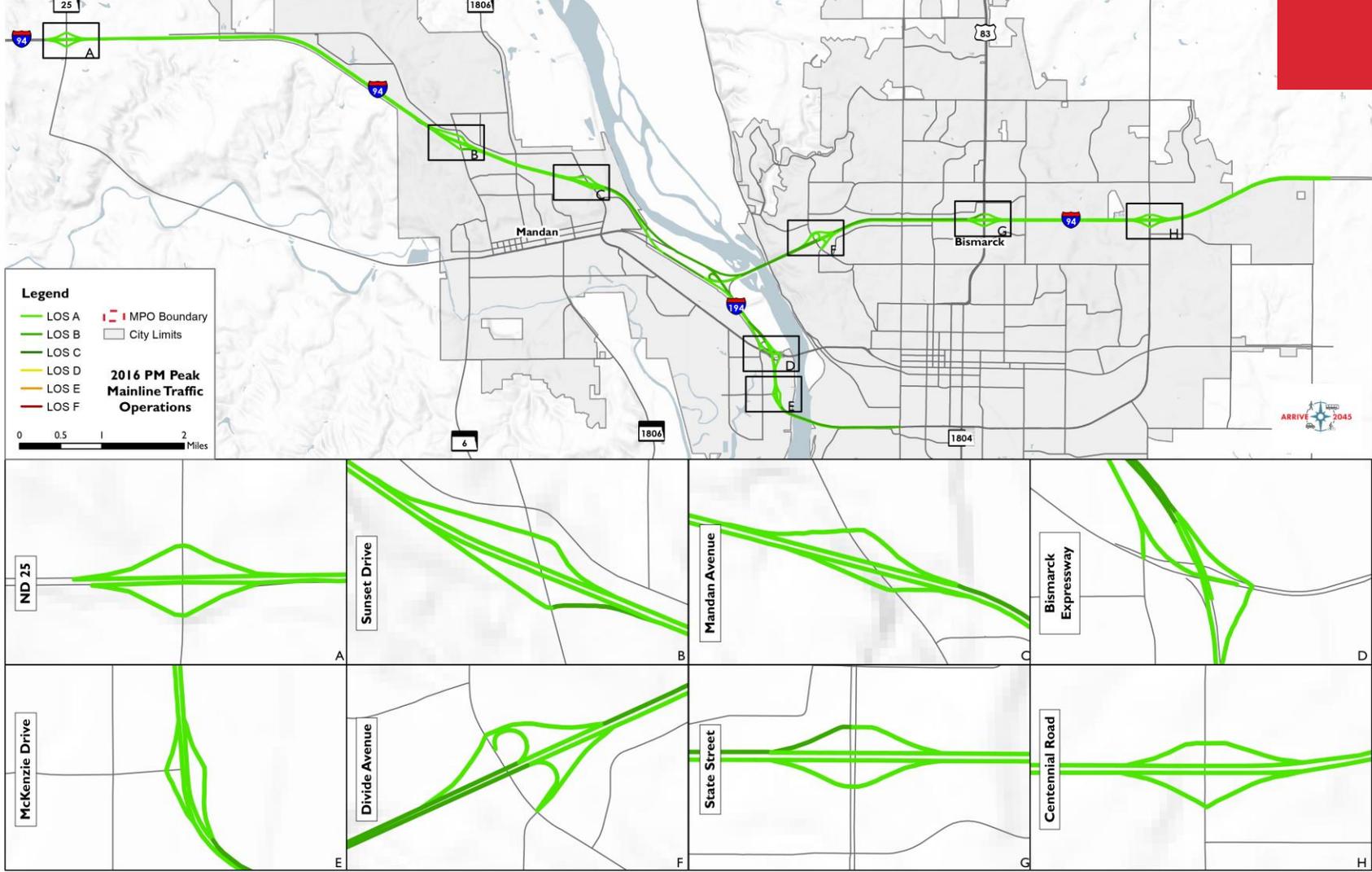
Mainline
Capacity Not
Needed.

Existing AM Operations



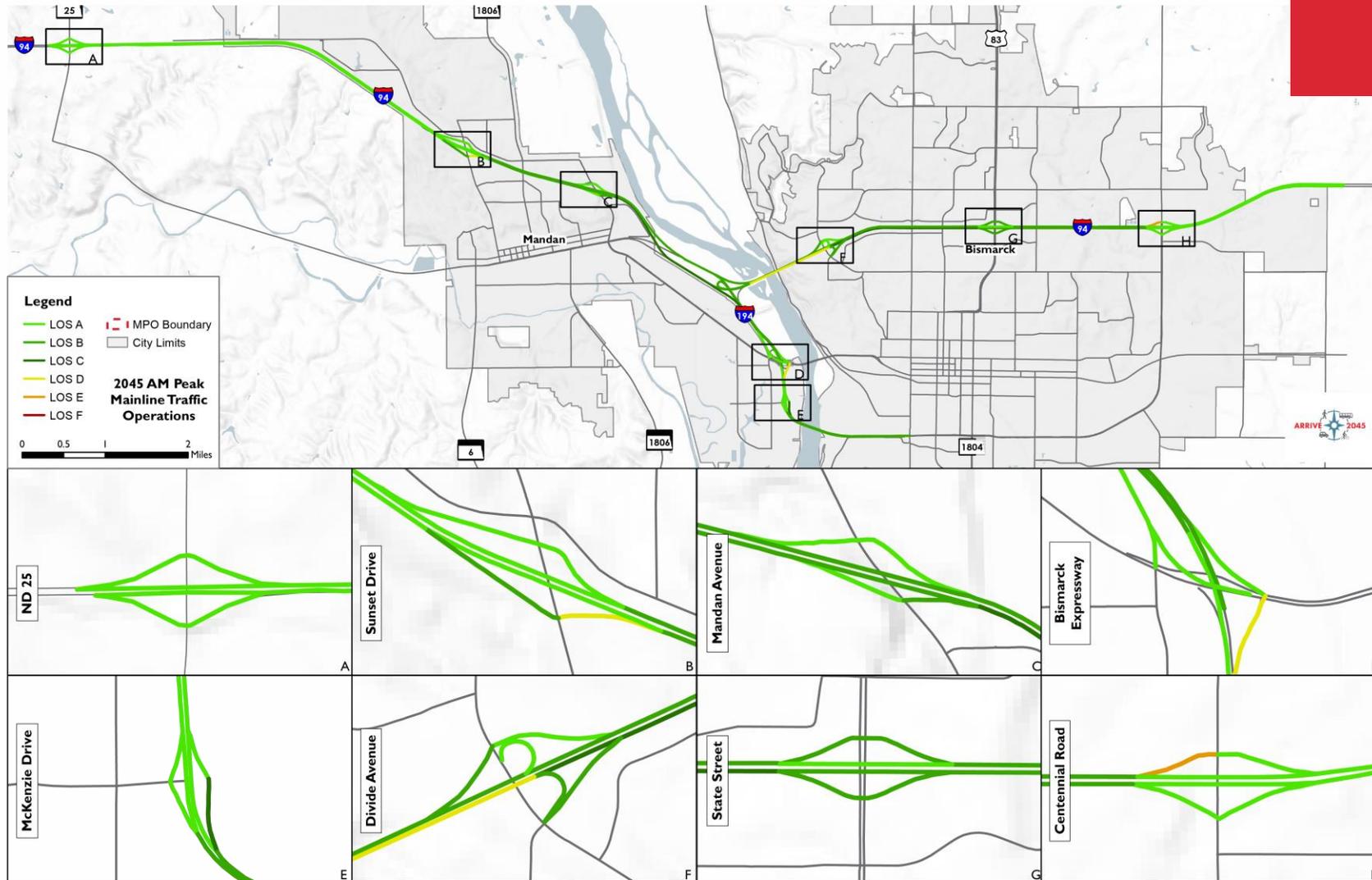
Mainline
Capacity Not
Needed.

Existing PM Operations



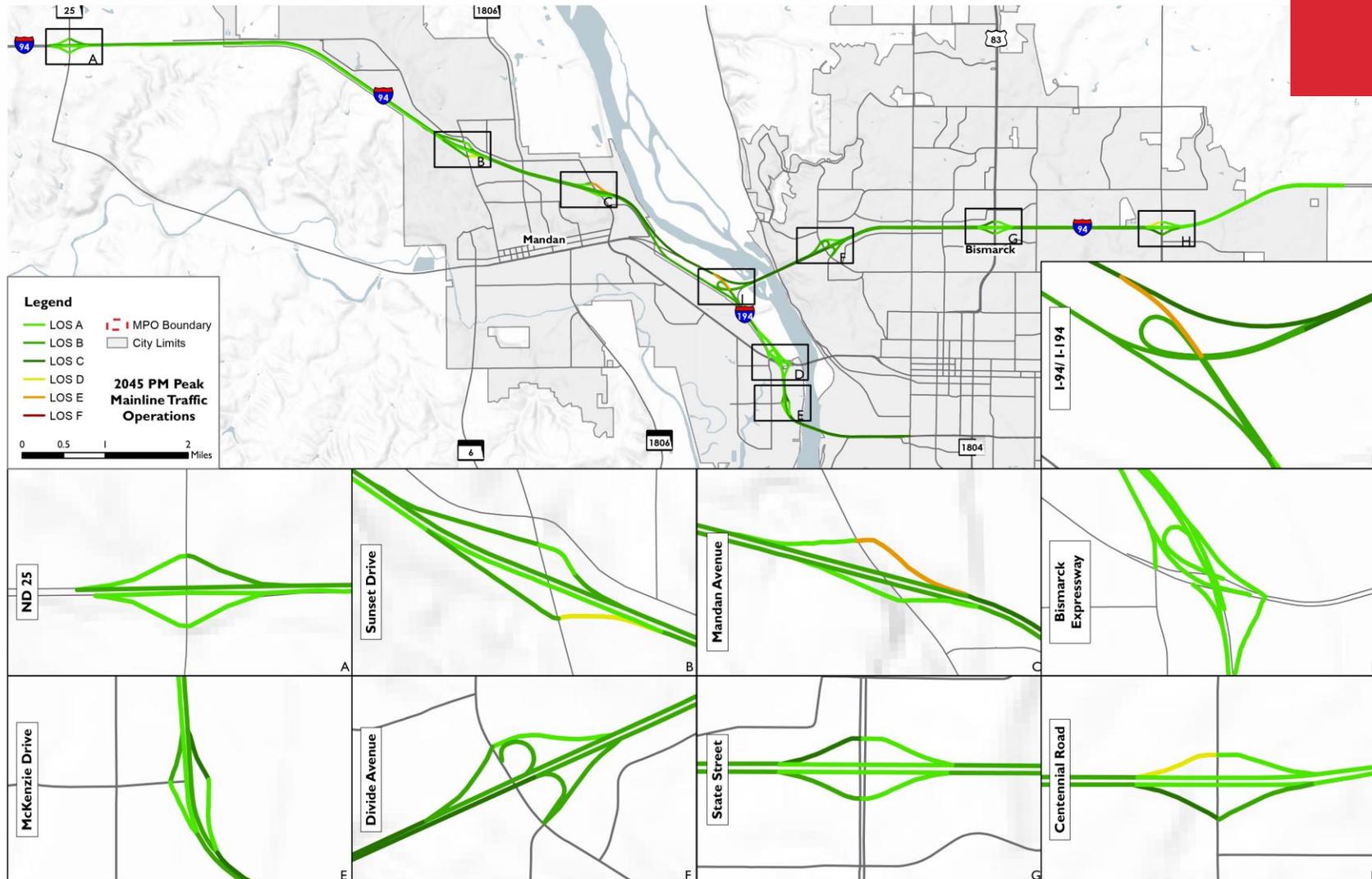
2045 AM Operations

Mainline
Capacity Not
Needed.

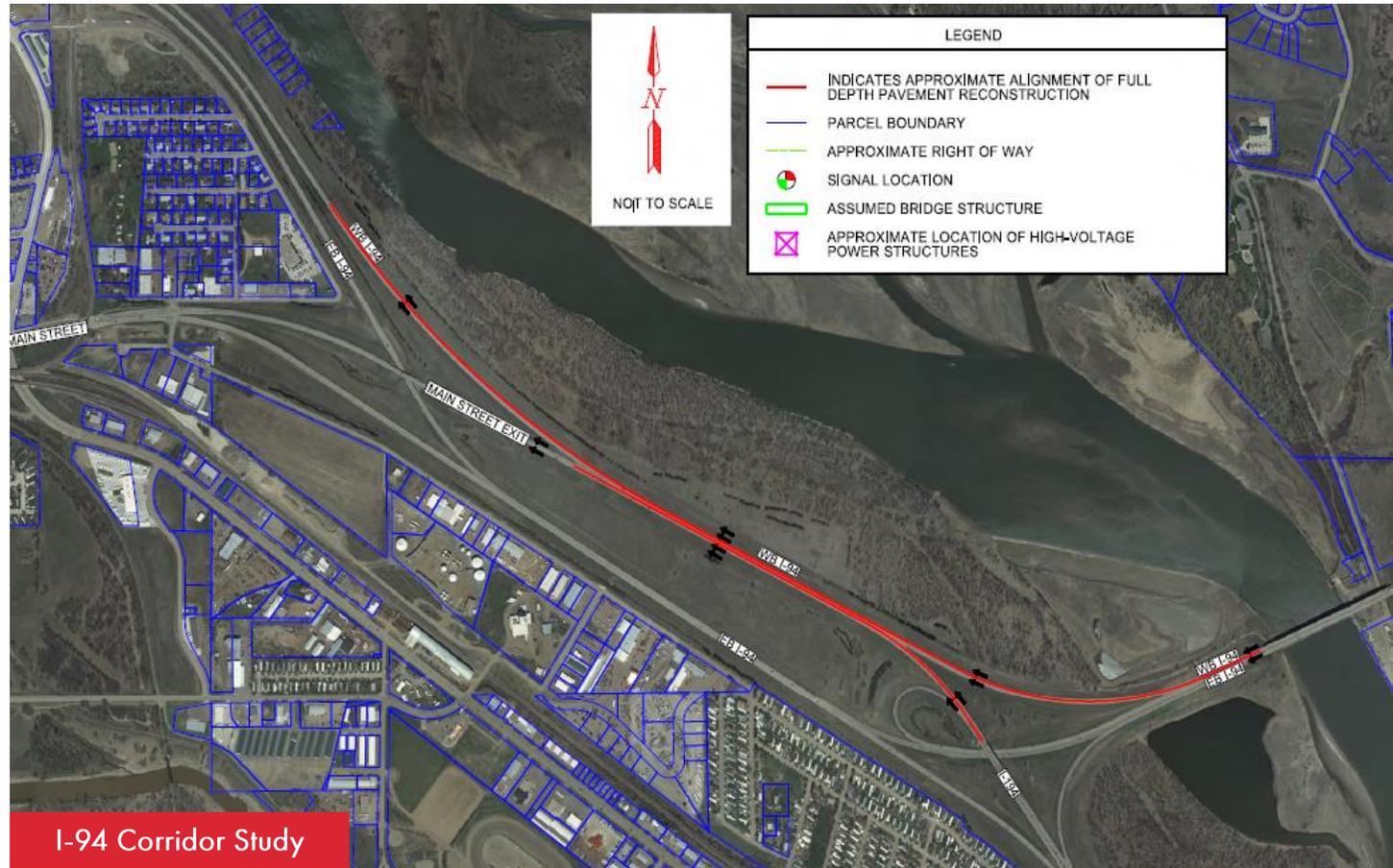


2045 PM Operations

Mainline
Capacity Not
Needed.



I-94 and I-194 Interchange



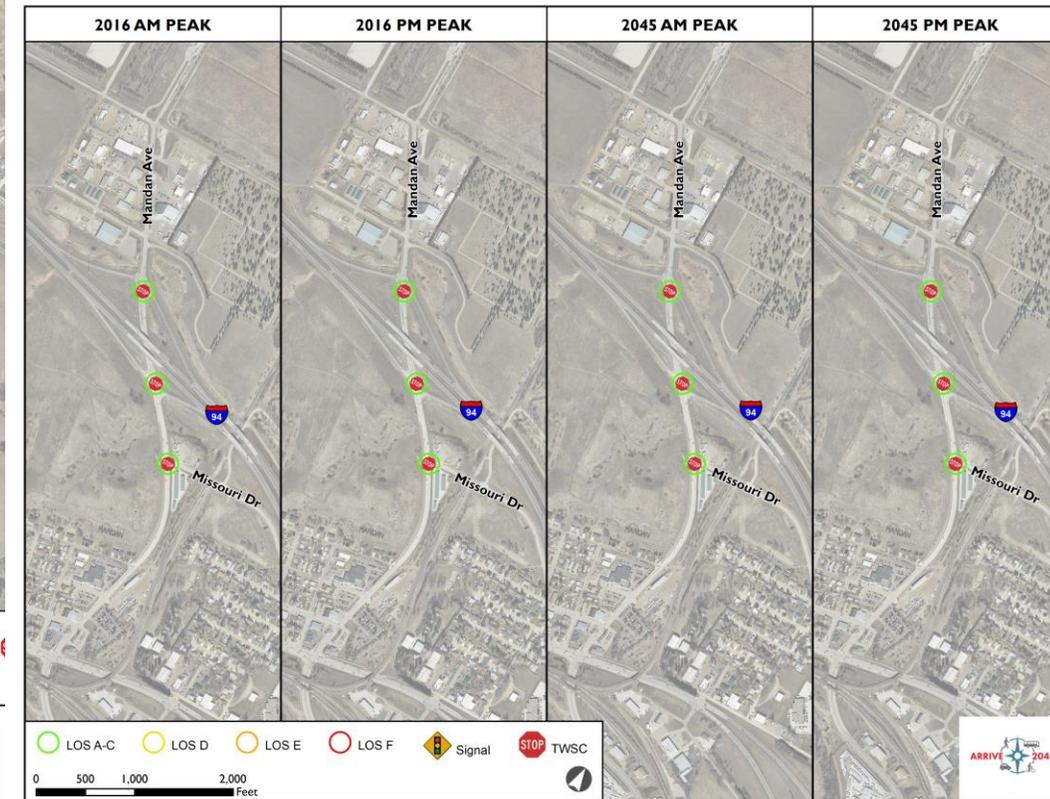
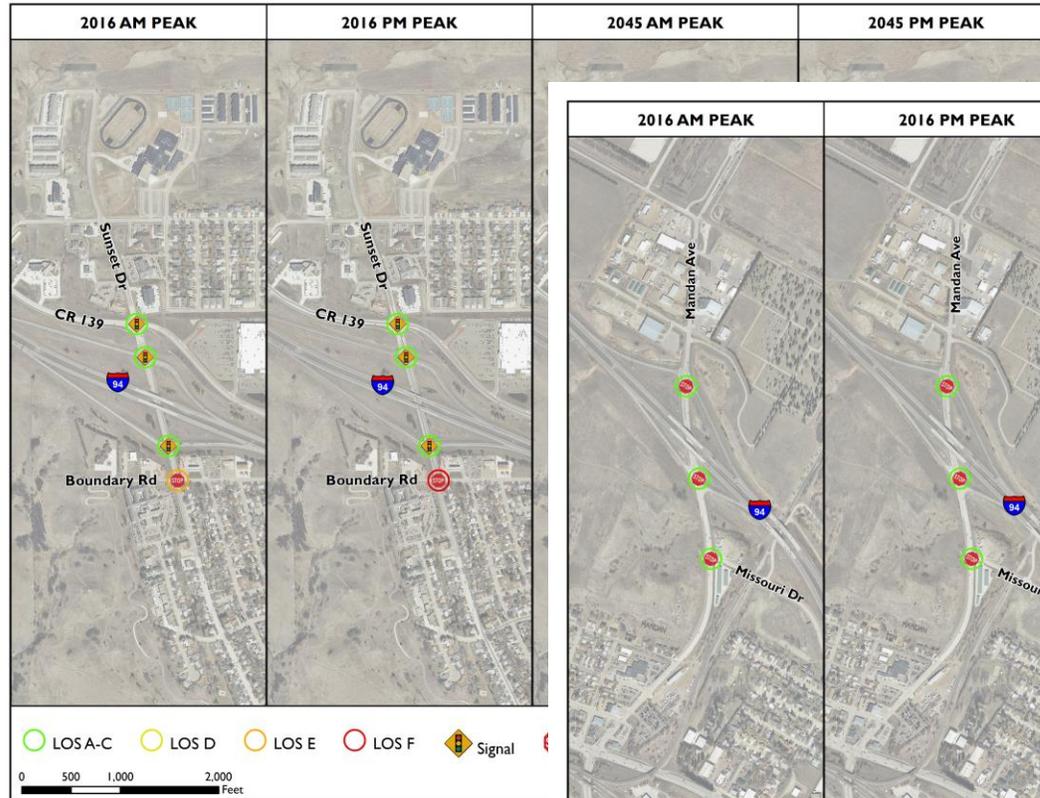
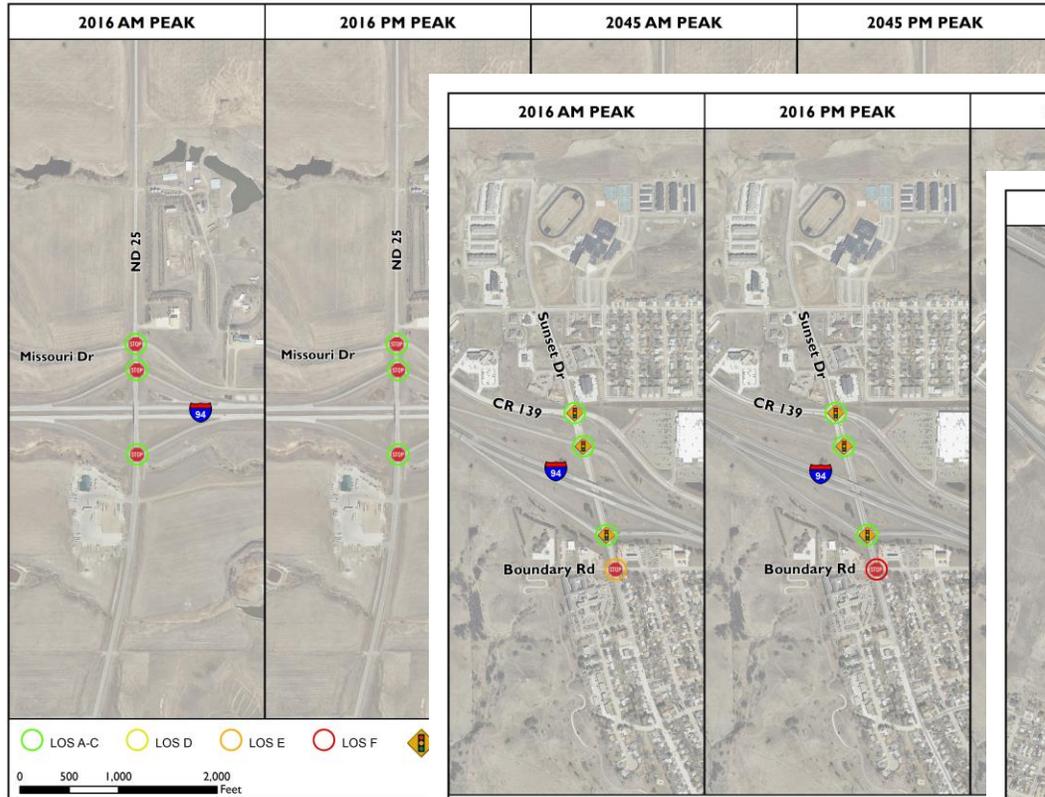
- » LOS "B" through 2045
- » \$15.2 M

Interstate Operations Analysis

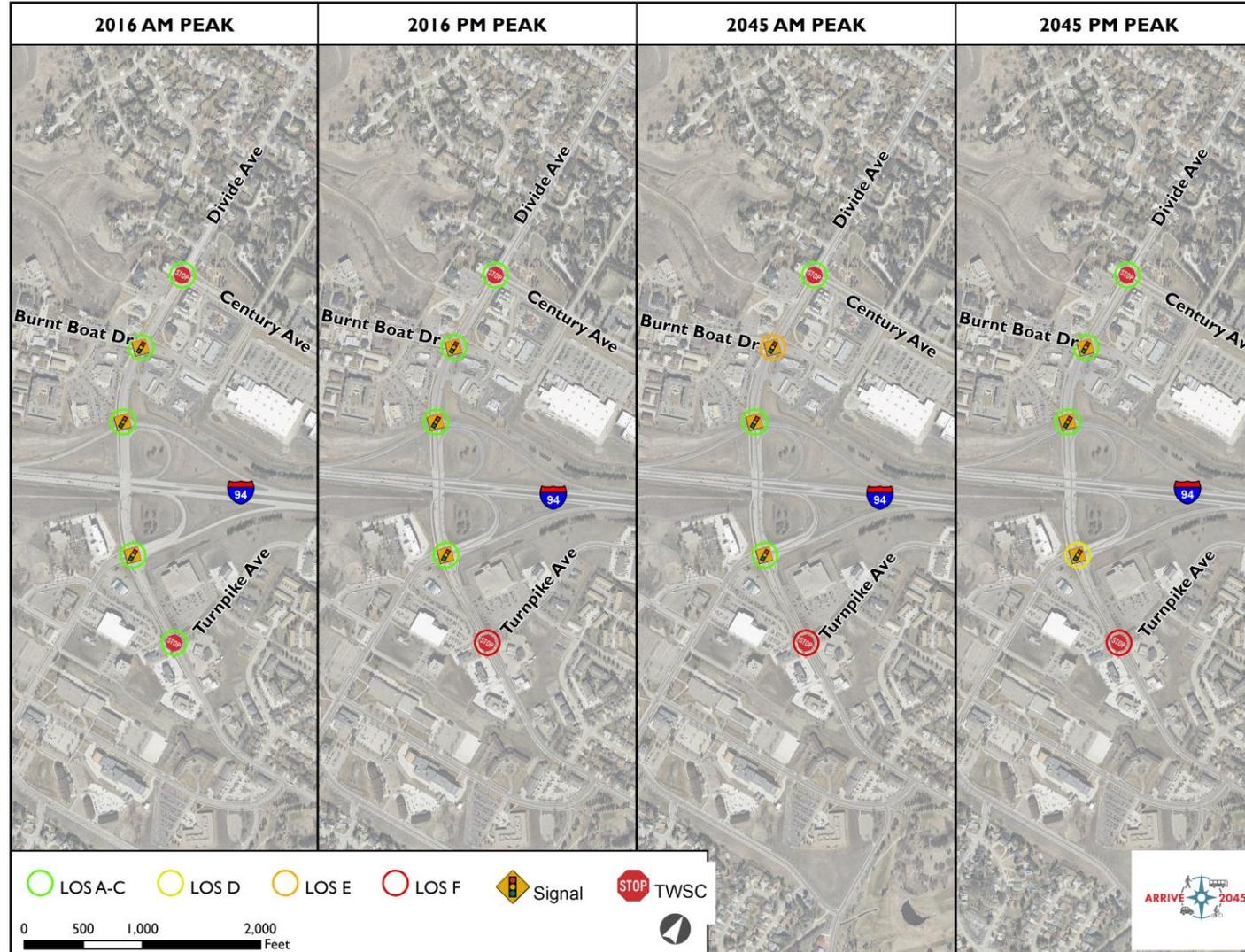
Interchange Traffic Operations

No Deficiencies

ND 25 Sunset Drive Mandan Ave



Divide Avenue/Tyler Parkway

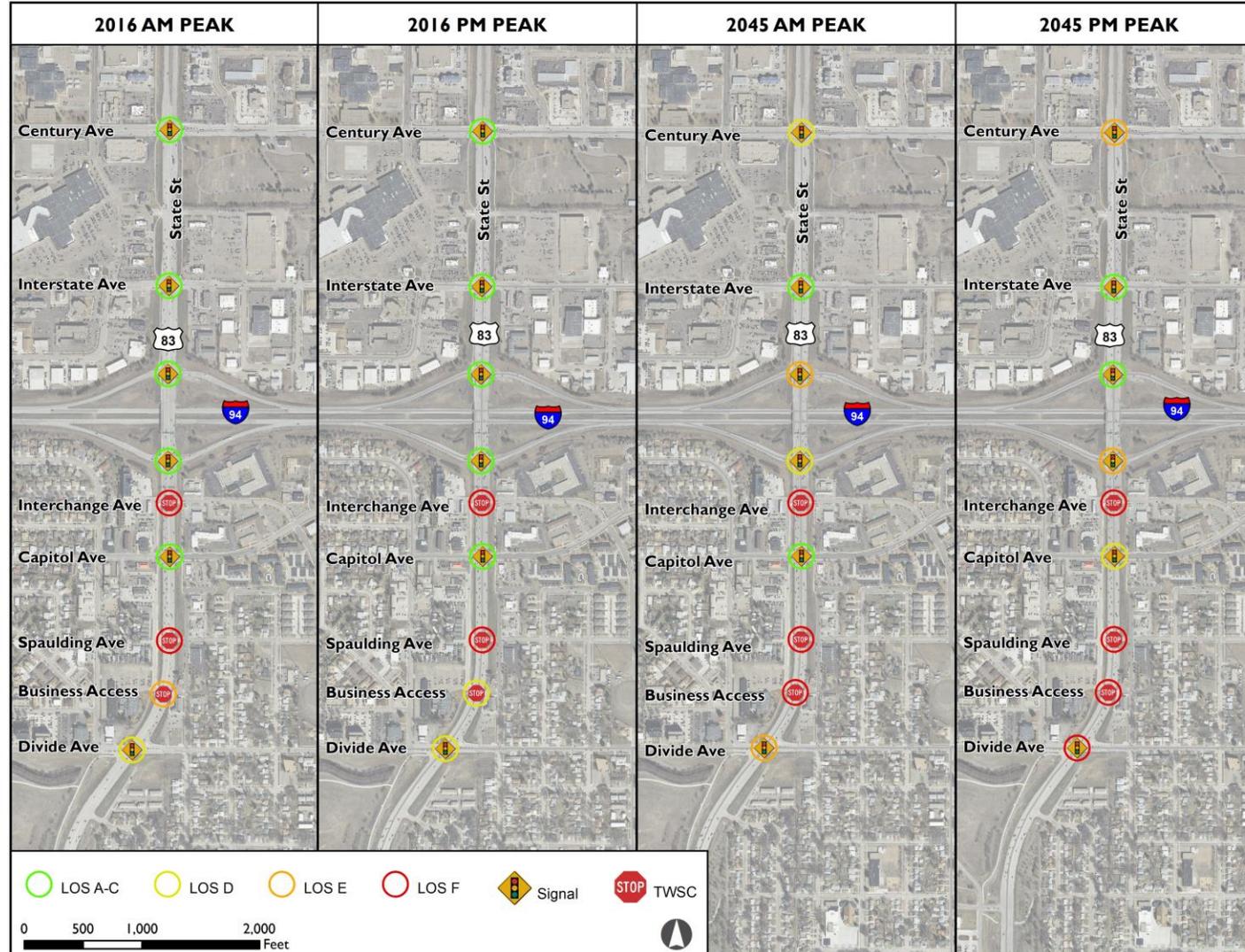


Divide Avenue/Tyler Parkway



- » Burnt Boat Road Improvements
 - LOS "E" to LOS "D"
 - 2nd NB Left-Turn Lane Reduces Queues from 450' to 135'
- » Turnpike Avenue $\frac{3}{4}$ Access
 - Accommodates 80% of Minor Approach Traffic
- » \$750,000

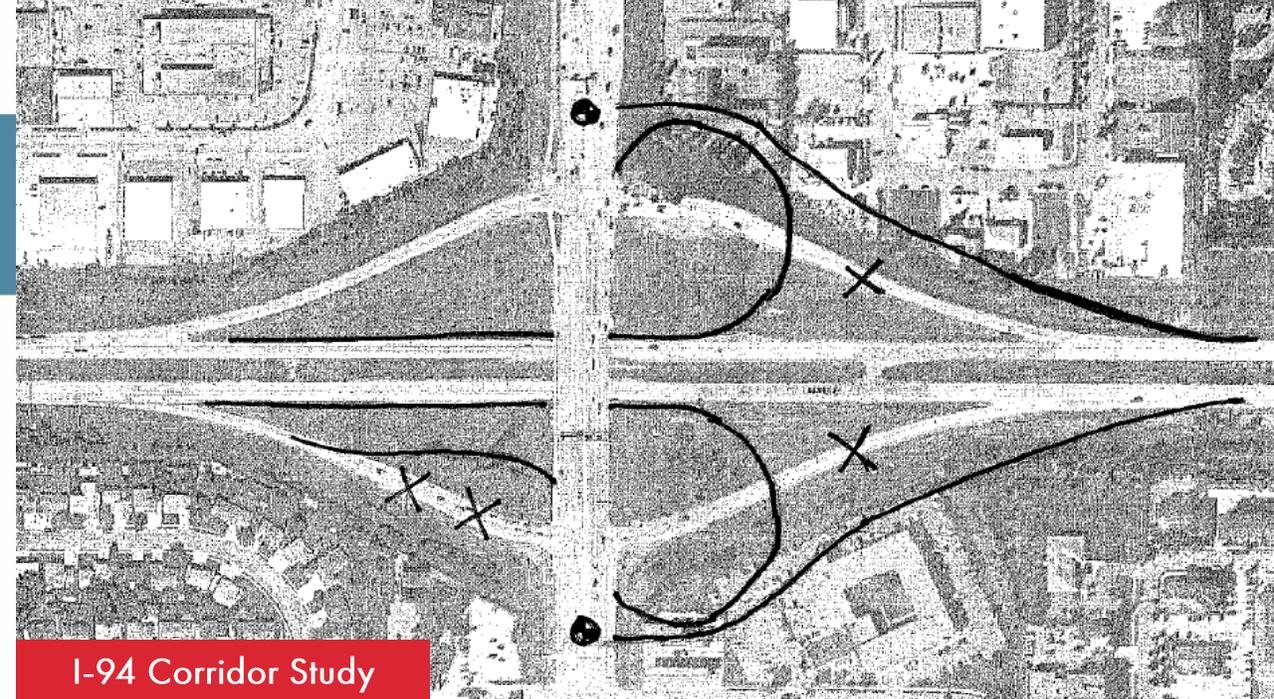
State Street



State Street

» Northeast and Southeast Loop Ramps

- Provide Acceptable LOS
- Discarded in I-94 Corridor Study due to Impacts



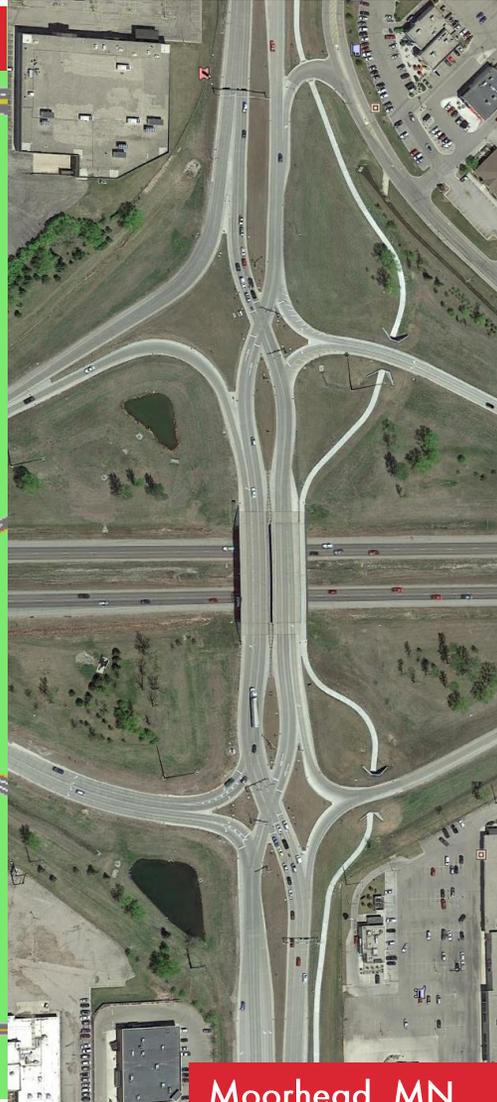
State Street

SPUI



Rapid City, SD

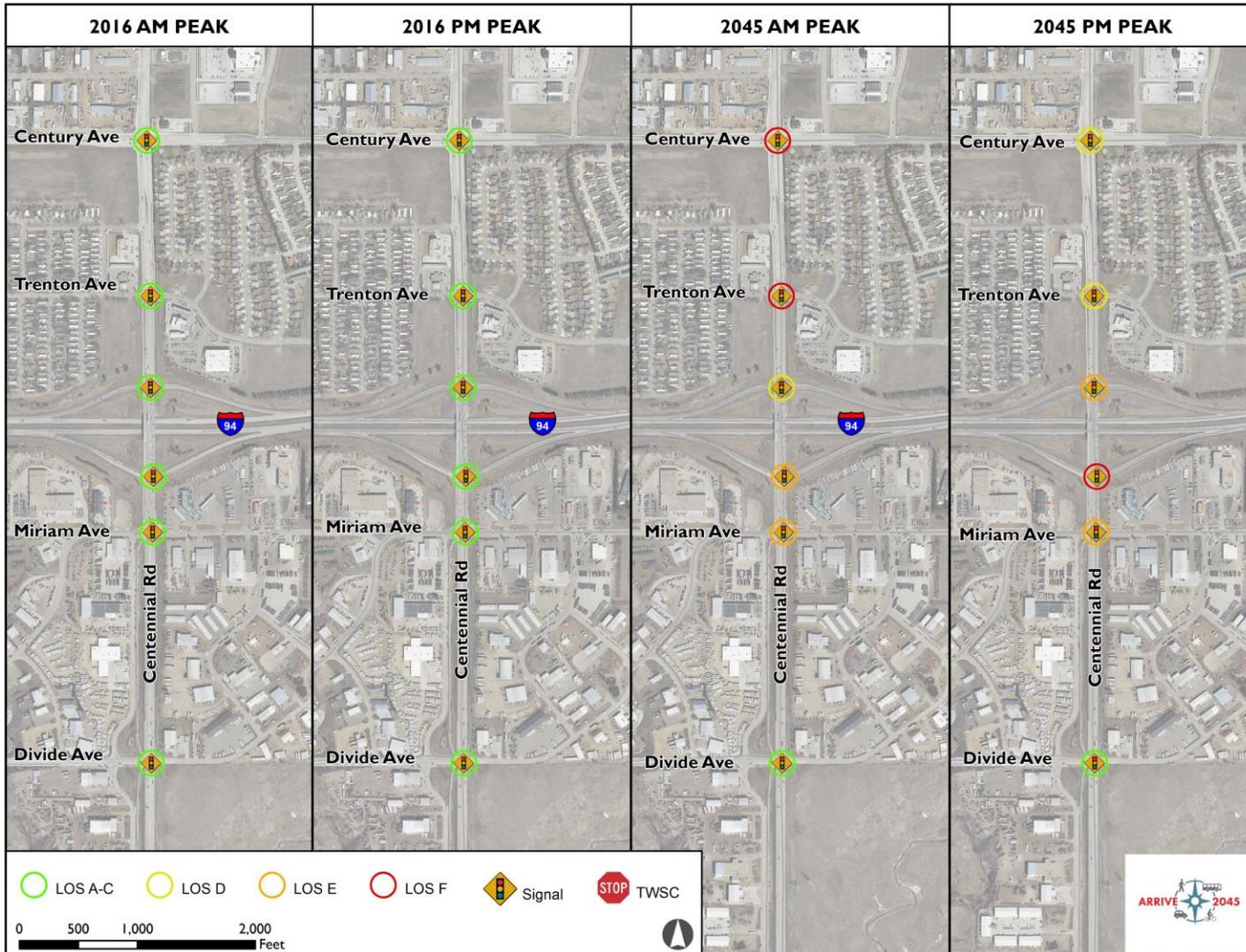
DDI



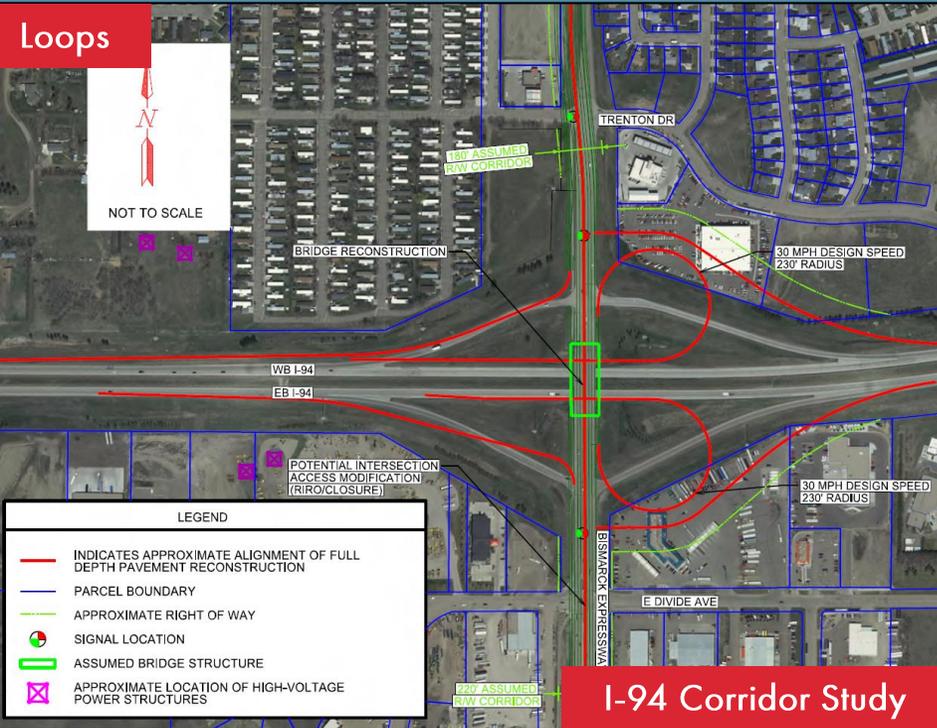
Moorhead, MN

	Do Nothing	Loops	SPUI	DDI
Operations	-	-62%	-52%	-54%
Worst LOS	F	D	E	C
Cost		\$21 M	\$21 M	\$12 M
Impacts	None	High	Low	Low

Centennial Road/ Bismarck Expressway



Centennial Road/ Bismarck Expressway

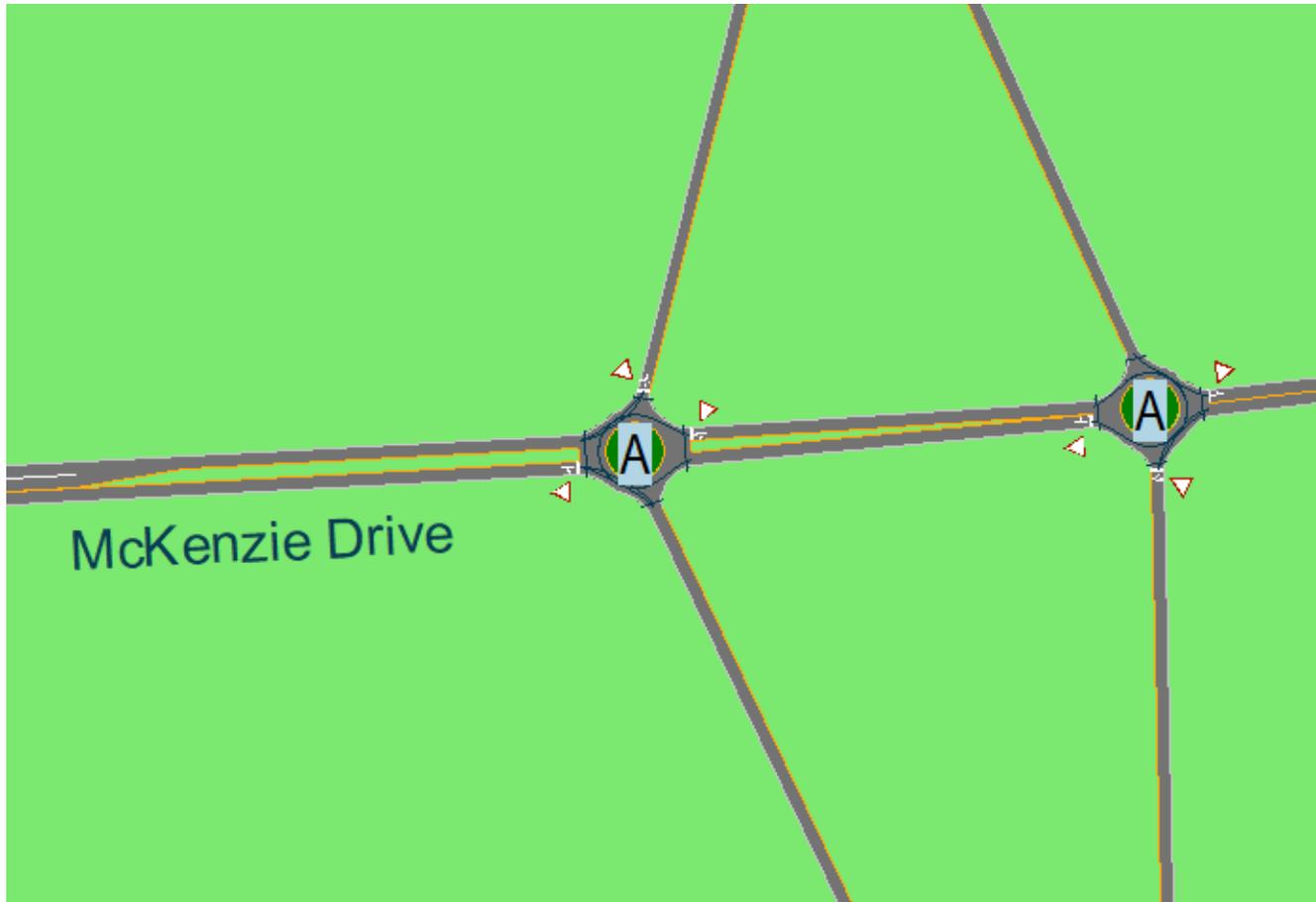


	Do Nothing	Loops	SPUI	MSPUI
Operations	-	-70%	-87%	-92%
Worst LOS	F	E	C	B
Cost		\$29 M	\$21 M	\$25 M
Impacts	None	High	Low	Low

McKenzie Drive

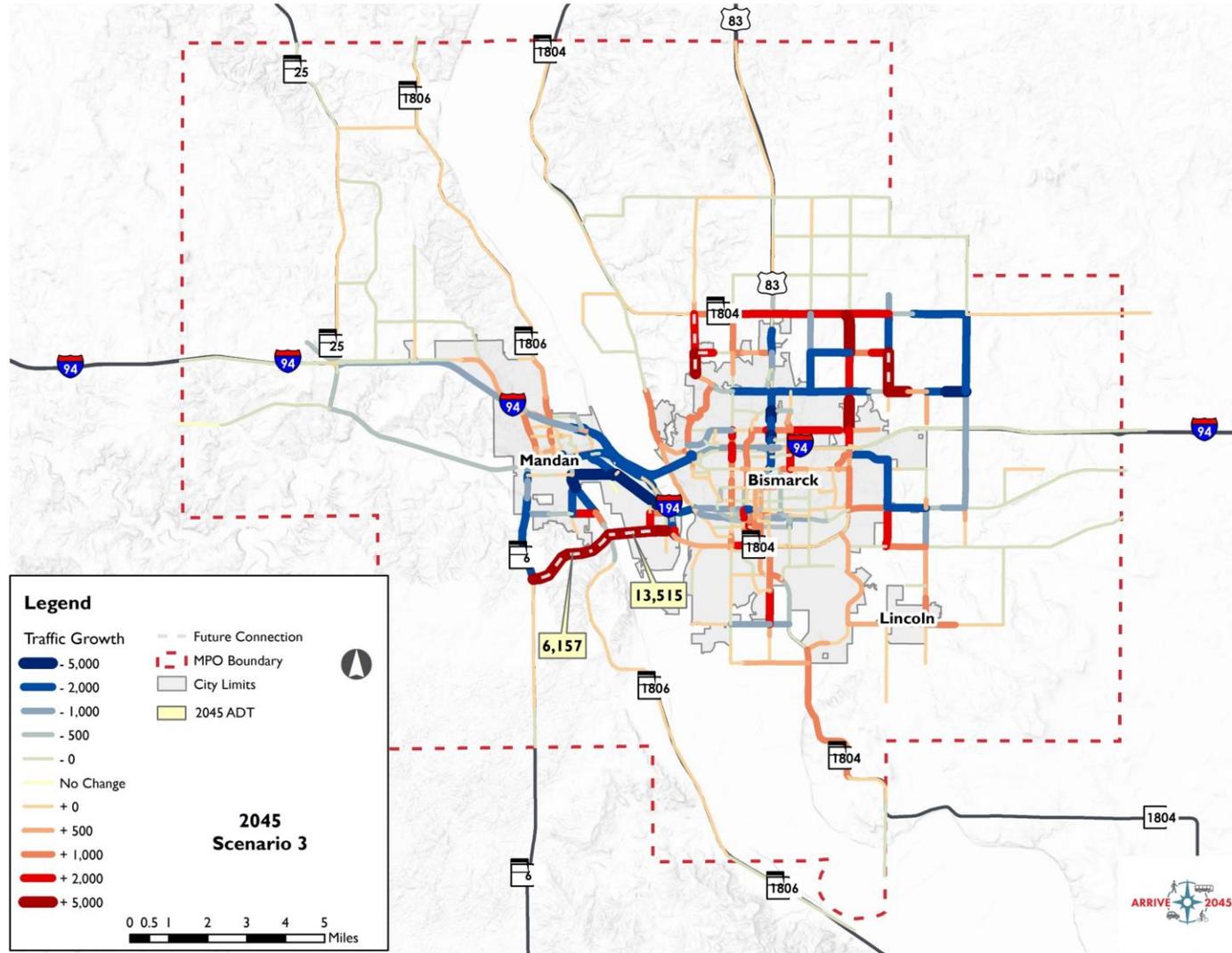


McKenzie Drive



- » Roundabouts
- » LOS A through 2045
- » \$2M
- » Traffic Signals Not Warranted

McKenzie Drive with Extension

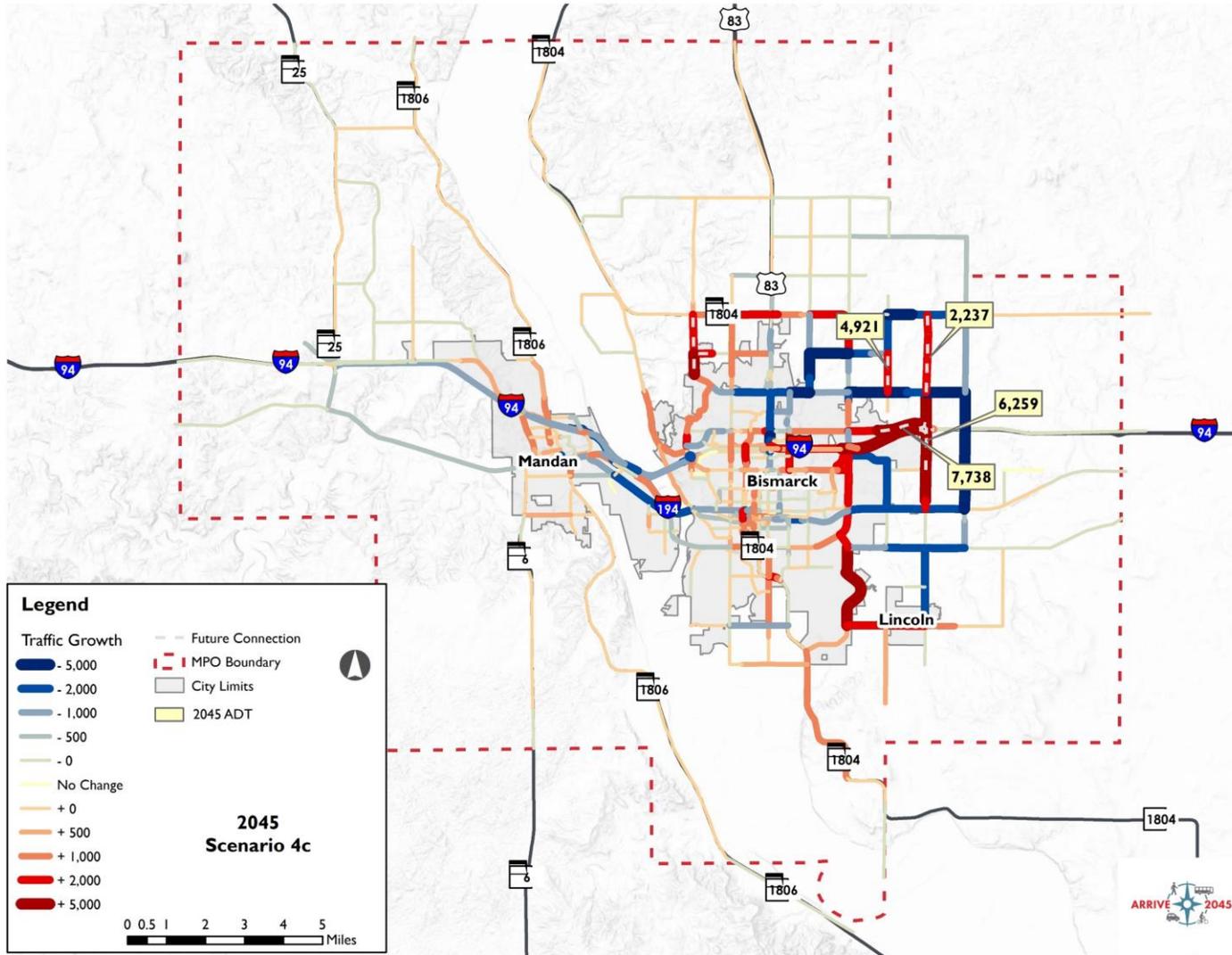


- » Roundabouts
 - LOS C through 2045
 - \$2M
- » Widening Likely Not Necessary but Possible
- » Traffic Signals Likely Warranted

Interstate Operations Analysis

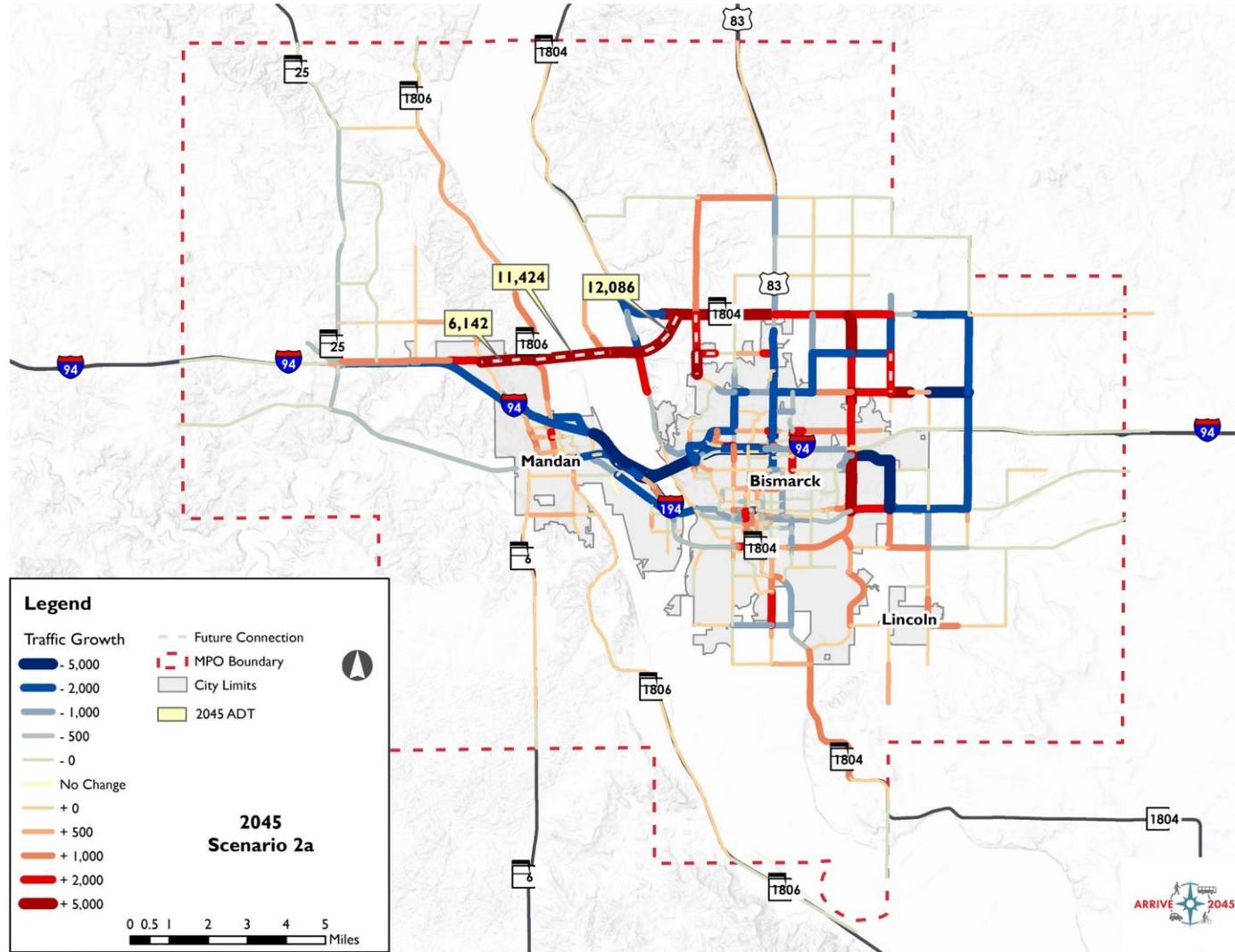
Regional Projects

66th Street



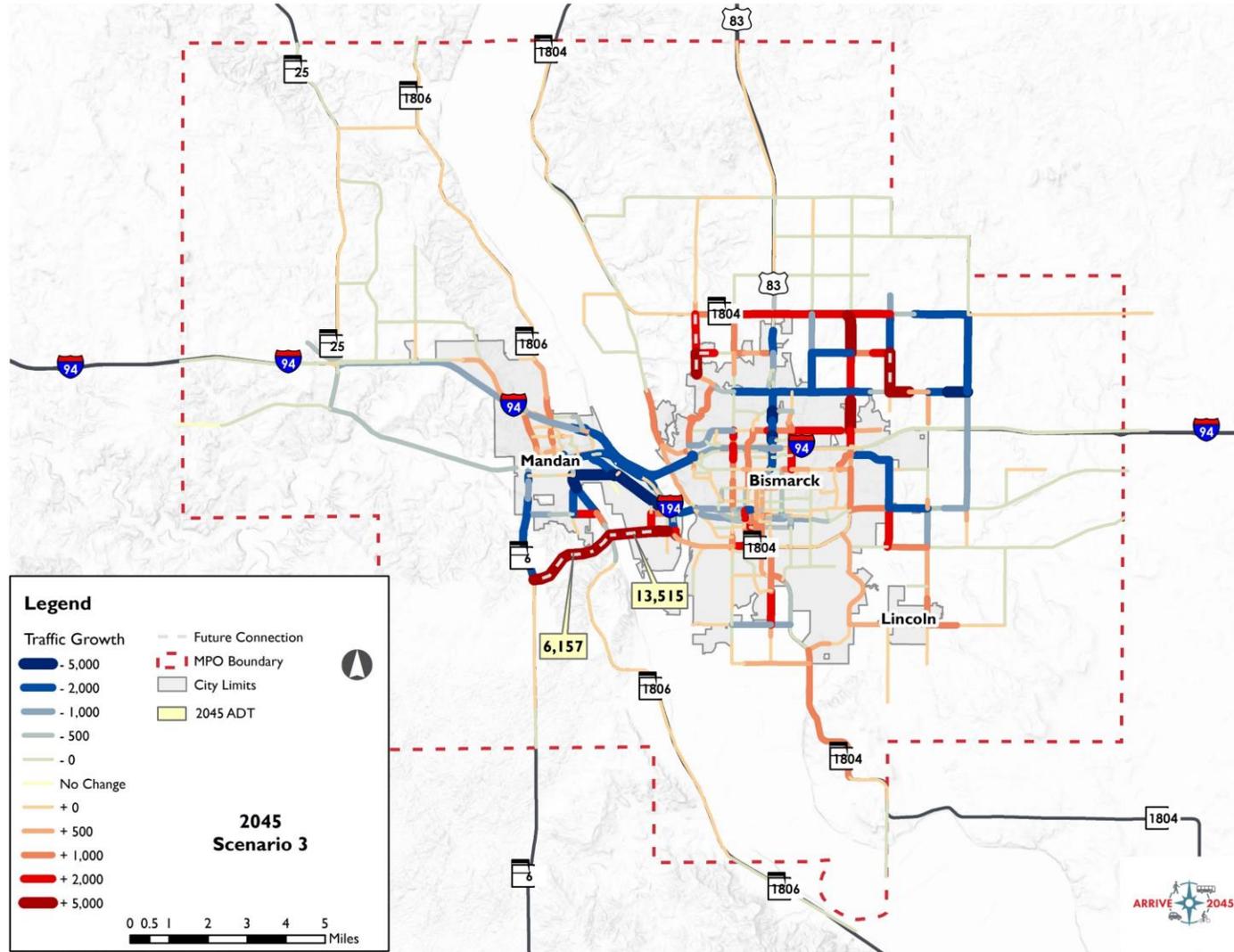
- » Value to Region: 2.7
- » Increased ADTs between Centennial and 66th but still acceptable operations
- » +3.5% Traffic Change at State Street
- » -2.3% to -19.2% Traffic Change at Centennial Road
- » Not Needed Until Further Buildout in NE Area of Bismarck
- » Centennial Rd/ Expressway Issues Occur Before 66th Street is Feasible
- » Consider Relationship to Centennial Rd

Northern Bridge Corridor



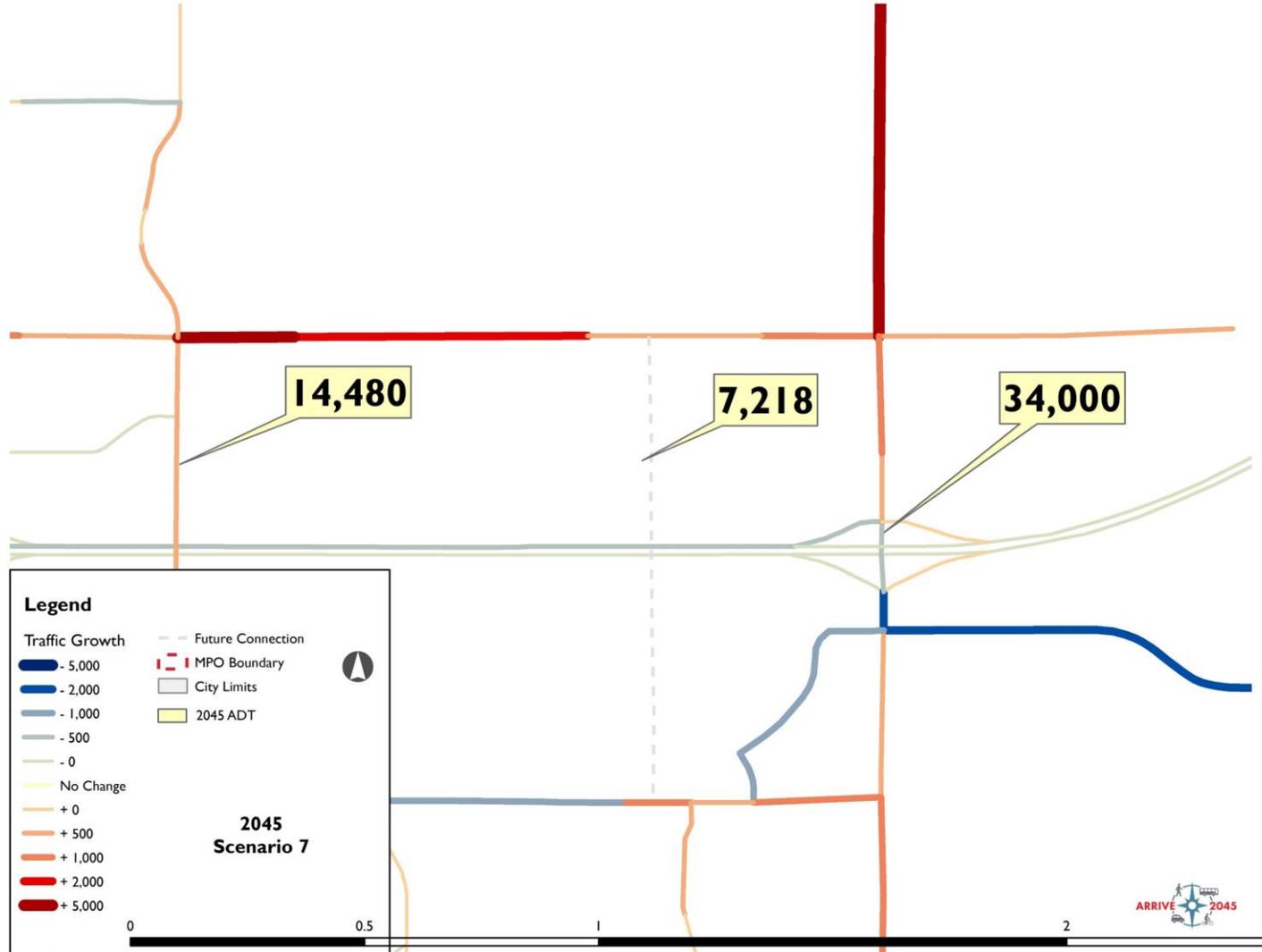
- » Value to Region: 8.8
- » Mitigates Need for I-94/I-194 Interchange Improvements
- » Benefits Entire Interstate System but Not a Need through 2045

McKenzie Drive Extension



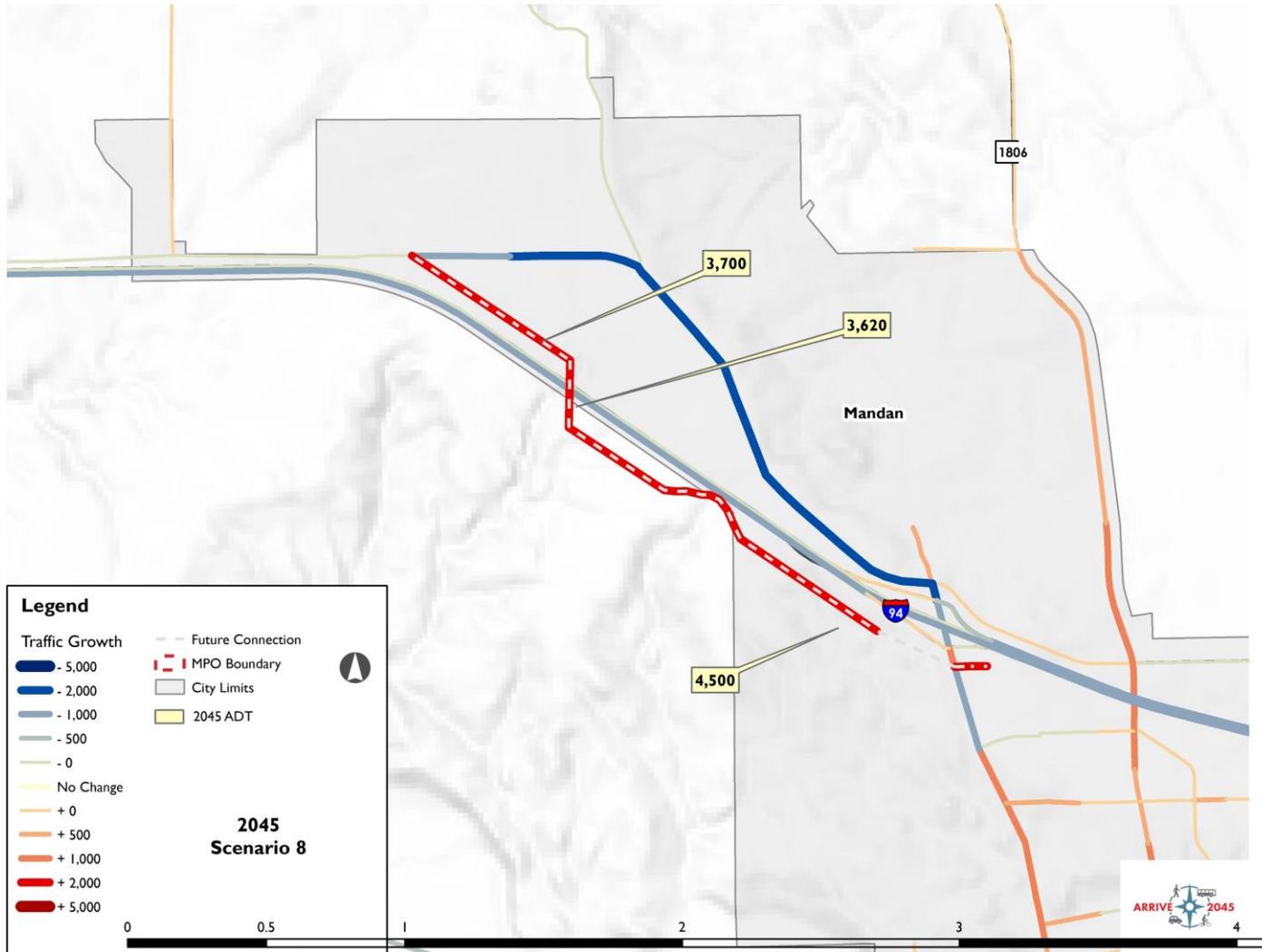
- » Value to region: 21.6
- » 2030 ADT: 13,675
- » 2045 ADT: 15,400
- » Mitigates need for improvements on I-94 between Grant Marsh and Main Avenue
- » Reduces traffic on Grant Marsh by 9%
- » May requires more improvements at McKenzie Drive Interchange

Hamilton Street Grade Separation



- » Value to region: 24.8
- » 2030 ADT: 6,000
- » 2045 ADT: 7,200
- » Reduction in Traffic:
 - 20% at 19th Street
 - 3-6% at State Street
 - Increases at Centennial
- » Potential future benefit that can be programmed long-term or beyond

33rd Avenue Grade Separation



- » Value to region: 18.7
- » 2030 ADT: 2,550
- » 2045 ADT: 3,600



Interstate Operations Analysis

Implementation

Implementation Plan

Interchange Location	Regional Connection	Deficiencies	Timing	Estimated Cost
ND 25	E+C	None	NA	\$0
Sunset Drive	E+C	None	NA	\$0
Mandan Avenue	E+C	None	NA	\$0
Memorial Highway/ Bismarck Expressway	E+C	None	NA	\$0
McKenzie Drive	E+C	Westbound Ramp Intersection	Short Term	\$2M
	McKenzie Drive Extension	Increase in traffic results in deficiencies at both ramp intersections	Short to Mid Term	\$2M
I-94/I-194	E+C	Westbound Lane Drop	Mid Term	\$15.2 M
	Northern Bridge Corridor	Reduces Traffic Along I-94	Beyond Long Term	\$15.2 M
	McKenzie Drive Extension	Reduces Traffic Along I-194	Beyond Long Term	\$15.2 M

Implementation Plan

Interchange Location	Regional Connection	Deficiencies	Timing	Estimated Cost
Tyler Parkway/Divide Avenue	E+C	Burnt Boat Road Intersection	Long Term	\$750,000
State Street	E+C	Most intersections deficient during one or both peak hours	Mid Term	\$12M
	66 th Street	Limited impacts would not improve operations on State Street or change timing needs.	Mid Term	\$12M
	Hamilton Street	Limited impacts would not improve operations on State Street or change timing needs.	Mid Term	\$12M
Centennial Road	E+C	Most intersections deficient during one or both peak hours	Short Term	\$25 M
	66 th Street	Mitigate some deficiencies but unlikely to be constructed before Centennial Road deficient	Short Term	\$25 M
	Hamilton Street	No impacts to Centennial Road operations and would not change timing needs	Short Term	\$25 M

US 83/ State Street

US 83 Alternatives Study

US HIGHWAY 83 ALTERNATIVE STUDY



BISMARCK - BURLEIGH COUNTY, NORTH DAKOTA

Prepared for: Bismarck-Mandan Metropolitan Planning Organization
Written By: SRF Consulting Group, Inc.



Study Partners

Bismarck



Bismarck-Mandan
METROPOLITAN PLANNING ORGANIZATION

Apex
Engineering Group

AECOM

- » Highway 83 Alternatives Report
 - Heavy Focus on Alternative Routes
 - Multiple concepts for State Street
 - Implementation plan recommended additional improvements and analysis



6-Lane At Grade



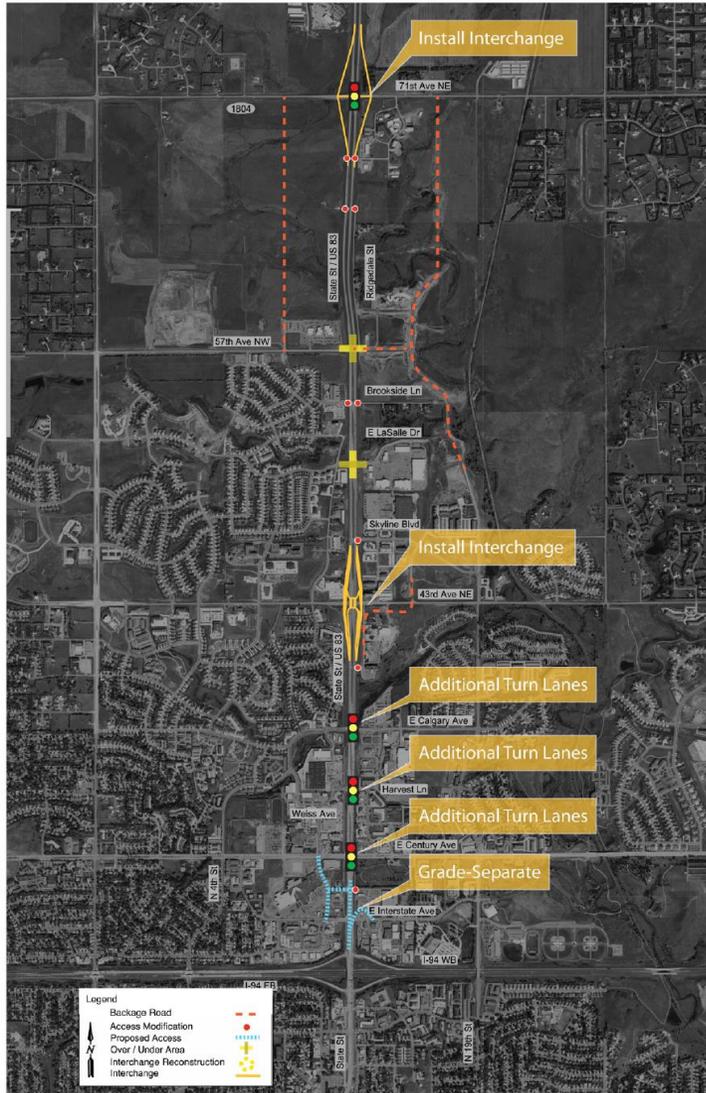
Scenario 9a	2030	2045
VHT Change	-4.2%	-16.8%
VMT Change	1.0%	0.1%
Construction Cost	\$64.3 M	
Total Benefits	\$523.3 M	
Benefit/Cost Ratio	10.8	
Breakeven	9 Years	

6-Lane with Interstate Avenue Grade Separation



Scenario 9b	2030	2045
VHT Change	-3.8%	-16.3%
VMT Change	1.1%	0.2%
Construction Cost	\$89.3 M	
Total Benefits	\$495.2 M	
Benefit/Cost Ratio	8.5	
Breakeven	10 Years	

Expressway



Scenario 9c	2030	2045
VHT Change	-2.3%	-14.0%
VMT Change	2.5%	2.2%
Construction Cost	\$145.1 M	
Total Benefits	\$289.5 M	
Benefit/Cost Ratio	4.2	
Breakeven	16 Years	

Summary

Alternative	Benefits (\$)	Benefits (%)	Deficient	Costs	Costs (%)
6-Lane At Grade	\$523.3M	Best	36% LOS "E"	\$64.3M	Best
6-Lane with Interstate Avenue Grade Separation	\$495.2M	-5%	32% LOS "E"	\$89.3M	+39%
Expressway	\$289.5M	-45%	0% LOS "E"	\$145.1M	+125%

- » Study Did Not Quantify Environmental, Social, or Business Impacts
- » Analysis Used Only Macro-Modeling Tools

MEETING SIGN IN

Name **Representing**

Rachel Drowlow BM-MPO

JUSTIN FROSETH CITY OF MANDAN

BEN ENRETH CITY OF BISMARCK

Steve Saunders MPO

Kim Lee City of Bismarck

John Saiki Morton County

Gabe Schell City of Bismarck

Mark Berg City of Bismarck

Marcus J. Hall Burleigh County

John Van Dyke City of Mandan

Natalie Pierce Morton County P+Z

Phone:

Wade Kline, Mike Bither, Bethany Brant-Sargent, Peggy Harter

Meeting: Small Group Working Meeting – October 24, 2019

Blackstead Room - Bismarck City Hall

