Lincoln MPO 2040 Long Range Transportation Plan

Technical Report

Adopted December 1, 2011

Lincoln Metropolitan Planning Organization

County-City Building

555 South 10th Street - Suite 213

Lincoln, Nebraska 68508

(402) 441-7491

Lincoln Metropolitan Planning Organization

Members

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LINCOLN MPO
2040 LONG RANGE TRANSPORTATION PLAN
TECHNICAL REPORT

CHAPTER 1: INTRODUCTION

This report documents the preparation of the Lincoln (Nebraska) Metropolitan Planning Organization (MPO) Long Range Transportation Plan (LRTP) for the year 2040. The LRTP has been developed in coordination with the update of the *City of Lincoln-Lancaster County Comprehensive Plan*. The Comprehensive Plan contains an assessment of historic growth, past and forecast socioeconomic data, land use alternatives, and the development of the preferred plan. The development of the LRTP along side of the Comprehensive Plan allows a comprehensive land use-transportation planning approach that offers a direct link between the two planning activities. This planning process is anticipated to culminate in the adoption of an updated Comprehensive Plan and LRTP by the end of the 2011 calendar year.

The preparation of the Lincoln MPO LRTP has occurred under the auspices of the Lincoln Metropolitan Planning Organization (MPO) and has been conducted in accordance with Federal, State, and local transportation planning guidelines and polices. The LRTP was prepared to address both the long range transportation needs of the City of Lincoln and Lancaster County and address the federal SAFETEA-LU requirements for preparing a Long Range Transportation Plan. This plan addresses project goals and the eight SAFETEA-LU planning factors, a transparent evaluation process that includes input from the LPlan Advisory Committee (LPAC) and the public. The LRTP also includes a Needs Based Plan which is not financially constrained with illustrative projects for all travel modes and strategies. Based on a financial analysis of forecast revenues through year 2040, a Financially Constrained Plan was developed with projects and strategies correlated to year of expenditure revenues.

The Long Range Transportation Plan Technical Report is intended to complement the LRTP. This report provides greater detail of the technical analysis and evaluation process that was undertaken in the development of the plan. This LRTP provides the basis for long range transportation planning for the City of Lincoln, Lancaster County, the State of Nebraska, and other entities within the greater Lincoln metropolitan area. The Plan addresses all modes of transportation, including roads, public transportation, air, rail, pedestrian, bike and trails. It should also be noted that the Lincoln MPO has an adopted Congestion Management Process that defines how projects are evaluated and selected to address good stewardship in addressing existing and future congestion within the region.

REPORT FORMAT

- **Chapter 1: Introduction:** Describes the report's purpose, the relationship between the LRTP, the Lincoln-Lancaster County Comprehensive Plan, and the Technical Report, an outline of chapters, the geographic scope of the analysis, and the agencies contributing to its completion.
- **Chapter 2: Community Vision and Planning Assumptions:** This chapter provides information on the transportation vision of the community, growth trends and land use assumptions on which the transportation plan is based. References to the population projections, land use plan, and growth tiers from the Lincoln-Lancaster County 2040 Comprehensive Plan are included.

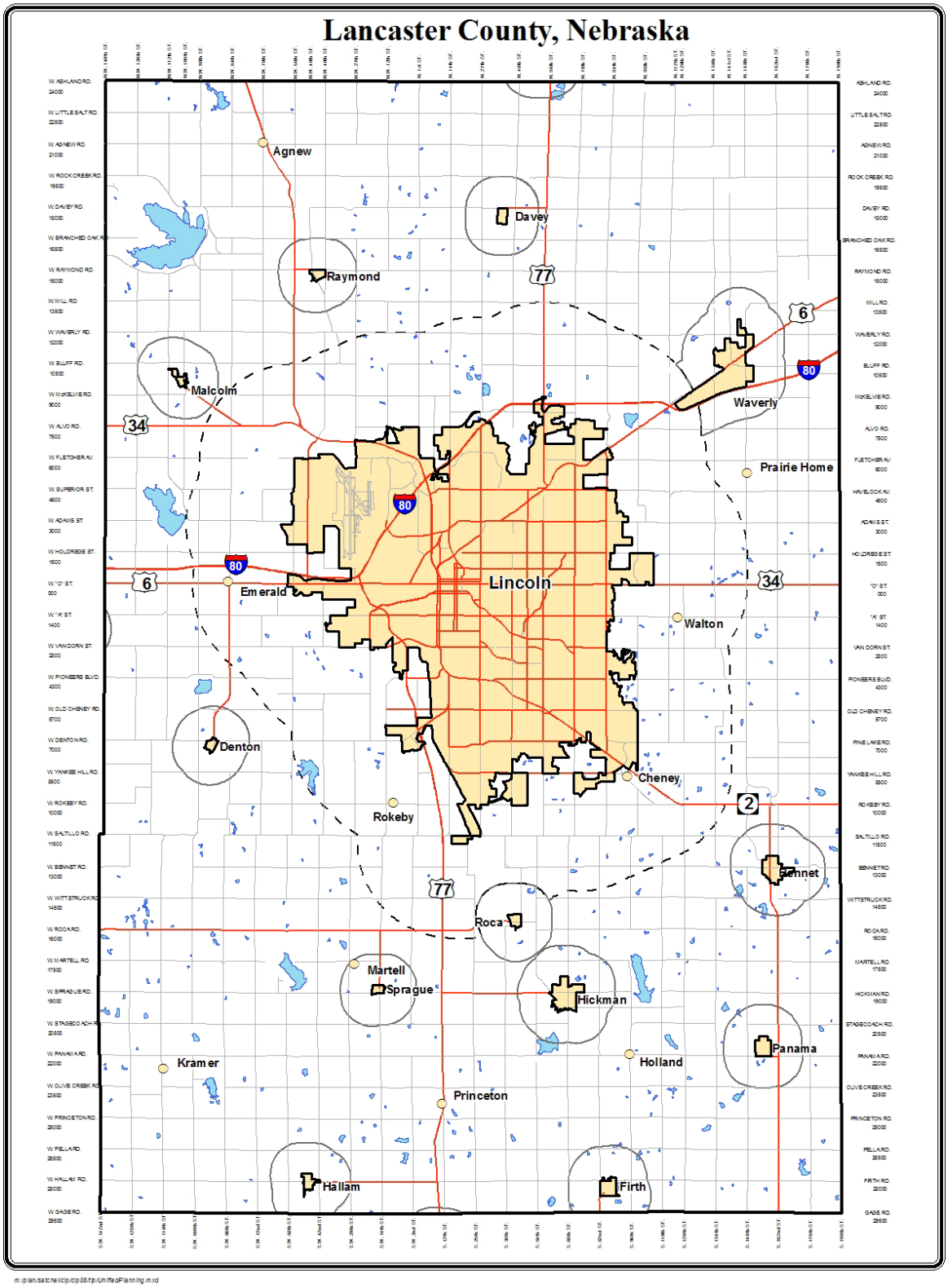
- **Chapter 3: Planning Partners and Public Participation Process Overview:** This chapter provides details on the public process and participation that occurred throughout the development of the LRTP. Included in this chapter are various links to other supporting documents.
- **Chapter 4: Existing Conditions:** This chapter summarizes the region's state of transportation including where the region is today and how it got here.
- **Chapter 5: Evaluation Process:** This chapter describes the process for evaluating projects based on the 2040 LRTP goals and eight SAFTEA-LU planning factors used to select and prioritize projects and priorities. This chapter also describes the process on how the previous 2030 LRTP, which was based on a very long and comprehensive list of projects that would be desirable, was refined to a list of what projects are actually needed to address future growth. The resulting Needs Based Plan provides a vision of what is needed if funding becomes available. Therefore, the list of projects needed to address future growth includes projects, programs and strategies that were incorporated into the Financially Constrained Plan as well as illustrative projects that are not, but identify priorities for potential future plan amendments included should additional revenues become available.
- **Chapter 6: Congestion Management Process:** In addition to the SAFETEA-LU requirements for preparing the Long Range Transportation Plan, the Lincoln MPO has adopted a Congestion Management Process (CMP) for preparing the plan. This chapter discusses the CMP and how the plan addresses those requirements.
- **Chapter 7: Forecasting Traffic – Lincoln MPO Travel Demand Modeling:** The forecast analysis for developing the Needs Based Plan and the Financially Constrained Plan is based on an updated Travel Demand Model. This section discusses the travel demand model and the inputs used for making future year forecasts.
- **Chapter 8: Financially Constrained Plan:** This chapter provides greater detail regarding the evaluation, selection, and prioritization process that was used to select plan elements within available funding by year of expenditure.
- **Chapter 9: Evaluation of Air Quality Impacts:** The impacts of the Financially Constrained Plan on air quality in the MPO region are reported and assessed in this chapter.
- **Chapter 10: Environmental, Social, and Cultural Impact Assessment:** This is a discussion of potential environmental, social and cultural impacts of the Plan and possible mitigation activities to be developed in consultation with federal, state and tribal wildlife, land management, and regulatory agencies.

GEOGRAPHIC SCOPE OF THE LONG RANGE TRANSPORTATION PLANNING EFFORT

The Lincoln MPO Long Range Transportation Plan covers the transportation systems of the jurisdictions located within the Lincoln Metropolitan Planning Area (MPA) which encompasses all of Lancaster County, Nebraska. The LRTP considers the interdependent nature of the metropolitan area's multimodal transportation systems through addressing the region's roadway, transit, bicycle, and pedestrian modes in a combined effort.

A major work element of the LRTP process is the use of a computer model to simulate vehicular traffic for the year 2040. This model uses takes proposed land uses by small geographic areas -- termed, "traffic zones" -- to project likely future vehicular trips. These projected trips are then used to simulate how traffic might flow over alternative future street systems. This information is then used to determine how well various street improvements -- especially new roads or added lanes -- might aid in moving traffic in the future.

Lincoln Metropolitan Planning Area



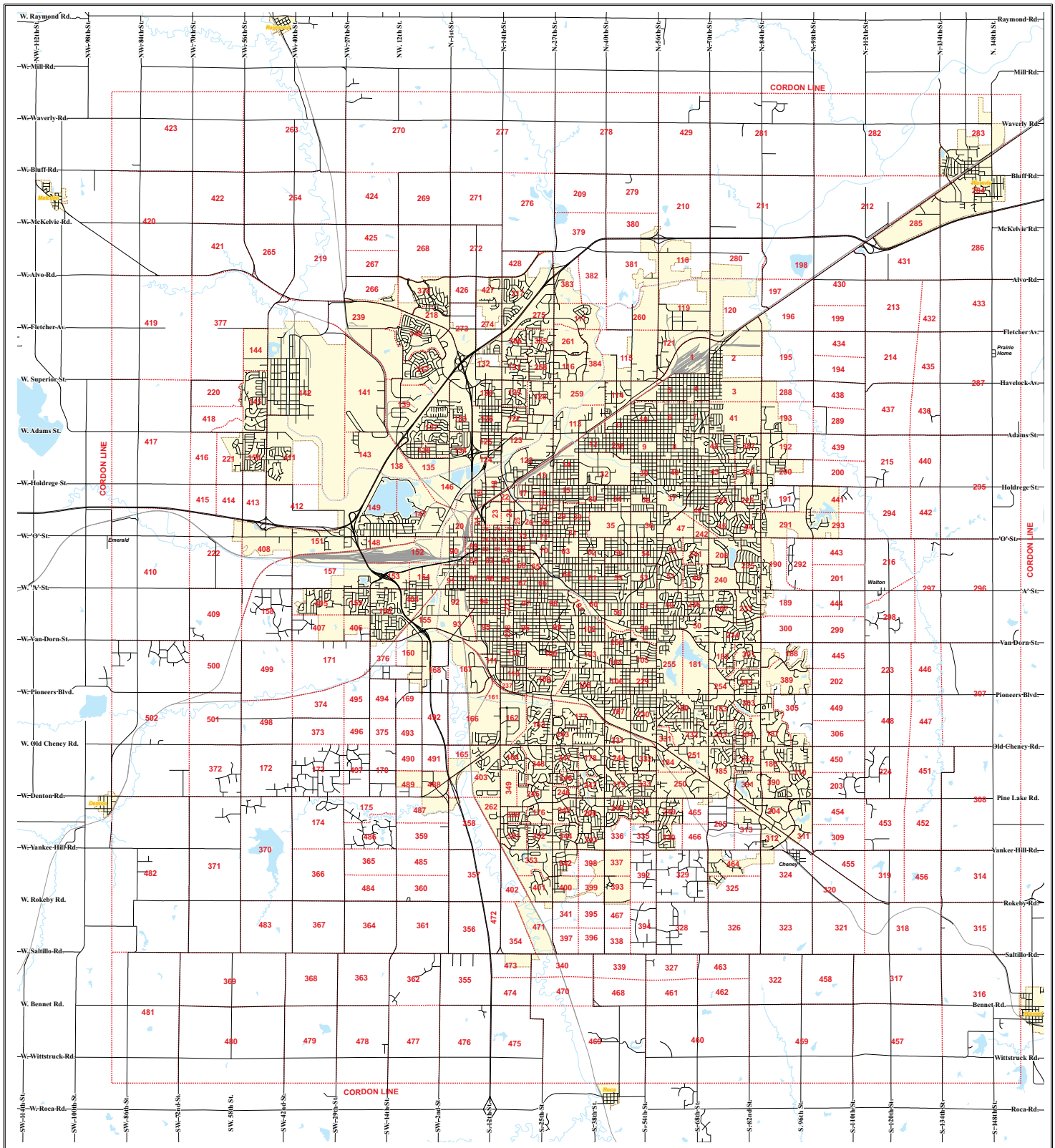
For purposes of completing this traffic modeling effort, a geographic area known as the "cordon area" is used. The cordon area is smaller than the County as a whole – it includes the City of Lincoln and an area extended three to five miles beyond the present corporate limits. The area is designed to model traffic for the greater Lincoln metropolitan area as it exists today and about 29 years into the future. This also allows the simulation of travel within and through the metropolitan areas, including the Interstate and State Highway system. The cordon area forms the primary geographic focus for transportation planning for the Lincoln MPO. This is illustrated on the TAZ map. This area corresponds to the most heavily traveled areas within the City and County.

The cordon area is divided into 502 "traffic zones." As noted, traffic zones form the geographic basis upon which traffic demand is projected. Existing and future land uses – such as dwelling units, commercial and industrial tracts, parks, and schools – are estimated for each zone. These estimates are then used to calculate the number of daily trips that might be expected to occur to and from each zone. A map of the 502 traffic zones and a detailed spreadsheet of the land use data for each traffic zone are attached to this report for review as Appendix A.

CONTRIBUTING AGENCIES TO THE LONG RANGE TRANSPORTATION PLAN PROCESS

This report represents the cumulative effort of many people. The community contributed through their participation on various committees and task forces, workshops, and other public events. Also numerous letters, emails, and voice mail messages provided a broad community voiced during this process. These are described in greater detail in the following section.

The effort could not have been completed without the assistance of staff from the Lincoln City-Lancaster County Planning Department, Lincoln Public Works and Utilities Department, Lancaster County Engineer's Office, Lincoln Parks & Recreation Department, Lincoln City-Lancaster County Health Department, Nebraska Department of Roads, Federal Highway Administration, and Federal Transit Administration as well as efforts from the consulting firm LSA Associates, Inc. The authors of this report wish to thank all who participated in this effort and to acknowledge the significant contribution they made to the successful completion of this task.



LINCOLN AREA TRAFFIC ZONES

Lancaster County, Nebraska

Miles 0 0.25 0.5 1 1.5

Corporate Limits

Lakes and Water Bodies

Streams

Traffic Zone Boundary

376 Traffic Zone Number

LINCOLN - LANCASTER COUNTY PLANNING DEPARTMENT

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March 23, 2010

CHAPTER 2: COMMUNITY VISION AND PLANNING ASSUMPTIONS

VISION FOR TRANSPORTATION

The Vision for Transportation in Lincoln and Lancaster County is a safe, efficient and sustainable transportation system that enhances the quality of life, livability, and economic vitality of the community. The following four principles guide the plan toward that goal:

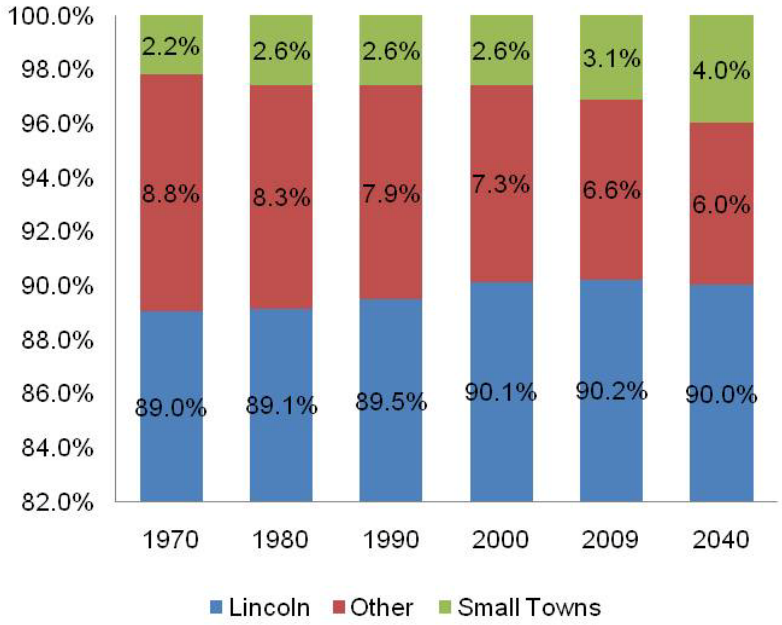
- **A Connected City:** In Lincoln and Lancaster County, the unifying qualities of transportation will be emphasized. Neighborhoods, activity and employment centers, rural communities, and open lands should be connected by a continuous network of public ways. The transportation network needs to sustain the One Community concept by linking neighborhoods and rural communities together.
- **A Balanced Transportation System:** Transportation planning in Lincoln will be guided by the principle of balancing needs and expectations. It will recognize that transportation is a means to the goal of a unified, livable, and economically strong community. The system needs to effectively move people and goods around the community, while minimizing impacts on established neighborhoods and investments. The concept of balance also applies to modes of transportation. While the system must function well for motor vehicles, it should also promote public transportation, bicycling, and walking as viable alternatives now and into the future.
- **Transportation as a Formative System:** Transportation and land use are linked systems that are subject to change by growth and development. The land use plan, which includes projections of future development, determines the character of the transportation plan. On the other hand, transportation has a major impact on the form of developing areas. Lincoln and Lancaster County will use transportation improvements to reinforce desirable land use development patterns.
- **Planning as a Process:** Transportation planning is a dynamic process, responding to such factors as community growth, development directions, and social and lifestyle changes. Therefore, the Comprehensive Plan and LRTP employ an ongoing process that responds to these changes.

SUMMARY OF COMPREHENSIVE PLAN ASSUMPTIONS

These assumptions represent the agreement of the LPlan Advisory Committee which assisted in the development of LPlan 2040, including the Long Range Transportation Plan. The following assumptions guide the planning process for Lincoln and Lancaster County:

- A City and County population growth rate of approximately 1.2 percent per year was used for the 30 and 50 year planning periods. This adds approximately 126,000 persons to the current County population of 285,000 over the next thirty years and about 226,000 over the next fifty years. The "Lancaster County Population Projections: 2010 to 2040" report of the population projections used in the development of LPlan 2040 is available in Appendix B of the Technical Report.

- The assumed County population distribution would remain ninety percent in the City of Lincoln, four percent in other incorporated towns and villages, and six percent on rural acreages, farms and unincorporated villages.
- Approximately 52,100 dwelling units will need to be added in Lancaster County to support the additional population of 126,000 persons by 2040.
- For transportation modeling purposes, an urban residential density factor of 3 dwelling units per acre was assumed for a majority of the designated future growth areas.
- Approximately 16% of new dwelling units will be built within the existing City, with about 3,000 in the Downtown and Antelope Valley areas, 1,000 in existing neighborhoods, and 4,000 in mixed use redevelopment nodes and corridors.



LAND USE PLAN

The Vision is the basis for decision making within the community. The challenge is turning these statements and goals into reality. Implementing these guiding principles requires additional details that come in three distinct forms:

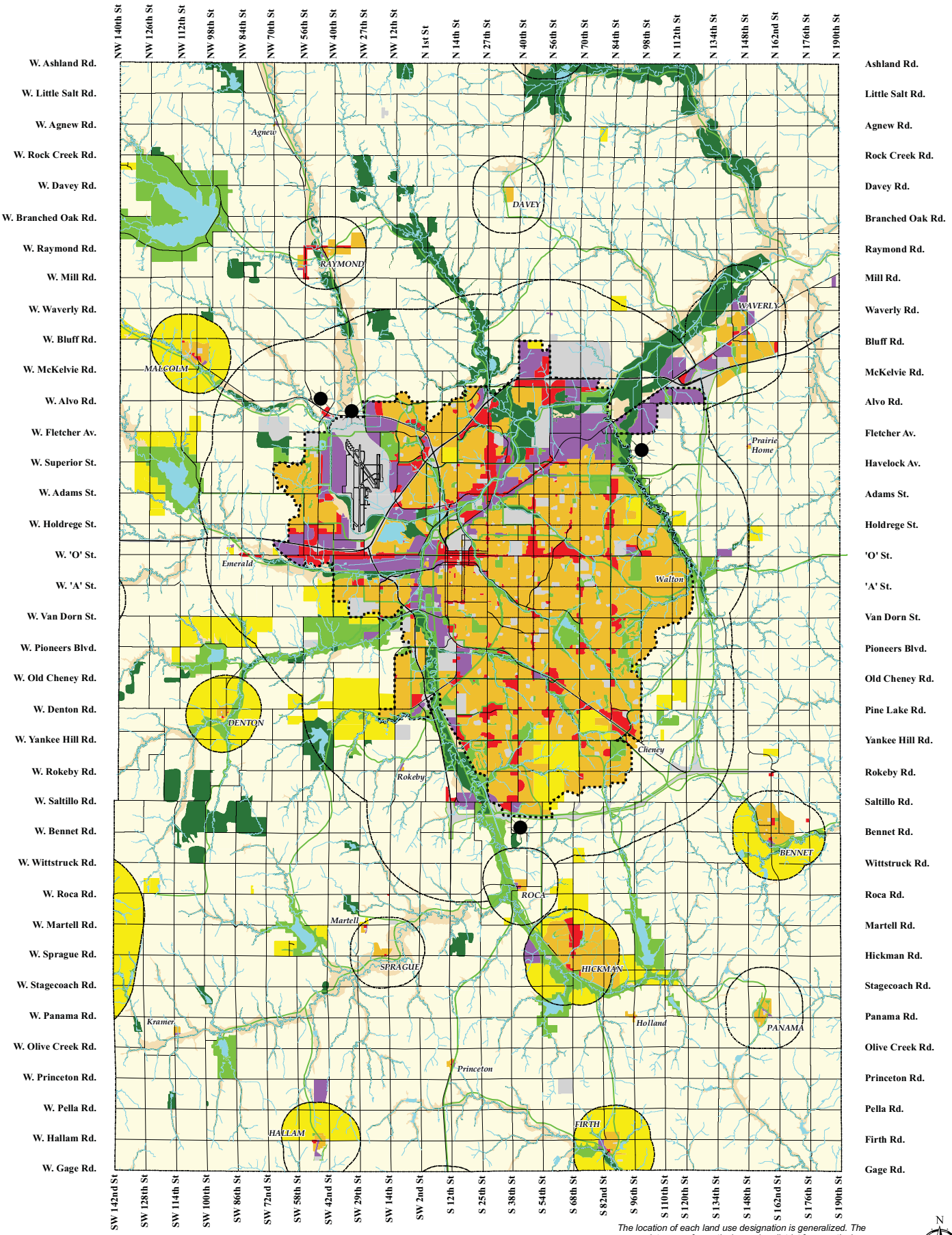
- The principles and strategies found in LPlan 2040
- The land use relationships in the future land use plan
- The direction and timing of future development projected by the future urban growth tiers

There is one land use plan for both the City of Lincoln and Lancaster County. This one land use plan is displayed in two figures for the purpose of providing greater clarity of display within the Lincoln urban area. The first figure displays the entire Lincoln/Lancaster County Future Land Use Plan. The second figure is an enlarged portion of the same plan, focused on the Lincoln urban area.

The future land use map displays the generalized location of each land use. It is not intended to be used to determine the exact boundaries of each designation. The area of transition from one land use to another is often gradual. LPlan 2040 also encourages the integration of compatible land uses, rather than a strict segregation of different land uses.

The land use plan includes detailed data for residential

The comprehensive plans adopted by surrounding towns and counties are listed in the Plan Realization chapter in the Comprehensive Plan and are used to coordinate projects and assist with discussions involving multiple jurisdictions.



2040 LANCASTER COUNTY FUTURE LAND USE PLAN

- Agricultural
- Residential - Urban Density
- Residential - Low Density
- Potential Large Employer Opportunity Areas
- Commercial
- Industrial
- Public & Semi-Public
- Agricultural Stream Corridor
- Green Space
- Environmental Resources
- Lakes & Streams
- Future Service Limit

The location of each land use designation is generalized. The appropriateness of a particular zoning district for a particular piece of property will depend on a review of all of the elements of the Comprehensive Plan. Please consult other sources for exact locations of environmental resources such as wetlands, native prairie and floodplain. Not all of these resources are displayed on this figure.

The incorporated town plans are displayed on this figure. In many circumstances the land use categories in the town plans were different from the categories used in the Lincoln Lancaster County Plan, so some adjustments were made for the purposes of this display. These communities and their specific adopted plans should be consulted as the source for decisions within their zoning jurisdictions.

N W E S

0 0.5 1 2 3 Miles

L Plan 2040

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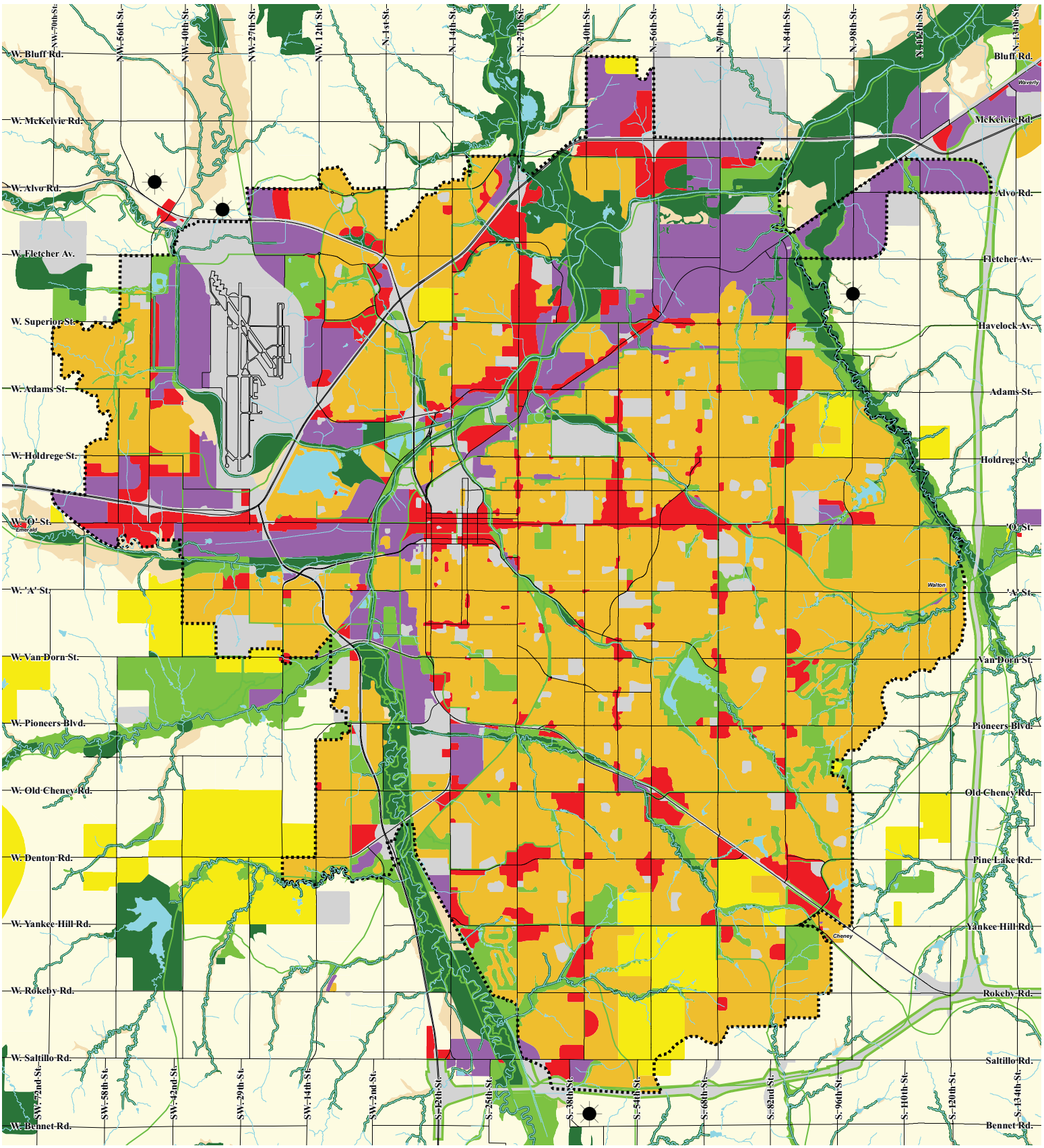

2040 LINCOLN AREA FUTURE LAND USE PLAN

- Agricultural
- Residential - Urban Density
- Residential - Low Density
- Potential Large Employer Opportunity Areas
- Commercial
- Industrial
- Public & Semi-Public
- Agricultural Stream Corridor
- Green Space
- Environmental Resources
- Lakes & Streams
- Future Service Limit

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N W E S

0 0.2 0.4 0.8 1.2 Miles

L Plan 2040

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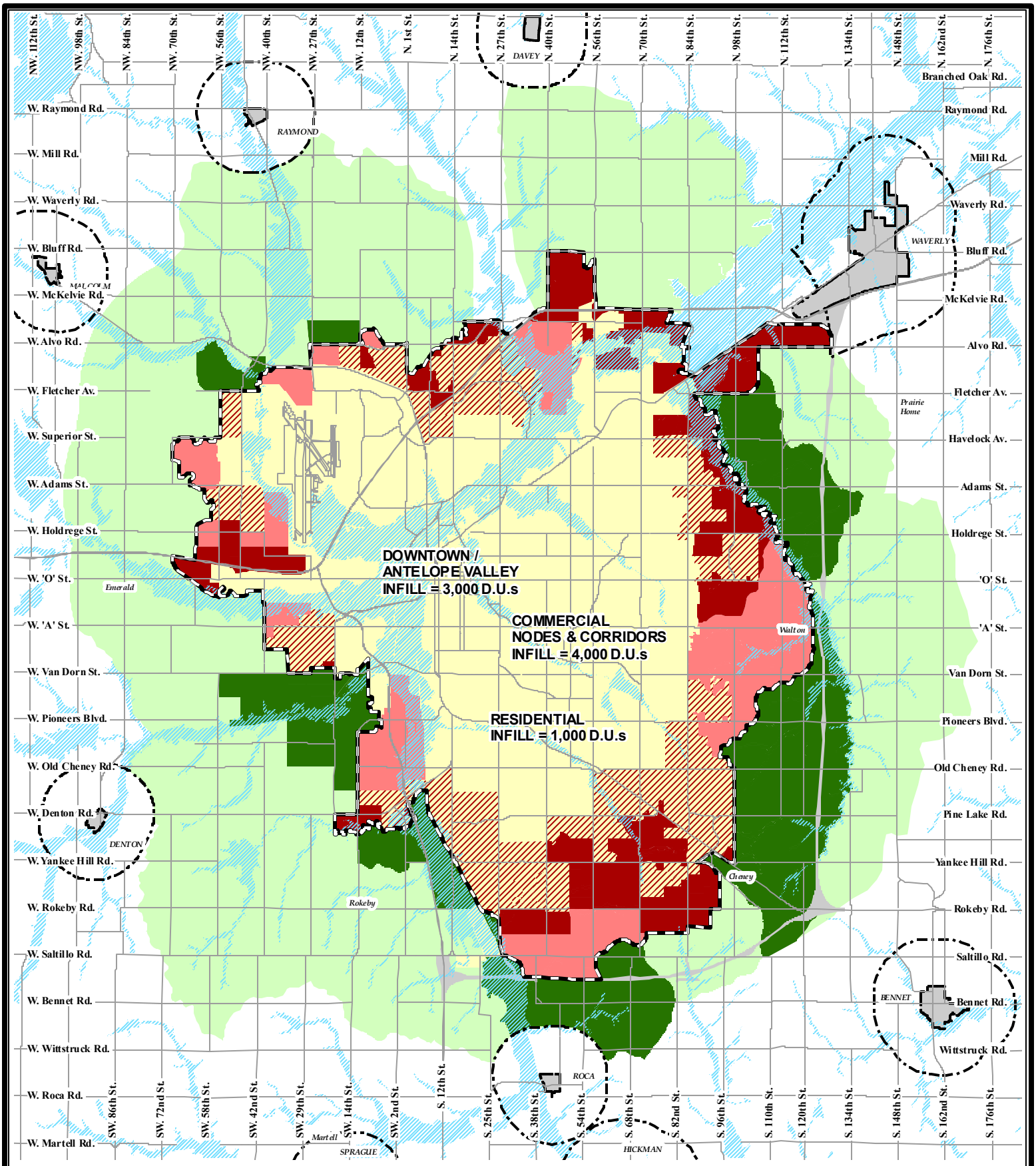
TIMING: FUTURE GROWTH TIER MAP

The Comprehensive Plan includes three tiers of growth for the City of Lincoln.

Tier I reflects the "Future Service Limit," 34 square miles where urban services and inclusion in the city limits are anticipated within the 30 year planning period. This area should remain in its current use in order to permit future urbanization by the City.

Tier II is an area of approximately 34 square miles that defines the geographic area the city is assumed to grow into immediately beyond Tier I. Infrastructure planning, especially for water and sanitary sewer facilities is anticipated to reach beyond the 30 year time horizon to 50 years and further. Tier II shows areas where long term utility planning is occurring today. Tier II should remain in its current use in order to allow for future urban development. It also acts as a secondary reserve should Tier I develop faster than anticipated.

Tier III provides an approximately 131 square mile area for Lincoln's longer term growth potential – perhaps 50 years and beyond. Little active planning of utilities or service delivery is likely to occur in the near term in Tier III, however, it should also remain in its present use in order to be available for future urban development.



2040 PRIORITY GROWTH AREAS

- Existing Lincoln City Limits and Approved Preliminary Plans (2011)
- Floodplain and Flood Prone Areas
- 2040 Future Service Limit
- Tier I, Priority A (Developing)
- Tier I, Priority B (2025)
- Tier I, Priority C (2040)
- Tier II (2060)
- Tier III

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CHAPTER 3: PLANNING PARTNERS AND PUBLIC PARTICPATION PROCESS OVERVIEW

This chapter describes the general procedures followed to formulate the 2040 Lincoln Lancaster County Comprehensive Plan, known as LPlan 2040 (See Appendix C), and the Long Range Transportation Plan. It begins with an overview of the requirements of a Long Range Transportation Plan (LRTP) and of the relationship of the LRTP to the Comprehensive Plan, and concludes with a description of the various working teams who participated in the process. While study and planning activities began in late 2009 and ended in 2011, the core tasks from all working groups were completed in the summer of 2011.

RELATIONSHIP OF THE LRTP WITH THE COMPREHENSIVE PLAN

Federal transportation planning guidelines call for every metropolitan area in the United States to have an approved "transportation plan." This plan, commonly referred to as the Long Range Transportation Plan (LRTP), must address the movement of goods and people for a planning horizon of at least twenty years. This plan is to conform to an array of policies and guidelines that govern the scope and content of the LRTP, as well as the process through which it is to be developed, reviewed and adopted.

One ingredient of a valid LRTP is that it reflects the comprehensive land use plans of the communities covered by the plan. A key conceptual underpinning of the LRTP process is that it clearly identifies the projected demand for travel and transportation facilities of the metropolitan area encompassed within the plan. This reinforces the strong relationship between consistent land use planning and an efficient transportation system.

In the City of Lincoln and Lancaster County there is a long standing connection between the community land use and transportation planning efforts. Since the very first long range planning efforts of the 1950s, all of the City and County Comprehensive Plans have included an integrated transportation plan element. These elements have closely linked the transportation and land use components of the Plans, clearly recognizing the need to take a long term perspective regarding the development and maintenance of the community's transportation facilities.

The currently adopted 2030 Comprehensive Plan reflects this long standing planning tradition. The process that was employed during the early 2000s in developing this plan explicitly recognized the imperative of the transportation-land use connection. From the procedures utilized in preparing the 2040 Plan's underlying goal statements to the final planning document, the planning process was careful to ensure that the relationship between sound long range transportation planning and sound long range comprehensive planning was preserved. This comprehensive planning process further affirmed the strong continuing relationship between the City-County Comprehensive Plan and the community's Long Range Transportation Plan, as called for in Federal regulations.

Under Federal guidelines, the LRTP is to be updated every 5 years in conforming metropolitan areas. The sunset date for the 2030 LRTP is December of 2011. The LRTP has gone through a complete update during 2010 and 2011 and is expected to be adopted by the end of year 2011.

TRANSPORTATION PLANNING PROCESS OVERVIEW

This subsection provides an overview of the composition and relationship between the working groups who participated in the LPlan 2040 process. It is not intended to provide detailed descriptions of the technical procedures and finding of each entity (that will described later in this report) but rather to offer the reader an understanding of the breadth of the citizen and technical support employed in this endeavor.

1. Working Groups:

The subsection contains brief narratives of the purpose, configuration, and performance of the working groups that were part of the Comprehensive Plan process.

MPO Officials Committee

The Lincoln Area MPO Officials Committee membership consists of elected officials representing the City of Lincoln, Lancaster County and the State of Nebraska. The Committee is comprised of five voting members and three non-voting members. The voting members review and act upon transportation related programs and studies, recommended by of the MPO Technical Committee, which serve as short-, mid-, and long-range development programs to implement the transportation plan. Reviews and recommendations by the Officials Committee are for compliance with the established planning process and the policies of the general purpose governments and agencies which they represent. The non-voting members represent the federal transportation agencies for the region and provide policy guidance to the Committee.

The Officials Committee is comprised of the following elected officials who represent the governmental bodies which make policy decisions:

Voting Members:
Mayor, City of Lincoln
County Board of Commissioners Chair, Lancaster County
County Board of Commissioners Vice Chair, Lancaster County
City Council Chair, City of Lincoln
City Council Vice Chair, City of Lincoln
Director, Nebraska Department of Roads
Non-voting Members:
Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)
Secretary:
MPO Administrator (Director, Lincoln-Lancaster County Planning Department)

The Officials Committee holds meetings on a quarterly basis and is subject to call additional meetings as circumstances warrant. The meetings are posted and open to the public and are held at such time and place as generally convenient to the membership.

MPO Technical Advisory Committee

The Lincoln Area MPO established a Technical Advisory Committee to investigate specific transportation related topics in greater detail than what is typically accomplished at Officials Committee meetings. The Committee is made up of representatives of various professional transportation and related planning disciplines which serve in review capacity to consider the effects of transportation plans and programs on social, economic, and environmental factors in conformance to appropriate federal regulations. All Technical Advisory Committees meetings are posted and open to the public.

The Technical Advisory Committee generally will serve as the administrative and technical staff to implement the Operations Plan for Continuing Urban Transportation Planning in the Lincoln Metropolitan Area and to propose, develop and/or review transportation related programs, studies and proposals for the Lincoln Metropolitan Area. The Committee conducts the work necessary to produce the recommended Long Range Transportation Plan and makes recommendations to the Officials Committee on proposed amendments to the transportation plan. Short-term planning documents developed and reviewed by the Technical Advisory Committee include the Unified Planning Work Program, Transportation Improvement Program, and Annual Transportation Report among other

implementation documents. The Technical Advisory Committee makes recommendations to the Officials Committee on proposed programs, studies and proposals.

The Technical Advisory Committee shall be constituted of the following members or their representatives:

Voting Members:
Lincoln-Lancaster County Planning Director, Tri-Chair
Lincoln Public Works & Utilities Director, Tri-Chair
Lancaster County Engineer, Tri-Chair
Lincoln City Engineer/ RTSD
Planning Department Principal Planner
County Engineer Design Division Head
Lincoln Assistant City Engineer
Planning Department Multi-Modal Transportation Planner
Urban Development Department Director
Lincoln-Lancaster County Health Department Air Quality Supervisor
Lincoln Parks and Recreation Director
StarTran Transit Manager
Lincoln Airport Authority Executive Director
NDOR District 1 Engineer
NDOR Planning and Project Development Manager
Non-voting Members:
Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)
Chairperson, Pedestrian and Bicycle Advisory Committee
Staff Administrator:
MPO Transportation Planner

While representatives from the cooperating governmental agencies represented on the Technical Advisory Committee may offer expertise in a variety of disciplines, it is anticipated, when necessary, that expert advice and guidance may be sought from other governmental agencies, law enforcement agencies, educational institutions, and, if necessary, private consulting organizations, depending upon staff availability and budgetary considerations.

The Technical Committee holds meetings on a bi-monthly basis and is subject to call as circumstances warrant. The meetings are open to the public and will be held at such time and place as generally convenient to the membership.

Sub-Committees

These sub-committees are based on MPO Management Plan (See Appendix D) defined sub-committees and were made up of the same membership from the Technical Committee. The sub-committees function throughout the MPO process, but within this report their role in the LRTP update is emphasized. Actual meeting dates are included in the table of Chronological Schedule for LPlan 2040 Meetings and Activities.

LRTP Administration Sub-Committee

The LRTP Administration committee is a standing committee that is part of the MPO process and is central to the MPO. The committee's role in the LRTP update was coordination and exchange of information between departments and agencies with concerns and duties in the LRTP update process. This committee met 15 times during the planning process.

Members:
Lincoln-Lancaster County Planning Director
Lancaster County Engineer
City of Lincoln Engineer
Lincoln Public Works and Utilities Director
Staff:
Lincoln-Lancaster County Planning Department, Long Range Planning Manager
Lincoln-Lancaster County Planning Department, MPO Transportation Planner
Lincoln-Lancaster County Planning Department, Transportation Planner
Lincoln Public Works and Utilities, Assistant City Engineer
Lincoln Public Works and Utilities, Design/Construction Manager
Lancaster County Engineering, Design Division Head

MPO Multi-Modal Sub-Committee

The purpose of this sub-committee was to provide technical oversight of information and materials developed regarding non-auto modes of travel that would become part of the 2040 LRTP. Major work items included coordination and information dissemination from the Star Tran Advisory Board and the Mayor's Pedestrian and Bicycle Advisory Committee. Another major work item included development of, and agreement with, the financial assumptions and project information that ultimately were incorporated into the Needs Based Plan and the Financially Constrained Transportation Plan. This committee met four times during the planning process with additional meetings including staff specific to detailed information needs.

Members:
Lincoln-Lancaster County Planning Department, Transportation Planner
Lincoln Public Works and Utilities, Assistant City Engineer
Public Works and Utilities, StarTran Transit Planner
Lincoln Parks and Recreation Department, Natural Resources and Greenways Manager
Lincoln-Lancaster County Health Department, Air Quality Division
Nebraska Department of Roads

MPO System Management and Operations Sub-Committee

The purpose of this sub-committee was to provide technical oversight of information and materials developed regarding the Congestion Management Process, the ITS program, and the Freight Operations topic that would become part of the 2040 LRTP. Major work items included coordination and information dissemination for developing ITS program projects and costs, discussions on maintenance and rehabilitation needs of the street system, and developing strategies for outreach to the freight community as part of the 2040 LRTP process, including data sharing with NDOR on their statewide freight survey. This committee met four times during the planning process, with additional meetings including staff specific to detailed information needs.

Members:
Lincoln-Lancaster County Planning Department, Transportation Planner
Lincoln Public Works and Utilities, Assistant City Engineer
Public Works and Utilities, StarTran Transit Planner
Lincoln-Lancaster County Health Department, Air Quality Division
Lancaster County Engineer, Design Division Head
Nebraska Department of Roads

MPO Programming and Funding Sub-Committee

The purpose of this sub-committee was to provide technical oversight of information and materials developed regarding transportation programs, funding sources, and project costs that would become part of the 2040 LRTP. Major work items included coordination and information dissemination for developing transportation packages for consideration in the 2040 LRTP planning process, development and consideration of new Goals and Objectives, and technical work on specific project cost estimates and prioritization. The sub-committee met three times during the planning process with four additional meetings including staff specific to detailed information needs.

Members:
Lincoln-Lancaster County Planning Department, Transportation Planners (2)
Lincoln Public Works and Utilities, Assistant City Engineer
Lincoln Public Works and Utilities, Design/Construction Manager
Lincoln Parks and Recreation Department, Natural Resources and Greenways Manager
Public Works and Utilities, StarTran Transit Planner
Lincoln-Lancaster County Health Department, Air Quality Division
Lincoln Urban Development, Parking Manager
Lancaster County Engineer, Design Division Head
Nebraska Department of Roads

Freight carriers working group

For the purpose of assisting in the creation of the 2040 LRTP and for cotinuing discussions, dissemination of information, and meetings, a working group of private sector freight operators, economic developer representatives, and local and state staff has been assembled. Membership is fluid and is open to various freight interests. This group met during development of the 2040 LRTP and information and comments were shared and used as part of the planning process. Future quarterly meetings are scheduled for continued information sharing and to provide a forum for freight issues to be considered as part of the ongoing transportation planning process.

Members:
Distribution Inc.
Universal Transport (Universal Cold Storage)
Lincoln Trucking
Gana Trucking
Sysco/Lincoln Poultry
Crete Carrier
Paragon Sanitation
Scudder Law
Nebraska Trucking Association
Lincoln Chamber of Commerce
Lincoln-Lancaster County Planning Department
Lincoln Public Works & Utilities Department
Mayor's Office – Economic Development
County Engineer
Nebraska Department of Roads

Lincoln-Lancaster County LPlan 2040 Interagency Group

Long range land use and transportation planning embraces a multitude of professional abilities and skills. To ensure that the Comprehensive Plan process and LRTP process could draw upon such expertise

when they were needed, a core group of more than 20 professional staff from a diverse set of City and County departments was assembled. This group, which became known as the Interagency Group, met a total of nine times during the LPlan 2040/LRTP process. Representatives from the following departments and agencies were invited to participate.

Members:
Lancaster County Engineering Department
Lancaster County Sheriff
Lancaster County Emergency Management
Lincoln Airport Authority
Lincoln City Libraries
Lincoln Fire and Rescue
Lincoln Mayor's Office - Area Agency on Aging
Lincoln Parks and Recreation
Lincoln Police
Lincoln-Lancaster County Planning Department
Lincoln-Lancaster County Health Department
Public Works and Utilities
- Engineering Services
- Solid Waste Management
- StarTran Transit
- Wastewater Services
- Water Services
- Watershed Management

Urban Development

The Following State and Federal agencies were also invited to attend these meetings:
State of Nebraska Department of Roads
United States Department of Transportation
Federal Highway Administration

Lincoln-Lancaster County Planning Commission

This is a group of nine volunteers, appointed by the Mayor of Lincoln with the approval of the Lancaster County Commissioners and Lincoln City Council. The Planning Commission is responsible for advising the Planning Director on the development of the Comprehensive Plan and Long Range Transportation Plan. Members of the Planning Commission include one representative from the rural part of Lancaster County. Remaining members are generally selected in order to include a broad representation of the general public. Members of the Planning Commission in 2010/2011 were:

Voting Members:
Michael Cornelius
Dick Esseks
Tommy Taylor
Wendy Francis
Leirion Gaylor Baird
Jim Partington
Roger Larson
Jeanelle Lust
Lynn Sunderman
Secretary:
Director, Lincoln – Lancaster County Planning Department

The Planning Commission meets every two weeks on Wednesday afternoons throughout the year. This body reviewed the draft LPlan 2040 and LRTP from July through September, 2011, following the work of the LPlan Advisory Committee, then made recommendations to the City Council and County Board.

LPlan Advisory Committee – LPAC:

The LPAC was a 20 member group appointed by the Mayor with input from the County Board and assembled specifically for the update of the 2040 Comprehensive Plan and the Long Range Transportation Plan. LPAC included all 9 of the Planning Commission members listed above, as well as 11 other volunteers from the community. As with the Planning Commission, these volunteers were selected in order to provide a broad representation of the general public. The members and their affiliation are listed below.

LPAC Members	Affiliation
Nine Planning Commissioners listed above	
Brett Baker	Small Towns
Scott Ernstmeyer	Education
David Grimes	Agriculture
Randy Harre	Business
Tom Huston	Attorney
Bill Langdon	Commercial Realty
Patte Newman	Neighborhoods
Mike Rezac	Home Builder
Dennis Scheer	Architectural Design
Cecil Steward	Sustainability
Donna Woudenberg	Natural Resources

The LPAC met every two weeks on Wednesdays before Planning Commission hearings from June 23, 2010, to June 15, 2011. The LPAC operated on a consensus model and did not vote or take any official action. The purpose of this body was to act as a representation of the community in advising the Planning Director on the update of LPlan 2040 and the LRTP.

Below are the meeting dates and topics for all LPAC meetings. All meetings were held in the County City Building and were advertised ten days ahead of the meeting in a paper of general circulation and on the City/County website. All meetings followed the provisions of the Nebraska Open Meetings Act. All meeting materials were made public both in print and online and can be viewed at http://lincoln.ne.gov/city/plan/lplan2040/Committee/materials.htm.

Date	Topics
June 23:	LPAC Kick-Off Meeting, City County Building Room 113, 12:00 pm to 2:00 pm Planning 101, Global Changes Likely to Affect Community's Future, Local Population and Housing Demands
July 14:	Local Population and Housing Demands, Community Survey Results, Employment/Non-Residential Space Demands
July 28:	Economy & Land Use Analysis, Major Plan Assumptions
Aug 11:	Plan Assumptions, Sustainability Elements – Initial Dialogue, Growth Scenarios Introduction & Plan-it-Yourself Workshop
Aug 25:	Review Input from Plan-it-Yourself Workshop, Potential Growth Scenarios
Sept 8:	Defining LPlan 2040 Sustainability Elements
Sept 22:	Review of LPlan 2040 Proposals, Recycling Bright Ideas and Proposal, Commercial/Industrial Future Land Use Assumptions and Inventory

Oct 6:	Follow-up on Sustainability Workshop, Residential/Mixed Use Redevelopment Considerations: Need and Opportunities
Oct 20:	Residential/Mixed Use Redevelopment Considerations: Tools and Policies Future Growth Scenario Analysis Presentation and Discussion
Nov 17:	Review Bright Ideas Submitted by Community, Results of Public Input on Future Growth Scenarios, Discussion and/or Refinement of Single Growth Scenario, Introduce Nodes and Corridors Concept
Dec 1:	Review of LPlan2040 Land Use Proposals, Initial Draft Future Land Use Plan, Draft Mixed Use Redevelopment Plan – Details for Selected Sites, Bright Ideas Topic Sign-up
Dec 15:	Feedback on Initial Draft Future Land Use Plan, Bright Ideas Hand Outs, Introduction to the Long Range Transportation Plan (LRTP)
Jan 12:	Summary of LPAC Comment on Draft Future Land Use Plan, Existing Transportation System Conditions and Emerging Issues Report, Bright Ideas Topic Discussion, Present LRTP Goals and Objectives
Jan 26:	Discuss Transportation Fiscal Constraint Review LRTP Revenue and Cost Assumptions Transportation Goals and Objectives discussion
Feb 9:	Present 2025 mid-term plan Tier & Priority Growth Areas, Discuss Existing and Committed 2010, 2025 and 2040 Model Run and Issues, Urban Design – Introduction
Feb 23:	Report of Public Input on Transportation Goals, Goals and Objectives Weighting Exercise, Road Conditions and Maintenance Needs, Results of 2040 Future Land Use with 2030 Plan Street Network, Discuss 2030 Transportation Project/Cost List
Mar 9:	Results of Weighting Exercise, Transportation Strategies
Mar 16:	Environmental Resources Mapping, County Roads, Infill & Redevelopment
Mar 23:	Discuss Transportation Packages for Study
Apr 6:	Discussion of Parks, Recreation & Open Space, Urban Design, Part II Finalize Transportation Packages for Study
Apr 20:	Housing Affordability – Panel Discussion, Present Outline of Energy Section and Sustainability Elements
May 4:	Discuss Public & LPAC Input on Alternatives, LPAC Conversation on Transportation Alternatives
May 18:	Present Fiscally Constrained Transportation Plan & Preferred Illustrative Plan Discussion on 2040 Plan Chapter Elements
Jun 1:	Finalize Preferred Transportation Alternative, Present: Draft Vision and Plan ("Executive Summary"), Outline of Major LPAC Input Items and Changes from 2030 Comp Plan, Key Plan Maps
Jun 15:	Conversation on Draft Plan Elements

StarTran Advisory Board

The StarTran Advisory Board is a seven member board appointed by the Mayor that reviews matters relating to the operation of the bus system including the following areas: transit-related studies and plans, route studies and evaluations, performance indicators, rates, fare and schedules. The Advisory Board meets once per month and meetings are open to the public with all Agendas and Minutes posted for public review. The Star Tran Advisory Board produced a memo titled Input to Transit Section of 2040 Long Range Transportation Plan that was forwarded to the LPAC and posted online at http://lincoln.ne.gov/city/plan/lplan2040/comment_gen.htm.

Members:
Kim Phelps, Chair
John Baylor, Vice Chair
Kory George
Stephen Specher
Mitch Paine
Debby Brehm
Beatty Brasch

Pedestrian Bicycle Advisory Committee

The Pedestrian Bicycle Advisory Committee (PBAC) is a 13 member committee appointed by the Mayor that provides advice and recommendations to the Mayor, City Council and Parks and Recreation Department on the development of a comprehensive plan or a bicycle and pedestrian network. The PBAC meets monthly and all minutes are posted online. The Pedestrian Bicycle Advisory Board produced a memo titled LPlan 2040 PBAC Recommendations that was forwarded to the LPAC and posted online at http://lincoln.ne.gov/city/plan/lplan2040/comment_gen.htm.

Members:
Ken Vice, Chair
Gary Bentrup
Parks Coble
Rick Dockhorn
Barb Fraser
Elaine Hammer
Delrae Hirschman
Albert Maxey, Sr.
Kair Rohren
Delyce Ronnau
Beth Thacker
Neal Thomas
William Wehrbein

Mayor's Environmental Task Force

The METF is a 21 member group unofficially appointed by the Mayor that acts as a policy sounding board for the Mayor. This group meets monthly to discuss environmental and sustainability issues. The group does request information but does not take any official action. Agendas and meeting notes are not posted, although the meetings are open to the public. The Task Force produced a memo titled Mayor's Environmental Task Force 2/9/2011 which was forwarded to the LPAC and posted online at http://lincoln.ne.gov/city/plan/lplan2040/comment_gen.htm. This group also commented verbally at several LPAC meetings and was active in the Environmental Screening Process as described later in this report.

Members:
Andrew Thompson
Bud Dasenbrock
Cecil Steward
Corinne Kolm
Dan King
Dan Schlitt
Deb Hansen
Dennis Sheer
Donna Woudenberg
Foster Collins
Greg Shinaut
Jim Kearney
Ken Reitan
Marilyn McNabb
Mark Brohman
Mike Rezac
Nichole MacDonald
Paul Zillig
Peter Hind
Rosina Paolini
Wes Sheets

County Ecological Advisory Committee

The Lincoln/Lancaster County Ecological Advisory Committee has 11 members appointed by the County Board of Commissioners. They meet at least quarterly and often more frequently. The committee is provides opinions and recommendations to the city of Lincoln and Lancaster County on matters of environmental quality, natural beauty, recreation, conservation, and recycling. Agendas and meeting notes are available from the Lincoln Parks and Recreation Department. The County Ecological Advisory Committee produced a memo titled *Recommendations to County Commissioners from Ecological Advisory Committee on LPlan 2040* that was passed on to the Lancaster County Board of Commissioners and used by staff in the preparation of LPlan 2040 and the LRTP. This group was also active in the Environmental Screening Process described later in this report.

Members:
Dayle Williamson
Dennis Schroeder
Gary Muckel
Gary Hergenrader
Judi Cook
Jim Culver
Merle Jahde
Marian Langan
Richard Slama
Jim Douglas
Tom Keep

2. ENVIRONMENTAL JUSTICE OUTREACH:

Environmental justice outreach was conducted in accordance with the Environmental Justice Action Strategy (December 29, 2010). According to Census information, the primary groups for environmental

justice outreach in Lincoln and Lancaster County are: African American/Black, Asian, Native American and Alaskan Native, Native Hawaiian and Other Pacific Islander, Other (than white), Two or More Races, Hispanic, and Low Income (80% of Median Family, Median Household, and Median Per Capita Income). Disabled populations, children, and the elderly are also groups of concern and so were included in this effort. In order to reach out to these particular groups, a list of contact persons was developed from various resources. These persons were contacted and asked to advise the Planning Department of any other organizations that may have an interest in comprehensive or transportation planning. This final group of Environmental Justice Contacts was included on all emails announcing release of information, newsletters, and requests for input. In addition, a group of organizations and agencies were specifically asked to comment on transportation projects as described in detail in the Impact Measures and Environmental Analysis section of this document. These comments were considered during the development of the 2040 Plan and specific comments were responded to.

On the basis of the Environmental Justice Analysis (See Appendix E) of the recommendations of the proposed 2040 Long Range Transportation Plan, it has been determined that it does not have a disproportional impact on areas of high concentration of low-income and minority populations. Furthermore, the LRTP duly considers the transportation needs of low-income and minority populations and provides many recommendations that will substantially benefit these populations.

Environmental Justice Contacts

Human Services Federation
Lincoln Housing Authority
Nebraska Commission for the Blind and Visually Impaired
Neighborhood Roundtable
NeighborWorks, Inc.
Malone Community Center
Lincoln Commission on Human Rights
The League of Human Dignity
The Indian Center
The Mexican American Commission
The Asian Cultural and Community Center
El Centro de las Americas
Nebraska Commission on Indian Affairs
Middle Eastern Contact
Lincoln Area Agency on Aging, Aging Services Centers
Lincoln Public Schools
Crete Public Schools
Malcolm Public Schools
Milford Public Schools
Norris Public Schools
Palmyra Public Schools
Raymond Central Public Schools
Waverly Public Schools

In addition to emails, at several points during the public outreach process materials were delivered to sites in order to solicit public input.

During the Plan Launch, multilingual flyers were distributed to The Indian Center, El Centro de las Americas, the Mexican American Commission, the Asian Cultural and Community Center, Nebraska Commission on Indian Affairs, and the Middle Eastern contact person. Newsletter 1 was emailed in

Spanish and English to all of the above as well as the full email list and can be found at http://lincoln.ne.gov/city/plan/lplan2040/background.htm.

Newsletter 2 was, emailed to all above contacts in Spanish and English and can be viewed online at http://lincoln.ne.gov/city/plan/lplan2040/background.htm.

For Decision Point 1: Future Growth and Land Use, kiosks were set up in Malone Community Center, Indian Center, El Centro de las Americas, Asian Cultural and Community Center, People's City Mission, six Aging Services Centers and five Lincoln City Libraries. Information on three growth scenarios was provided along with paper copies of newsletters. Paper copies of a community survey were also available along with a drop box. Newsletter 2 in English and Spanish was emailed to full contact list. An online comment board and Virtual Town Hall social networking site were used to solicit input as well. Five open houses were held in three Lincoln locations and two county locations. All comments received are logged in the report *Lincoln-Lancaster County Growth Scenarios: Public Input Report* and can be viewed online at http://lincoln.ne.gov/city/plan/lplan2040/committee/101117/pi_rpt.pdf.

For Decision Point 2: Transportation Goals and Objectives, kiosks were set up in Malone Community Center, Indian Center, El Centro de las Americas, Asian Cultural and Community Center, People's City Mission, two Department of Motor Vehicles licensing sites, three Aging Services Centers and five Lincoln City Libraries, Information on transportation goals and objectives was provided. Paper copies of a community survey were also available along with a drop box. Newsletters in English and Spanish were emailed to full contact list. An online comment board and electronic survey was used to collect input. All comments received are logged in the report *Transportation Goals Survey Report* which can be viewed at http://lincoln.ne.gov/city/plan/lplan2040/Committee/110223/survey.pdf.

For Decision Point 3: Transportation Alternative Evaluation and Selection of a Preferred Plan, kiosks were set up in Malone Community Center, Indian Center, El Centro de las Americas, Asian Cultural and Community Center, People's City Mission, three Aging Services Centers and five Lincoln City Libraries, Information on transportation goals and objectives was provided. Paper copies of Newsletter 3 and a community survey were also available along with a drop box. Newsletters in English and Spanish were emailed to full contact list. An online comment board and electronic survey were used to collect input. Open Houses were held in one Lincoln Location. All comments received are logged in the report *Transportation Preferences Survey Report* and can be viewed online at http://lincoln.ne.gov/city/plan/lplan2040/content/past.htm.

In addition, select contacts were asked to participate in the analysis of transportation projects and their impacts on social, cultural and historic resources as described later in this report under Social and Cultural Screening Process.

3. COMMUNITY WORKSHOPS AND OUTREACH

A series of Community outreach activities was integral to the development of the Comprehensive Plan and the Long Range Transportation Plan. These activities included newsletters, workshops, open houses, social networking tools, flyers, videos, online comment boards, kiosks in public areas, and others as described below.

WORKSHOPS:

A series of four workshops were conducted to introduce the planning process to the public and to highlight planning issues identified in an April, 2010, community survey. The public was invited through press releases, emails, website announcements, and other media tools such as scrolling text on Channel 5, "On-Hold" messages on city telephone lines, twitter and Facebook announcements.

Complete Streets Workshop

This workshop occurred in two parts: 1) a day-long workshop for city, county and state staff, development professionals, and private transportation organizations; 2) a 90 minute Public Meeting with a presentation by a Complete Streets professional followed by question/ answer session.

The Complete Streets Workshop was held on June 7 from 7:45 am to 4:15 pm and was attended by 40 people. The purpose of this workshop was to gain an awareness of Complete Street principles and generate ideas and support for the development of a County-wide Complete Streets Policy. The workshop was led by consultant Michael Moule, P.E., P.T.O.E.

The Complete Streets Public Meeting was held on June 8, 2010. Complete Streets are planned, designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities should be able to safely travel along and across any street.

An overview presentation was given by Michael Moule to provide background on the benefits of Complete Streets, dispel myths, explain how existing streets can easily be retrofitted into Complete Streets, and detail how a Complete Streets Policy can save money.

The flyer for the workshop, presentation power point, and Complete Streets Concept Video are available online at http://lincoln.ne.gov/city/plan/lplan2040/content/past.htm.

Living and Working in 2040 Workshop

This workshop was held on July 13, 2010. It speculated on the future of Lincoln and Lancaster County to the year 2040. Nationally recognized speaker Arthur C. Nelson was the keynote speaker and focused on future development and transportation in Lincoln. Four local economic and demographic specialists spoke briefly after the keynote address before opening up to questions from the public. The workshop was a follow-up to the Living and Working in 2040 report which was released in June of 2010. This report contained population and housing projections, employment information and land use analysis for the year 2040 and can be viewed along with all workshop materials online at http://lincoln.ne.gov/city/plan/lplan2040/content/past.htm.

Plan-it-Yourself Workshop

The City of Lincoln and Lancaster County conducted a Plan-it-Yourself Workshop on August 14, 2010. The workshop format consisted of an interactive planning activity that explored the connection between land-use, transportation, and finance. Participants used maps and magnetic game pieces to design future residential growth and "build" streets and other transportation facilities and identify open space to serve the 2040 population. Participants worked with other interested people to learn a little about what it takes to build a city on a budget. A full report on the results of the workshop and all workshop materials are available online at http://lincoln.ne.gov/city/plan/lplan2040/content/past.htm.

The results of this workshop, along with input from the LPAC during a similar activity, informed the development of the three Growth Scenario alternatives.

Sustainability Workshop

The City-County Planning Department held a Sustainability Workshop on September 29, 2010. The purpose of the discussion was to engage the public on local sustainability issues and how those issues relate to the Comprehensive Plan and Long Range Transportation Plan. The workshop included a presentation by keynote speaker Gayle Prest, Sustainability Director for the City of Minneapolis, and a question/answer session with five local experts including:

Scott Holmes, Environmental Public Health Manager, Lincoln-Lancaster County Health Department
Michelle Penn, AIA Registered Architect, Authenticity LLC

Mike Rezac, President of the Home Builders Association of Lincoln, President of Rezac Construction, Green Builder
Cecil Steward, FAIA Dean Emeritus Professor of Architecture and Planning at UNL's College of Architecture, President and founder of Joslyn Institute for Sustainable Communities and the International North/North Network for Urban Sustainability
Kristi Wamstad-Evans, LEED AP Sustainability Coordinator for the City of Omaha

All materials from the workshop, including a full video are available at http://lincoln.ne.gov/city/plan/lplan2040/content/past.htm.

Open Houses:

Open Houses were held at two key decision points in the process. Attendance at the first set of open houses was found to be low, while other contact methods were very well received, so a decision was made to increase the effort put toward these other methods and hold open houses at one location, over the noon hour and in the evening, for the second set.

Decision Point 1: Future Growth and Land Use

Open houses for this decision point were held at five different times and locations: two local libraries, one in the north half of the city and one in the south, a downtown community college, and at two small town community centers, one in the north and one in the south of the county. In all, there were 45 attendees at these open houses. Each open house followed the same format with a 20 minute presentation followed by question and answer period being delivered twice during the meeting, and the remainder of the time spent answering individual questions. Comment sheets were made available, as were newsletters, flyers and other contact information.

October 26, 2010, Walt Library, 6701 S. 14th Street, 5:00 pm-6:30 pm (Presentations at 5:15 pm and 6:00 pm)
October 28, 2010, Hickman Community Center, 6:30 pm-7:30pm (Presentation at 6:45 pm)
November 2, 2010, Energy Square, 1111 O Street, Rm. 106, 11:00 am-12:30 pm (Presentations at 11:15 am and noon)
November 3, 2010, Eisely Library, 1530 Superior Street, 5:00 pm-6:30 pm (Presentations at 5:15 pm and 6:00 pm)
November 4, 2010, Davey Community Hall, 6:30 pm-7:30 pm (Presentation at 6:45 pm)

Input from open houses, as well as other input, is included in the *Lincoln-Lancaster County Growth Scenarios: Public Input Report* which was provided to the LPAC and can be viewed along with all open house materials online at http://lincoln.ne.gov/city/plan/lplan2040/content/past.htm.

Decision Point 3: Alternative Evaluation and Selection of a Preferred Plan

Long Range Transportation Plan Open Houses were held on April 19, 2011 from 11:00 am to 1:00 pm and again from 4:30 pm to 6:30 pm. The Open Houses were held at the County/City Building at 555 S. 10th Street, in Room 113. The purpose of these Open Houses was to gather public input on alternatives for the future of Transportation in Lincoln and Lancaster County. Presentations were given at 11:30 am, 12:45, 5:00 and 5:45 pm. Staff was available to take questions and gather input. Newsletters, flyers, and handouts were available as well as a survey on transportation preferences. There were 23 people attending the open house meetings. The results of the survey, from the open house as well as the online and other print responses, are included in the *Transportation Preferences Survey Report* and can be viewed along with all other materials from the open house online at http://lincoln.ne.gov/city/plan/lplan2040/content/past.htm.

WEBSITE:

The Lincoln Lancaster County Planning Department maintained a very detailed website throughout the planning process. The website includes several different tabs from which the following information can be accessed:

- **Home:** This page includes a Director's Welcome video, a banner that was regularly updated with the most recent materials and event notifications, links to You Tube, Facebook, and Twitter.
- **Get Involved:** A place to sign up for email notifications, a portal to our comment board, contact information, and a link to the Event Calendar.
- **Events:** An ongoing calendar of major events and meetings of the LPAC, records and materials for all past events, A link to the Advisory Committee meeting topics page.
- **Committee:** Description of the LPAC, committee members and their affiliations, a list of upcoming meetings and topics, all meeting materials, agendas, and meeting notes from all meetings of the Advisory Committee.
- **Background:** Comprehensive Plan resources and reports developed for the review process, all newsletters and flyers in all languages translated, videos and general presentations, links to various other websites and reports.
- **The Plan:** Major releases of information such as the growth scenario alternatives, draft land use plan, transportation plan alternatives and draft plan document.
- **FAQs:** Frequently asked questions.

The website has seen a great deal of participation with over 11,000 visits and a rate of 24% new visits. This translates to almost 3,000 unique visitors.

The website contains a comment board where any member of the public can enter comments which are then displayed for the public. These comments are compiled in the Online Comment Board report can be viewed at http://lincoln.ne.gov/city/plan/lplan2040/comment_gen.htm.

PUBLICATIONS:

Several different publications were produced by the Lincoln Lancaster County Planning Department for distribution to the general public.

NEWSLETTERS

Six newsletters were produced, one every two to three months. These newsletters were published in both English and Spanish. All newsletters were distributed via email to organizations, agencies, individuals and media contacts. Two issues, October of 2010 and April of 2011, were also printed and distributed to community centers, Aging Services centers, and Libraries listed above as well as being distributed at open houses and all presentations held during that time period. These Newsletters are permanently displayed on the website at http://lincoln.ne.gov/city/plan/lplan2040/background.htm.

NEWS RELEASES

News releases are informational articles published to the City website for reading by the general public or use by media contacts as a resource. Generally, these press releases were written in order to announce a special effort to solicit public input or availability of new information. Press releases can be found online at http://lincoln.ne.gov/city/mayor/media/index.htm.

FLYERS

Two flyers were produced for the overall planning process; one at the launch of the process and one at the release of the draft Plan. Both flyers were translated into Spanish, Vietnamese, Russian, and Arabic and paper copies distributed to local community centers and by email to the full list of addresses. These flyers can be found online at http://lincoln.ne.gov/city/plan/lplan2040/background.htm.

Specialized flyers were also produced and distributed to advertise workshops. These flyers were distributed in the same manner as the general flyers and also were distributed to various coffee shops and other public venues.

Social Networking:

Virtual Town Hall

VTH is online social networking software produced by Community Redesigned that enables the public to participate in idea generation and evaluation. Comments and ideas can be entered by members and viewed by any visitor. During a comment period, individuals can view and comment on ideas. During a voting period, members can vote on whether or not they like an idea. Points are assigned and a score is generated for that idea.

This method was used at the launch of the process to solicit input from the public in a campaign called "Bright Ideas". This campaign generated 98 unique ideas and the participation of over 300 members. Ideas were sorted by common themes relating to sections of the Comprehensive Plan. Ideas themes that related more directly to individual departments were passed along to those departments. Themes were evaluated by the LPAC and five topic areas were selected for further discussion. Interested LPAC members spent part of one meeting discussing these themes and making recommendations for incorporation into the draft plan. These recommendations, along with any other themes that were not pert of the LPAC discussion or forwarded to other departments were considered by staff in the drafting of the Comprehensive Plan text. A full report of this effort is online at http://lincoln.ne.gov/city/plan/lplan2040/committee/101103/BrightIdeas.pdf.

VTH was also used to solicit input on three alternative growth scenarios. Information on each growth scenario alternatives, maps, and a link to the Growth Scenario Analysis Report were included on three major topic pages. Participants were invited to enter comments on each scenario during a two week comment period. During that time, they could also comment on one another's entries. After the two week period, participants were asked to enter a "vote" on each scenario page. A vote of "Love It" added three points to the scenario's score, a vote of "Like it" added two points, a vote of "Just OK" added one point, and a vote of "Don't Like it" subtracted one point. Each scenario received a final score and all comments were compiled in the Public Input Report which can be found online at http://lincoln.ne.gov/city/plan/lplan2040/Committee/101117/pi_rpt.pdf. The LPAC used this information, along with all other input from the public and staff, to formulate their recommendations for a preferred Future Growth Scenario.

Facebook

As part of LPlan 2040, a Facebook page was developed and maintained. This page was used to advertise upcoming events, publicize the release of information, and solicit public input via survey. As of June 15, 2011, the LPlan 2040 Facebook page had 63 members who indicated they "like" the page.

Twitter

Twitter was used in a similar way as Facebook. All Tweets were in fact generated from the Facebook page so all had the same text as the Facebook posts. As of June 15, 2011, the LPlan 2040 Twitter account had 28 followers.

YouTube

During the course of the planning process, several short videos were produced and posted to YouTube. These posts were generated to deliver abbreviated information and direct viewers to websites where they could find further details. As of June 15, 2011, there were 673 downloaded viewings of these videos.

4. CONTRIBUTING AGENCIES TO THE PLANNING PROCESS

Throughout the planning process efforts were coordinated with City, County, State and Federal staff, both through regular working group meetings as well as through distribution of documents and materials and special efforts to solicit comment.

A group of Local, State and Federal Government representatives were closely involved in the update of LPlan 2040 and the LRTP. These individuals and agencies were invited to monthly Interagency Group meetings as well as being copied on all invitations to LPAC meetings. All materials given to the LPAC were also passed along to this group. In addition, many members were included in other working groups. Primary staff involved in the process are listed under Lincoln-Lancaster County LPlan 2040 Interagency Group in II.B.1.

Additional departments, agencies and non-profit organizations were contacted to gather comment on special efforts, such as the analysis of the three Growth Scenario Alternatives and the three Transportation Alternatives. These departments and agencies include:

LOCAL GOVERNMENT AND OTHER LOCAL:

- Lancaster County Human Services
- Lancaster County Housing Authority
- Lancaster County Rural Water District 1
- Lancaster County Extension Office
- Lincoln Public Schools
- Lincoln Electric System
- Black Hills Energy
- Norris Public Power
- Lower Platte South NRD
- Sustainability Coordinator for City of Lincoln

Rural Fire Districts

- Raymond
- Malcolm
- Crete
- Hallam
- Hickman
- Firth
- Cortland
- Panama
- Bennett
- Southeast
- Southwest
- Denton
- Waverly
- Milford

Rural Schools Districts

- Crete
- Malcolm
- Norris
- Palmyra
- Raymond
- Waverly

Lancaster County Incorporated Villages and Cities

- Bennett
- Davey
- Denton
- Firth
- Hallam
- Hickman
- Malcolm
- Panama
- Raymond
- Roca
- Sprague
- Waverly

STATE GOVERNMENT:

- Nebraska Game and Parks Commission
- Nebraska Department of Environmental Quality
- Nebraska Department of Natural Resources
- Nebraska Commission on Indian Affairs
- Nebraska Commission for the Blind and Visually Impaired
- Nebraska State Historical Society
- Nebraska Innovation Zone Commission

FEDERAL GOVERNMENT:

- Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Natural Resource Conservation Service

NON-GOVERNMENTAL ORGANIZATIONS:

- Nebraska Land Trust
- University of Nebraska Foundation (Nine-Mile Prairie Director)
- Friends of Wilderness Park
- Great Plains Trails Network
- Joslyn Castle Institute
- Lower Platte River Corridor Alliance
- Nebraska Environmental Trust
- Wachiska Audubon Society
- Nebraska Audubon
- Nebraska Chapter Sierra Club
- Nebraska Chapter Bluestem Group
- The Nature Conservancy Nebraska Field Office
- Nebraska League of Conservation Voters
- Audubon Nebraska
- Human Services Federation
- Lincoln Housing Authority
- NeighborWorks Inc.
- Malone Center
- The Indian Center
- The Mexican American Commission
- The Asian Cultural and Community Center
- El Centro de las Americas
- Lancaster County Health Board
- People's City Mission
- Community Action Partnership
- Center for People in Need
- NAF Multicultural Human Development Corporation

5. CHRONOLOGICAL SCHEDULE OF COMP PLAN MEETINGS AND ACTIVITIES

The following is a chronological listing of all meetings, open houses, articles, press releases, video presentations, and other materials and events in the LPlan 2040 and LRTP update process.

Chronological listing of Comprehensive Plan activities

1/17/10	Friends of Wilderness Park presentation
1/20/10	Trans & PW Forum, Chamber presentation
1/21/10	Lincoln Public Schools presentation
1/27/10	Planning Commission briefing
2/1/10	Mayor's Office briefing
3/2/10	City County Commons briefing
3/17/10	Cabinet briefing
4/1/10	Mayor's Environmental Task Force presentation
4/6/10	Lincoln-Lancaster Ecological Advisory Committee presentation
4/9/10	Sparky Committee (Schools and Parks) presentation
4/13/10	Lincoln Green By Design group presentation
4/13/10	Pedestrian/Bicycle Advisory Committee presentation
4/20/10	Futures Committee of Parks & Rec. Advisory Board group presentation
4/28/10	StarTran Advisory Boardgroup presentation
5/10/10	Mayor's Neighborhood Roundtable group presentation
5/11/20	Lincoln/Lancaster Board of Health presentation
5/14/10	Mayor's Youth Advisory Committee presentation
5/18/10	LPlan 2040 Interagency Committee
6/1/10	MPO Administrative Sub-Committee
6/2/10	Press Release Complete Streets Workshop
6/3/10	Mayor's press conference
	Press Release
	Launch of LPlan 2040 Website
	Launch of Twitter page
	Launch of Facebook Page
	Launch Announcement email: LPAC, Inter Agency, newletter list. Others added as email addresses were filled in.
6/3/10	Announcement of Complete Streets Workshop emailed
6/7/10	Complete Streets Workshop
6/8/10	Complete Street Public Meeting
6/8/10	City County Common
6/10/10	Water/WW Bill Stuffer starts: Living and Working
6/11/10	Comment Board on Website Live
6/15/10	MPO Administrative Sub-Committee
6/15/10	MPO Technical Committee
6/15/10	Small Town/County Board meeting
6/16/10	First meeting packet to LPAC
6/23/10	LPAC Meeting
6/25/10	On-Hold Message starts: Living and Working
6/25/10	Living and Working Report and Workshop announcement via email
6/25/10	City Focus TV program highlighting Living and Working Workshop and Bright Ideas
6/26/10	Pedestrian/Bicycle Advisory Committee

6/27/10	Hickman Village Board
6/30/10	Email request for public submission of Comprehensive Plan update proposals
6/30/10	Email reminder of online survey closing date
7/1/10	MPO Officials Committee
7/8/10	Multi-lingual flyers distributed to Cindy Wallman; 'clyde.tyndall@indiancenterinc.org'; 'lazaro.spindola@nebraska.gov'; 'maureenbh@msn.com'; 'elcentrolincoln@yahoo.com'; 'judi.gaiashkibos@nebraska.gov'; 'Zainab@lincolngncc.org' Posted on website
7/8/10	Living and Working Flyers posted on building doors, dowtown library, coffee shops, senior center
7/9/10	Press Release Living and Working Workshop and Bright Ideas
7/13/10	Living and Working in 2040 Workshop
7/14/10	LPAC meeting
7/15/10	Virtual Town Hall: Bright Ideas live - Beautiful Places is first topic
7/15/10	email announcement of Bright Ideas
7/27/10	Health Department highlights Bright Ideas in interdepartmental newsletter
7/27/10	LPlan 2040 Interagency Committee
7/28/10	LPAC Meeting
7/30/10	Bright Idea reminder email
8/3/10	Email announcing Plan-it-Yourself Workshop, flyer attached
8/4/10	MPO Technical Committee
8/5/10	Mayor Press Release - Plan-it-Yourself Workshop
8/6/10	Newsletter, Issue 2, emailed and posted online in both English and Spanish
8/6/10	Email notification of Newsletter Issue 2, Plan it Yourself, and Sustainability workshops
8/9/10	MPO Officials Committee
8/9/10	Plan-it-Yourself workshop flyers posted on building doors
8/11/10	LPAC Meeting
8/12/10	Reminder email re: Plan-it-Yourself Workshop
8/12/10	Lincoln Green By Design group sends out Plan-it-Yourself workshop flyer and announcement via email
8/14/10	Plan-it-Yourself Workshop, 30 in attendance
8/17/10	Bright Ideas Article in Journal Star
8/18/10	Bright Ideas article on Planetizen website
8/18/10	Meet with Chamber, PW subgroup
8/23/10	online planning magazine Planetizen picks up Bright Ideas story
8/24/10	LPlan 2040 Interagency Committee
8/25/10	LPAC Meeting
8/26/10	MPO Technical Committee
8/27/10	email annoucing Sustainability Workshop, flyer attached
9/8/10	LPAC Meeting
9/13/10	earth2lincoln Radio Program on KZUM
9/13/10	Lincoln Green by Design email reminder to members to enter Bright Ideas
9/14/10	LPlan 2040 Interagency Committee

9/16/10	MPO Officials Committee
9/21/10	Tuesday Review group presentation
9/22/10	Reminder email for Sustainability Workshop
9/22/10	LPAC Meeting
9/23/10	Real Estate Owners and Managers group presentation
9/24/10	Press Release Invitation to Sustainability Workshop
9/24/10	Posted Sustainability Workshop flyers on building doors and Development Services Center screen
9/27/10	Lincoln Journal Star article announcing Sustainability Workshop
9/29/10	Sustainability Workshop, 82 in attendance
10/5/10	County Ecological Advisory Committee
10/6/10	LPAC Meeting
10/7/10	METF Growth Scenario Briefing
10/8/10	Coordination meeting with NE Game and Parks
10/20/10	Press Release Public Input for Growth Scenario Alternatives
10/20/10	LPAC Meeting
10/20/10	through 28 Oct Poster boards, comment sheets, newsletters posted at: Bennett Martin, Gere, Walt, Anderson, and Eiseley Libraries, El Centro de las Americas, Development Services Center, Indian Center
10/22/10	Newsletter 3 released, posted online and sent via email
10/25/10	Journal Star Article about Growth Scenario Alternatives
10/26/10	LPlan 2040 Interagency Committee
10/26/10	Press Release Bright Ideas
10/26/10	Paid add in Journal Star for Growth Scenario Alternative open houses
10/26/10	Open House, Walt Library, 5 - 6:30
10/27/10	Meet with Chamber, PW subgroup
10/27/10	Journal Star article about Bright Ideas awards
10/28/10	Paid ad in Hickman Voice about Growth Scenario Alternatives open houses
10/28/10	Paid ad in Waverly News about Growth Scenario Alternative open houses
10/28/10	Open House, Hickman Community Center, 6:30 - 7:30
10/29/10	through Nov 5 Poster boards, comment sheets, newsletters posted at: Northeast Sr. Center, Downtown Sr. Center, Asian Community Center, Malone Center, Belmont Sr. Center, Lake Sr. Center, People's City Mission
10/31/10	Editorial on Growth Scenario Alternatives
11/1/10	City/County Commons Brieffing (City Council and County Board)
11/2/10	County Environmental Comp Plan working group
11/2/10	Open House, Energy Square, Room 106, 11 am - 12:30 pm
11/3/10	email reminder to get Growth Scenario Alternative input in
11/3/10	Local View editorial about Grwoth Scenario Alternatives
11/3/10	LPAC meeting
11/3/10	Open House, Eiseley Library, 5 -6:30 pm
11/4/10	MPO Technical Committee
11/4/10	Hickman Voice article on Growth Scenario
11/4/10	Open House, Davey Community Hall, 6:30 - 7:30 pm

11/16/10	MPO Officials Committee
11/17/10	LPAC Meeting
11/18/10	Journal Star article on preferred growth scenario
11/23/10	LPlan 2040 Interagency Committee
11/29/10	MPO System Management and Operation Sub-Committee
12/1/10	LPAC Meeting
12/3/10	RAL presentation
12/9/10	StarTran Advisory Board
12/13/10	Neighborhood Roundtable
12/13/10	Near South Neighborhood Association
12/14/10	LPlan 2040 Interagency Committee
12/14/10	Pedestrian Bicycle Advisory Board
12/14/10	Association of Civil Engineers presentation
12/14/10	Interagency Group
12/15/10	Journal Star article about growth scenarios
12/15/10	LPAC Meeting
12/20/10	Letter to the editor on Growth Scenarios
12/20/11	MPO Multi Modal Sub-Committee
12/21/10	MPO Programming and Funding Sub-Committee
12/25/10	Journal Star Article about redevelopment
12/28/10	Journal Star Editorial on Growth Scenario, preferred
1/4/11	MPO Administrative Sub-Committee
1/5/11	Newsletter Issue 4 emailed and posted online
1/5/11	PBAC Subcommittee on LRTP issues
1/6/11	MPO Programming and Funding Sub-Committee
1/12/11	LPAC Meeting
1/13/11	MPO System Management and Operation Sub-Committee
1/18/11	MPO Administrative Sub-Committee
1/18/11	MPO Programming and Funding Sub-Committee
1/20/11	MPO Technical Committee
1/24/11	MPO System Management and Operation Sub-Committee
1/25/11	LPlan 2040 Interagency Committee
1/26/11	LPAC Meeting
1/28/11	MPO Multi Modal Sub-Committee
1/28/11	email notification of online Goals and Objectives Survey
1/28/11	Surveys delivered to Bennett Martin, Gere, Walt, Anderson, and Eiseley Libraries, El Centro de las Americas, Development Services Center, Indian Center, Northeast Sr. Center, Downtown Sr. Center, Asian Community Center, Malone Center, People's City Mission
1/28/11	through Feb 9, Public Input (survey) on Draft Transportation Goals and Objectives
2/1/11	MPO Administrative Sub-Committee
2/2/11	MPO Programming and Funding Sub-Committee
2/4/11	MPO Officials Committee
2/7/11	Reminder email for Goals and Objectives survey

2/9/11	LPAC Meeting
2/10/11	Leadership Lincoln workshop
2/11/11	MPO Multi Modal Sub-Committee
2/11/11	Lincoln Lancaster County Board of Health presentation
2/11/11	MPO Programming and Funding Sub-Committee
2/15/11	MPO Administrative Sub-Committee
2/17/11	MPO Programming and Funding Sub-Committee
2/17/11	MPO Technical Committee
2/20/11	Directions series in Journal Star
2/23/11	LPAC Meeting
3/1/11	MPO Administrative Sub-Committee
3/2/11	MPO Administrative Sub-Committee
3/2/11	MPO System Management and Operation Sub-Committee
3/8/11	Board of Health
3/8/11	PBAC
3/9/11	LPAC Meeting
3/10/11	Journal Star article on light rail in Lincoln
3/16/11	LPAC Meeting
3/23/11	LPAC Meeting
3/24/11	MPO Technical Committee
3/31/11	MPO Programming and Funding Sub-Committee
4/5/11	MPO Administrative Sub-Committee
4/5/11	County Ecological Advissory Committee
4/6/11	LPAC Meeting
4/6/11	Journal Star Article on LRTP open houses and survey
4/8/11	MPO Multi Modal Sub-Committee
4/12/11	Press Release: Public asked for Input on Transportation Projects
4/12/11	through Apr. 27 Public Input on Transportation Alternatives
	Online and paper survey
	Surveys and newsletters delivered to Bennett Martin, Gere, Walt, Anderson, and Eiseley Libraries, El Centro de las Americas, Development Services Center, Indian Center, Northeast Sr. Center, Downtown Sr. Center, Asian Community Center, Malone Center, People's City Mission
	Twitter announcement sent
	Facebook event posted and announcement sent
	Email announcement
4/19/11	MPO Administrative Sub-Committee
4/19/11	Open House - Transportation Alternatives
4/19/11	Osher Lifelong Learning Institute
4/20/11	LPAC Meeting
4/26/11	LPlan 2040 Interagency Committee
4/28/11	MPO Administrative Sub-Committee
4/28/11	MPO Technical Committee
5/4/11	LPAC Meeting
5/11/11	MPO Administrative Sub-Committee

5/17/11	Lincoln MPO Freight Subcommittee on LRTP issues
5/18/11	LPAC Meeting
5/19/11	East Lincoln Business Association
5/19/11	MPO Technical Committee
5/21/11	ProRail Nebraska
5/31/11	MPO Administrative Sub-Committee
6/1/11	LPAC Meeting
6/4/11	Neighborhood Extra article: More Evidence that Lincoln is a Special Place
6/7/11	MPO Administrative Sub-Committee
6/9/11	Lancaster County Board Staff Meeting
6/15/11	Final LPAC Meeting
6/16/11	MPO Technical Committee
6/21/11	MPO Administrative Sub-Committee
6/23/11	MPO Officials Committee
7/7/11	METF Sustainability elements in LPlan 2040
7/8/11	Release of LPlan 2040 Post LPlan 2040 online Email announcement of LPlan 2040 release Press Release LPlan 2040 available online Deliver copies of LPlan 2040 to Libraries
7/12/11	PBAC on LRTP issues
7/13/11	PC brieffing on County Land Use
7/15/11	Plan posted in all 8 city libraries and Bookmobile, Malone, Indian, El Centro de las Americas, and Asian Community Centers, People's City Mission, Downtown and Northeast Aging Services Cneters, comment sheets and drop boxes included at all sites
7/21/11	Lincoln-Lancaster County Health Department presentation
7/21/11	County Board and Lancaster Co. town meeting - Waverly
7/27/11	Planning Commission Workshop on LPlan 2040
7/29/11	email announcement of Newsletter 6 release
7/29/11	Newsletter 6 delivered to community Centers, libraries, etc…
7/29/11	Journal Star Insert - LPlan 2040
8/2/11	Lincoln MPO Technical Committee Meeting
8/5/11	LPS Coordination Meeting on LPlan 2040
8/9/11	Lincoln-Lancaster County Board of Health presentation
8/9/11	PBAC on LRTP issues
8/10/11	Planning Commission Workshop on LPlan 2040
8/10/11	Lincoln MPO Freight Subcommittee on LRTP issues
8/17/11	Planning Commission Special Public Hearing on LPlan 2040
8/24/11	Planning Commission Continued Public Hearing on LPlan 2040
8/29/11	KZUM 89.3 FM LPlan 2040 Discussion
8/30/11	UNL planning studio LPlan 2040 presentation
9/7/11	Planning Commission Workshop, Continued Public Hearing and Action on LPlan 2040

9/9/11	LPS Coordination Meeting on LPlan 2040
9/12/11	UNL architecture studio class presentation on LPlan 2040
9/13/11	email announcement of Planning Commission approval of LPlan 2040 and LRTP
9/13/11	PBAC on LPlan 2040
9/15/11	Lincoln MPO Technical Committee Meeting
10/3/11	City County Commons Brieffing
10/18/11	City County Joint Public Hearing

CHAPTER 4: EXISTING CONDITIONS

At the very beginning of the development of the Lincoln MPO Long Range Transportation Plan a thorough examination of all transportation modes and strategies was developed. This analysis was incorporated into an existing conditions mobility report card that highlighted in what areas the region is doing well and areas where the region is not doing so well.

The product of this work effort was a summary of issues and concerns that the region is facing that would lead to the development of various capital projects and strategies for testing and evaluation. The following summarizes the existing conditions of each transportation mode.

ROADWAY NETWORK

The City and County roadways provide for the majority of travel within the region. They also serve transit and typically include sidewalks for the pedestrian. Some roadways also have bicycle lanes or have been designated as bicycle routes. The assessment of the existing roadway network was critical to understand its functional hierarchy and performance.

ROADWAY FUNCTIONAL CLASSIFICATION

Roadways are classified based on the function they serve. All roadways fall under one of four broad categories: principal arterial, minor arterial, collectors or local streets. “Arterials” are multiple use corridors that carry large volumes of through traffic. “Collectors” equally serve to carry traffic but also provide access to neighborhoods and abutting properties. “Local” streets primarily provide access to abutting properties.

Each classification performs an important function in making the transportation system work effectively. The “Existing Functional Classification” map presents the existing Lincoln/Lancaster County Functional Classification. The following describes the functions of each of the various street classifications used in the Lincoln-Lancaster County transportation planning area:

- **Principal Arterial:** This functional class of street serves the major portion of through-traffic entering and leaving the urban area and is designed to carry the highest traffic volumes. These serve intra-area traffic such as between the downtown and outlying residential areas or traffic between major inner-city communities or suburban centers. Managing and controlling access to these types of roadways is very important. This access must respect and reflect the land uses and development context adjacent to each principal arterial. For example, managing and controlling access to and from a roadway in the “built environment” differs from that in developing locations, because of the varying character of these areas. The principal arterial system is stratified into the following two subsystems:
  - **Interstate Highway, Freeway and Expressway**: These are divided, limited access facilities with no direct land access. The freeway does not have at-grade crossings or intersections. The expressway is similar to a freeway except it may have some cross streets that intersect at grade and access is either full or partially controlled. Both the freeway and expressway are intended to provide the highest degree of mobility serving potentially large traffic volumes and long trip lengths.
  - **Other Principal Arterial:** This functional class of street serves the major portion of inter-community and intra-community traffic movement within the urban area and is designed to carry high traffic volumes. Facilities within this classification are capable of providing direct access to adjacent land but such access is incidental to the primary functional responsibility of moving traffic within the system.

- **Minor Arterial:** This functional class serves trips of moderate length and offers a lower level of mobility than principal arterial. This class interconnects with and augments principal arterials, distributes traffic to smaller areas, and contains streets that place some emphasis on land access. These are characterized by moderate to heavy traffic volumes.
- **Collector Streets:** These streets serve as a link between local streets and the arterial system. Collectors provide both access and traffic circulation within residential, commercial, and industrial areas. Collector streets also provide more direct routes through neighborhoods for use by transit, pedestrians and cyclists. Moderate to low traffic volumes are characteristic of these streets. There should be one north/south and one east/west continuous, but not straight, collector street within a developing square mile.
- **Local Streets:** These are composed of all lower order facilities that essentially serve as a conduit between abutting properties and higher order streets. Local streets provide the lowest level of mobility and generally exhibit the lowest traffic volumes.

Congestion/Level of Service

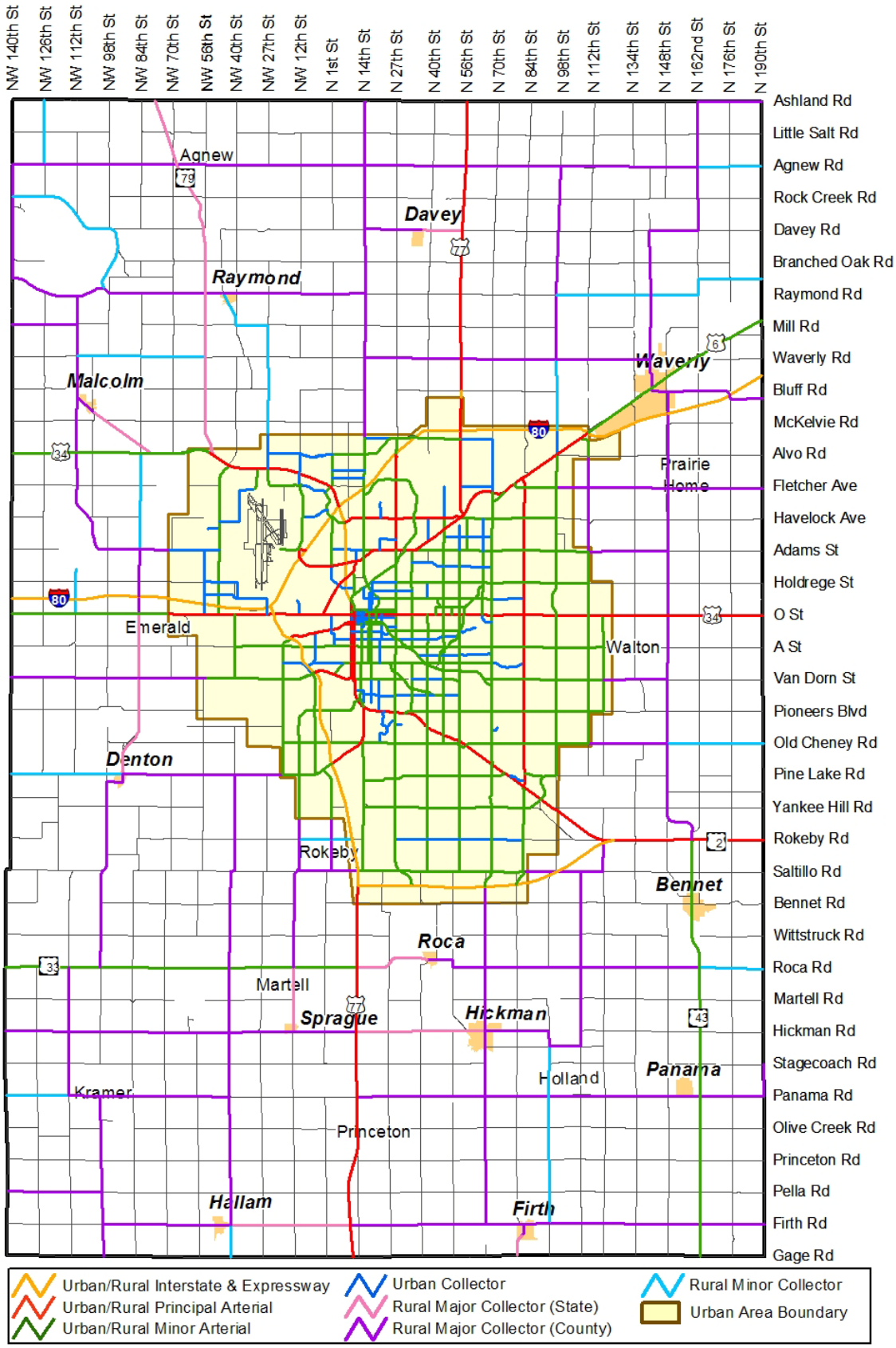
One of the important issues to address the existing roadway network was the collection of current traffic counts and to conduct a level of service (LOS) analysis. Level of service is similar to a report card where LOS A through C reflects uncongested conditions, LOS D is congesting and LOS E and F are congested, or failing.

The "Existing Traffic Volumes and Congestion" map presents both the existing average daily traffic volumes and the current levels of service. The traffic volumes are depicted by the width of the line, referred to as band width. The wider the line, the higher the volume of traffic. The level of service/congestion is based on the traffic volumes, the roadway functional classification and the number of travel lanes. In review of the map, it is clear that the City of Lincoln currently has relatively free flow conditions except for some corridors including Highway 2, O Street, and 27th Avenue. The other areas of existing congestion tend to be associated with developing areas that are served with roadways that need to be improved to accommodate future growth.

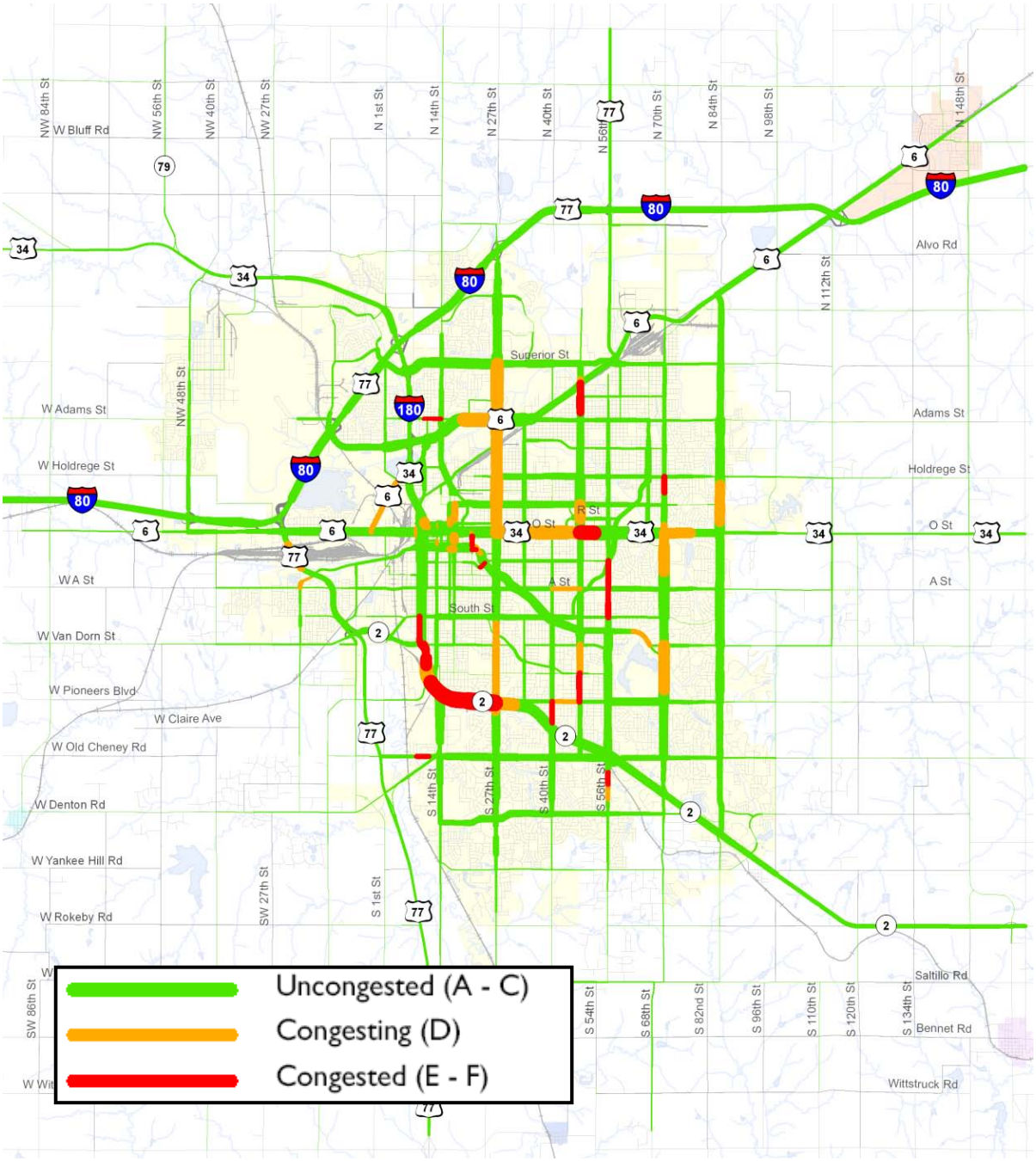
In addition to the existing level of service and congestion analysis, a 2040 travel demand model run was conducted assuming only the current improvements and some previously committed improvements. The 2040 traffic forecasts with the existing plus committed network is presented in the "2040 Traffic Volumes and Congestion with the Existing Plus Committed Network" map.

As can be seen in this figure, the number of roadways that will change from uncongested to congesting or congested will increase significantly. These areas include both the existing urban area as well as outlying areas that are forecasted to experience future growth, without an adequate roadway system to serve it.

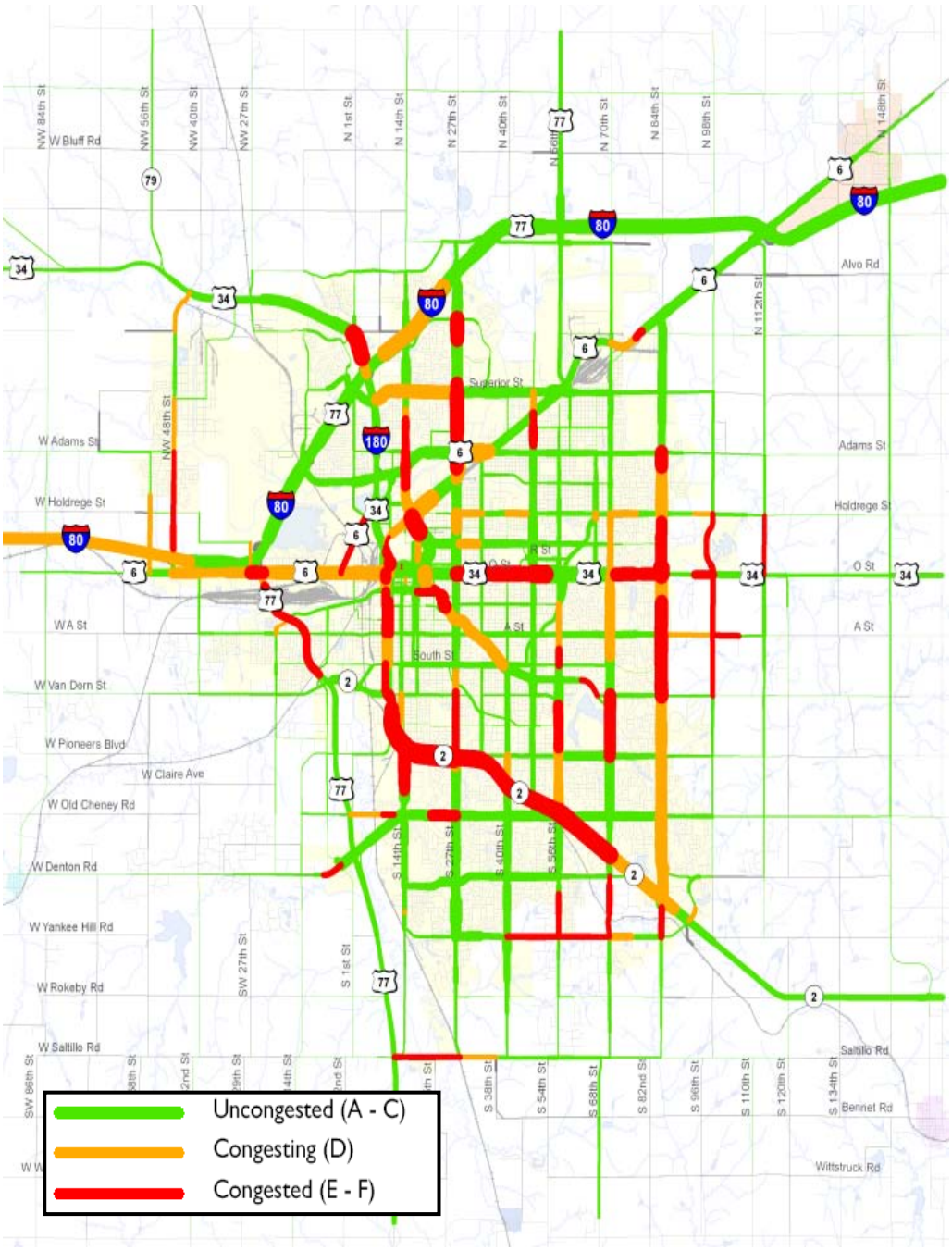
Existing Functional Classification



Existing Traffic Volumes and Congestion



2040 Traffic Volumes and Congestion with the Existing Plus Committed Network

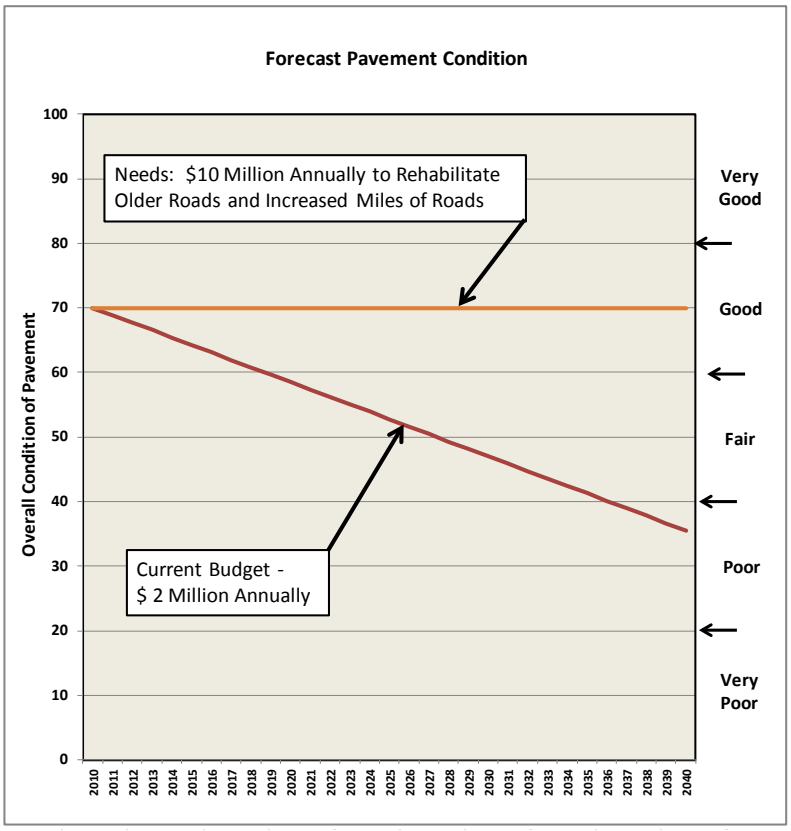


PAVEMENT CONDITION

One of the major concerns that were raised as part of the existing conditions analysis was the lack of funds to provide adequate rehabilitation to an aging and growing roadway system. Historically the City has had roadways classified as good based on an system level Pavement Quality Index (PQI). This was largely due to the fact that many of the roads within the City were relatively new and required lower maintenance and rehabilitation costs. As roadways get older, the cost of maintenance and rehabilitation increases.

Currently the City of Lincoln is spending about $2 million annually for roadway maintenance and rehabilitation. Based on the existing pavement quality index and continuation of existing roadway maintenance funding, a 2040 forecast year pavement quality analysis was conducted and is presented in the "Forecast Pavement Condition" figure. As can be seen, it was determined that the condition of the roadways within the City would drop from the current good condition (70% PQI) to poor (35% PQI) based on current funding levels. The issue was raised that with continued limited funding, the roadways within the City of Lincoln would deteriorate to unacceptable levels or funding from other transportation programs, such as funding for new roadways would need to be shifted to maintenance/ rehabilitation.

Forecast Pavement Condition



RURAL ROADS

Population growth and increased recreational demands in the rural areas add to the volume of traffic on rural roadways. Grain trucks and other commercial vehicles are carrying heavier loads than ever before and create additional problems as roads experience greater transport weights.

These pressures lead to increased maintenance demands and demand for improved pavement and modifications to road foundations. The decision to make improvements to the road surface is based on several factors including:

- Role of the road in the overall system
- Number of vehicles traveling the road daily
- Increased maintenance or decreased driver safety
- Type of traffic and weight of vehicles on the roadway
- Spacing or proximity to other paved roads

A major topic of discussion prior to the development of the 2040 LRTP and during the LRTP planning process is the increasing demand on rural roads in Lancaster County. Of particular interest are the topics of the need for efficient and effective planning of road improvements in the urbanizing area of Lincoln, and the need to stretch the life of existing paved rural roadways as long as possible to serve growth in the community in order to limit costs of improvements.

One policy item that addresses these concerns and was included in the new 2040 LRTP are the findings in the Mayor's Road Design Standards Technical Task Force report. This 14 member committee appointed by the Mayor of Lincoln was charged with developing a strategy for addressing the near term roadway funding challenges of the time. In 2008, Executive Order 081547 directed City departments to immediately begin taking steps to adopt the recommendations of the committee. Among other findings, the Task Force recommended the City consider extended life for rural paved roadways, simplified road designs, and building roads initially to meet the demand of the immediate future, rather than traffic volumes that may not exist for decades.

Another existing policy that is continued in the 2040 LRTP is the Rural-to-Urban Transition for Streets (RUTS). Lancaster County and the City of Lincoln agree it is mutually beneficial to provide a better transition from County roads located within the three mile zoning jurisdiction of the City to City streets at the time of annexation. This process provides a more useful life from the public investment in these County roads while at the same time accommodating future growth of the City, by establishing right-of-way and construction standards with the initial paving offset to allow future transition from rural to urban standards without disruption to the existing through traffic and the surrounding property.

TRANSIT

Public transportation is an essential component of the transportation system and should be integrated with all other transportation modes. StarTran, the City operated transit system, provides fixed-route service, para-transit (Handi-Van), and brokerage or contracted transportation service that is door-to-door demand responsive disability service, as shown in the "Existing Star Tran Transit Service" map. These public services are critical to those persons that are dependent on public transit services. These services are necessary for compliance with the Federal Americans with Disabilities Act. In addition to providing services for the transit dependent, StarTran also offers services as an alternative to the automobile for the non-transit dependent.

Based on an evaluation of the existing transit service routes, service hours and frequency of service, the following observations were identified.

- **Transit Coverage:** The transit coverage area within the City is extremely good with over 80% of the City being within 1/4 mile of a transit stop.
- **Access to Downtown & University:** With extensive service from all parts of the City to downtown and UN, transit service is good.

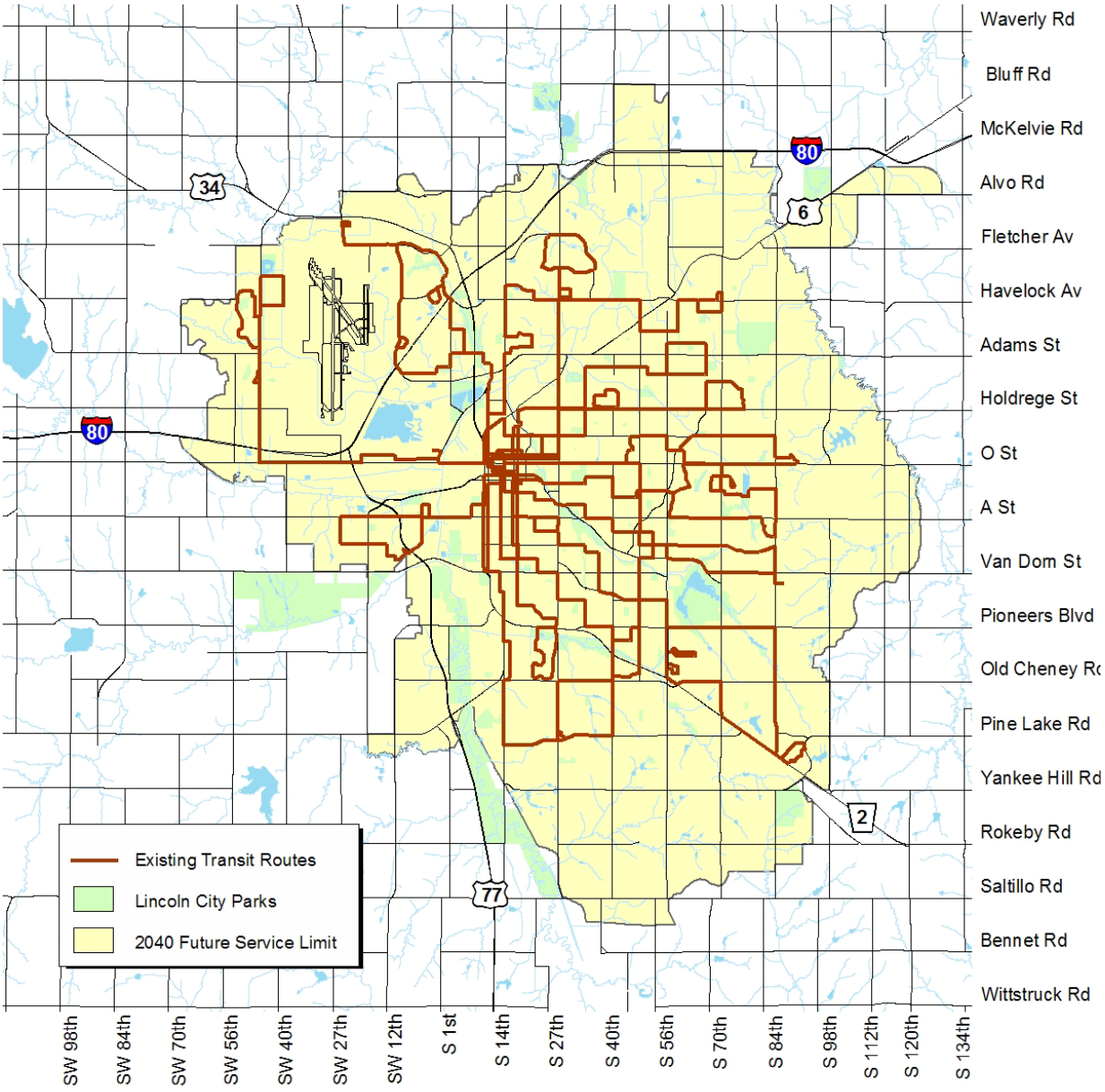
Transit Service Throughout the City: With a downtown hub and a spoke transit service to outlying areas, transit trips require a transfer and are long to get from one part of the city to another. They can also be confusing.

- **Service Frequency:** StarTran runs 30-minute service during the peak hours and one hour served during the off-peak. This frequency of service is generally considered as adequate to service transit dependent riders, however if the objective is to provide transit service as an alternative to the automobile "Choice" riders, the frequency of transit service would need to be increased.
- **Hours of Service:** StarTran operates between around 6:00 a.m. to 6:00 p.m. This limits the opportunity for those that work after the typical 5:00 p.m. end of day to take transit. Many of these are lower income populations

- **Transit Expansion:** With lower density land uses in outlying areas, it becomes difficult for StarTran to expand viable transit service. Higher density and mixed land uses are required.

One method of comparing StarTran service with other peer cities is through the measurement of per capita annual revenue service hours. Currently StarTran provides for .41 revenue service hours for the city's existing population. Based on a review of peer cities as identified in the StarTran Transit Development Plan (TDP), the average of the peer cities was .48 revenue service hours per population. This would indicate that StarTrans service would need to increase by approximately 15%.

Existing StarTran Transit Service



BICYCLE/TRAILS

The city has an existing system of multi-use trails and on-street bike routes. The present system serves both commuter bicyclists who use their bicycles daily for work and shopping trips and tend to travel from point to point, and recreational bicyclists who tend to ride their bicycles on a more occasional basis, seeking attractive and safe routes. The system also serves other users such as pedestrians. This bicycle and trails system is presented in the "Existing Bicycle and Trails System" map.

Based on an analysis of the bicycle and trails system, the following observations were noted.

- The City has the framework for building a quality trails system that will serve both the recreational and commuter rider. However, this trail system is only about 50% complete and will require additional facilities to connect the entire city.
- The City of Lincoln has a limited system of bicycle improvements that allows a person to truly use the bicycle as a mode of transportation.
- There is no facility to allow the bicyclist to travel east-west in the City's Downtown (the adopted Downtown Master Plan does include a plan for east-west bike lanes)
- The existing street system has severe right-of-way constraints that significantly limit the opportunity to add bicycle lanes.
- The City's low volume/speed roadways used for bicycle routes are an important element of the bicycle network.

Types of Bicycle Facilities

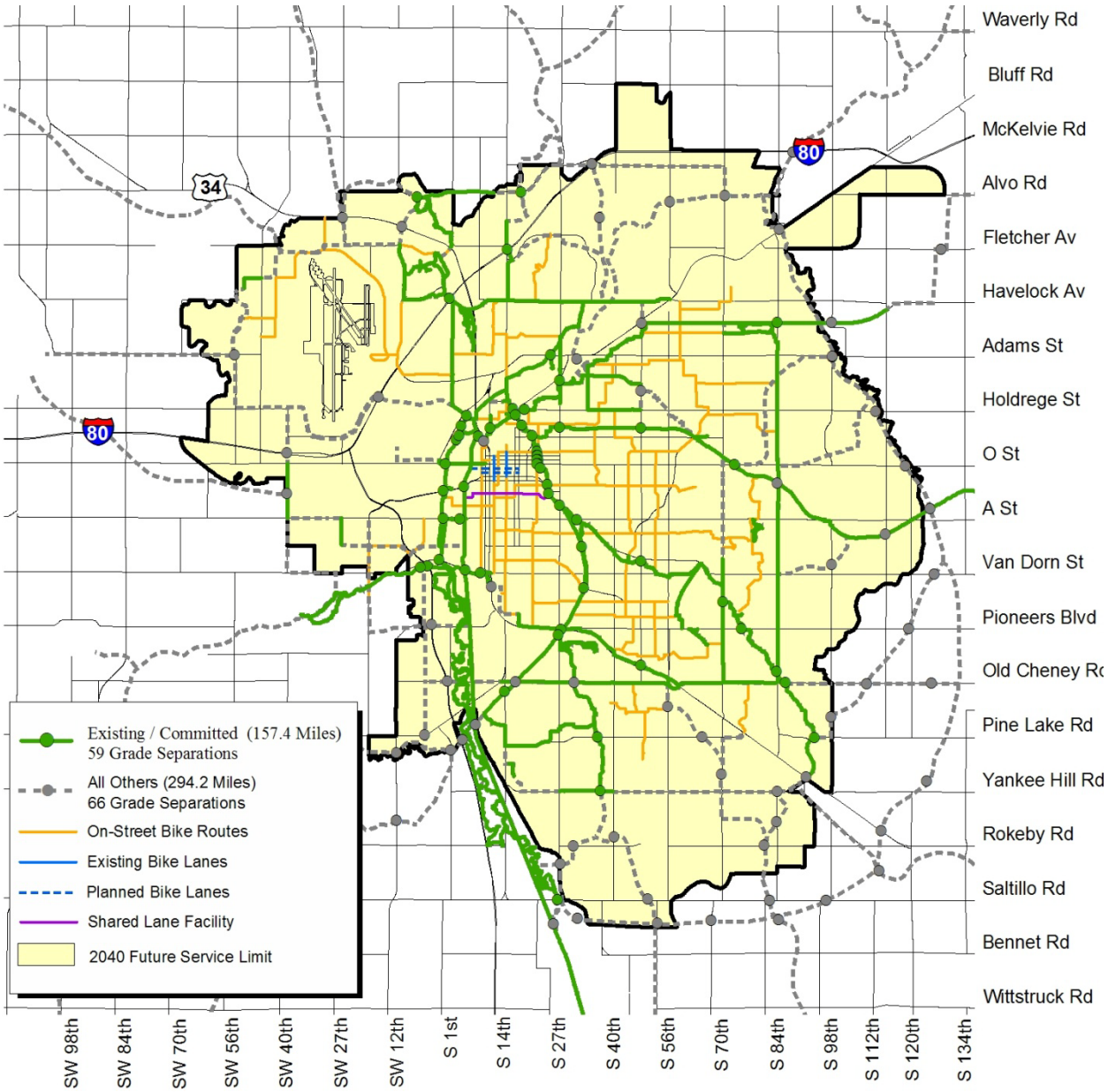
Multi-Use Trail: 10 to 12-foot paved trail for both pedestrians and bicyclists.

Shared Use Path: Wide sidewalks separated from a street and designed for two-way travel.

Bicycle Lane: Designated pavement markings supported with bicycle lane signs.

Bike Routes: Roadways that have low traffic volumes/travel speeds where the bicycle and the automobile share the same travel lanes.

Existing Bicycle and Trails System



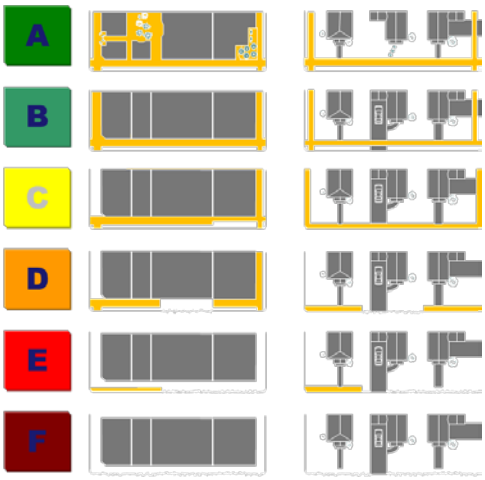
PEDESTRIAN SYSTEM

The City's pedestrian system is made up of sidewalks which are generally located within the street right-of-way on both sides of the street throughout the City and intersection crossings, both protected through signalization and at unsignalized intersections.

There are five LOS measurements that are used in evaluating the pedestrian system. The following section presents these factors, and a general summary of how the City fares.

- **Directness** - Pedestrians should be able to walk in a reasonably direct path to destinations like transit stops, schools, parks, and commercial and mixed-use activity centers. Directness is the ratio of actual distance along a sidewalk or pathway divided by the minimum distance the trip would take on a grid system.

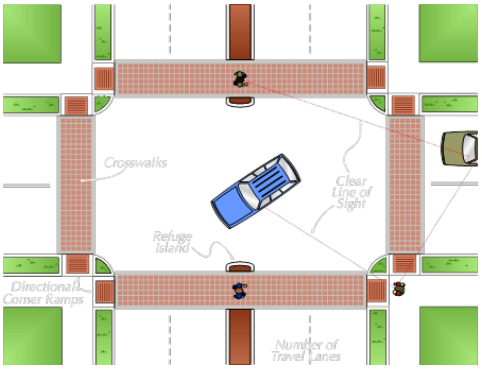
  The City of Lincoln has a strong grid system with short to moderate length blocks and easy travel from point to point.

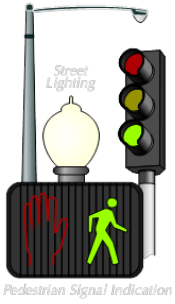


- **Continuity** - The sidewalk system should be complete, without gaps, and maintained in good repair. The pedestrian network in shopping centers should be integrated with adjacent activities.

  The City of Lincoln has always required that sidewalks are provided on both sides of the street. Therefore the City in general has very good sidewalk continuity.

- **Street Crossing** - Street crossings should feel be safe and feel comfortable. Factors to consider are number of lanes to cross, traffic volumes, turning movements, speed of traffic, signal indication, curb radius, crosswalks, lighting, raised medians, visibility, curb ramps, pedestrian buttons and convenience.





  The City of Lincoln in general has good street crossings. However, along some wider and higher volume and higher speed streets, signalized street crossings can be at great distance and potentially cause a safety concern.

- **Visual Interest** – Pedestrians enjoy a visually appealing environment. Street lighting, fountains, and benches should match the local architecture. Pedestrian amenities should include landscaped parkways with street trees between the street and sidewalk while being sensitive to existing areas and uses.

  Many of the City of Lincoln streets have sidewalks separated with landscaped parkways and tree canopies creating a desirable and pleasing place to walk. The major issue impacting the visual

character of the pedestrian network is the lack of maintenance, which creates a major distraction in many areas.

- **Security** - Pedestrians should be visible to motorists and other pedestrians. Pedestrians should be separated from motorists and bicyclists. Adequate lighting should be provided.

  The City of Lincoln's sidewalks generally have line of sight for many eyes on the pedestrian. Streets also have good lighting.

  Although the City has a relatively good pedestrian system, the one major concern has been the lack of funding for maintenance.

CHAPTER 5: EVALUATION PROCESS

A major objective of the Lincoln MPO Long Range Transportation Plan process was to include meaningful public input in the plan development phase and a transparent evaluation process for prioritizing projects and developing a Needs Based Plan and a Financially Constrained Plan.

It is also important to note that the preparation of the Long Range Transportation Plan requires a local application of the SAFETEA-LU planning factors. As will be discussed, it is mandatory that these planning factors be incorporated into the planning process for development of a preferred, Financially Constrained Long Range Transportation Plan.

This chapter begins with the requirements of SAFETEA-LU and the eight planning factors. The Lincoln/Lancaster County LRTP goals, developed from the SAFETEA-LU planning factors and the public and policy makers weighting for each goal, are then presented.

FEDERAL PLANNING REQUIREMENTS

Several laws, regulations, statutes, codes and other documents at the federal level affect the development of the Long Range Transportation Plan by specifying requirements to be considered in the planning process or to be contained in the Plan. These include SAFETEA-LU, existing and proposed metropolitan planning regulations, management and monitoring system regulations, Executive Order 12898 on Environmental Justice, the Americans with Disabilities Act, and a variety of others.

SAFETEA-LU replaces the Transportation Equity Act for the 21st Century (TEA-21) and provides the primary authoritative direction on the development of the Long Range Transportation Plan. On August 10, 2005, Congress enacted SAFETEA-LU as Public Law 109-59. SAFETEA-LU authorizes the federal surface transportation programs for highway and transit systems for the 5-year period from 2005 to 2009. SAFETEA-LU continues and enhances the federal programs and priorities established in the previous Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and TEA-21.

Among the many environmental, funding, infrastructure, modal, safety, and other transportation-related provisions of the legislation, the process for developing transportation plans shall provide for consideration of all modes and shall be continuing, cooperative, and comprehensive to the degree appropriate.

The eight SAFETEA-LU Planning Factors that must be addressed in the transportation plan include:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the security of the transportation system for motorized and non-motorized users.
4. Increase the accessibility and mobility of people and for freight.
5. 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.
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.

2040 LRTP GOALS

The goals for the Lincoln MPO Long Range Transportation Plan were developed through the assistance of the LPlan Advisory Committee (LPAC) and in review of the eight SAFETEA-LU Planning Factors. In total, there are seven goals. These seven goals

were presented to the public, where they provided input regarding their relative weighting which was used as part of the evaluation process.

1. Maintain the existing transportation system to maximize the value of these assets.
2. Improve the efficiency, performance and connectivity of a balanced transportation system.
3. Promote consistency between land use and transportation plans to enhance mobility and accessibility.
4. Provide a safe and secure transportation system.
5. Support economic vitality of the community.
6. Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural resources.
7. Maximize the cost effectiveness of transportation.

The close relationships between the 2040 LRTP goals and the SAFETEA-LU planning factors are presented in the "Relationship Between SAFETEA-LU Planning Factors and 2040 LRTP Goals" table. It should also be noted that there are some additional planning objectives incorporated within the Lincoln/Lancaster County MPO goals. These include emphasis on sustainability, livability and reductions in greenhouse gas. These additional elements were identified in the proposed Federal Transportation Bill. Although this Bill has not been passed, the Secretary of Transportation, Ray LaHood, has been requesting that federal and state Departments of Transportation to include these alternative transportation, livability, and environmental goals in the transportation process. For that reason, they have been included to illustrate that they have been addressed in the planning and evaluation of projects throughout the development of the Long Range Transportation Plan.

Below is a list of each LRTP Goal with its relative weight of importance as determined by the LPAC, an explanation of the goal's intent, and related objectives and evaluation criteria used in the formulation of the LRTP.

***Goal 1: Maintain the existing transportation system to maximize the value of these assets*. (Weight 18.3)**

As the transportation system ages, increased funding is required for maintenance. There is often competition between funding for new projects and funding for the maintenance and operation of the existing system. Reductions in maintenance funding today lead to higher costs in the future. Constructing new roads increases future maintenance costs as the new facilities age.

a. Maintain and repair existing roads, sidewalks and/or multi-use trails so that 80% of facilities are in good condition or better.

Six Federal Livability Principles

1. Provide more transportation choices. Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.
2. Promote equitable, affordable housing. Expand location-and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
3. Enhance economic competitiveness. Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services, and other basic needs by workers, as well as expanded business access to markets.
4. Support existing communities. Target Federal funding toward existing communities—through strategies like transit oriented, mixed-use development, and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.
5. Coordinate and leverage Federal policies and investment. Align Federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.
6. Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.

This objective states that the proposed project includes maintenance of an existing road, trail, sidewalk or bridge facilities to a minimum good or better condition.

b. Increase access to additional modes by replacing and retrofitting transportation facilities in the existing system to allow for a wide range of transportation options as appropriate with maintenance projects.

This objective recognizes that in older parts of town, thought may not have been given to the provision of travel choices at the time of construction. In order to increase the efficiency of the overall system, these travel choices should be considered in any retrofit project.

***Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system*. (Weight 18)**

Efficiency, performance and connectivity of the transportation system imply multiple benefits to all users. An efficient system allows people to move from place to place in as direct a route as possible, allowing them to reduce the amount of time spent in travel, the distance that must be traveled, and the amount of time spent in congested traffic. Connectivity allows people to make route decisions based on current traffic conditions, road access, or desired stopping points. A transportation system that performs well allows users to choose multiple transportation modes and to move through those modes in an efficient and safe manner.

a. Optimize the efficiency of transportation facilities through improved signal timing, road design, elimination of bottlenecks, integration of multiple modes, or other methods.

People can move through the transportation system, using multiple modes (even within a single trip, if desired) and encounter as few obstacles as possible along the way.

b. Minimize increases in travel times by methods such as providing direct routes between destinations, use of intelligent transportations systems and transportation demand management tools, and/or providing information to the public to allow them to make informed transportation decisions.

The time spent in travel is reduced by reducing the congestion in the system by monitoring that system, adjusting signal timing appropriately, and informing users when delays might recommend an alternate route, or through various transportation demand management programs that reduce peak hour traffic.

c. Promote Complete Streets concepts so that streets are planned, designed and operated to maximize safe access for all users including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.

Complete streets include safe, comfortable, and attractive alternatives to single passenger vehicles. An increase in use of non-motorized transportation or transit reduces the number of single passenger vehicles on the road.

***Goal 3: Promote consistency between land use and transportation plans to enhance mobility and accessibility*. (Weight 10.1)**

A major objective of the 2040 City of Lincoln and Lancaster County Future Land Use Plan is to create a future vision of a more compact, livable urban environment that minimizes vehicle miles traveled and promotes alternative transportation modes. This plan also addresses the changing demographics of an aging population and the increased number of single person households requiring alternative choices in

housing and transportation. A goal of the transportation plan is to demonstrate an integration of the land use plan and transportation plan by supporting transportation improvements that target mixed use development nodes, redevelopment and infill projects, and multimodal corridors that connect these activity nodes.

a. Provide a transportation network which supports land use planning.

A primary objective of the City of Lincoln's Comprehensive Land Use Plan is the development of mixed use activity centers through redevelopment and infill development and providing an integrated transportation plan that supports all travel modes. This objective also includes the linkages of these activity areas through multimodal travel corridors.

b. Provide travel choices within mixed use activity centers including infill and redevelopment areas.

Compact, walkable mixed use activity centers include land use patterns that contain all activities of daily living (shopping, entertainment, work, recreation, etc…) within a reasonable distance from housing. Multi-modal transportation solutions to complement these mixed use activity centers must include a robust sidewalk system that is integrated within the land use design of the area, a bicycle network that provides connections to the centers from outlying areas, and transit connections to other centers, households and retail, services and employment destinations.

c. Provide travel choices along multimodal travel corridors.

All roadway projects should consider Complete Streets. If a roadway project is proposed to widen a road from two to four lanes or flare out an intersection with additional left and right turn lanes, the project should include complete street elements including sidewalks, bike lanes, transit stops and safe street crossings. If this roadway project is to be an active multimodal travel corridor, complete street improvements should also include context sensitive design and traffic calming elements to further enhance the experience of walking, bicycling and taking transit.

***Goal 4: Provide a safe and secure transportation system*. (Weight 9.8)**

All transportation improvements should be designed to be safe and secure. Visibility, access control, and separation of incompatible modes, either through buffers or grade separations, are some of the methods that can be employed to decrease conflicts and increase comfort. Security devices at key facilities, such as bus stops and trail head facilities, increase the safety and security of users. Educational programs that help travelers understand the particular safety concerns associated with various modes can help all users travel with increased confidence and security. Access to technology that helps identify and clear safe and rapid routes to incident sites is vital for first responders. The ability to ensure alternative routes in times of weather emergencies, crashes, and other emergency incidents helps to secure the continued access of responders and regular users.

a. Support transportation programs and design improvements which reduce crashes and improve safety of all modes.

A major goal of transportation planners and engineers is insuring the safety of travelers. Visibility, access control, and separation of incompatible modes, either through buffers or grade separations, are some of the methods that can be employed to decrease conflicts and increase comfort. Security devices at key facilities, such as bus stops and trail head facilities, increase the

safety and security of users. Educational programs that help travelers understand the particular safety concerns associated with various modes can help all users travel with increased confidence and security.

b. Facilitate the rapid movement of first responders and support incident management during times of emergency.

The ability of emergency responders and managers to reach incidents in a timely manner can make a difference of life or death in emergency situations. Access to technology that helps identify and clear safe and rapid routes to incident sites is vital. The ability to ensure alternative routes in times of weather emergencies, crashes, and other emergency incidents helps to secure the continued access of responders and regular users.

Goal 5: Support economic vitality of the community. **(Weight 14.6)**

Economic vitality is a SAFETEA-LU planning factor that is very complex and hard to describe. Economic vitality requires that many characteristics beyond transportation facilities be present, including a low cost of doing business, availability and access to technology, an educated and skilled workforce, choice of housing types, high quality schools, low municipal and state debt, and other less tangible qualities. A good transportation system, which includes transit, vehicle, freight, air, non-motorized and rail modes all integrated with land use, can help contribute to these factors.

a. Support new and existing commercial and industrial development by ensuring access by multiple transportation modes.

While it is important that freight haulers have access to commercial and industrial facilities as discussed above, it is equally important that the customers and employees of these facilities have safe and adequate access as well. Transportation facilities should include multiple modes to allow access by all users, as well as being appropriately sized to allow access by each mode without sacrificing the safety of another.

b. Provide attractive and convenient transportation facilities that attract and retain businesses, young professionals, families and older adults.

Transportation amenities are one piece of an overall amenity package that makes a city more desirable. People often make decisions of where to live based on the particular amenities available. Businesses also make decisions based on these amenities because they understand their value in attracting and retaining a particular employee or customer population. Public transportation systems, trails and trail facilities, air service, and low traffic congestion conditions are all transportation attractors.

c. Facilitate the movement of goods and freight to commercial and industrial centers.

The ease with which industrial and commercial facilities can receive goods and ship products is important to their economic viability. Transportation facilities that allow direct, convenient access to these centers can decrease the conflicts with other traffic and increase the efficiency of the shipping process.

Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources. **(Weight 17.7)**

This goal is one that should be part of many different planning elements. The SAFETEA-LU Planning Factors and the proposed Transportation Bill both stress the need for transportation planning to more seriously take these factors into account than they have before. The LRTP process requires a review of

environmental, cultural and social effects of transportation plans. Protection of quality of life factors such as clean air and water, the promotion of healthy lifestyles, and the preservation of natural, historic and cultural resources are priorities of LPlan 2040.

a. Reduce fossil fuel consumption by minimizing travel time and providing access to alternative modes and fuels.

Fossil fuels are limited in supply and their burning has many effects on the environment including increased green house gases, particulate matter, and effects on global warming. A large proportion of the US fossil fuels supply is obtained from countries with which the US has some degree of security concern. Additionally, fossil fuels are predicted to be in very limited supply and their cost will continue to increase over time.

b. Minimize air pollution by reducing trip length and congestion.

Air quality is very important for public health, environmental sustainability and a good quality of life. The US Environmental Protection Agency, which has been working to develop new, and much lower, thresholds for attainment of Clean Air Act goals. Depending on these thresholds, Lincoln could be in a position where it could be found in a state of "non-attainment" with any increases to current air pollution levels. This status would require corrective actions which could be very costly to the City and County.

c. Minimize vehicle miles traveled and promote a more active lifestyle by promoting livable communities with a variety of transportation choices.

Public Health is an increasingly important topic in transportation planning, and planning in general. The availability of non-motorized options for transportation can have a great effect upon public health by increasing time spent walking and biking. Shorter trips can be accomplished by creating more mixed use, compact neighborhoods, or increasing the integration of residential land uses into existing commercial areas through redevelopment.

d. Minimize impacts to natural environment by taking opportunities to couple transportation projects with protection and enhancement of environmental resources.

Transportation projects in new areas often cross water ways, disturb land, and cut through tree masses. It is important to, wherever possible, avoid these resources, or mitigate their disturbance. Non-motorized transportation facilities in particular can take advantage of the benefits of locating in harmony with these natural amenities. Establishing environmentally sensitive landscaping during transportation projects can create aesthetic benefits without major maintenance requirements.

e. Reduce impacts on neighborhoods and cultural and historic resources through evaluation of assets and involvement of neighbors in the planning process with special attention to areas where a larger proportion of the population belongs to traditionally under-represented groups.

Preserving the value and character of existing neighborhoods is an important consideration and efforts should be made to minimize impacts on established neighborhoods and investments. In the past, many transportation projects displaced citizens, destroyed valuable cultural resources, and displaced or divided neighborhoods. Often these injustices were unfairly borne by those who were traditionally under-represented in government. Transportation planning has since evolved a very strong link to environmental justice which is both desirable and required. It is vitally important that the needs of neighborhoods, particularly those with larger under-represented populations, be involved in transportation planning decisions and that these decisions take into account, and work to protect, those resources important to neighborhoods.

Goal 7: Maximize the cost effectiveness of transportation. **(Weight 11.6)**

Transportation costs can be viewed on an individual, organizational, or municipal scale. Costs can also be viewed as the cost of building structures, powering vehicles, or the time spent in travel. Transportation facilities that expand the travel options available, reduce the time spent traveling, reduce the fuel consumed in travel, and make the best use of public funding in their construction and maintenance are most desirable.

a. Plan for a transportation system that is affordable, sustainable, and makes the best use of public financial resources.

Public funding, both locally and nationally, for transportation facilities is extremely tight. Public and private groups have expressed the desire to see funds spent in the most efficient way possible. Projects with high capital construction costs decrease remaining funding for other projects. Conversely, low cost improvements leave available funds for other improvements.

b. Reduce cost of travel to users by taking opportunities to include all modes of transportation in new and retrofitted projects and reducing travel times and distances for activities of daily living.

"Travel costs" refers to the cost of traveling, not the cost of the facility itself. If trips are shorter, vehicles travel a shorter distance and consume less fuel. If trips can be accomplished with non-motorized modes, the cost is much lower. If transit can be conveniently used for trips, greater use of transit may be encouraged, thus reducing the cost.

c. Construct projects that have a capital cost that produces a corresponding benefit to travelers.

Projects cannot be compared strictly on the basis of costs. A large project will have a high cost; however, that project may have a profound positive effect on the overall transportation system. Both costs and benefits must be evaluated when prioritizing projects.

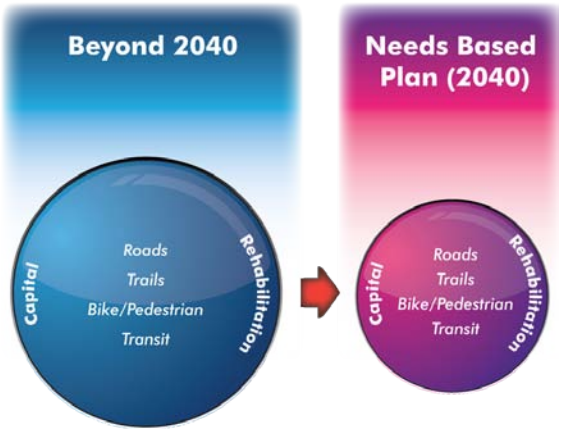
Relationship Between SAFETEA-LU Planning Factors and 2040 LRTP Goals

			LPlan2040 Transportation Goals						
			1. Maintain the existing transportation system to maximize the value of these assets.	2. Improve the efficiency, performance, and connectivity of a balanced transportation system	3. Promote consistency between land use and transportation plans to enhance mobility and accessibility	4. Provide a safe and secure transportation system	5. Support economic vitality of the community	6. Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.	7. Maximize the cost effectiveness of transportation
SAFETEA-LU Planning Factors	1	Support the economic vitality of the metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency.					x		x
	2	Increase the safety of the transportation system for motorized and non-motorized users				x			
	3	Increase the security of the transportation system for motorized and non-motorized users				x			
	4	Increase the accessibility and mobility of people and for freight		x					
	5	Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between trasnportation improvements and State and local planned growth and economic development patterns			x			x	
	6	Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight	x	x					
	7	Promote efficient system management and operation	x	x					x
	8	Emphasize the preservation of the existing transportation system	x						
Proposed Transportation Bill	A	Address the mobility and access needs of people and goods		x					
	B	Improve the condition, performance and connectivity of the intermodal transportation system	x	x					
	C	Provide transportation choices for commuters and travelers		x					
	D	Promote environmental sustainability, public health and the livability of communities						x	
	E	Incorporate land use patterns that support improved mobility and reduce dependency on single occupant vehicles			x			x	
	F	Limit impacts on farmland, natural resources and air quality						x	
	G	Demonstrate a reduction in greenhouse gases		x				x	
	H	Increase water and energy conservation and efficiency		x				x	
	I	Provide for an increase in livable communities			x			x	

NEEDS BASED PLAN DEVELOPMENT, SELECTION, AND PRIORITIES

After the completion of the existing conditions assessment and the development of the 2040 LRTP goals, a Needs Based Plan was prepared to address the 2040 growth and land use forecasted for the region. The development of the Needs Based Plan was both a bottom up and top down effort. The bottom up approach was based on 2040 traffic forecasts assuming the existing plus committed roadway network. New facilities or widened roadways were then added to the model runs to address those areas that were congested. These improvements included both widening of existing roadways to directly address the problem area, or propose a new facility that would provide an alternative to the congested facility.

The top down approach began with the 2030 Plan. This plan was not financially constrained and was more of a vision to address the long term regional needs beyond 2040. It should also be noted that the land use and growth assumptions were different in the 2030 Plan as compared to the 2040 Plan. This top down approach was therefore to examine proposed improvements to determine if they were receiving high use. If not, they were eliminated and the model rerun to see what impacts resulted.



The bottom up and top down process was iterative until a needs based plan was developed. This needs based plan was significantly reduced when compared to the 2030 Plan, but exceeded the available budget identified in the revenue analysis.

The next step involved the process of determining of the projects within the needs based plan, which ones would remain in the financially constrained plan and what were there priorities. These plan alternatives included both capital improvements and transportation programs, such as ITS and TDM.

The evaluation methodology was based on the project goals and their weights based on LPAC and public input. For each goal, three performance statements were developed for high, medium and low. A high performance rating for a goal was given a score of 3, a medium performance rating a score of 2, and a low performance rating a score of 1. These performance ratings for each of the seven goals was then multiplied by the related weights attributed to each goal, resulting in a total weighted score for each project. The project and program evaluation was based on the individual scoring of each project for all seven goals of a team of public works and planning staff. Prior to individual evaluations, a meeting was held where each participant scored five different types of projects and then compared results. This allowed discussion of how the differences in the performance measures could be viewed and allow a refinement of the performance interpretation. Data used to inform these evaluations included (See Appendix F):

- Lancaster County Natural Resources GIS Map and Data
- Draft 2040 Land Use Map
- Draft 2040 Priority Growth Areas Map
- Existing Average Daily Traffic Data
- Draft 2040 Urban Trails Plan Prioritization Map
- 2030 LRTP Roadway Projects List and Map
- 2009 Existing Level of Service Congestion Map
- 2040 Forecast Level of Service on E+C Network and Congestion Map

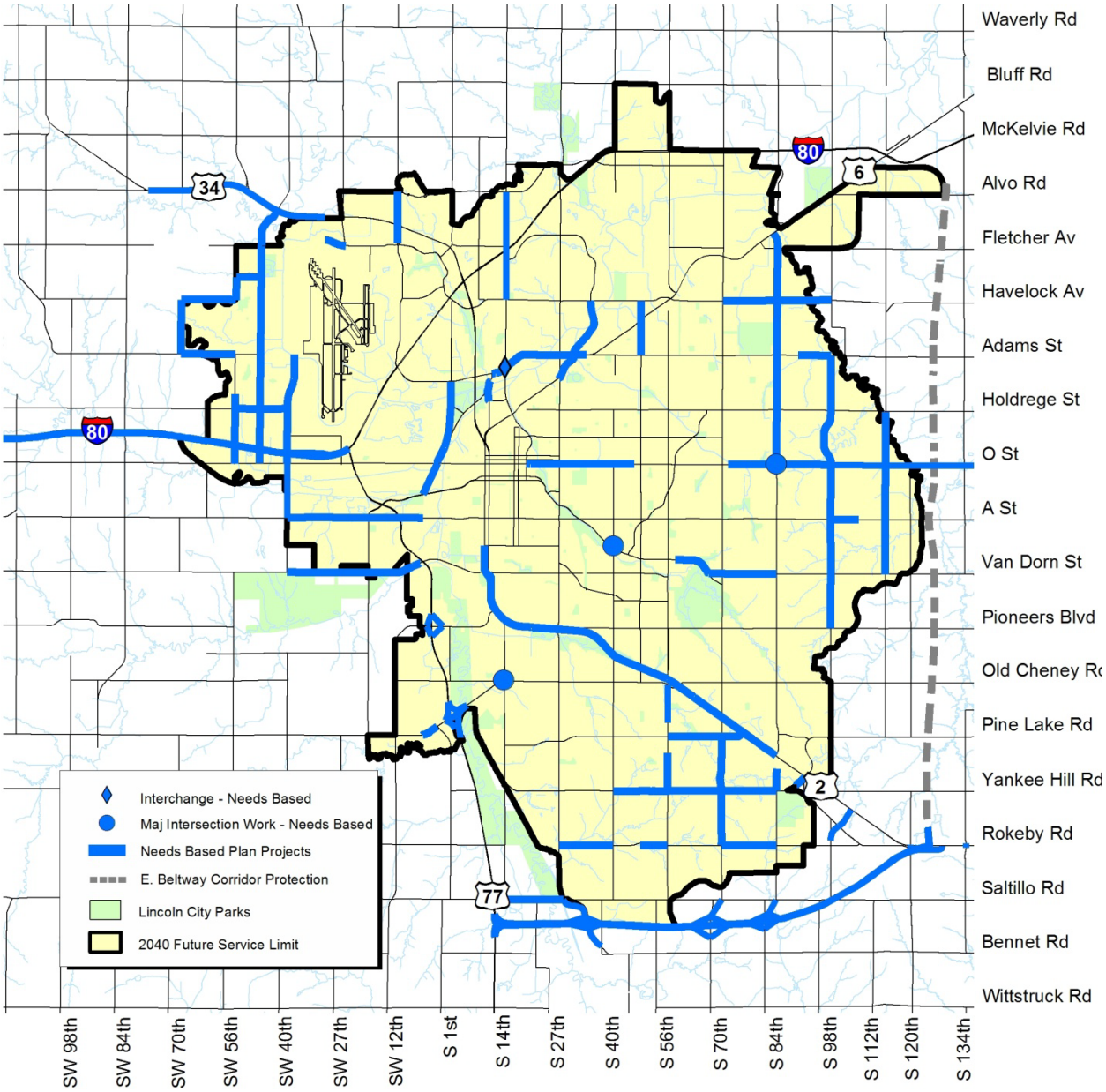
- 2040 Forecast Level of Service on E+C Network with Preliminary Needs Assessment Network
- 2040 Forecast Level of Service on 2030 Plan Projects Network
- City Crash Study data
- Preliminary 2040 Plan Project List with costs and descriptions
- Existing Star Tran route map and Draft Nodes & Corridors Redevelopment map
- List and description of LRTP Goals and Objectives
- City Pavement Condition data and map

After all evaluations were completed, they were compiled in a spreadsheet along with the goal weights to come up with a project score that was ranked from top to bottom. The "2040 LRTP Urban Area Street Projects and Prioritizations" summary sheet shows the results of this step in the process. These projects were also mapped for presentation to the LPAC and for public meetings. The Needs Based Plan is presented in the "Needs Based Roadway Plan" map. The resulting 2040 congestion is presented in the "2040 Congestion with Needs Based Plan" map. As can be seen, the 2040 forecast year with Needs Based Roadway Plan improvements will result in more congestion than current levels, but a significant reduction in congestion when compared to the 2040 forecasts with the existing plus committed network.

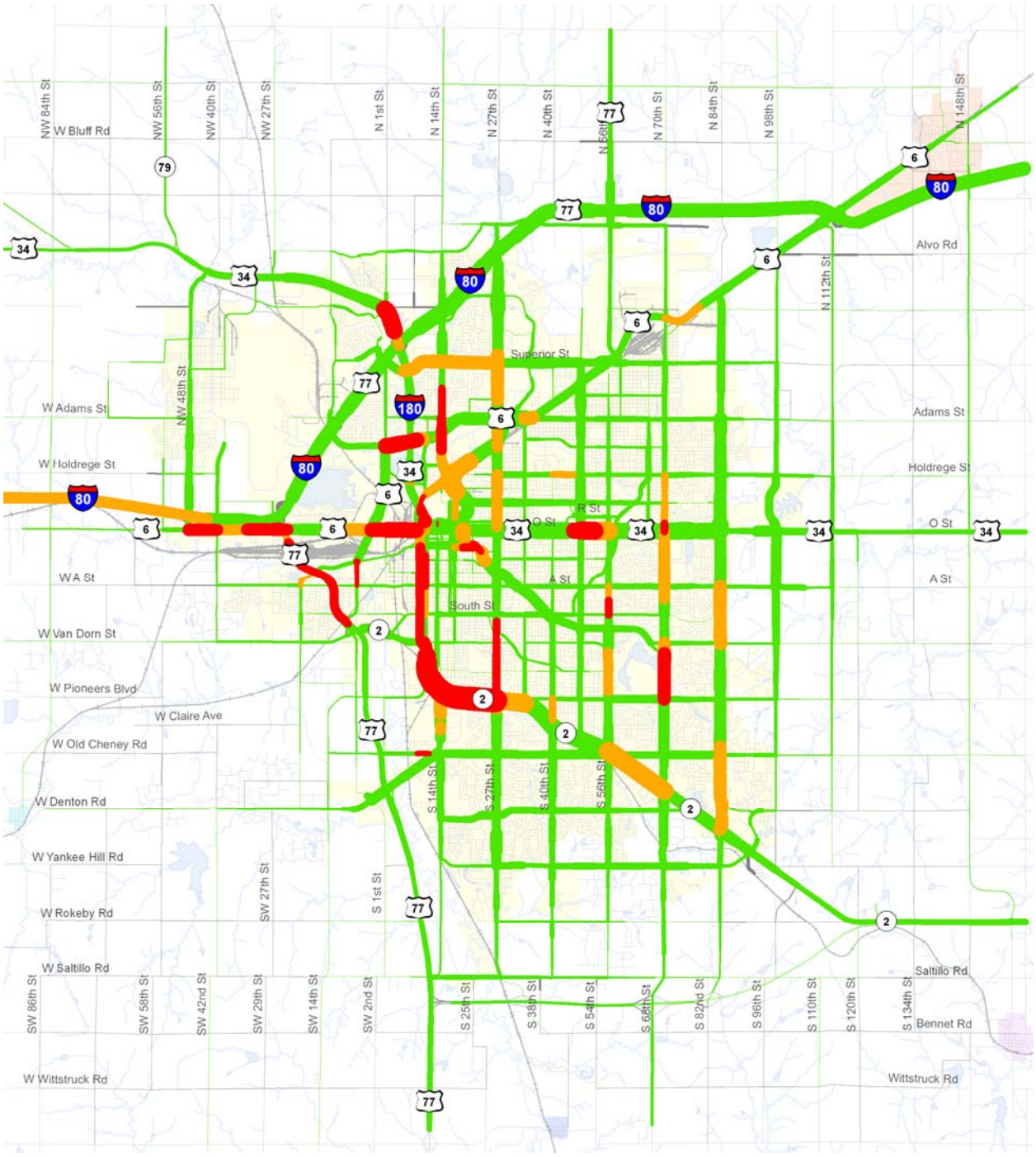
2040 LRTP Urban Area Street Projects and Prioritizations

Facility/Project Name	Project Type	Weighted Goals								2009 Volumes	2009 LOS	2025 E+C Volumes	2025 E+C LOS	2025 Fiscally Constrained Volumes	2025 Fiscally Constrained LOS	2040 E+C Volumes	2040 E+C LOS	2040 Fiscally Constrained Volumes	2040 Fiscally Constrained LOS	2040 Needs Plan Volumes	2040 Needs Plan LOS
		18.3	18.0	10.1	9.8	14.6	17.7	11.6													
City of Lincoln Projects		Goal 1	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7	Weighted Score												
Intersection Capacity Improvement Projects ($1,000,000 annual program)	Program	2.0	3.0	2.1	2.7	2.3	2.1	2.9	243.3												
Two Plus Center Turn Lane Projects in the Built Environment (added capacity portion of projects)	Program	2.9	2.4	2.1	3.0	1.3	2.3	2.7	237.8												
Intelligent Transportation System Capital Program of Projects ($1,000,000 annual program)	Program	1.6	2.7	2.0	2.9	2.0	2.6	3.0	235.3												
Safety Projects (20% of state safety projects)	Program	1.9	2.4	2.1	3.0	2.0	2.3	2.9	231.5												
Travel Demand Management Program of Projects ($200,000 annual program)	Program	1.1	2.6	2.3	2.3	2.0	2.4	2.6	214.7												
East Beltway, I-80 to Hwy-2, " Corridor Protection" Freeway ($250,000 annual program)	Corridor Protection	1.0	2.0	1.3	1.4	1.7	1.6	1.9	155.7												
Developer Commitments	Various																				
NW 48th Street, Adams to US-6	4 lanes + turn lanes	2.4	2.7	2.1	1.9	2.4	2.0	1.7	223.9	11,240	B	14,530	D	20,317	A	16,265	E	28,469	B	22,395	A
S. 14th Street / Warlick Boulevard / Old Cheney Road	Major Intersection Work	1.9	2.4	1.7	2.6	1.9	1.9	1.7	200.1												
Hwy-2, Van Dorn Street to Old Cheney Road	6 lanes + turn lanes	2.3	2.9	2.6	2.6	2.7	2.3	2.4	252.7	33,302	D	41,113	F	45,221	D	44,673	F+	51,936	E	51,068	D
S. 9th Street, Van Dorn to South Street	3-lanes + turn lanes	2.1	2.4	2.0	1.7	1.7	2.3	2.1	210.3	16,902	E	19,413	F	21,169	C	23,576	F+	26,591	E	25,009	E
N. 48th Street, Adams to Superior	4 lanes + turn lanes	2.2	2.3	2.0	1.8	1.7	1.8	1.5	194.0	19,364	E	19,927	F	23,516	B	21,354	F	26,634	B	24,722	B
Pine Lake Road, S. 57th Street to Hwy-2	4 lanes + turn lanes	1.6	2.0	2.0	1.6	1.9	1.6	1.4	171.9	9,656	A	10,653	B	13,154	A	11,523	B	13,387	A	13,298	A
US-6 (Sun Valley Blvd.), Corn. Hwy (US-6) to W "O" St.(US-6), including R.R Overpass (local 20% share)	4 lanes + turn lanes	2.4	2.7	2.3	1.7	2.0	1.7	2.6	222.6	9,286	B	10,541	B	12,265	A	12,076	C	14,961	A	24,737	B
N. 10th Street, US-6 to Military Road, including Salt Creek Bridge	4 lanes + turn lanes	2.1	1.9	2.3	1.9	1.9	1.3	1.3	178.7	11,328	D	6,826	A	7,603	A	9,967	C	11,513	A	10,307	A
W. Holdrege Street, NW 56th Street to NW 48th Street	2 lanes + turn lanes	1.1	1.4	1.7	1.4	2.0	1.4	1.4	149.0	965	A	1,517	A	2,365	A	2,606	A	4,147	A	4,350	A
NW 56th Street, W. Partridge Lane to W. "O" Street	2 lanes + turn lanes	1.1	1.9	1.4	1.3	2.0	1.6	1.3	153.3	1,134	A	7,620	A	2,693	A	13,913	D	4,607	A	4,319	A
N. 98th Street, Adams Street to Holdrege Street	2 lanes + turn lanes	1.1	1.3	1.6	1.1	1.3	1.3	1.3	127.6	173	A	4,440	A	4,436	A	8,072	A	11,790	A	14,606	B
W. "A" Street, SW. 40th Street to Coddington Avenue	2 lanes + turn lanes	1.6	1.3	1.9	1.6	1.4	1.7	1.6	155.5	4,893	A	6,390	A	6,387	A	7,723	A	7,713	A	8,130	A
US-34 ("O" St.), Antelope Valley N/S Rdwy. (19th St.) to 46th Street	6 lanes + turn lanes	2.1	2.4	2.7	2.0	2.6	2.0	2.1	227.7	34,549	C	35,089	D	35,108	D	38,177	D	43,041	C	42,560	C
US-34 ("O" St), Wedgewood Drive to 98th Street	6 lanes + turn lanes	1.9	2.4	2.3	2.0	2.4	2.1	1.7	213.7	17,142	B	20,888	C	20,877	C	24,280	E	32,568	B	33,221	B
S. 56th Street, Thompson Creek Boulevard to Yankee Hill Road	4 lanes + turn lanes	1.9	2.0	1.9	1.4	1.4	1.6	1.6	169.6	7,513	A	14,134	D	15,321	E	17,280	F	19,470	A	18,854	A
S. 70th Street, Pine Lake Road to Yankee Hill Road	4 lanes + turn lanes	1.7	2.0	2.0	1.4	1.4	1.7	1.6	171.0	4,849	A	16,478	F	14,940	E	17,239	F	24,502	B	24,361	B
Yankee Hill Road, S. 40th Street to S. 56th Street	4 lanes + turn lanes	1.7	2.0	2.1	1.3	1.4	1.4	1.7	167.6	3,296	A	15,434	E	15,119	E	17,548	E	19,924	A	19,159	A
Yankee Hill Road, S. 56th Street to S. 70th Street	4 lanes + turn lanes	1.6	1.7	1.9	1.4	1.4	1.3	1.4	152.6	2,048	A	13,907	D	11,847	C	16,760	E	21,359	A	19,908	A
Yankee Hill Road, S. 70th Street to S. 84th Street	additional 2 lanes	1.4	1.6	1.9	1.4	1.4	1.3	1.4	147.4	705	A	14,019	B	13,315	B	18,343	C	19,654	A	18,522	A
Yankee Hill Road, Railroad Crossing to Hwy-2	2 lanes + turn lanes	1.3	1.4	1.7	1.3	1.4	1.3	1.1	136.0	720	A	5,840	A	5,794	A	9,565	B	13,628	B	12,688	A
S. 84th Street, Amber Hill Road to Yankee Hill Road	4 lanes + turn lanes	1.7	2.1	1.7	1.3	1.6	1.3	1.4	162.1	2,924	A	14,787	E	14,067	D	19,785	F+	17,711	A	17,126	A
Normal Boulevard, S. 58th Street to Van Dorn Street	4 lanes + turn lanes	2.0	2.4	2.3	2.3	1.7	1.9	2.0	206.9	14,295	C	14,983	D	14,839	D	16,251	D	18,820	A	18,563	A
W. Holdrege Street, NW 48th Street to NW 40th Street	2 lanes + turn lanes	1.0	1.4	1.6	1.1	1.9	1.3	1.0	132.6	37	A	212	A	187	A	536	A	2,099	A	3,889	A
West Denton Road, Amaranth Lane to S. Folsom Street	additional 2 lanes	1.4	1.7	1.3	1.3	1.9	1.6	1.6	155.7	2,659	A	12,843	D	13,035	D	17,497	F	18,242	A	18,106	A
W. "A" Street, Coddington to Folsom	2 lanes + turn lanes	1.6	1.1	1.7	1.4	1.6	1.7	1.4	150.5	4,372	A	4,864	A	4,871	A	5,989	A	5,921	A	5,530	A
N. 98th Street, US 34 to Holdrege	additional 2 lanes	1.3	2.0	2.0	1.0	1.8	1.8	2.3	174.6	366	A	8,798	B	8,817	B	14,258	D	20,560	B	23,927	B
S. 98th Street, US-34 to "A" Street	4 lanes + turn lanes	1.1	2.0	1.9	1.4	1.4	1.9	1.7	163.3									26,154	B	29,838	C
S. 112th Street, US-34 to Van Dorn Street	2 lanes + turn lanes	1.1	1.3	1.3	1.3	1.3	1.1	1.1	121.9	4,672	A	6,215	A	6,131	A	13,420	D	11,704	A	11,149	A
N. 112th Street, Holdrege Street to US-34	2 lanes + turn lanes	1.1	1.9	1.3	1.3	1.3	1.3	1.1	134.7	2,974	A	8,402	C	8,278	C	14,785	F+	12,653	C	12,131	C
Saltillo Road, Highway 77 to S. 27th Street	2 lanes + turn lanes	1.9	2.0	1.3	1.4	1.7	1.6	1.7	169.7	6,276	A	11,313	C	11,029	C	15,973	E	16,984	C	13,665	B
W. Adams Street, NW 70th Street to NW 56th Street	2 lanes + turn lanes	1.1	1.1	1.6	1.3	1.3	1.3	1.4	128.1	91	A	214	A	162	A	6,876	B	4,429	A	4,411	A
W. Van Dorn Street, Coddington Avenue to US-77	2 lanes + turn lanes	1.6	1.3	1.4	1.6	1.3	1.1	1.1	134.0	6,486	A	6,951	A	7,061	A	8,443	A	9,317	A	9,491	A
W. Van Dorn Street, SW 40th Street to Coddington Avenue	2 lanes + turn lanes	1.6	1.3	1.3	1.3	1.1	1.1	1.0	126.0	5,335	A	5,896	A	5,997	A	7,020	A	7,838	A	8,043	A
Rokeby Road, S. 27th Street to S. 40th Street	2 lanes + turn lanes	1.1	1.3	1.4	1.1	1.4	1.1	1.0	122.4	4	A	1,385	A	1,339	A	2,304	A	10,659	A	8,440	A
Rokeby Road, S. 70th Street to S. 84th Street	2 lanes + turn lanes	1.0	1.1	1.3	1.1	1.1	1.3	1.0	114.1	7	A	15	A	15	A	16	A	1,242	A	1,227	A
Rokeby Road, S. 48th Street to S. 56th Street	2 lanes + turn lanes	1.0	1.3	1.1	1.1	1.3	1.4	1.0	119.8									7,957	A	6,352	A
W. Cummings Street, NW 56th Street to NW 52nd Street	2 lanes + turn lanes	1.1	1.1	1.4	1.1	1.1	1.3	1.1	119.8									2,807	A	2,830	A
NW. 56th Street, W. Cummings Street to W. Superior Street	2 lanes + turn lanes	1.0	1.1	1.3	1.1	1.1	1.3	1.0	114.1									2,807	A	2,830	A
W. Superior Street, NW 70th Street to NW 56th Street	2 lanes + turn lanes	1.1	1.1	1.1	1.1	1.1	1.1	1.0	112.7	41	A	112	A	108	A	297	A	2,228	A	2,241	A
NW 70th Street, W. Superior Street to W. Adams Street	2 lanes + turn lanes	1.0	1.1	1.1	1.1	1.1	1.3	1.0	112.7	41	A	111	A	106	A	3,611	A	2,616	A	2,589	A
South Beltway, Local 20% Share	4 Lane Expressway	1.1	2.6	1.6	1.9	2.0	1.9	2.1	188.2												A
Hwy-2, Old Cheney Road to S. 84th Street (Corridor Protection)	6 lanes + turn lanes	2.1	2.6	2.0	2.4	2.6	2.1	2.1	229.8	21,971	A	35,689	D	35,978	D	41,300	E	41,424	E	41,613	C
S. 98th Street, "A" Street to Pioneers Boulevard	4 lanes + turn lanes	1.3	1.6	1.1	1.4	1.4	1.1	1.4	135.0	176	A	1,171	A	1,165	A	6,050	A	13,790	D	19,347	A
N. 84th Street, US-6 to US-34	6 lanes + turn lanes	1.7	2.6	2.1	1.7	2.6	1.7	1.6	202.2	23,445	B	27,470	B	27,280	B	32,478	C	30,916	C	29,203	A
Sun Valley Blvd. Extension, W. O Street to Rosa Parks Way	4 lanes + turn lanes + RR overpass	1.4	1.7	1.7	1.4	1.7	1.7	1.6	161.9											23,754	B
US-6 (Corn. Hwy), N. 20th Street to N. 33rd Street	6 lanes + turn lanes	2.0	2.3	1.9	2.1	2.3	2.0	1.9	207.8	38,729	D	33,702	C	32,457	C	37,476	C	36,105	C	38,894	B
NW 40th Street, W. Holdrege Street to W. Vine Street	2 lanes + turn lanes	1.3	1.3	1.4	1.3	1.9	1.4	1.4	142.7	500	A	647	A	647	A	3,422	A	500	A	10,249	A
NW 40th Street, W. Vine Street to US-6, including I-80 Overpass	Overpass	1.4	2.1	1.9	1.9	2.0	1.9	1.7	183.6											10,249	A
NW 48th Street, US-34 to Adams	2 lanes + turn lanes	2.1	1.6	1.6	1.4	1.9	1.4	1.3	164.7	5,495	A	8,547	B	8,431	B	12,429	C	12,325	C	11,777	A
N. 14th Street and US-6, Interchange	Interchange	2.6	2.3	1.7	2.4	1.9	1.7	1.7	206.7												
Van Dorn Street, Normal Boulevard to S. 84th Street	4 lanes + turn lanes	1.7	1.6	2.1	1.3	1.4	1.6	1.4	159.1	8,228	A	8,709	A	8,702	A	12,106	B	11,664	B	11,833	A
Havelock Avenue, N. 70th Street to N. 84th Street	2 lanes + turn lanes	2.0	1.7	2.0	1.6	2.3	1.7	2.1	191.6	7,489	A	9,503	B	9,084	B	11,766	C	11,629	C	11,863	A
S. 40th Street / Normal Boulevard / South Street	Major Intersection Work	1.9	2.4	1.7	1.7	1.6	1.7	1.4	181.7												
84th Street and US-34	Major Intersection Work	1.9	2.4	1.7	2.4	2.1	1.9	1.9	204.5												
NW 12th Street, W. Alvo Road to Fletcher Avenue , US 34 Overpass	2 lanes + turn lanes + overpass	1.0	1.7	1.7	1.7	1.7	1.6	1.0	147.7											1,906	A
US-6 (Corn. Hwy), N. 11th Street to N. 20th Street	6 lanes + turn lanes	2.0	1.7	1.7	1.6	2.0	1.7	1.7	179.6	31,974	C	24,353	B	23,295	B	28,031	B	27,395	B	30,999	A
S. 70th Street, Yankee Hill Road to Rokeby Road	2 lanes + turn lanes	1.6	1.9	1.4	1.3	1.4	1.6	1.6	156.1	3,293	A	7,906	A	8,370	B	11,546	C	12,732	D	13,344	B
NW 38th Street, W. Adams Street to W. Holdrege Street	2 lanes + turn lanes								0.0											6,815	A
Havelock Avenue, N. 84th Street to N. 98th Street	2 lanes + turn lanes	1.4	1.3	1.3	1.1	1.3	1.1	1.0	124.1	1,114	A	4,586	A	4,586	A	7,562	A	8,635	B	8,683	A
N. 33rd Street, Ant.Valley Rdwy East Leg End to Corn. Hwy. to Superior, Salt Creek	4-lanes + turn lanes + bridge	1.3	2.6	2.3	2.4	2.6	2.1	1.6	210.4											15,120	A
A Street, S. 98th to 105th	2 lanes + turn lanes	1.7	1.7	1.3	1.3	1.4	1.6	1.9	158.0	2,527	A	3,545	A	3,618	A	15,570	E	16,236	F	17,715	C
W. Fletcher Avenue, NW 31st Street to NW 27th Street	2 lanes + turn lanes	1.1	1.6	1.6	1.3	1.7	1.3	1.4	142.0											3,052	A
Adams Street, N. 90th to N. 98th Street	2 lanes + turn lanes	1.1	1.1	1.6	1.3	1.3	1.3	1.4	128.1	584	A	2,988	A	2,956	A	5,748	A	4,889	A	4,543	A

Needs Based Roadway Plan



2040 Congestion with Needs Based Plan



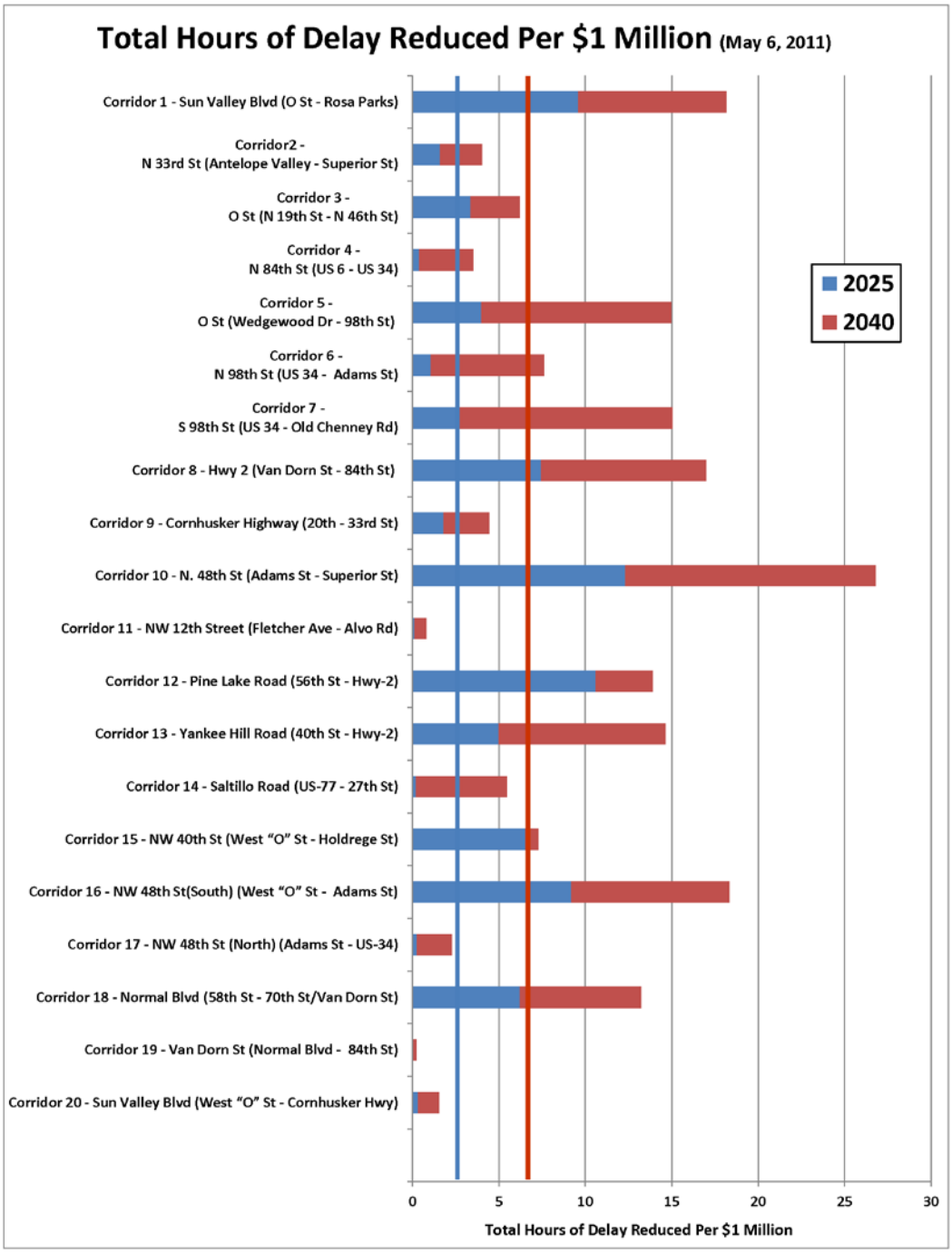
The Needs Based Roadway Plan map and the ranking of alternatives were presented to the LPAC. One observation that was presented to them was that in some cases, there may be more than one project that ranked high to address the problem, but may not require both projects. It was also noted that in some instances, a project was contingent on another project. The request of the LPAC was to support the projects identified in Needs Based Plan based on the goals and evaluation process, but to allow staff to conduct additional evaluation to determine which if two projects that serve the same need would be a preferred solution and to group projects that were dependent on each other. The LPAC both agreed to the Needs Based Plan list and the direction for further refinement of priorities.

The further refinement of alternatives was based in part on grouping projects related to one another. Because a major objective of the plan development was to be good stewards of limited resources, an additional measurement that identified how much delay could be saved for one-million dollars of investment was added to the evaluation process. This process was conducted for a number of alternatives with an example presented in the “Example Total Hours of Delay Reduced Per $1 Million” figure.

The total hours of delay reduced per $1 million of costs provided additional guidance on selecting and prioritizing projects. This analysis included a performance of each project for the year 2025 and 2040 by conducting separate model runs to see the delay changed by first adding the project to the existing plus committed network and then by subtracting the project from the Needs Based Plan.

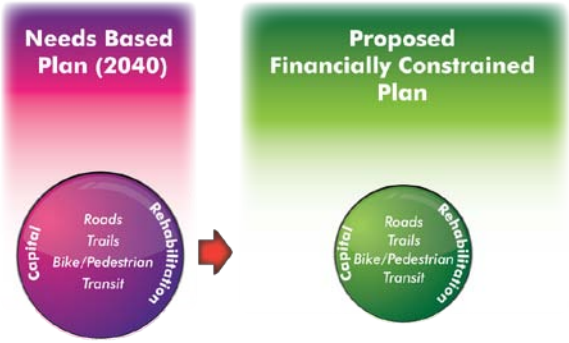
In review of the data it became apparent that some lesser costing projects may have fared better in reducing congestion than some more costly projects. Each project was also compared to the average of delay saved per $1 million for all projects within the Needs Based Plan. This further provided the opportunity to identify which projects resulted in the best performance.

Example Total Hours of Delay Reduced Per $1 Million



FINANCIALLY CONSTRAINED PLAN DEVELOPMENT, SELECTION AND PRIORITIZATION

After the development of the Needs Based Plan and evaluation of the plan elements, it was necessary to further reduce the number of projects to be within the limits of the available revenues, for a Financially Constrained Plan.



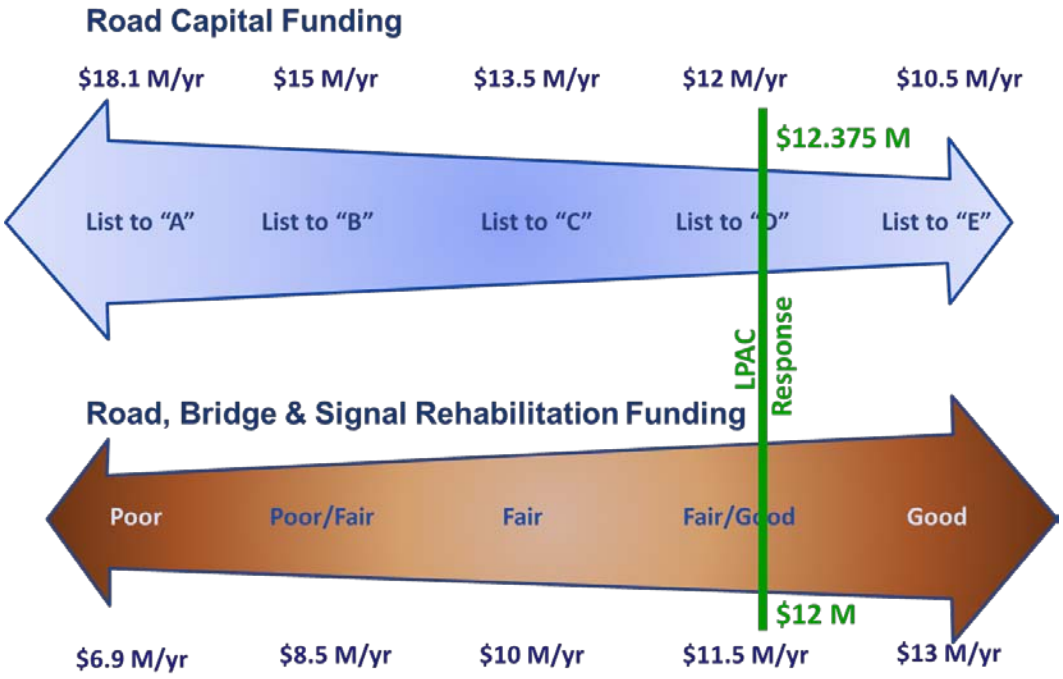
One of the more difficult issues was the fact that there was both the need for future capital projects to address growth and congestion versus the increased demand for taking limited resources to maintaining the existing transportation system.

The resolution of where on the continuum from higher capital/lower rehabilitation versus lower capital/higher rehabilitation was addressed through input from the LPAC and the public.

Based on the LPAC and public input, the direction of investment was a shift toward higher investments in maintenance and rehabilitation and less on capital.

With the decision on the level of capital versus rehabilitation, the prioritized project lists were further refined to what could be funded by year through 2040. This became the final Financially Constrained Plan.

During the FY 2012 City budget development process, additional roadway program funding through increased Wheel Tax rates and additional General Revenue funds were approved. The result is a significant increase in the amount of funded capital roadway projects in the 2040 Financially Constrained Plan. This is reflected in the Financially Constrained Plan list of capital roadway projects.



2040 LRTP Urban Area Street System Project Listing

Work In Progress

No.	Facility/Project Name	Project Type	Project Cost (2010 Dollars)	
	State Projects			
1	US-34 East, 84th Street to east county line	4 lanes + turn lanes		
2	US-34 West, west city limits to west county line	4 lanes + turn lanes		
3	US-6 West, west city limits to west county line	Paving Improvements		
4	US-6 (Sun Valley Boulevard), "O" Street to Cornhusker Highway (80% of Project Cost)	4 lanes + turn lanes	$16,343,033	
5	US-77 and Warlick Boulevard Intersection - ILLUSTRATIVE	Interchange		
6	US-77 and West Pioneers Boulevard Intersection - ILLUSTRATIVE	Interchange		
7	South Beltway, US-77 South to Nebraska Highway 2 (80% of Project Cost) - ILLUSTRATIVE	4 Lane Expressway	$140,000,000	
8	South Beltway, US 77 to Hwy-2	Corridor Protection		
9	US-79, US-34 to County Line	Paving Improvements		
10	Safety Projects (80% of state safety projects)	Program	$23,200,000	
	City of Lincoln Projects			
11	Developer Commitments	Various	$22,390,388	
12	Hwy-2, Van Dorn Street to Old Cheney Road	6 lanes + turn lanes	$37,438,797	
13	Intersection Capacity Improvement Projects ($1,000,000 annual program)	Program	$29,000,000	
14	Two Plus Center Turn Lane Projects in the Built Environment (added capacity portion of projects)	Program	$4,212,000	
15	Intelligent Transportation System Capital Program of Projects ($1,000,000 annual program)	Program	$29,000,000	
16	Safety Projects (20% of state safety projects)	Program	$5,800,000	
17	Hwy-2, Old Cheney Road to S. 84th Street	6 lanes + turn lanes	$16,523,640	
18	US-34 ("O" St.), Antelope Valley N/S Rdwy. (19th St.) to 46th Street	6 lanes + turn lanes	$15,161,957	
19	NW 48th Street, Adams to US-6	4 lanes + turn lanes	$14,122,516	
20	US-6 (Sun Valley Blvd.), Corn. Hwy (US-6) to W "O" St.(US-6), including R.R Overpass (local 20% share)	4 lanes + turn lanes	$4,085,758	
21	Travel Demand Management Program of Projects ($200,000 annual program)	Program	$5,800,000	
22	US-34 ("O" St), Wedgewood Drive to 98th Street	6 lanes + turn lanes	$16,489,642	
23	N. 33rd Street, Ant.Valley Rdwy East Leg End to Corn. Hwy. to Superior, Salt Creek	4-lanes + turn lanes + bridge	$36,600,000	
24	S. 9th Street, Van Dorn to South Street	3-lanes + turn lanes	$2,063,195	
25	US-6 (Corn. Hwy), N. 20th Street to N. 33rd Street	6 lanes + turn lanes	$9,908,111	
26	Normal Boulevard, S. 58th Street to Van Dorn Street	4 lanes + turn lanes	$5,153,267	
27	N. 14th Street and US-6, Interchange	Interchange	$8,953,020	
28	84th Street and US-34	Major Intersection Work	$5,000,000	
29	N. 84th Street, US-6 to US-34	6 lanes + turn lanes	$34,008,524	E
30	S. 14th Street / Warlick Boulevard / Old Cheney Road	Major Intersection Work	$10,600,000	
31	N. 48th Street, Adams to Superior	4 lanes + turn lanes	$7,296,353	
32	Havelock Avenue, N. 70th Street to N. 84th Street	2 lanes + turn lanes	$2,564,904	
33	NW 40th Street, W. Vine Street to US-6, including I-80 Overpass	Overpass	$6,765,962	
34	S. 40th Street / Normal Boulevard / South Street	Major Intersection Work	$5,000,000	
35	US-6 (Corn. Hwy), N. 11th Street to N. 20th Street	6 lanes + turn lanes	$10,644,537	D
36	N. 10th Street, US-6 to Military Road, including Salt Creek Bridge	4 lanes + turn lanes	$8,119,202	
37	N. 98th Street, US 34 to Holdrege	additional 2 lanes	$2,430,392	
38	Pine Lake Road, S. 57th Street to Hwy-2	4 lanes + turn lanes	$6,602,985	
39	S. 70th Street, Pine Lake Road to Yankee Hill Road	4 lanes + turn lanes	$5,923,581	
40	Saltillo Road, Highway 77 to S. 27th Street	2 lanes + turn lanes	$4,253,759	
41	S. 56th Street, Thompson Creek Boulevard to Yankee Hill Road	4 lanes + turn lanes	$4,139,817	
42	Yankee Hill Road, S. 40th Street to S. 56th Street	4 lanes + turn lanes	$5,967,970	
43	NW 48th Street, US-34 to Adams	2 lanes + turn lanes	$10,937,084	C
44	S. 98th Street, US-34 to "A" Street	4 lanes + turn lanes	$7,889,890	
45	S. 84th Street, Amber Hill Road to Yankee Hill Road	4 lanes + turn lanes	$2,542,248	
46	Sun Valley Blvd. Extension, W. O Street to Rosa Parks Way	4 lanes + turn lanes + RR overpass	$18,070,442	
47	Van Dorn Street, Normal Boulevard to S. 84th Street	4 lanes + turn lanes	$7,591,126	
48	A Street, S. 98th to 105th	2 lanes + turn lanes	$1,372,212	
49	S. 70th Street, Yankee Hill Road to Rokeby Road	2 lanes + turn lanes	$2,847,257	B
50	West Denton Road, Amaranth Lane to S. Folsom Street	additional 2 lanes	$837,065	
51	East Beltway, I-80 to Hwy-2, " Corridor Protection" Freeway	Corridor Protection	$15,000,000	
52	W. "A" Street, SW. 40th Street to Coddington Avenue	2 lanes + turn lanes	$4,022,980	
53	NW 56th Street, W. Partridge Lane to W. "O" Street	2 lanes + turn lanes	$3,840,675	
54	Yankee Hill Road, S. 56th Street to S. 70th Street	4 lanes + turn lanes	$6,011,339	
55	W. "A" Street, Coddington to Folsom	2 lanes + turn lanes	$2,720,537	
56	W. Holdrege Street, NW 56th Street to NW 48th Street	2 lanes + turn lanes	$1,249,810	
57	NW 12th Street, W. Alvo Road to Fletcher Avenue , US 34 Overpass	2 lanes + turn lanes + overpass	$6,776,272	
58	Yankee Hill Road, S. 70th Street to S. 84th Street	additional 2 lanes	$3,876,017	
59	Alvo/Arbor, N. 14th Street to N. 27th Street	2 lanes + turn lanes	$2,497,709	
60	NW 40th Street, W. Holdrege Street to W. Vine Street	2 lanes + turn lanes	$1,325,821	
61	W. Fletcher Avenue, NW 31st Street to NW 27th Street	2 lanes + turn lanes	$1,392,117	
62	Yankee Hill Road, Railroad Crossing to Hwy-2	2 lanes + turn lanes	$1,720,324	
63	S. 98th Street, "A" Street to Pioneers Boulevard	4 lanes + turn lanes	$11,456,844	
64	N. 112th Street, Holdrege Street to US-34	2 lanes + turn lanes	$5,364,896	
65	W. Van Dorn Street, Coddington Avenue to US-77	2 lanes + turn lanes	$2,811,311	
66	W. Holdrege Street, NW 48th Street to NW 40th Street	2 lanes + turn lanes	$1,423,628	
67	W. Cummings Street, NW 48th Street to NW 38th Street	2 lanes + turn lanes	$1,597,097	
68	W. Adams Street, NW 70th Street to NW 56th Street	2 lanes + turn lanes	$2,622,729	
69	Adams Street, N. 90th to N. 98th Street	2 lanes + turn lanes	$1,685,936	
70	N. 98th Street, Adams Street to Holdrege Street	2 lanes + turn lanes	$4,683,568	
71	NW 38th Street, W. Adams Street to W. Holdrege Street	2 lanes + turn lanes	$2,842,567	
72	W. Van Dorn Street, SW 40th Street to Coddington Avenue	2 lanes + turn lanes	$5,008,028	A
73	Havelock Avenue, N. 84th Street to N. 98th Street	2 lanes + turn lanes	$2,967,313	
74	Fletcher Avenue, US-6 to N. 84th Street	2 lanes + turn lanes	$1,204,660	
75	Rokeby Road, S. 27th Street to S. 40th Street	2 lanes + turn lanes	$2,933,994	
76	S. 112th Street, US-34 to Van Dorn Street	2 lanes + turn lanes	$6,158,680	
77	Rokeby Road, S. 48th Street to S. 56th Street	2 lanes + turn lanes	$1,215,196	
78	W. Cummings Street, NW 56th Street to NW 52nd Street	2 lanes + turn lanes	$638,126	
79	Rokeby Road, S. 70th Street to S. 84th Street	2 lanes + turn lanes	$2,603,248	
80	NW. 56th Street, W. Cummings Street to W. Superior Street	2 lanes + turn lanes	$1,363,503	
81	W. Superior Street, NW 70th Street to NW 56th Street	2 lanes + turn lanes	$2,564,904	
82	NW 70th Street, W. Superior Street to W. Adams Street	2 lanes + turn lanes	$2,622,729	
83	South Beltway, Local 20% Share - ILLUSTRATIVE	4 Lane Expressway	$35,000,000	**$20.1 Million Annual Program**
		TOTAL NEEDS	**$583,310,159**	
		E Program Total	**$301,710,815**	
		D Program Total	**$344,582,571**	
		C Program Total	**$392,957,361**	
		B Program Total	**$433,270,536**	
		A Program Total	**$524,037,806**	

CHAPTER 6: CONGESTION MANAGEMENT PROCESS

The Lincoln MPO Congestion Management Process (CMP) (See Appendix G) - formerly known as a Congestion Management System (CMS) - provides a systematic, transparent, and continuous way for transportation planning in metropolitan areas to identify and manage congestion in a multi-modal manner and better direct funding toward projects and strategies that are most effective for addressing congestion within the region. The CMP was used as part of the overall transportation planning evaluation process that defined the Needs Based Plan and the selection and prioritization of projects for the Financially Constrained Plan.

The key objective of the Congestion Management Process and the planning efforts that lead to the development of the Lincoln MPO Long Range Transportation Plan are the same: 1) provide better information about transportation system performance and the effectiveness of different strategies that improve the effectiveness of the existing and future transportation networks; 2) enhancing the mobility of people and goods; and 3) reduce the level of congestion in the transportation system.

As part of the existing conditions analysis, it was found that on the whole, Lincoln experiences much less congestion than other major urban areas. However with the growth in population and dependence on the drive-alone trips and increasingly longer trips, congestion is forecasted to increase.

To address these issues, the plan specifically includes actions to minimize congestion. This included the development of land use plan that focuses less development along the outer edges of the City where it is more difficult to support alternative travel modes and trips are required to be longer, to increased development in the existing urban environment. This redistribution of future land use also provides for the diversity and density of uses and trips to promote alternative travel modes. The travel demand modeling process also provided information as to which improvements best address future congestion needs in a financially prudent method.

The proposed Lincoln MPO Long Range Transportation Plan is also consistent with the CMP objectives to manage growing traffic by targeting resources to critical hot spots, ITS to keep traffic flowing and travel demand reduction strategies to reduce dependence on single occupant vehicle travel. The LRTP also include lower cost strategies that complement major capital recommendations that result in a more efficient and effective transportation system, increased mobility, and safer travel.

CONGESTION MANAGEMENT PROCESS 8 STEPS

The Lincoln MPO's Congestion Management Process has been described as an "8 Step" process. The flowing describes the eight steps and how the transportation planning process used for developing the proposed Long Range Transportation Plan incorporated these eight steps.

1. Develop Congestion Management Objectives

At the outset of the plan development process, the Lincoln Planning Advisory Committee (LPAC) and input from the public developed seven transportation and congestion management objectives consistent with the eight SAFETEA-LU Planning factors. The LPAC and public also assisted in workshop exercises for weighting the plan goals that was subsequently used in a transparent evaluation, selection and prioritization of projects. These goals were broad and provided a balance between various transportation modes and investment in new capital projects versus maintenance of transportation system that is growing older and getting larger.

2. Identify Application Area

The area included in the Long Range Transportation Plan included the existing urbanized area of Lincoln plus the area expected to be urbanized by 2040. Since the majority of the area outside this limit is

planned to be rural, congestion is not expected to be an issue except under specific conditions. However, there are some travel corridors that will be in transition and there was close coordination between the City of Lincoln and Lancaster County to accommodate future needs. This also included rural roadway standards within the urban boundary given the need to address future congestion while remaining cost effective with limited resources.

3. Define System or Network of Interest

The transportation planning process explored a wide range of alternatives ranging from forecast growth on the existing plus committed network to forecast growth on the previous 2030 transportation plan elements. This modeling effort provided valuable information on where congestion would occur and which network elements and corridors would most be affected.

Similar analysis was conducted on the review of the existing trails system, the bicycle network and the pedestrian sidewalks system. Existing transit was also examined to determine the possibility of redeploying current revenue service hours to corridors that would experience higher density development with a diversity of trip types.

4. Develop Performance Measures

As stated above, the LRTP transportation planning process included the development of seven goals that responds to the eight SAFETEA-LU planning factors. Performance measures were developed for each of these planning factors. Some of these factors included congestion measurements such as travel speed, volume to capacity ratios and delay. Other performance measure included impact to the built environment, economic vitality, safety, security and use of alternative modes.

A specific evaluation scoring was developed for each of the project goals that provided a method of evaluation and scoring from low to high that could be used in the evaluation, selection, and prioritization of projects.

5. Institute System Performance Monitoring Plan

Available and collected data was used to evaluate the performance of the various transportation systems. This data included traffic counts, roadway facility type, lane descriptions, trails and bicycle facility mapping, pedestrian network, transit data from StarTrans' Transit Development Plan (TDP) and Public Works' data on traffic operations, maintenance and ITS. The system performance was reported via a simple thumbs up and down mobility report card format for the various transportation system elements, as identified in Appendix H.

Evaluation of past investment strategies, or lack thereof, became an important element of the overall transportation system reporting. As an example, investment in roadway maintenance has not been keeping up with demand. Through past pavement quality analysis forecasted through 2040 this data further projected a severe decline in the regions condition of roads. This information was used to develop workshop exercises for the LPAC and public to provide input on where along the continuum of investing in new capital transportation improvements versus the maintenance of the existing system the plan should be targeted. Intelligent Transportation System improvements to address non reoccurring events, emergency response and security objectives were also included in the plan alternatives and plan elements.

6. Identify and Evaluate Strategies

With the recognition that there was limited funding and the need to shift some of that funding to maintenance of the existing transportation system, there was a major effort to examine transportation strategies to reduce the demand on single occupant vehicle travel, strategies to maximize the existing transportation system, and strategic cost effective solutions to address the region's transportation needs.

As part of the transportation plan development process a list of strategic transportation strategies were identified and evaluated, and compared to more traditional capital projects. These strategies included programs that would target bottlenecks where congestion could be minimized without wholesale roadway widening and adding left turn lanes on two lane roads that increased capacity but did not require major right-of-way takes and impacts to existing neighborhoods. Minimizing impacts to existing neighborhoods was a major element of the Mayor's Congestion Management Task Force Final Report for the City of Lincoln, Nebraska, October, 10, 1996. Additional strategies included ITS solutions to maximize traffic flow and minimize congestion resulting from non-recurring incidence.

The overall Comprehensive land use planning effort also recognized the relationship between land use and transportation. A range of land use alternatives were evaluated from continuation of existing trends to a compact city alternative where all future development would be targeted toward infill development. The resulting alternative was a compromise of the two extremes where some previously forecast development on the fringe of the urban area was reallocated to some infill developments and along potential future multimodal corridors. This land use strategy minimizes the impacts of vehicle mile of travel associated with longer trips, and creates the opportunity for increasing the use of alternative modes through mixed use activity centers and multimodal corridors.

7. Implement Selected Strategies and Manage Transportation System

As part of the project selection and prioritization projects, the recommended transportation strategies were added to the list of capital improvements. Based on this list, performance data was provided for each improvement and strategy into a matrix with the project goals, evaluation measures and weights. Using this evaluation matrix, member of Public Works and Planning evaluated each project and strategy based on the seven goals and their performance measures.

The results of this evaluation process resulted in a preliminary ranking of projects and strategies and presented to the LPAC and public. Based on their review, Public Works and Planning refined the list to avoid redundancies, maximize cost effectiveness and balance the transportation improvements throughout the region to minimize congestion in the urban areas and provide new access to the limited areas defined for new growth.

Many of these strategies ranked high in the evaluation process and included in the Financially Constrained Plan. The following provides a list of transportation strategies included in the Financially Constrained Plan that maximize mobility and decrease congestion that are found to be cost effective. These programs are based on annual budgets that would be available to be used for implementation throughout the plan horizon.

- **Intersection Capacity Improvements:** Whereas the capital project list focuses on larger projects such as widening of an existing arterial or building a new roadway, much of the current and future congestion occurs at existing intersections. Therefore, the financially constrained plan proposes a $1 million per year set aside for strategic intersection improvements at bottle neck areas. These improvements could include the addition of a right or left turn lane, intersection geometrics, or signal modifications. The key is to increase intersection capacity at a modest cost. This program will be an integral part of the region's ongoing Congestion Management Process.
- **Two Plus Center Turn Lane Program:** The City of Lincoln has for years been adding a center left turn lane as part of programed street rehabilitation along two lane minor arterials and some collectors. This program has been very successful by increasing the capacity of a two-lane roadway by approximately 50% and minimizes traffic congestion, while preserving the character and viability of the established neighborhoods and other components of the built environment.
- **Intelligent Transportation Systems (ITS):** ITS is a requirement of SAFETEA-LU and is an important and cost effective method to increase highway safety, mobility, security, economic health and community development, while preserving the environment. The City of Lincoln/Lancaster County MPO since the early 1970's has stayed at the cutting edge of

Transportation Technology, by deploying a computerized traffic control system and its associated communication infrastructure. Today the Lincoln MPO's Intelligent Transportation Systems (ITS) capabilities include video detection & monitoring; pavement & weather monitoring stations; dynamic message signs; state of the art traffic signal components to ultimately achieve a real-time traffic responsive system; emergency vehicle & railroad preemption devices; a hybrid communication system including fiber optic, broadband radio, and twisted pair cable; automated speed detection and display. Proposed ITS strategies include:

- **Regional Communications:** Expansion of fiber optics to support communication between all agencies and additional traffic signals and vehicle detection devices.
- **Traffic Signal Controllers:** Upgrade remaining substandard traffic signal controllers to 430 – 146 NTC compliant controllers.
- **Vehicle Detection:** Add additional cameras and loops to record real time traffic and provide signal timing changes.
- **Dynamic Message Signs:** Continue and expand operation of dynamic message signs to inform the motoring public of problems and future construction delays.
- **Traffic Signal Response:** Updates to signal timing plans.
- **Traffic Management Operations Center:** Integrate 911 calling with County fire and police.
- **Automatic Vehicle Location (AVL):** Install AVL on city vehicles to track and program operations and maintenance services such as snow removal and sanding.
- **Incident Management:** Surveillance cameras and detection for accident reporting and response.

Travel Demand Management (TDM) was also included in the proposed transportation strategies. TDM influences travel decisions by providing a menu of travel options to all types of travelers. Through a combination of financial incentives, cost savings, education, pricing, and travel services (such as transit) presented as an integrated TDM program, drivers are provided a reason to use a different way to travel. The goal is to provide more travel options to more people, in a way that is consistent with the character and quality of the community. Based on input from the public and LPAC, there was strong support for TDM. The Financially Constrained Plan provides for a TDM program that would allow for some marketing promotions, traveler information, ride share information and marketing, and efforts to support flexible work hours and telecommuting.

8. Monitor Strategy Effectiveness

It is recognized that although Long Range Transportation Plan frames out a new direction for the region, departing from a more traditional capital improvement base to a combination of capital improvements, congestion management strategies and alternative modes, this plan will need to be updated in five years. This will provide the region the opportunity to evaluate the effectiveness of the implemented strategies. These strategies will be evaluating using the same evaluation process and performance measures developed through LRTP process. Annually an update to the Mobility Report Card will be prepared which summarizes transportation mobility and congestion within the region.

CHAPTER 7: FORECASTING TRAFFIC - LINCOLN MPO TRAVEL MODEL

The development of the Lincoln/Lancaster MPO Needs Based Transportation Plan and the selection and prioritization of projects for the Financially Constrained Plan was developed through an analysis of system deficiencies based on traffic forecasts from the Lincoln MPO Travel Demand Model. This Regional Travel Model was updated for this plan. The travel model updates included refined algorithms, updated land use and traffic counts, and a complete model calibration and validation process.

The model process, shown graphically below, uses estimates of household and employment data and the existing roadway network as input assumptions. Household and employment data is estimated by regions, called Traffic Analysis Zones (TAZ). The model utilizes four basic steps:

1. **Trip Generation:** Based on existing and forecasted socioeconomic data, including the number of dwelling units and jobs, the model estimates trips by trip type, such as work trips, shopping trips, or service trips. By comparing base year trip generation to forecast 2040 trip generation, one can see the estimated growth in trip activity.
2. **Trip Distribution:** The trip distribution process examines the relationship between where trips begin and end. As an example, a Home Based Work Trip begins at the residence and ends at the place of work. This process of distributing trips is conducted for each trip type and for each trip generated throughout the modeling area.
3. **Mode Choice:** The mode choice step projects how the trips will be divided among the available modes of travel. Trips between a given origin and destination are split into travel modes which include but are not limited to trips using transit, pedestrian/bike or as automobile passengers and trips by automobile drivers. Calculations are conducted that compare the attractiveness of travel by different modes to determine their relative usage.
4. **Trip Assignment:** Trip distribution patterns are assigned to various routes between trip origins and destinations. The modeling software recognizes the travel speeds of the roadway network to identify the shortest distance and time paths. The model also recognizes that as the roadways fill up, congestion might occur making alternate routes more attractive.

The Lincoln MPO travel model forecasts daily and peak hour traffic. The model's accuracy is refined through a sophisticated model calibration process, where estimated existing trips are compared to actual traffic counts.

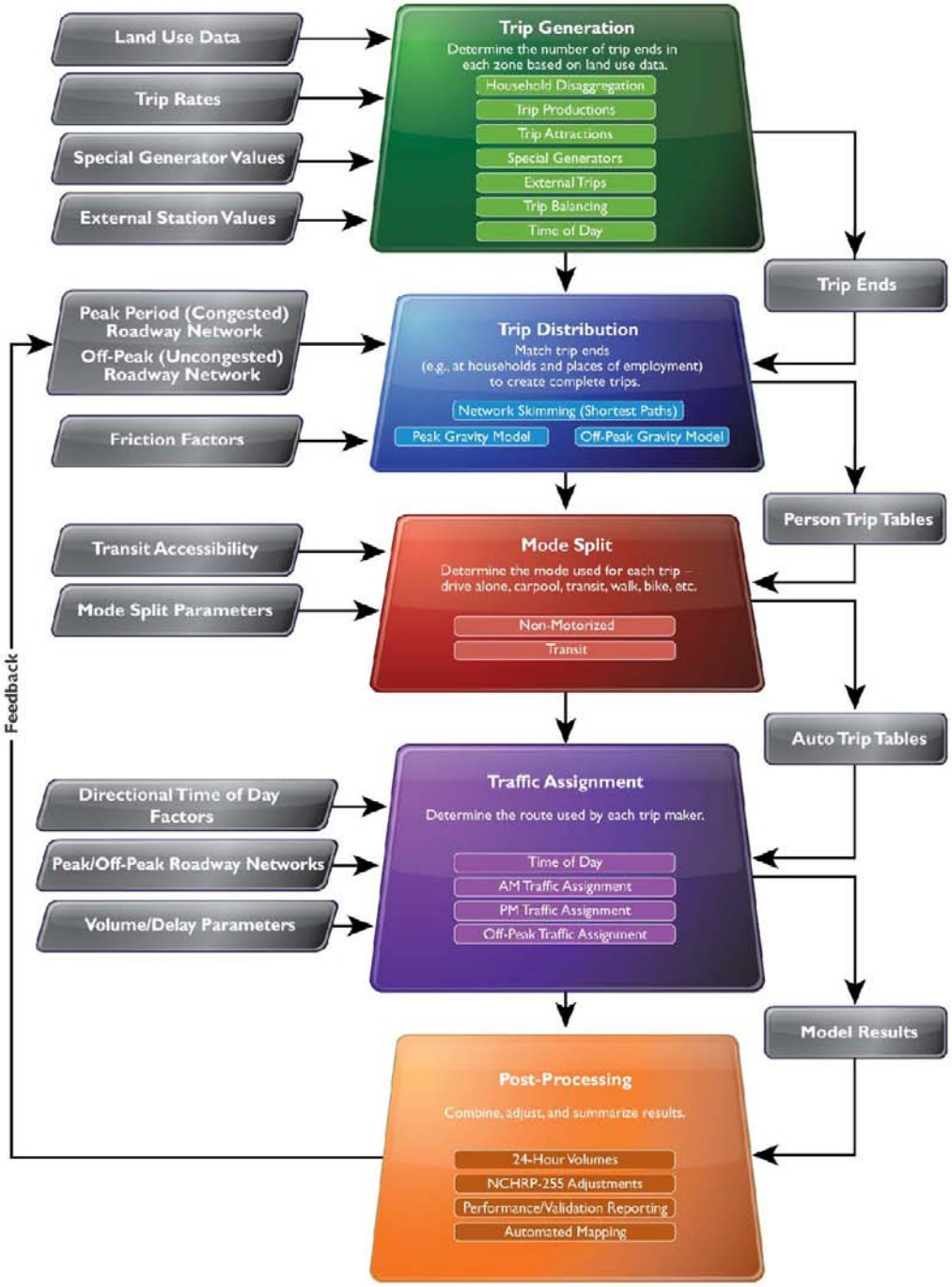
The travel model is useful throughout the transportation planning process. It is used as a tool to identify future deficiencies. The existing, 2025 and 2040 land use and transportation alternatives were tested using the model to guide the development of the preferred Needs Based Plan and the development of the Financially Constrained Plan.

TRAVEL MODEL DEVELOPMENT

Prior to the technical analysis, the City of Lincoln/Lancaster County MPO Travel Demand Model was updated to improve the tool and accuracy of analysis for preparing the Plan. Major changes to the model include:

- Roadway networks, centroid connectors, and turn penalties were updated to represent 2009 base year, 2025 interim year and 2040buildout conditions.
- Land use and external station trip data was updated based on the most recent information, including data from NDOR for 2009 and 2040.
- The TAZ structure was updated to provide more detail.
- Minor adjustments were made to trip generation rates.
- Intrazonal travel times were adjusted.

Lincoln MPO Travel Model Process Flowchart



- A time of day analysis and PM peak-hour assignment were added to the travel modeling process.
- Traffic assignment parameters were adjusted during model calibration.
- Various utilities and post-processors were added to the travel model process.
- The user interface and scenario manager were updated.

Validation Overview

The entire "Travel Demand Model: Model Development and Validation Report" describes the parameters, process, and validation of each model step. Validation results are summarized here for easy reference.

Trip Generation Validation

While production rates are applied using a cross classified approach, it is often useful to consider simplified trip generation rates (e.g., total average trips per household). The "Summarized Trip Productions per Household" table shows summarized total trips per households, with the "Distribution of Trips by Purpose" table showing the distribution of trips by purpose in comparison to ranges seen in the TMIP Model Validation and Reasonableness Checking Manual.

Summarized Trip Productions per Household

Purpose	Total Person Trips	Person Trips per Household	% of Person Trips	Vehicle Trips per Household
HBW	**308,634**	**2.7**	**18%**	**2.4**
HBS	220,532	2.0	13%	1.4
HBR	185,840	1.6	11%	1.0
HBO	497,450	4.4	29%	2.6
HBNW (Subtotal)	**903,822**	**8.0**	**53%**	**5.0**
WBO	138,242	1.2	8%	1.0
OBO	370,292	3.3	22%	2.1
NHB (Subtotal)	**508,534**	**4.5**	**30%**	**3.1**
Total	**1,720,990**	**15.2**	**100%**	**10.5**

Distribution of Trips by Purpose

Trip Purpose	TMIP Validation Manual	Lincoln MPO Model (2009) - Total Person Trips	Lincoln MPO Model (2009) - Motorized Person Trips	Lincoln MPO Model (2009) - Motorized Person Trips Excluding HBU
HBW	17.9 - 27.0%	17.3%	17.7%	18.2%
HBNW	47.0 - 53.8%	54.2%	53.7%	52.4%
NHB	22.6 - 31.3%	28.5%	28.5%	29.3%

Trip Purposes

Previous Model	Updated Model
Home-Based Work (HBW)	Home-Based Work (HBW)
Home-Based Shop (HBS)	Home-Based Shop (HBS)
Home-Based Recreational (HBR)	Home-Based Recreational (HBR)
Home-Based Other (HBO)	Home-Based University (HBU)
	Home-Based Other (HBO)
Non-Home-Based (NHB)	Work-Based-Other (WBO)
	Other-Based-Other (OBO)

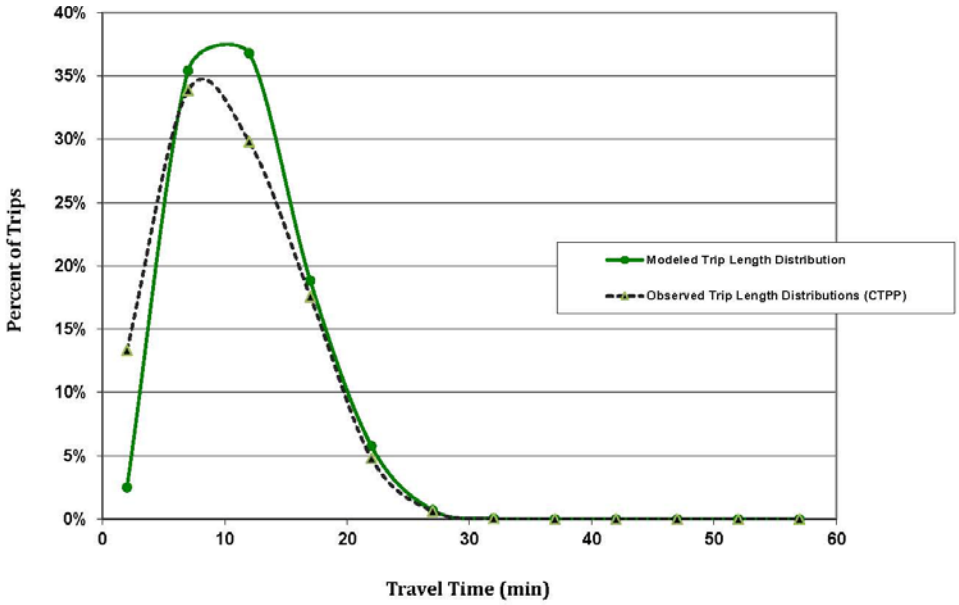
Generally, a trip is defined as a distinct travel movement from one clearly identifiable starting place/activity to another with a distance of more than 1 block. In some cases, two or more trips may be linked to reflect the true trip purpose and to factor out convenience stops, such as stopping for gas on the way from home to work. In these cases, the model represents the linked trip as two separate trips. The specific trip purpose definitions are as follows:

- **Home-Based Work (HBW)** - Commute trips between home and work and vice versa (e.g., includes trips between work and home).
- **Home-Based Shop (HBS)** - Trips between home and shopping locations for the purpose of shopping.
- **Home-Based Recreational (HBR)** - Trips between home and social or recreational activities such as restaurants, entertainment venues, or the homes of friends or relatives.
- **Home-Based University (HBU)** - Trips between home and the university campus for school related purposes by people not employed by the University (i.e., students and visitors).
- **Home-Based Other (HBO)** - All other trips that have one end at home. These can include trips between home and appointment, home and recreation, etc.
- **Work-Based Other (WBO)** - Work-related trips without an end at home.
- **Other-Based Other (OBO)** - Trips with neither an end at home nor a work-related purpose.

Trip Distribution Validation

Trip distribution has been calibrated for home-based work (HBW) trips using worker flow data from the 2000 Census Transportation Planning Package (CTPP). The "Trip Length Distribution Curves" chart shows a comparison of model results to observed data. The "Modeled Average Trip Lengths" tables and the "Intrazonal Trip Percentages" table demonstrate average modeled trip lengths and intrazonal trip percentages by trip purpose.

Trip Length Distribution Curves



Modeled Average Trip Length

Time Period	Measure	HBS (Low)	HBW (Med)	HBW (High)	HBS	HBR	HBU	HBO	WBO	OBO
Off-Peak	Distance (Miles)	5.6	7.5	8.1	4.5	3.4	4.4	3.5	3.5	3.7
	Time (Minutes)	11.7	14.2	15.2	9.7	7.2	10.8	7.7	7.5	7.9
	Implied Speed (MPH)	28.4	31.5	31.9	29.0	28.1	28.5	24.8	27.6	28.4
Peak	Distance (Miles)	5.7	7.5	8.0	4.5	3.4	4.4	3.5	3.5	3.7
	Time (Minutes)	14.5	15.5	16.5	9.7	7.2	10.8	7.7	7.5	7.9
	Implied Speed (MPH)	23.5	29.1	29.0	28.1	28.5	24.8	27.6	28.4	28.6

Intrazonal Trip Percentages

Time Period	HBS (Low)	HBW (Med)	HBW (High)	HBS	HBR	HBU	HBO	WBO	OBO
Off-Peak	0.02%	0.29%	0.24%	3.50%	4.31%	0.00%	4.77%	7.39%	8.70%
Peak	0.02%	0.29%	0.34%	3.83%	4.69%	0.00%	5.15%	8.11%	9.44%

Mode Split Validation

Mode split is applied separately for non-motorized and motorized trips. Non-motorized trips were calibrated to a percentage of trips based on CTPP data and a pivot-point analysis using borrowed data. Total transit trips were calibrated to match observed transit ridership data. Mode share targets and results are shown in the "Mode Share Targets and Results" table.

Mode Share Targets and Results

Mode	HBW	HBS	HBR	HBU	HBO	WBO	OBO	Total
Bicycle Mode Share Targets	1.2%	2.0%	0.7%	19.5%	0.7%	0.9%	0.6%	**n/a**
Bicycle Mode Share Results	1.0%	1.7%	0.9%	17.7%	0.9%	0.6%	0.5%	**1.5%**
Bicycle Trip Results	3,036	3,774	1,676	10,861	4,793	793	1,939	**26,872**
Pedestrian Mode Share Targets	2.9%	1.7%	6.0%	3.5%	6.0%	6.1%	5.5%	**n/a**
Pedestrian Mode Share Results	2.2%	2.1%	4.6%	5.1%	5.2%	5.6%	5.8%	**4.4%**
Pedestrian Trip results	6,655	4,866	8,800	3,106	26,690	8,011	22,440	**80,568**
Transit Trip Target	n/a							**4,498**
Transit Trip Results	1,827	220	186	1,531	550	36	103	**4,453**
Transit Trip Shares	0.6%	0.1%	0.1%	2.5%	0.1%	0.0%	0.0%	**0.2%**

Traffic Assignment Validation

Traffic assignment validation is explored in detail in Chapters 5 and 6. The most frequently referenced validation measures are demonstrated in the tables and figures below.

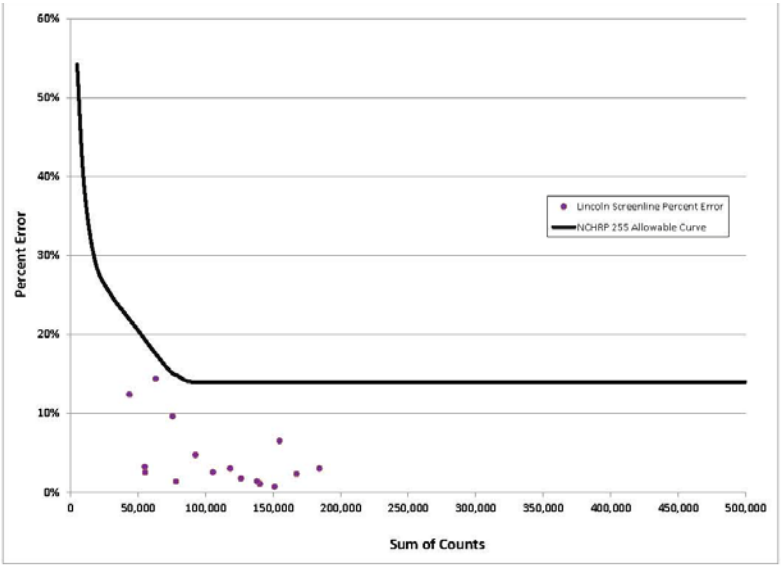
Regional Activity Validation

Link Type	Number of Counts	Model Volume / Count Volume	Model VMT / Count VMT	Target
Freeway	22	2.5%	-1.4%	+/- 7%
Expressway	16	4.5%	-6.7%	+/- 7%
Principal Arterial	115	2.3%	-2.5%	+/- 10%
Minor Arterial	292	-0.1%	0.7%	+/- 15%
Urban and State Collectors	32	-14.7%	-16.5%	+/- 25%
Rural Collectors and Local Streets	52	-40.4%	-55.6%	n/a
CBD	10	0.9%	-1.1%	n/a
Urban	202	-0.6%	0.5%	n/a
Suburban	199	3.2%	-1.6%	n/a
Rural	118	-5.7%	2.6%	n/a
Total	**529**	**0.5%**	**0.0%**	**+/- 5%**

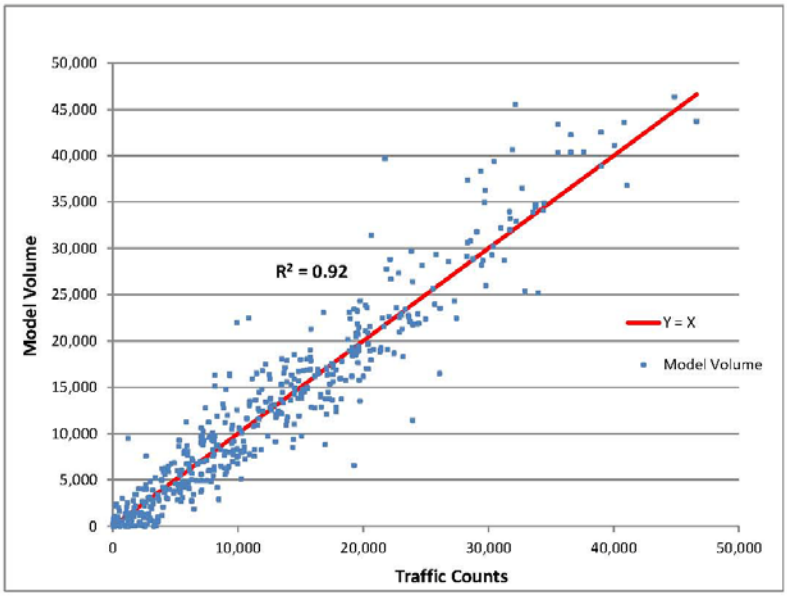
Model % Root Mean Square Error

Link Type	Number of Counts	% RMSE	Validation Target
Freeway	22	10.4%	30%
Expressway	16	13.3%	30%
Principal Arterial	115	16.5%	30%
Minor Arterial	292	29.8%	40%
Urban and State Collectors	32	41.7%	50%
Rural Collectors and Local Streets	52	140.9%	n/a
CBD	10	16.4%	n/a
Urban	202	22.6%	n/a
Suburban	199	24.2%	n/a
Rural	118	37.5%	n/a
Total	**529**	**25.1%**	**40%**

Screenline Error Values



Model County/Volume Comparison



TRAVEL MODEL INPUT AND APPLICATION

Roadway Networks: Roadway networks are electronic representations of the roadway system in Lincoln and Lancaster County that contain information such as speed, capacity, and facility type for collectors, arterials, highways, and some local streets. Roadway networks comprise basic input information for use in the travel demand model and should represent real-world conditions to the extent possible. Horizon year networks begin with the base year network and include additional capacity from improvements to existing roadways and new roadway facilities.

In the model, the roadway network is used to distribute and route trips. In addition, the networks provide a foundation for analysis of system performance including vehicle miles of travel, congestion delay, level of service, and other measures. Networks also provide a base on which travel model results can be displayed.

Most local streets present in the roadway network are ignored by the model and are instead represented by centroid connectors. Each centroid connector links a TAZ to a single point on the modeled roadway network. Wherever possible, centroid connectors are placed at locations where access to a roadway exists, but some exceptions were made during the calibration and validation processes. Each TAZ must have at least one centroid connector and can have many, but two to three centroid connectors per zone is typical.

TAZ Structure and Socioeconomic Data: The traffic analysis zones layer is a polygon layer that divides the MPO modeling area into 502 distinct zones, which contain socioeconomic (households and employment) data used for generating, distributing and assigning trips. This data is directly based on the land use plan from LPlan 2040 and was provided for both 2025 and 2040 based on projected growth rates and direction of growth. The TAZ structure used in the update to the Lincoln model is largely based on the structure from the previous model. The previous TAZ structure was reviewed for adequacy and adjusted where necessary to provide sufficient detail. The Lincoln traffic analysis zones structure is presented in Appendix A of the Technical Report for 2010, 2025 and 2040 data sets.

Trip Generation: Trip generation is the first step of the traditional 4-step travel demand modeling process. It identifies the trip ends (productions and attractions) that correspond to the places where activities occur as represented by land use and socioeconomic data. Productions and attractions are estimated for each TAZ by trip purpose, and then balanced at the regional level so that total productions and attractions are equal. In some cases, production and attraction allocation sub-models are applied to better represent the geographic locations at which they occur. The resulting productions and attractions by trip purpose and TAZ are subsequently used by the Trip Distribution model to estimate zone-to-zone travel patterns.

Trip Distribution: Trip distribution is the second phase of the traditional 4-step travel demand model. Trip distribution is the process through which balanced person trip productions and attractions from the trip generation model are apportioned among all zone pairs in the modeling domain by trip purpose. The resulting trip table matrix contains both intrazonal (e.g., trips that don't leave the zone) on the diagonal and interzonal trips in all other zone interchange cells for each trip purpose. The Lincoln Model uses a standard gravity model equation and applies friction factors to represent the effects of impedance between zones. As the impedance (e.g., travel time, spatial separation) between zones increases, the number of trips between them will decrease as represented by a decreasing friction factor.

Trip Assignment: The final step in the travel model is traffic assignment. This procedure determines the best route between origins and destinations determined in the previous steps. Traffic is assigned to the roadway network using a capacity constrained technique. Capacity constraint is based on speeds and capacities defined on the roadway network. As traffic volume increases, travel time increases based on parameters in a volume/delay function.

Validation: The base year validation measures are critical in ensuring the validity of the Lincoln MPO Model. These measures show that the model adequately reproduces observed trip generation, distribution, mode split, and assignment patterns. In addition, the measures show that parameters such as trip rates and trip lengths are reasonable when compared to other sources of data and guidance documents. There exist validation standards that are used to measure how well the model performs. The Lincoln travel demand model exceeds all standards.

CHAPTER 8: FINANCIALLY CONSTRAINED PLAN

The Financially Constrained Long Range Transportation Plan is based on the Needs Based Plan and the realities of limited transportation funding. Although the Financially Constrained Plan is limited to available revenue and year of expenditure costs (all costs in the plan inflate by 3% annually), the Financially Constrained Plan has flexibility in implementing improvements identified in the Needs Based Plan (Illustrative), if additional revenues such as earmarks, funding through programs other than Surface Transportation Program (STP) and Federal Transportation Enhancement (TE) funding programs and local contributions. All programs and projects are inflated by 3% annually in the Financially Constrained Plan.

Historically, a 4% inflation factor has been used, but subsequent to the 2009 recession, inflation has been extremely low and in some cases a reduction from previous years has occurred. It is assumed that in the near future, through the TIP period and beyond, the inflation rate will remain low and then possibly increase. Therefore, the 3% represents a more realistic estimate for the entire plan years, but is probably still over inflated in the earlier years. Obviously, when this plan is updated in five years, there will be a better understanding of what inflation might be in the more distant future, but even then it is only an estimate. Flexibility also exists by presenting a prioritized list of improvements that although provides a prioritized guideline for improvements must not be so rigid and not be able to respond to engineering and planning studies for an out year project, right-or-way requirements or a projects readiness.

While the Lincoln MPO plans and develops programs for the all of Lancaster County, separate and defined funding sources are used to fund the respective urban and rural transportation programs. Urban sources of funding are generally planned to be used within the "Urban Area Boundary" as shown on the Existing Functional Classification map. Rural sources of funding are generally planned to be used outside of this identified boundary. This Financially Constrained Transportation Plan provides detailed funding and programmatic information for the Urban Area programs and related projects. The use of federal funding will be for the purpose of funding projects related to the arterial street network and facilities of regional significance. A 20% local funding match is assumed for those projects using federal funds, and the federal process will be followed for all regionally significant projects. The appropriate use of local, state, and federal funding to implement the Financially Constrained Plan will be determined on a project by project basis. Also provided is a financially constrained plan for the rural road network. There are projects included in this Plan where rural projects are planned inside the Urban Area Boundary.

DETAILED FUNDING SOURCES

URBAN ROADS PROGRAM FUNDING

CITY WHEEL TAX

The City Wheel Tax is a revenue source that is generated by a City tax on all vehicles registered within the corporate limits. Currently, a $5 increment in the Wheel Tax generates approximately $1.1 million in revenue. There are 4 categories of the Wheel Tax that are established for specific uses. (Note: the County Treasurer receives off the top 1% for administration and collection of the Wheel Tax)

Snow Removal: This portion of the City Wheel Tax is specifically dedicated to only fund the removal of snow and ice from streets, roads, alleys, public ways, or parts thereof within the city limits. Any unused balances are available for carryover to future year snow removal budgets or for road projects. This amounts to 9.26% of the total fund.

Residual Fund: This portion of the City Wheel Tax is specifically dedicated to be used generally for street improvements in the City of Lincoln. Uses include arterial rehabilitation, new construction

projects, debt service and may be needed for street maintenance operations in the future. This amounts to 32.33% of the total fund.

Residential Rehabilitation Fund: This portion of the City Wheel Tax is specifically dedicated to be used only for the purpose of rehabilitating existing residential streets. This amounts to 9.26% of the total fund.

New Construction: This portion of the City Wheel Tax is dedicated to fund the construction, design, and right-of-way acquisition of streets, roads, alleys, public ways, or parts thereof, or for the amortization of bonded indebtedness when created for such purposes. This amounts to 48.15% of the total fund.

The history of increases in the Wheel Tax generally supports the equivalent of a $5 increase every five years. Such a regular increase in the Wheel Tax is assumed in the 2040 LRTP to grow this funding source. Currently the city receives approximately $12 million annually from this funding source. Limited growth in this funding source is assumed in the 2040 LRTP to generally match growth in the number of registered vehicles at 1.5% annually.

Wheel Tax History

1958	$4.00	1994	$23.00	2012	$69.00 (approved)
1963	$6.00	1996	$31.00	2013	$74.00 (approved)
1965	$8.00	1997	$39.00		
1981	$12.00	2004	$44.00		
1984	$16.00	2007	$49.00		
1988	$18.00	2010	$54.00		
1992	$20.50	2011	$64.00 (approved)		

Source: City of Lincoln Finance Department Budget Office

As part of the 2012 City budget process, additional increases in the City Wheel Tax were approved. Beginning in October 2011, a $10 increase to the Wheel Tax Residual fund will occur and will amount to approximately $2.2 million each year in additional revenue. In both 2012 and 2013, additional $5 increases were also approved and will bring in an additional $2.2 million annually in Wheel Tax Residual. The total amount of additional Wheel Tax from these approved increases will equal $4.4 million annually beginning in 2014. These approved increases in revenue have been incorporated into the revenue assumptions that are part of the 2040 Financially Constrained Plan.

Build Nebraska Act Funds

State fuel tax collections are allocated to the City 84) was adopted in 2011 which created a State Highway Capital Improvement Fund and directs one-quarter of a cent of existing state sales tax to fund the construction of high-priority highway projects throughout the state. The diversion of the sales tax began in 2013 and is to continue for twenty years. The Highway Capital Improvement Fund obligates funding for 80 percent of the project costs of the South Beltway around Lincoln within the third group of projects planned for fiscal years 2020-2023.

Highway Allocation Funds (State Fuel Tax)

State fuel tax collections are allocated to the City of Lincoln via a State funding formula. These funds are designated for projects throughout the City to rehabilitate, construct and improve streets, intersections/ interchanges, sidewalks, bikeways and trails, safety projects, intelligent transportation infrastructure, and landscaping in connection with street improvement projects. These funds are also used in the study, design, acquisition of easements or right-of-way to support public projects. In 2010 the City of Lincoln received $16.5 million in Highway Allocation Funds from the State. This funding source is expected to continue into the future, but due to the experienced slowdown in the growth in the state gas tax over the past several years, very limited growth in this funding source is assumed in the 2040 Financially Constrained Plan to only match growth in the community at 1.2% annually. In 2011, the Nebraska

Legislature approved and the Governor signed the Build Nebraska Act through LB84 which approved the use of ¼ cent of the statewide sales tax for use on roadway projects beginning July 1, 2013. A portion of this additional revenue goes to the local communities; the remainder of the revenue is to be used by the State on the State Highway System. This funding source is slated to be used by the State to pay for 80% of the South Beltway project costs.

Highway Allocation Bonds

These Bonds are payable from a specific source of revenue (State fuel tax and City Wheel Tax). These funds are designated for projects throughout the City to rehabilitate, construct and improve streets, intersections/ interchanges, sidewalks, bikeways and trails, safety projects, intelligent transportation infrastructure and landscaping in connection with street improvement projects. These funds are also used in the study, design, acquisition of easements or right-of-way to support public projects. The roughly $5 million annual payment on these bonds is paid with Highway Allocation Funds, thus limiting the usable amount of this funding to $11.5 million annually. Two regular payments to these bonds that add up to the total $5 million annual payment are scheduled to be completed in 2024 and 2027 respectively, at which time the full allotment of Highway Allocation Funds will be available to the roadway program.

Source: City of Lincoln Finance Department Budget Office

Federal Aid – STP

This federal funding source is designated by formula for urbanized areas with over 200,000 populations and provides resources for a variety of eligible transportation projects. The most recent 6 years of funding indicate an annual increase in federal STP funding of 3.5% per year. Due to uncertainty with the pending federal transportation legislation, only a 2.5% annual increase in all federal funding sources is assumed in the 2040 LRTP.

History of City of Lincoln STP Funding (in millions)

FY 05	FY 06	FY 07	FY 08	FY 09	FY 10
$4.41	$4.38	$4.91	$5.01	$5.13	$5.30

Source: City of Lincoln Public Works & Utilities Department

Federal Demo/Safety/Bridge

STPP Hazard Elimination: This federal funding source provides resources for safety improvements on any public road for activities including railroad crossings, public transportation facilities and public pedestrian and bicycle pathways, and trails. The past 6 years (FY 05 thru FY 10) of this funding has totaled $3.35 million for an average annual amount of $558,000. The annual amount assumed for the Financially Constrained Plan is $500,000 annually and is assumed to grow at the same rate at the STP federal funding, 2.5% per year.

Bridge Replacement: This federal funding source provides resources to assist the City to replace or rehabilitate deficient highway bridges. The past 6 years (FY 05 thru FY 10) of this funding has totaled $10.23 million for an average annual amount of $1.7 million. The annual amount assumed for the Financially Constrained Plan is $1.5 million annually and is assumed to grow at the same rate at the STP federal funding, 2.5% per year.

Demonstration Funding: This federal funding source provides resources for specific projects (commonly referred to as demonstration projects) that intend to use new technology or new methods that may result in improved practices for future projects. Due to uncertainty with the pending federal transportation legislation, this funding source is less certain than others and therefore is not assumed to be a source of future transportation funding. Demonstration funding may ultimately be provided for future projects, but that is not an assumed funding source for the 2040 Financially Constrained Plan.

Source: City of Lincoln Public Works & Utilities Department

Impact Fees

This local funding source is dedicated for new infrastructure in the following categories: water, wastewater, parks, trails, and arterial streets. An impact fee charge is levied against new development to generate revenue to support specific public projects. Impact fees are a one-time, up front charge paid by new construction only. The fees can generally be used on public projects within the district that it is collected. For arterial streets, there are 7 districts where fees are collected and expected to be spent. The Arterial Street Impact Fee schedule includes collections for a range of residential types including single family detached residential at $2,466 per unit and multi-family residential at $1,501 per unit. The Arterial Street Impact Fee schedule also includes collections for retail commercial, office, and industrial development on a per square foot basis. This funding source is projected to grow to match the projected annual inflation rate of 3% (per a requirement in the ordinance) and the projected growth in the community equating to a total projected annual increase of 4.2% per year. Provided here is a link to the City Ordinance explaining the Impact Fees mechanism in detail.

General Revenue

The general fund provides resources from sources such as property tax and sales tax for general operating functions of City departments. This local funding source represents pay-as-you-go contributions from the general fund for capital projects with or without other funding sources. Growth in this funding source from 1990 to 2010 was approximately 4% annually. The assumption for General Revenue growth in the 2040 Financially Constrained Plan is a more conservative 3% per year to reflect the slowdown in the economy during the recent recession and an expected slower economic growth rate in the first part of the planning period.

Historical trends in General Revenue funding for the City's roads program as part of the City of Lincoln Public Works & Utilities Department annual budget has been approximately $2.5 million. This amount is assumed to continue in the 2040 Financially Constrained Plan and is assumed to grow at 3% per year.

As part of the 2012 City budget process, additional General Revenue funding was made available to the City road program through the shifting of responsibility of funding street lighting from the City Public Works & Utilities Department to LES. The amount of additional General Revenue funding on an annual basis from this shift is approximately $2.7 million. This amount is assumed in the 2040 Financially Constrained Plan annually for the planning period. Like other General Revenue funding, this amount of additional funding is assumed to grow at 3% per year through the life of the plan.

Source: City of Lincoln Finance Department Budget Office

Railroad Transportation Safety District (RTSD)

This local funding source is generated by a county-wide public entity, the Railroad Transportation Safety District, which has taxing authority to levy a property tax. These funds are designated for projects throughout the City and County to eliminate automobile and railroad conflicts. From 2005 to 2010, approximately $17.7 million of RTSD funding was used for qualifying projects for an annual average of $2.95 million. Since this funding source is a countywide levy, only a portion of the revenues are used within the urbanizing area, and therefore only a portion of these revenues is projected to be used to help fund qualifying projects in the urban transportation program. An average of $1.2 million annually is assumed in the 2040 Financially Constrained Plan for use in the urban street program. Growth in this funding source is also assumed to be limited and generally matches projected population growth at 1.2% per year.

Source: City of Lincoln Public Works & Utilities Department

State - Train Mile Tax

State tax on rail traffic passing through the City and used for constructing, rehabilitating, relocating or modifying railroad grade separation facilities. This funding is often paired with RTSD funds to pay for qualifying projects. From 2005 to 2010, approximately $2 million of State Train Mile Tax funding was

used for qualifying projects for an annual average of $333,333. An average of $300,000 annually is assumed in the 2040 Financially Constrained Plan for use in the urban street program. Growth in this funding source is also assumed to be limited and generally matches projected population growth at 1.2% per year.

Source: City of Lincoln Public Works & Utilities Department

TRANSIT FUNDING

FEDERAL TRANSIT ADMINISTRATION (FTA)

This federal funding source provides resources for transit operations and capital expenditures. A local match of 20% is generally required to qualify for this funding. Only a 17% local match is required when use of federal transit funds involve fuel efficient or alternative fuel vehicles and related programs. This has been the case recently for StarTran. Currently the City of Lincoln through StarTran receives approximately $3.2 million in FTA funding for transit programs. This federal funding source is assumed to continue to be available and grow at a rate of 2.5% annually.

History of StarTran Federal Funding (in millions)

FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11
$3.04	$3.06	$2.74	$3.36	$2.82	$3.38	$3.86

Source: City of Lincoln Public Works & Utilities Department – StarTran Division

STATE REVENUE OR AID

These funds include any State subsidy received in aid of public transit operations and capital expenditures. From 2005 through 2010 the City of Lincoln averaged $344,000 annually in state revenue. The assumption for the 2040 Plan is for the City of Lincoln to receive approximately $300,000 annually from this funding source. This state funding source is assumed to continue to be available and grow at a rate of 2.5% annually.

GENERAL REVENUE

The general fund provides resources from sources such as property tax and sales tax for general operating functions of City departments. This local funding source represents pay-as-you-go contributions from the general fund for capital projects with or without other funding sources. Growth in this funding source over the long-term is projected at 3% per year, which is lower than the historical growth rate in this funding between 1990 and 2010, which was approximately 4% annually. From 2005 through 2010 the City of Lincoln averaged $5.6 million annually in General Revenue. The amount of General Revenue funding assumed for the 2040 Financially Constrained Plan is $5.3 million annually.

FARES, ADVERTISING, AND UNL CONTRACT

These funds include fare revenue from use of the transit system based on current and projected ridership and is projected to grow by expected growth in the community (1.2% per year) and by expected fare increases based on the past 15 years of fare increases to match inflation (3% per year) for a total growth in revenue rate of 4.2% per year. This amounts to $1.2 million per year. Advertising and miscellaneous funding is expected to continue based on historical trends which amount to $140,000 per year as of 2011. The contract with the University of Nebraska provides funding to the transit system to provide #24 Holdrege Route service between the Downtown Campus and East Campus using student fees and amounts to $350,000 per year as of 2011.

History of Bus Fares

	Year the Rate Became Effective					
Fare Type	1996	2001	2005	2008	2010	Annual % Change
Cash Fare	$0.85	$1.00	$1.25	$1.75	$1.75	5.3%
Monthly Pass	$25	$30	$35	$45	$45	4.3%

Source: City of Lincoln Public Works & Utilities - StarTran Division

TRAILS FUNDING

TRANSPORTATION ENHANCEMENT

This federal funding source provides resources for transportation-related activities that are designed to strengthen the cultural, aesthetic, and environmental aspects of the transportation system. A 20% local funding match is typically required for use of these funds. The City of Lincoln is eligible to receive up to $400,000 annually through the State's program to distribute this federal funding source and has historically received this funding on an annual basis. As a federal funding program that is anticipated to gain importance in relation to livability objectives, this source of funds is assumed to continue to be available and grow at a 2.5% annual rate.

RECREATIONAL TRAILS PROGRAM (RTP)

The Recreational Trails Program provides funds to States to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA). States develop and administer their own programs to distribute these funds for local projects. This funding source is largely used for maintenance and rehabilitation of the local trail system. A 20% local funding match is typically required for use of these funds. The City of Lincoln is eligible to receive up to $150,000 annually through the State's program to distribute this federal funding source and has historically received this funding on an annual basis. As a federal funding program that is anticipated to gain importance in relation to livability objectives, this source of funds is assumed to continue to be available and grow at a 2.5% annual rate.

NATURAL RESOURCES DISTRICT (NRD)

These funds include state subsidy received through the Natural Resources District to aid the construction of the local multi-use trail system related to the regional drainage system and natural areas. A 20% local funding match is typically required for use of these funds. The City of Lincoln's trail system regularly benefits from approximately $150,000 annually through the State's NRD trails program. This source of funds is assumed to continue to be available and grow at a 2.5% annual rate.

6 Year Trails Funding History (2006-2011)

Source: City of Lincoln Parks and Recreation Department

Federal Recreational Trails Program			Federal Enhancements Program			Other Agencies (NRD, County)			
	Award	Match		Award	Match*		Award	Match	TOTAL
Billy Wolff	$44,000	$11,000	Antelope Creek Phase I	$291,951	$131,400	Randolph Bridge-NRD	$150,000	$30,000	
Boosalis	$141,416	$11,455	Antelope Creek Phase II	$362,065	$90,517	A to 27th-NRD	$150,000	$0	
Bison Bridge	$250,000	$187,935	MoPac Bridge	$500,000	$1,582,100	J Street Underpass-NRD	$236,000	$60,000	
Billy Wolff Connector	$141,000	$35,800	Jamaica North	$500,000	$270,602	Jamaica North-County	$300,640	$226,000	
Bison/Van Dorn Connector	$176,700	$35,000	Cavett Connector	$363,200	$90,800	Haymarket - NRD	$429,000	$108,000	
6-Year Average	**$125,519**	**$46,865**	**6-Year Average**	**$336,203**	**$360,903**	**6-Year Average**	**$210,940**	**$70,667**	**$1,151,097**

*A significant amount of private funding was raised to help pay for the MoPac Bridge project and is not indicative of the regular local match dollars available to Enhancement grants. A normal local match to the MoPac Bridge project would result in an average local match of $118,000.

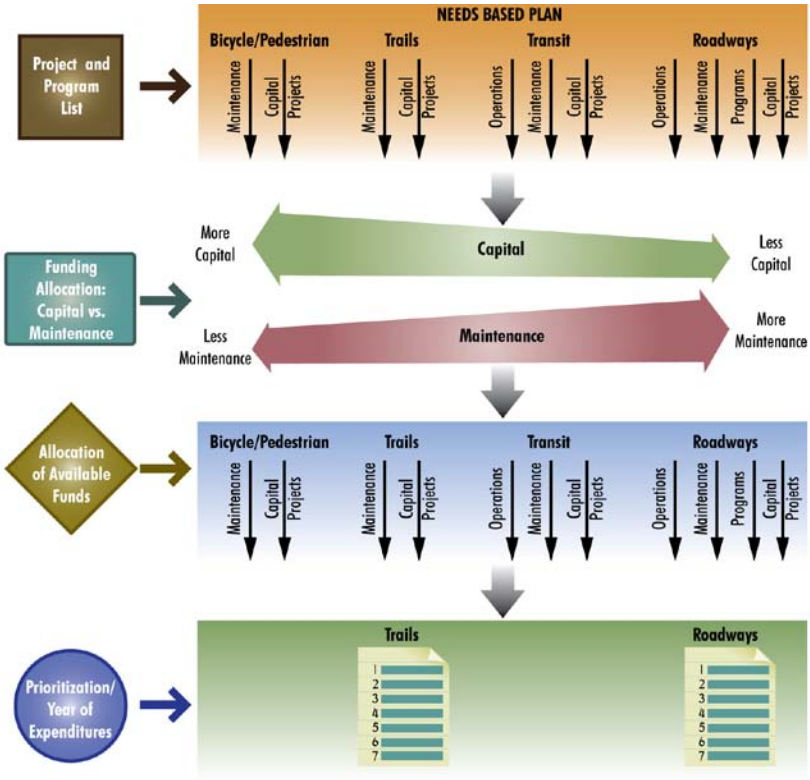
DEVELOPING THE FINANCIALLY CONSTRAINED PLAN

The process for developing the Financially Constrained Plan is presented graphically in Figure 6.1. The first step of the process began with a list of transportation operations, maintenance and capital projects for bicycle and pedestrians, trails, transit and roadways and defined as the Needs Based Plan.

Because available funds and revenues are less than needs, the second step was to determine funding allocations between the maintenance of the existing transportation system or new capital projects. One of the major issues was maintenance of existing transportation facilities or investing in new capital projects. Historically, the Lincoln MPO region has had adequate funding for widening existing facilities and adding new roadways to accommodate growth. However, recently the available revenues for maintenance of an aging and growing transportation infrastructure have not kept up with needs. To determine this allocation, the MPO conducted major outreach to the public through public meetings and on-line surveys to address priorities.

As part of the public outreach, the MPO provided the public the pros and cons of both sides and asked the public where on the continuum, from more capital and less maintenance, to less capital and more maintenance, they would support. Based on public meetings and surveys, the public overwhelmingly favored maintenance of the current transportation infrastructure and with strategic programs and capital improvements to accommodate the needs for future growth.

Financially Constrained Transportation Plan Process



As part of the Financially Constrained Plan process, the LPAC was also asked where on the continuum, from more capital and less maintenance to less capital and more maintenance, the plan should provide funding. Similar to the public, a significant shift from more capital projects was needed to address critical maintenance and rehabilitation needs.

The third step of the process was allocating revenues to the various program categories. This process basically followed the funding stream, where transportation enhancement, recreational trails, and NRD funding was allocated to trails, and Federal Transit Agency funds, transit fares, advertising and the StarTran contract with the University of Nebraska, and historic general funds dedicated for transit went to transit.

The roadway and bicycle/pedestrian funds are from the same roadway funding category. Currently there is no funding for capital bicycle and pedestrian improvements and very minimal funds for sidewalk maintenance.

The fourth and final step in the process was to prioritize capital projects within their respective categories. Operations and maintenance programs are ongoing and allocated by year of expenditure. However, capital projects must first be prioritized and then allocated by year based on available year of expenditure funding.

The capital projects fell into two categories, trails and roadways. The prioritization of trails has a historic legacy that goes back many years made up of stakeholders promoting the completion of the City's trail program. These trails have been prioritized based on expected areas of new growth, connectivity and completion of the system.

In regards to roadways, there were approximately 70 roadway capital projects identified in the Needs Based Plan. The prioritization of these roadway projects consisted of two rounds of analysis and review by the public and the LPAC.

The first round consisted of an evaluation of each project based on the seven (7) Lincoln MPO Long Range Transportation Plan goals. As presented previously, these seven goals were presented to the public and the LPAC with an exercise to weight the goals for importance.

In order to assess how each project addressed the seven goals, an evaluation statement was developed for each goal that described how a project would be rated high (3), medium (2), or low (1) rating. Each of the 70 projects was then scored individually by seven planning and engineering staff. Prior to the individual evaluation, the group collectively went through the process on five different projects to confirm consistency in evaluation methodology. The database used to make the evaluations included costs, traffic data (such as existing and modeled congestion information, travel volumes, levels of service, and vehicle miles traveled), natural resources inventory maps, planned trails and bicycle facility maps, and projected land use and growth areas.

Once the evaluations were completed they were tabulated, scored, and prioritized based on the weighted goal score times the evaluation score. Projects were sorted from highest to lowest project score to form an initial list of prioritized projects for further analysis. See the prioritized list of projects that resulted from this process in table 2040 LRTP Urban Area Street Projects and Prioritizations on page 60 of this Technical Report.

The initial prioritized list was reviewed and analyzed and presented to the LPAC. Based on the review of projects, they confirmed the logical sequencing from the most to least important projects. There were, however, some situations where two projects may have both performed similarly, but if one were constructed, the other might not be needed for some time. There were also projects that depended on other projects to fulfill their purpose.

Based on the review and direction from the LPAC, the projects were further evaluated to see if project redundancy would suggest moving a parallel project up or down in the prioritization or if multiple projects should be combined. Because of limited funding, the cost effectiveness of the project was considered through a measurement based on the travel demand model's estimate of congestion and delay saved by the improvement divided by the improvement costs. Other factors considered were to confirm that there would be some access to developing areas, even if a less than ideal urban roadway standard was proposed.

The resulting financially constrained funding by mode and maintenance/rehabilitation or capital is presented in the "Financially Constrained Annual Funding by Mode (Current Year Dollars)" table. The sections that follow describe the programs and projects for each mode. These sections will also provide for year of expenditure forecast from 2012 to 2040.

Financially Constrained Annual Funding by Mode (Current Year Dollars)

Annual Investment (Current Year Dollars)	Needs Based Plan	Financially Constrained Plan
Multi-Use Trails		
Trails Maintenance / Rehabilitation	$425,000	$300,000
Trails Capital	$1,000,000	$575,000
Total Trails	**$1,425,000**	**$875,000**
Bike / Pedestrian		
Bike / Pedestrian Maintenance / Rehabilitation	$2,500,000	$500,000
Bike / Pedestrian Capital	$700,000	$125,000
Total Bike / Pedestrian	**$3,200,000**	**$625,000**
Transit		
Transit - Capital & Operations	$13,000,000	$10,500,000
Roadway		
Operations	$14,000,000	$13,000,000
Maintenance / Rehabilitation	$15,000,000	$11,500,000
Roadway Capital / Programs	$21,300,000	$20,475,000
Total Roadway	**$50,300,000**	**$44,975,000**
Total	**$67,925,000**	**$56,975,000**

MULTI-USE TRAILS

As discussed above, the financial constrained budget for multi-use trails in current year dollars is about $875,000 per year. This amount is based on historical experience of obtaining approximately $400,000 each year in Federal Transportation Enhancement funding with a required 20% local match, $150,000 in Federal Recreational Trails Program funding with a required 20% local match, and $150,000 in Natural Resources District funding with a required 20% local match. Public input, input from the LPAC, and input from the Pedestrian Bicycle Advisory Committee was used to discuss needed changes to the way funding were distributed within the multi-use trail program. A common theme in all input groups was the need for the direction of more financial resources to the maintenance and rehabilitation of existing facilities, even at the expense of new facilities.

With this input, a financial plan that directs $300,000 toward maintenance and rehabilitation and $575,000 toward new trails is recommended. This would allow about 60% of planned trails to be built within the 30-year planning period.

It should be noted that the trails funding in future years will reduce in current year dollars because inflation will exceed the growth in revenues. Because maintenance and rehabilitation was strongly supported by the public input and LPAC, the funding toward maintenance and rehabilitation was kept constant with the current year allocation of 300,000. Therefore, the current year funding for capital projects of $575,000 would have to drop to a current year equivalent of $464,000 per year in 2040.

Based on year of expenditure revenues and expenditures, approximately 45 miles of new trails could be added by 2040. It should also be noted that there are about 10.5 miles of trails that are part of street projects so the total number of new miles of trails that can be constructed as part of the 2040 financially constrained plan is 56.5 miles.

Trails identified in the Needs Based Plan were reviewed and prioritized on the basis of phasing of development in the Growth Tiers and Priority Areas map, absence of trail facilities in an area, and connectivity with the existing trails system to create a complete network. The Pedestrian Bicycle Advisory Committee was consulted and gave valuable input in this process.

Presented in the "Financially Constrained Plan Trails" map are mileage numbers for high priority trails projects to be completed by 2025 and the long range 2040 trails projects. Below is a listing of the highest priority trail rehabilitation projects as discussed during the plan development process and with the Pedestrian & Bicycle Advisory Committee.

Complementary Strategies to Connect Multi-Use Trails with Existing and Future Development Areas

- Extend the multi-use trails system into the new and redeveloping neighborhoods as the city grows. Connections should be made to schools, parks, and other activity areas.
- Evaluate existing bicycle routes and other travel corridors for opportunities to provide bicycle lanes throughout the entire community.
- Provide cyclists safe, direct, and convenient access to all destinations served by the Lincoln area streets and roads network, and provide bike racks for commuters and shoppers.
- Maintain existing route maps for all trails, lanes, and routes and provide appropriate signage.
- Implement a public information and education program encouraging bicycles as an alternative mode of transportation.
- Develop an Activity/Trail Center that promotes active and healthy living.

Multi-use trail rehabilitation projects with 2010 costs:

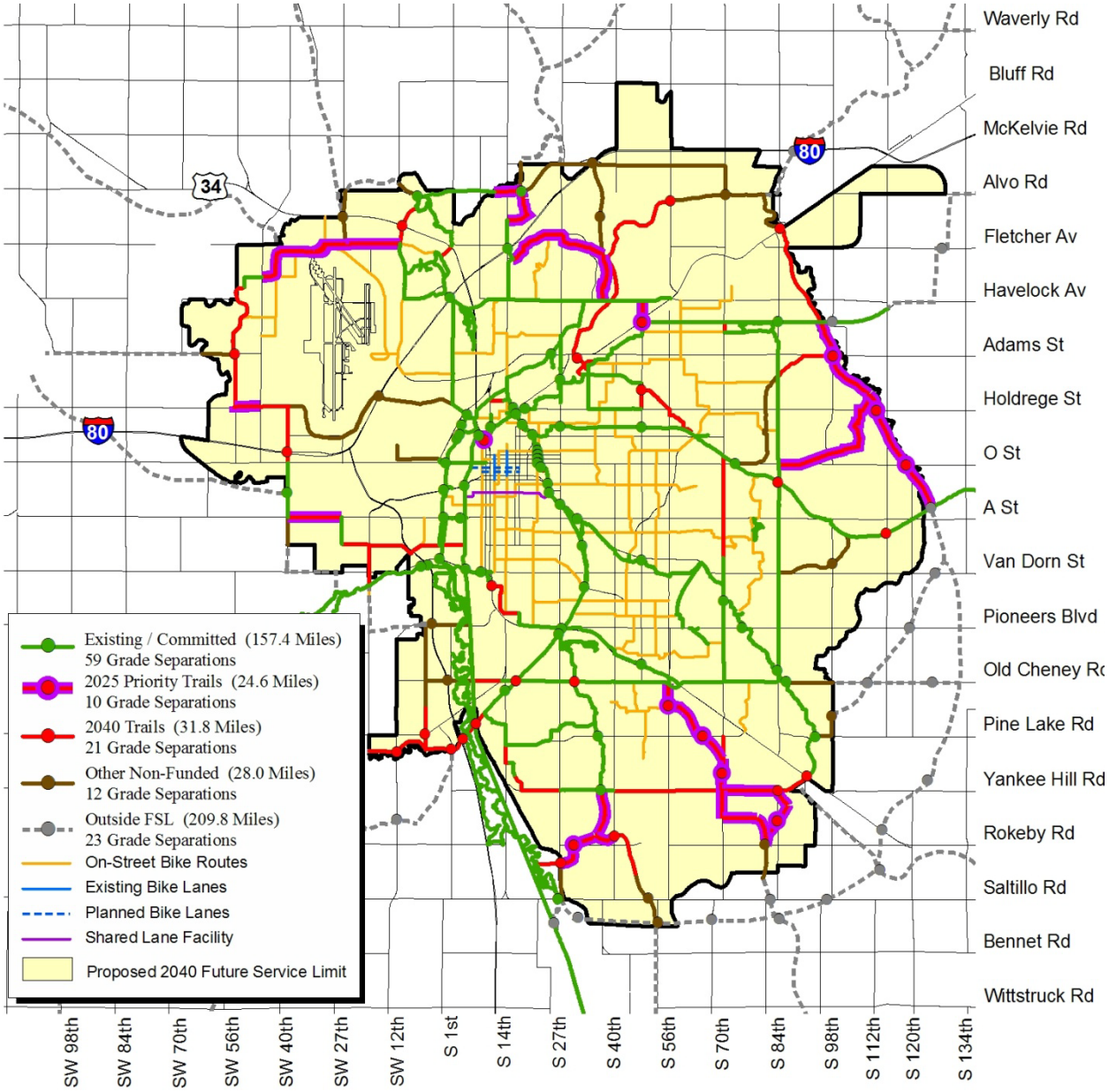
- 27th and Hwy 2 Bridge Paint $250K
- 70th Street/Superior Street Repairs $175K
- Billy Wolff Trail
  27th and Capital Pkwy Underpasses
  East and West $425K
- Billy Wolff
  48th St. Underpasses
  East and West $425K
- Billy Wolff – Remove 8' concrete and replace with 12'
  "A" to 48th $425K
- Billy Wolff – Remove 8' concrete and replace with 12'
  48th to 56th and 58th to Holmes Park $425K
- Rock Island Trail – Replace Garfield St. Bridge $250K
- Rock Island – Remove 8' and replace with 12'
- "A" to South $175K
- Rock Island Trail – Remove 8' and replace with 12'
- South to Calvert $425K
- Rock Island Trail – Remove 8' and replace with 12'
  Calvert to Essex $425K
- Rock Island Trail – Remove 8' and replace with 12'
  Essex to Old Cheney $180K
- Dietrich Trail – Remove 8' and replace with 12'
- 18th to Leighton $245K
  Dietrich Trail – Remove 8' and replace with 12'
  Leighton to Adams $425K
- Dietrich/Murdock Trail – Remove 8' and replace with 12'
  Adams to Touzalin $425K
- Murdock Trail – Remove 8' and replace with 12'
  Touzalin to Mahoney Park $425K
- Replace Park Blvd Bridge over Salt Creek $850K

BICYCLE AND PEDESTRIAN PROGRAM

As described in Existing Conditions, the City currently has an underfunded sidewalk rehabilitation program and does not have a formal pedestrian and bicycle capital improvement program, only projects that respond to opportunities as they arise. Public input and input from the LPAC indicated a strong desire to formalize a program of dedicated funding for these improvements and to increase the funding dedicated to sidewalk rehabilitation.

This Financially Constrained Plan recommends the sidewalk rehabilitation program be funded to a level of $500,000 per year and an additional $125,000 per year be dedicated to pedestrian and bicycle projects, information, and educational programs.

Financially Constrained Plan Trails



It should be noted that this funding level remains extremely constrained, at about one-fifth the Needs Based Plan. This funding should be able to accommodate the regions ADA obligations. The priority of rehabilitation projects will be based on the City's Sidewalk Repair Program which identifies areas of concentration and timing for sidewalk improvements.

Only a few pedestrian and bicycle projects have been identified. In order to develop a list of priority projects analysis of the current system must be conducted and a plan for a future system must be developed. With limited funding, likely projects would be limited to wayfinding and signage, signage and expansion of the bike route system, bicycle lane striping, education and promotion of bicycling, and pedestrian crossing projects. This amount of bicycle and pedestrian funding is not sufficient to include a bicycle and pedestrian coordinator, or pioneering new bike lanes, or completion of major sidewalk missing links.

Pedestrian and Bicycle Support Actions

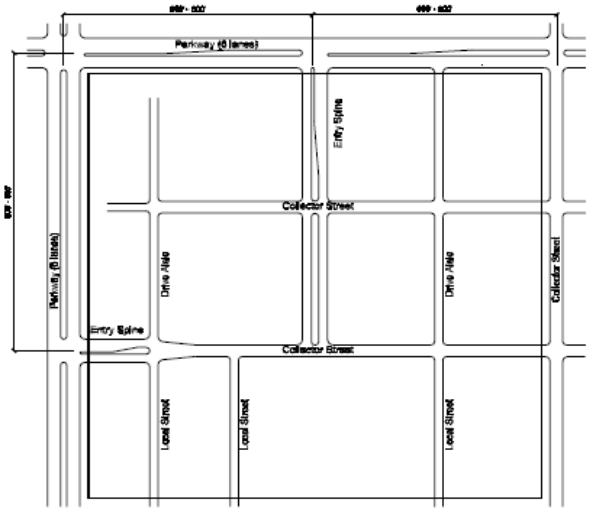
In addition to the rehabilitation and capital funding for the pedestrian and bicyclists, there are other plan objectives that will improve the livable aspects of Lincoln. These actions are as follows.

Mixed Use Activity Centers and Multimodal Corridors: Pedestrians are found throughout the community, but they are most found in mixed use activity areas where they have the opportunity to walk between trip origin and destinations. They include the Downtown (along with the main campus of the University of Nebraska-Lincoln), University Place, College View, and Havelock.

Pedestrian level of service standards in these areas should be high. These areas should have direct, continuous sidewalks with safe street crossings. Visual interest and amenities should serve to attract people to these districts. Future large scale, mixed-use activity districts should be considered members of this category of pedestrian activity centers.

Mixed Use Activity Centers are complement with Multi-Modal Transportation Corridor. These corridors are arterials that provide mobility for all travel modes. Directness and safety for pedestrians going to, from, and within these corridors and centers should be stressed.

All areas of the community should have safe, secure, and reasonably direct pedestrian connections. Activities of daily living should be available within walking distance. Neighborhoods should include homes, stores, workplaces, schools, and places to recreate. Interconnecting streets, trails, and sidewalks should be designed to encourage walking and bicycling, reduce the number and length of automobile trips, and conserve energy.



Pedestrian/Bicycle Program Elements

- Update City's Street Standards to Complete Streets with Options.
- Land Use and Design Guidelines to Support Pedestrian & Bicycle.
- Improve Crosswalks and Develop Guidelines for New (midblock) Crossings.
- Develop an on Street Bicycle Network Master Plan.
- Provide both an east-west and north-south bicycle lane across downtown.
- Develop bicycle rack and storage requirements for new developments. Requirements should address design, location and number.
- Provide functional bicycle racks and storage facilities in all major destination areas.

TRANSIT PROGRAM

Fixed route and demand responsive transit service within the City of Lincoln is provided by StarTran, and the proposed financially constrained transit plan reflects objectives from StarTran staff and their Advisory Board, as well as input from the public and the LPAC.

Transit Recommendations

- Selective Service Approach for Higher Density Areas
- Additional Multi-Modal Hubs
- "Point to Point" Express Service
- "Park & Ride" Service in Fringe Areas
- "Corridor" Express Services
- Traditional Fixed Route Express Service
- Coordination With Alternative Modes (Bicycle and Pedestrian)
- Flexibility to Respond to Change
- Emphasize Intelligent Transportation Systems (ITS)

StarTran provides for approximately 106,000 annual fixed route service hours, which equates to approximately 0.41 service hours per capita. This service per capita is below peer cities with an average of 0.48 service hours per capita. Currently, the StarTran transit service would be described as a hub and spoke service with good coverage throughout the City. This service, however, is limited to the hours of 6:00 a.m. to 6:00 p.m. with buses every one-half hour in the peak periods and one hour in the off-peaks.

The needs based plan assumed that transit revenue service hours should increase to peer City service hour per capita rates. This would indicate that the current $10.5 million annual StarTran budget be increased to $13 million. This increase would provide the opportunity for extending service hours and increase frequency.

The needs based plan also recognized that as population increases, the revenue service hours would need to also increase to maintain per capita revenue service hours. Based on a 45% increase in population by 2040, the service hours would also need to be increased. This would suggest that the current Needs Based Transit Funding of $13 million, would need to increase to approximately $19 million (current year dollars) a year by 2040.

The available transit dollars are limited to $10.5 million, and can only grow slightly to $12.35 million (current year dollars) by 2040. This is significantly less than the $13 million identified in the Needs Based Plan.

Therefore, the proposed financially constrained transit plan must incorporate changes in operations to maximize transit ridership. These changes, supported by StarTran Advisory Board and staff include a conversion from a coverage based transit service, serving the majority of the city to a productivity based service targeting higher density areas. With increased lower density growth projected in outlying areas, the current transit service model is not sustainable. Instead, transit service will need to be redeployed to higher demand areas that will permit increased frequency, longer service hours and increased ridership.

Transit Program Elements

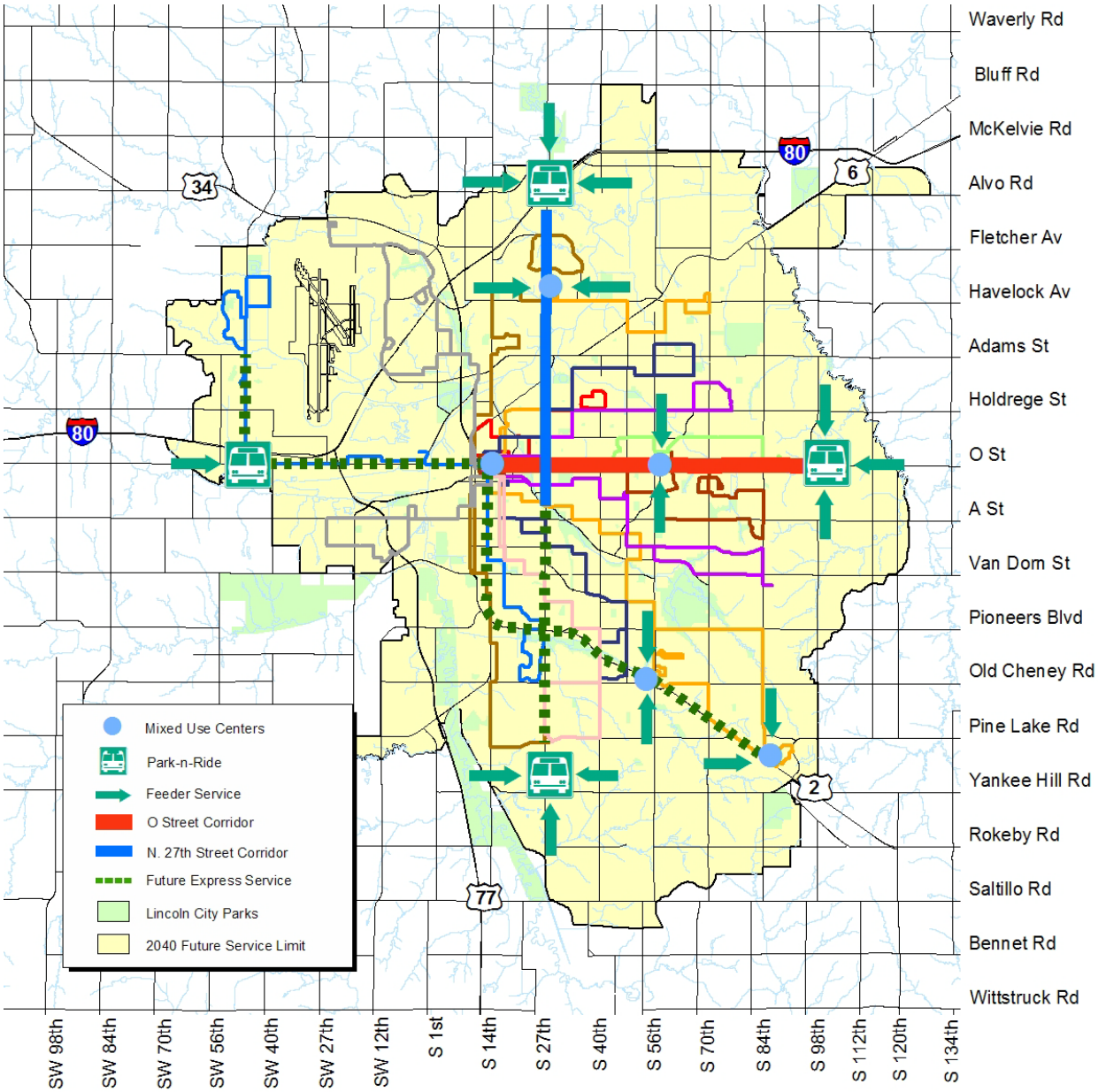
- Extended Evening Service
- Productivity Based Service Targeting Higher Density Areas
- Multi-Modal Hubs/Mixed Use Activity Areas
- Increased Frequency for High Demand Areas
- Express Service
- "Park & Ride"

This service change can also target future mixed-use activity centers served by multi-modal transportation hubs as identified in LPlan 2040. As densities increase on some of these corridors, express service and park & rides can be added to the transit system. It should also be noted that these higher demand areas generally are also locations with higher populations of those with lesser incomes and minorities. Increasing transit service and hours of operation will positively impact these population groups in providing transportation opportunities that they did not have. A conceptual illustration of future transit service is presented in the "2040 Transit System Concept Map".

Given the population and employment growth projected for the year 2040, an aging population that is more dependent on transit, increased densities, and a redeployment of current transit service, there is

potential for the transit system to see dramatic increases in demand over the 30-year planning period. The system should be carefully monitored and plans adjusted in response to these changes. For this plan, an update of the TDP is recommend to address the recommendations the StarTran Board, the public, and LPAC.

2040 Transit System Concept Map



FISCALLY CONSTRAINED ROADWAY PLAN

Roadways account for the largest percentage of transportation funding and serve the most number of persons and trips. Roadways require ongoing operations and rehabilitation, other roadway programs, and capital projects to accommodate future growth. The costs for each of these aspects of the roadway plan are inflated by 3% annually in the Financially Constrained Roadway Plan.

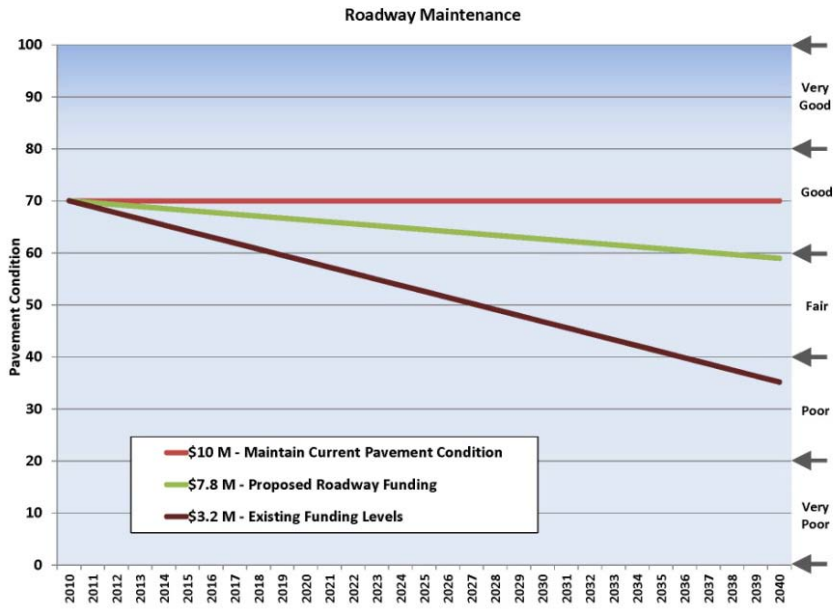
The total financially constrained funding for roadways is approximately $41.66 million for 2012. Total roadway funds by year of expenditure through 2040 are approximately $1.92 billion. Two programs, operations and rehabilitation, were separated from capital projects throughout the plan development process. The remaining programs presented in the table were considered no different than a capital project and were evaluated and prioritized. The following steps through the various programs and what they would provide.

TRAFFIC OPERATIONS

Traffic operations include a wide variety of services and function including signals, street sweeping, snow removal storm water, mowing, crack sealing, pothole repair, signing and striping. The current annual budget for traffic operation is approximately $13 million per year and is proposed to be continued at this rate through 2040.

REHABILITATION

The City's rehabilitation projects include residential streets, arterials, bridges and traffic signals. This has been one area where past funding has not kept up with the need. This is particularly true for residential streets and arterial rehabilitation. As presented in the accompanying figure, the continuation of the current $3.2 million annually for roadway rehabilitation would result in a decline in overall pavement quality from good to poor by 2040. Based on pavement calculations, roadway funding would have to increase to $10 million annually to keep the pavement quality the same as it is today.



The issue of roadway rehabilitation became an important topic as part of the public input process and input from the LPAC because any increase in roadway rehabilitation meant that the available funds for other programs and capital projects would need to be reduced. Based on input from the public and LPAC, it was decided to increase roadway rehabilitation funding to approximately $7.8 million per year. This would keep the roads within the City near the lower limit of good pavement quality by 2040.

The total annual expenditure for rehabilitation would include $7.8 million for roadway rehabilitation, $1.8 million for signal rehabilitations and $1.9 million for bridge rehabilitation, for a total of $11.5 million annually in current year dollars.

Roadway Annual Programs

As part of the development of projects, the list also included a number of programs, most directly related but some partially related to roadway operations. These programs were added to the list of capital projects, with each being evaluated based on the projects goals and evaluation process. All programs were rated high because they provided important and strategic improvements to address future traffic demand at a moderate cost. They all have annual program budgets that would be used to implement key plan objectives. The following describes these programs.

Intersection Capacity Improvements: Whereas the capital project list focuses on larger projects such as widening of an existing arterial or building a new roadway, much of the current and future congestion occurs at existing intersections. Therefore, the financially constrained plan proposes a $1 million per year set aside for strategic intersection improvements at bottle neck areas. These improvements could include the addition of a right or left turn lane, intersection geometrics, or signal modifications. The key is to increase intersection capacity at a modest cost. This program will be an integral part of the region's ongoing Congestion Management Process.

Two Plus Center Turn Lane Program: The City of Lincoln has for years been adding a center left turn lane as part of programmed street rehabilitation along two lane minor arterials and some collectors. This program has been very successful by increasing the capacity of a two-lane roadway by approximately 50% and minimizes traffic congestion, while preserving the character and viability of the established neighborhoods and other components of the built environment.

The remaining two plus center left turn projects are estimated to cost approximately $4.2 million for the additional added capacity portion of the projects. These were spread evenly through 2025 in which all target roadways will have been scheduled for programmed rehabilitation.

Intelligent Transportation Systems (ITS): ITS is a requirement of SAFETEA-LU and is an important and cost effective method to increase highway safety, mobility, security, economic health and community development, while preserving the environment. The City of Lincoln/Lancaster County MPO since the early 1970's has stayed at the cutting edge of Transportation Technology, by deploying a computerized traffic control system and its associated communication infrastructure. Today the Lincoln MPO's Intelligent Transportation Systems (ITS) capabilities include video detection & monitoring; pavement & weather monitoring stations; dynamic message signs; state of the art traffic signal components to ultimately achieve a real-time traffic responsive system; emergency vehicle & railroad preemption devices; a hybrid communication system including fiber optic, broadband radio, and twisted pair cable; automated speed detection and display.

The proposed Financial Constrained Plan continues the important investment into ITS at the annual rate of $875,000 per year in current year dollars. ITS program elements will include:

- **Regional Communications:** Expansion of fiber optics to support communication between all agencies and additional traffic signals and vehicle detection devices.
- **Traffic Signal Controllers:** Upgrade remaining substandard traffic signal controllers to 430 – 146 NTC compliant controllers.
- **Vehicle Detection:** Add additional cameras and loops to record real time traffic and provide signal timing changes.
- **Dynamic Message Signs:** Continue and expand operation of dynamic message signs to inform the motoring public of problems and future construction delays.
- **Traffic Signal Response:** Updates to signal timing plans.
- **Traffic Management Operations Center:** Integrate 911 calling with County fire and police.
- **Automatic Vehicle Location (AVL):** Install AVL on city vehicles to track and program operations and maintenance services such as snow removal and sanding.
- **Incident Management:** Surveillance cameras and detection for accident reporting and response.

Detailed Potential ITS Projects and Costs

ITEM	***PROJECTS***	***Near Term*** **1-5 yrs**	***Estimated Cost Mid Term*** **6-15 yrs**	***Long Term*** **16 + yrs**	**Total**
1	Dynamic Message Sign Expansion (DMS)	$500,000	$500,000	$500,000	$1,500,000
2	Traffic Monitoring Camera Expansion	$120,000	$120,000	$120,000	$360,000
3	Vehicle Sensor System Expansion	$80,000	$160,000	$320,000	$560,000
4	Communication System Expansion (Fiber Optic)	$4,000,000	$4,000,000	$9,000,000	$17,000,000
5	Joint Operations Center	$3,000,000	$100,000	$100,000	$3,200,000
6	Advanced Traffic Management System Software (ATMS)	$300,000	$100,000	$100,000	$500,000
7	Automatic Vehicle Location & Global Positioning System (AVL/GPS)	$200,000	$200,000	$200,000	$600,000
8	Traffic Signal System Improvements	$400,000	$400,000	$1,000,000	$1,800,000
9	Traffic Adaptive Signal System	$250,000	$500,000	$750,000	$1,500,000
10	Central Business District - Smart Card System	$300,000	$300,000	$300,000	$900,000
11	Parking and Event Management Improvements	$400,000	$400,000	$250,000	$1,050,000
12	Ice Detection System Expansion	$150,000	$200,000	$250,000	$600,000
13	Flood Monitoring Systems	$150,000	$150,000	$150,000	$450,000
14	Automated Gate Control System	$150,000	$300,000	$450,000	$900,000
15	Urban Camera Cordination	$60,000	$0	$0	$60,000
16	Emergency Management and Computer Aided Dispatch	$150,000	$50,000	$100,000	$300,000
17	Traveler Information System (511 Urban Content)	$100,000	$400,000	$0	$500,000
18	Infrastructure Security Monitoring	$50,000	$100,000	$100,000	$250,000
19	Transit Signal Priority	$0	$50,000	$1,000,000	$1,050,000
20	Automated Traffic Enforcement (Red Light Running)	$50,000	$200,000	$1,800,000	$2,050,000
21	Smart Railroad Grade Crossings (RTSD)	$0	$75,000	$600,000	$675,000
22	Public & Private School Bus Tracking (AVL/GPS)	$0	$0	$350,000	$350,000
23	Emergency Management Coordination	$0	$50,000	$0	$50,000
24	Operations Coordination	$0	$50,000	$0	$50,000
25	Multi-jurisdictional Transit Coordination	$0	$50,000	$0	$50,000
	Estimated Subtotals	*$10,410,000*	*$8,455,000*	*$17,440,000*	*$36,305,000*

Safety Projects: Safety projects are periodically identified and funded for federal and state roadways by the Nebraska Department of Roads (NDOR). These projects require a 20% local match. The Financially Constrained Plan provides for $200,000 annual funding for the MPO's local share.

Travel Demand Management (TDM): Travel Demand Management (TDM) influences travel decisions by providing a menu of travel options to all types of travelers. Through a combination of financial incentives, cost savings, education, pricing, and travel services (such as transit) presented as an integrated TDM program, drivers are provided a reason to use a different way to travel. The goal is to provide more travel options to more people, in a way that is consistent with the character and quality of the community. Based on input from the public and LPAC, there was strong support for TDM. The Financially Constrained Plan includes $200,000 annually, in current dollars, for a modest program that would allow for some marketing promotions, traveler information, ride share information and marketing, and efforts to support flexible work hours and telecommuting.

East Beltway Corridor Preservation: Although the East Beltway is not included in the Financially Constrained Plan for construction, it is a project that could be constructed if additional funds were earmarked or made available for the project, or if it were constructed after 2040 when more demand warranted its construction. In order to preserve this project for future construction, the Financially Constrained Plan provides for a fund of $250,000 annually in current year dollars that would be used for acquisition of necessary right-of-way if development proposals within the future East Beltway alignment were applied for. This program is coordinated with the County Engineer's commitment to provide similar funding for this purpose.

Developer Commitments: The City of Lincoln has an impact fee program that developers pay for new development based on a trip generation basis for a dwelling unit or square foot for non-residential uses. The funds from these impact fees are included in the projected revenues. As part of this process, there have been past developments that have paid fees and negotiated improvements that would be paid for by those fees. In total there are approximately $22.4 million in developer committed projects. The Financially Constrained Plan assumes that all of the identified developer commitment improvements would be completed and paid for by 2025 and receives $1.6 million per year in current year dollars funding.

South Beltway Local Funding Match: The 20% match in local funds for the State's South Beltway project is funded by local roadway funding in the Financially Constrained Plan with a lump sum payment in 2020. As a State project, the South Beltway is formally indentified in the State's program and can reasonably expect to have the necessary funding for the project to be added to the prioritized list of funded projects.

Roadway Capital Projects

The total roadway budget minus the above programs yields the remaining funds available for roadway capital projects. This calculation was based on a sum of the total year program funding allocation for current year dollars times a 3% inflation factor to get year of expenditure costs that were then subtracted from the total year of expenditure costs for all roadway projects.

As presented, the available funding for roadway capital projects was based on subtracting all roadway programs from the forecasted roadway revenues. These roadway programs were significant. Based on 2012 current year dollars, roadway programs account for approximately $25.63 million of the total

$41.66 million for all roadway projects. This leaves $16.03 million per year in current year dollars for capital projects.

The process for developing a roadway capital improvement schedule by year of expenditure included two steps, prioritizing roadway capital projects and allocation to year of expenditure.

The prioritization of projects was previously defined based on an evaluation of the each project using the Lincoln MPO project goals, and refined to eliminate any redundancy with similar projects and grouping of projects that needed to be constructed together.

In total, there are 60 local projects (*note: this includes some projects with multiple segments*) identified that could be constructed within the remaining roadway capital budget. Also included in the capital projects plan are State program projects that are planned for the first 10 years and the second 10 years of the planning period. These projects are presented in the "Financially Constrained Roadway Plan" map.

Roadway capital costs do not exceed revenues. In some years it will be possible to complete more than one project with smaller projects costs. In other years a year might be skipped to accumulate sufficient funds for completing the project. It should be noted that this is a conservative estimate as remaining revenues were not inflated for subsequent years. One project, improvements to Highway 2, was split into three phases due to the cost of the project.

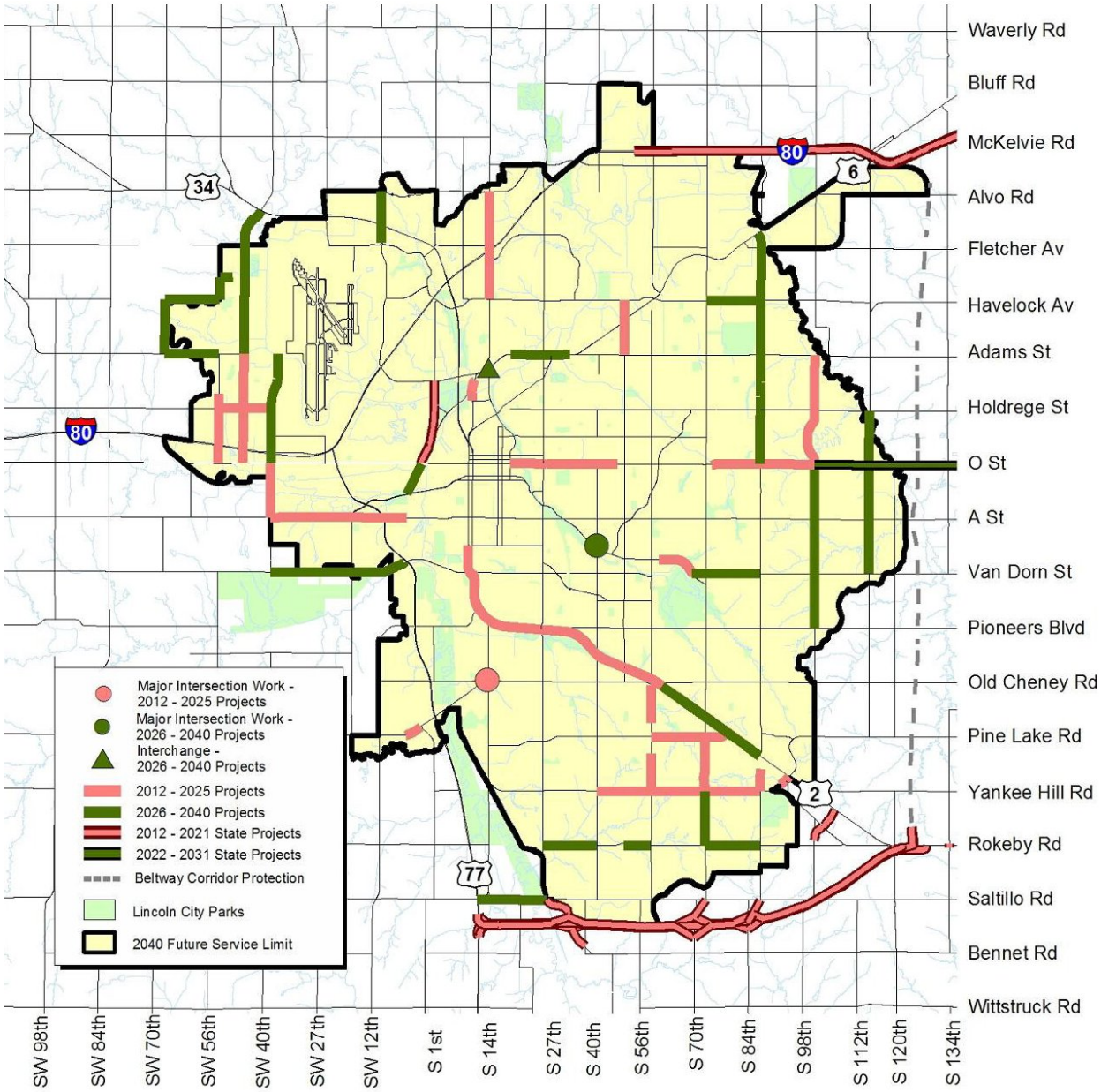
It should be noted that this list is a forecast illustrating that the defined list can be completed with available revenues over the time frame of the project. It should further be noted that there may be minor changes to this list to reflect the realities of roadway construction. As an example a large project such as Highway 2 will likely require engineering and possibly purchasing of right-of-way prior to the year of construction. Project readiness or accelerated growth in one area or another might suggest moving up a project in scheduling provided a previously scheduled project was delayed. Conversely, a project may not be project ready at the scheduled year of construction and a lower prioritized project may move ahead if it is ready.

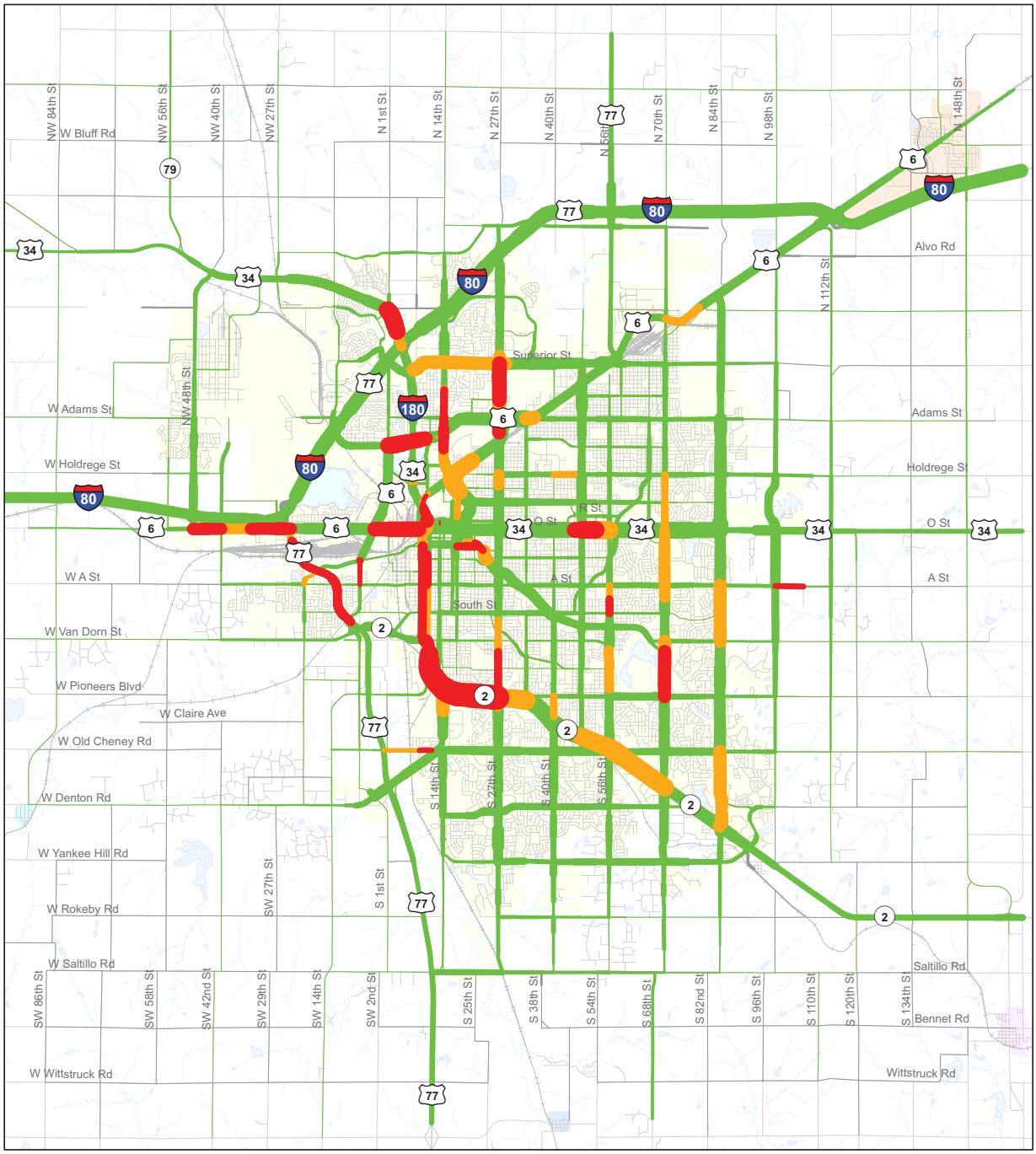
In conclusion, the list of projects presents the MPO's prioritization of projects and a general schedule of which year they would be constructed. Construction demands, project readiness, and good engineering may suggest minor modifications to this schedule. Regardless, the expenditures will not exceed available funds throughout the program design period.

2040 LRTP Capital Roadway Projects and Prioritizations

Facility/Project Name		Lead Agency	Project Type	Project Cost (Current Dollars)
MPO Roadway Projects				
Intersection Capacity Improvement Projects	**Ongoing Programs**	Local	Program	$29,000,000
Two Plus Center Turn Lane Projects in the Built Environment (added capacity portion of projects)		Local	Program	$4,212,000
Intelligent Transportation System Capital Program of Projects		Local	Program	$25,375,000
Safety Projects (20% Local shared for State safety program)		Local	Program	$5,800,000
Safety Projects (80% State share for State safety program)		State	Program	$23,200,000
Travel Demand Management Program of Projects		Local	Program	$5,800,000
East Beltway, I-80 to Hwy-2 "Corridor Protection" Freeway		Local	Corridor Protection	$7,250,000
Developer Commitments		Local	Various	$22,390,388
MPO Roadway Projects				
N. 14th Street, Superior to Alvo	**Projects Programmed to 2025**	Local	4 lanes + turn lanes	$5,604,000
SW 40th Viaduct		Local	Viaduct over BNSF Railroad	$6,500,000
S. 56th STreet, Shadow Pines Dr. to Old Cheney Road		Local	4 lanes + turn lanes	$7,275,000
S. 14th Street / Warlick Boulevard / Old Cheney Road		Local	Major Intersection Work	$10,600,000
NW 48th Street, Adams to US-6		Local	4 lanes + turn lanes	$14,122,516
Pine Lake Road, S. 61st Street to Hwy-2		Local	4 lanes + turn lanes	$6,602,985
US-6 (Sun Valley Blvd.) Corn Hwy (US-6) to West "O" St. (US-6), including R.R. Overpass (local 20% share)		Local	4 lanes + turn lanes	$4,866,487
N. 48th Street, Adams to Superior		Local	4 lanes + turn lanes	$7,296,353
W. Holdrege Street, NW 56th Street to NW 48th Street		Local	2 lanes + turn lanes	$1,249,810
NW 56th Street, W. Partridge Lane to West "O" Street		Local	2 lanes + turn lanes	$3,840,675
West "A" Street, SW 40th Street to Coddington Avenue		Local	2 lanes + turn lanes	$4,022,980
N. 98th Street, Adams Street to Holdrege Street		Local	4 Lane Expressway	$35,000,000
South Beltway, Local 20% Share		Local	4 Lane Expressway	$35,000,000
N. 10th Street, US-6 to Military Road, including Salt Creek Bridge		Local	4 lanes + turn lanes	$8, 119,202
US-34 ("O" St.) Antelope Valley N/S Rdwy. (19th St.) to 46th Street		Local	6 lanes + turn lanes	$15,161, 957
I-80, US-77 to NW 56th		State	Widen to 6 lanes/10 year	$32,897,984
NW 48th STreet Bridge over I-80		State	2 Bridges over 6-lane I-80/10 Year	$5,134,112
NW 56th Street Bridge over I-80		State	1 Bridge over 6-lane I-80/10 Year	$2,831,903
US-34 West, west city limits to Malcolm Spur		State	4 lanes + turn lanes/10 Year	$12,546,143
US-6 West, west city limits to west county line		State	Paving Improvements/10 Year	$11,441.872
US-6 (Sun Valley Boulevard), "O" Street to Cornhusker Highway (State 80% share)		State	4 lanes + turn lanes/10 Year	$19,465,948
US-79, US-34 to county line		State	Paving Improvements/10 Year	$15,784,477
South Beltway, US 77 to Nebraska Highway 2		State	4 lane expressway	$106,000,000
US-34 ("O" St.), Wedgewood Drive to 98th Street		Local	6 lanes + turn lanes	$16,489,642
S. 56th Street, Thompson Creek Boulevard to Yankee Hill Road		Local	4 lanes + turn lanes	$4,139,817
S. 70th Street, Pine Lake Road to Yankee Hill Road		Local	4 lanes + turn lanes	$5,923,581
Yankee Hill Road, S. 40th Street to S. 56th Street		Local	4 lanes + turn lanes	$5,967,970
Yankee Hill Road, S. 56th Street to S. 70th Street		Local	4 lanes+ turn lanes	$6,011,339
Yankee Hill Road, S. 70th Street to S. 84th Street		Local	additional 2 lanes	$3,876,017
Yankee Hill Road, Railroad Crossing to Hwy-2		Local	2 lanes + turn lanes	$1,720,324
S. 84th Street, Amber Hill Road to Yankee Hill Road		Local	4 lanes + turn lanes	$2,542,248
S. 9th Street, Van Dorn to South Street		Local	3 lanes + turn lanes	$2,063,195
Hwy-2, Van Dorn Street to Old Cheney Road		Local	6 lanes + turn lanes	
Phase I - Van Dorn thru S. 14th		Local		$9,359,699
Phase II - S. 14th thru S. 33rd		Local		$9,359,699
Phase III - S. 33rd thru S. 56th / Old Cheney Road		Local		$18,719,399
Normal Boulevard, S. 58th Street to Van Dorn Street		Local	4 lanes + turn lanes	$5,153,267
W. Holdrege Street, NW 48th Street to NW 40th Street		Local	2 lanes + turn lanes	$1,423,628
West Denton Road, Amaranth Lane to S. Folsom Street		Local	additional 2 lanes	$837,065
West "A" Street, Coddington to Folsom		Local	2 lanes + turn lanes	$2,720.537
N. 98th Street, US 34 to Holdrege		Local	additional 2 lanes	$2,430,392
MPO Roadway Projects				
S. 98th Street, US-34 to "A" Street	**Projects Programmed to 2040**	Local	4 lanes + turn lanes	$7,889,890
S. 112th Street, US-34 to Van Dorn Street		Local	2 lanes+ turn lanes	$6,158,680
N. 112th Street, Holdrege Street to US-34		Local	2 lanes + turn lanes	$5,364,896
Saltillo Road, Highway 77 to S. 27th Street		Local	2 lanes + turn lanes	$4,253, 759
W. Adams Street, NW 70th Street to NW 56th Street		Local	2 lanes + turn lanes	$2,622,729
W. Van Dorn Street, Coddington Avenue to US-77		Local	2 lanes + turn lanes	$2,811,311
W Van Dorn Street, SW 40th Street to Coddington Avenue		Local	2 lanes + turn lanes	$5,008,028
Rokeby Road, S. 70th Street to S. 84th Street		Local	2 lanes + turn lanes	$2,603,248
Rokeby Road, S. 27th Street to S. 40th Street		Local	2 lanes + turn lanes	$2,933.994
Rokeby Road, S. 48th Street to S. 56th Street		Local	2 lanes + turn lanes	$1,215,196
W. Cummings Street, NW 56th Street to NW 52nd Street		Local	2 lanes + turn lanes	$683,126
NW 56th Street, W. Cummings Street to W. Superior Street		Local	2 lanes + turn lanes	$1,363,503
W. Superior Street, NW 70th Street to NW 56th Street		Local	2 lanes + turn lanes	$2,564,904
NW 70th Street, W. Superior Street to W. Adams Street		Local	2 lanes + turn lanes	$2,622,729
Hwy-2, Old Cheney Road to S. 84th Street		Local	6 lanes + turn lanes	$16,523,640
S. 98th Street, "A" Street to Pioneers Boulevard		Local	4 lanes + turn lanes	$11,456,844
I-80, Pleasant Dale to NW 56th Street, with Related Bridges		State	Widen to 6 lanes/10-20 Year	$96,798,791
I-80, Reconstruction with Related Bridges		State	Reconstruction/10-20 Year	$30,065,057
I-180, I-80/I-180 Reconstruction		State	Interchange/10-20 Year	$15,938,652
US 34 East, 84th Street to east county line		State	4 lanes + turn lanes/10-20 Year	$50,575,804
N. 84th Street, US-6 to US-34		Local	6 lanes + turn lanes	$34,008,524
Sun Valley Blvd. extension, West "O" Street to Rosa Parks Way		Local	4 lanes + turn lanes +RR overpass	$18,070,442
US-6 (Cornhusker Hwy), N. 20th Street to N. 33rd Street		Local	6 lanes + turn lanes	$9,908,111
NW 40th Street, W. Holdrege Street to W. Vine Street		Local	2 lanes + turn lanes	$1,325,821
NW 40th Street, W. Vine Street to US-6, including I-80 Overpass		Local	Overpass	$6,765,962
NW 48th Street, US-34 to Adams		Local	2 lanes + turn lanes	$10,937,084
N. 14th Street and US-6, Interchange		Local	Interchange	$8,953,020
Van Dorn Street, Normal Boulevard to S. 84th Street		Local	4 lanes + turn lanes	$7,591,126
Havelock Avenue, N. 70th Street to N. 84th Street		Local	2 lanes + turn lanes	$2,564,904
S. 40th Street / Normal Boulevard / South Street		Local	Major Intersection Work	$5,000,000
NW 12th Street, W. Alvo Road to Fletcher Avenue, US 34 Overpass		Local	2 lanes + turn lanes + overpass	$6,776,272
S. 70th Street, Yankee Hill Road to Rokeby Road		Local	2 lanes + turn lanes / illustrative	$2,847,257
NW 38th Street, W. Adams Street to W. Holdrege Street		Local	2 lanes + turn lanes / illustrative	$2,842,567
US-6 (Cornhusker Hwy), N. 11th Street to N. 20th Street	**Unfunded Illustrative Projects**	Local	6 lanes + turn lanes / illustrative	$10,644,537
Havelock Avenue, N. 84th Street to N. 98th Street		Local	2 lanes + turn lanes / illustrative	$2,967,313
N. 33rd Street, Antelope Valley Roadway east leg end to Cornhusker Hwy to Superior Street		Local	4 lanes + turn lanes + bridge / illustrative	$36,600,000
"A" Street, S. 98th Street to 105th Street		Local	2 lanes + turn lanes / illustrative	$1,372,212
W. Fletcher Avenue, NW 31st Street to NW 27th Street		Local	2 lanes + turn lanes / illustrative	$1,392,117
Adams Street, N. 90th Street and N. 98th Street		Local	2 lanes + turn lanes / illustrative	$1,685,936
US-77 and Warlick Boulevard intersection with South Beltway		State	Interchange / illustrative	
US-77 and West Pioneers Boulevard intersection with South Beltway		State	Interchange / illustrative	

Financially Constrained Roadway Plan





2040 Forecast Level of Service - 2040 Fiscally Constrained Improvements

Lincoln MPO - 2010 - 2040 Long Range Transportation Plan

Legend

Level Of Service

- Uncongested (A - C)
- Congesting (D)
- Congested (E - F)
- Not Computed (n/a)

25,000 10,000 1,000

Thicker lines indicate higher traffic volumes

0 0.5 1 2

Miles

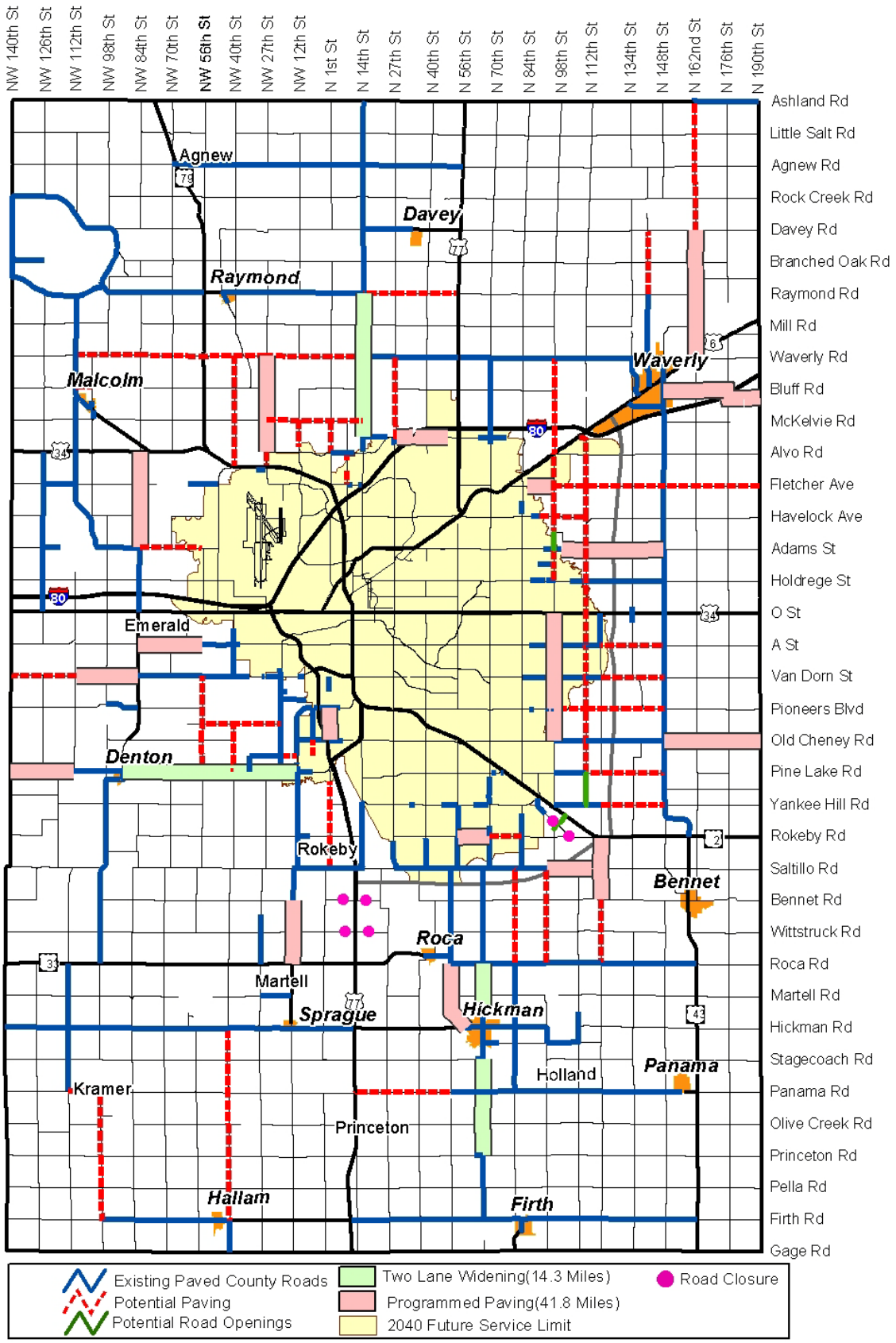
RURAL ROAD IMPROVEMENTS

Close coordination between the Lancaster County Engineer's office and MPO staff occurred during the development of the 2040 LRTP to identify a financially constrained rural road program with a planning horizon year of 2040. Priority paving projects were identified using the amount of expected funding for paving programs as the determinant of how many miles of roadways will be paved. The designation of "Programmed Paving" and "Two Lane Widening" projects on the Future County Road Improvements map identifies the rural road segments that are most likely to receive funding for paving improvements during the 2040 planning period.

The majority of the budget for the rural roadway network is devoted to maintenance of the network. Grading, spreading gravel, snow removal and bridge and right of way maintenance are the most common costs. About $1 million per year is devoted to the programmed paving projects. These roads are the ones that are most likely to require paving by 2040. The order and priority of the paving projects will be determined as traffic conditions warrant.

There are two basic project types: 1) Rehabilitation and two lane widening projects; and 2) Paving gravel roads. Rehabilitation and two lane widening projects are those that involve repair or rebuilding of currently paved roadways, and in some cases widening these roads to include larger lanes and paved shoulders. The identified "Rehab & 2-Lane Widening" program of 14.3 miles at a cost of $14.3 million will be funded with Federal funds with a local match along with other local funds. The Paving Gravel Roads program of 41.8 miles at a cost of $14.63 million will be funded with local funds at a rate of 1.5 miles of paving each year. The County roads budget is funded by a combination of property tax, gas tax, sales tax, motor vehicle registrations, and federal funding. It is anticipated that these revenues for the County road program will keep pace with inflation through the planning period.

Future County Road Improvements



CHAPTER 9: EVALUATION OF AIR QUALITY IMPACTS

An Air Quality Analysis for the Lincoln MPO Long Range Transportation Plan (LRTP) was performed using the regional travel model along with the Motor Vehicle Emission Simulator (MOVES) published by the United States Environmental Protection Agency (EPA). This analysis was based on MOVES2010a, the most current version released by EPA in August 2010.

MOVES is EPA's state-of-the-art tool for estimating emissions from highway vehicles. MOVES accounts for emissions under new car and light truck energy and greenhouse gas standards. This simulator provides reliable measures of mobile source emissions pollution spread by car, trucks and other vehicles by applying the output emissions rate from MOVES to link-level VMT from the MPOs travel demand model. Criteria air pollutants MOVES forecasts includes current and future year emissions for volatile organic compounds (VOC), Nitrogen Oxides (NOx), Carbon Monoxide (CO), Particulate Matter (PM 2.5), and Greenhouse Gases – Carbon Dioxide Equivalent (CO2).

The MPO worked with the Lincoln-Lancaster Health Department and LSA, Inc. to transition to the MOVES air quality postprocessor. This allows data from the MPO's TransCAD traffic model to apply MOVES as an emissions rate model for the metropolitan planning area. In this process, the MPO applies local inputs on vehicle activity, vehicle mix, and emissions factors where applicable and makes use of the standardized national inputs provided by the EPA with the MOVES model.

MOVES EMISSIONS FORECASTS

The MOVES model can simulate many different types of vehicle emissions. To better understand the impacts of technology, growth, and transportation planning on air quality, results for the following pollutants are summarized:

- Ozone Precursors: Ozone precursors, such as volatile organic compounds (VOCs) and nitrogen oxides (NOX), combine in the atmosphere to form ground level ozone (O3). High levels of ozone can cause difficulty breathing and irritate lungs. Ozone is particularly harmful to children and people with asthma. Ozone is most problematic in the summer.
- Carbon Monoxide: Carbon monoxide (CO) is a colorless, odorless gas that can reduce oxygen delivery to the body's organs and tissues. Carbon monoxide tends to be most problematic during winter months.
- Particulate Matter: Particulate matter consists of fine particles of solids or liquid droplets that can get deep into the lungs and cause serious health problems, such as difficulty breathing, development of chronic bronchitis, and an irregular heartbeat . Particulate matter is separated into small (10 micron and smaller) and very small (2.5 micron and smaller) categories. For Lincoln, particulate matter tends to be most problematic in the spring and summer months.
- Greenhouse Gases: The MOVES simulator can quantify levels of greenhouse gas emissions generated by on-road vehicles. While unlike the pollutants described above, some greenhouse gas emissions do not pose immediate localized health threats. Instead, greenhouse gasses are suspected contributors to global climate change. Greenhouse gasses include carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4), and others. To simplify analysis of greenhouse gas emissions, total emissions can be measured in units of an equivalent amount of CO2 that represents impacts of all greenhouse gas emissions.

MOVES INPUTS

MOVES uses information about Lancaster County such as temperature, humidity, and altitude. MOVES also uses data provided by the State of Nebraska regarding the type and age of vehicles owned by residents of Lancaster County. This information is used for forecasting future year emissions based on the same distribution of age and vehicle type as current year. As an example, if 3% of all current year vehicles are one year old and they are passenger vehicles, the same 3% of all vehicles in 2025 or 2040 would be one year old passenger cars.

Input to MOVES also includes data from the traffic model, such as vehicle miles of travel (VMT), travel speeds for freeways, urban arterials, and rural roads.

This information is used along with travel model results to simulate emissions of various types of pollutants today and in the future.

EMISSION RATES

The City of Lincoln and Lancaster County passenger vehicle emission curves for existing conditions (2009), 2025 conditions, and 2040 conditions are presented in Figure 1. Similar curves are developed by MOVES for all vehicle classifications.

Improvements in technology have the greatest impact on expected future emissions. As older vehicles wear out and are replaced with newer, cleaner burning vehicles, significant reductions in emissions are to be expected. The MOVES simulator reflects replacement of older vehicles using the technology available today and also includes assumptions about future improvements in technology. These assumed improvements in technology result in lower rates of emissions per VMT over time.

Emission rates can also be reduced by reducing the amount of congestion in which vehicles travel. Stop and go driving, resulting in slower overall average vehicle speeds, produces more emissions than driving in uncongested conditions. This pattern continues until vehicles reach high speeds (about 70 MPH). After this point, emission rates begin to rise due to lower operating efficiency.

The resulting emission rates for all vehicle types and travel speeds are presented in Table 1. These figures also demonstrate the reduction in emission factors over time due to improvements in technology.

Figure 1: Emission Rates for Passenger Vehicles

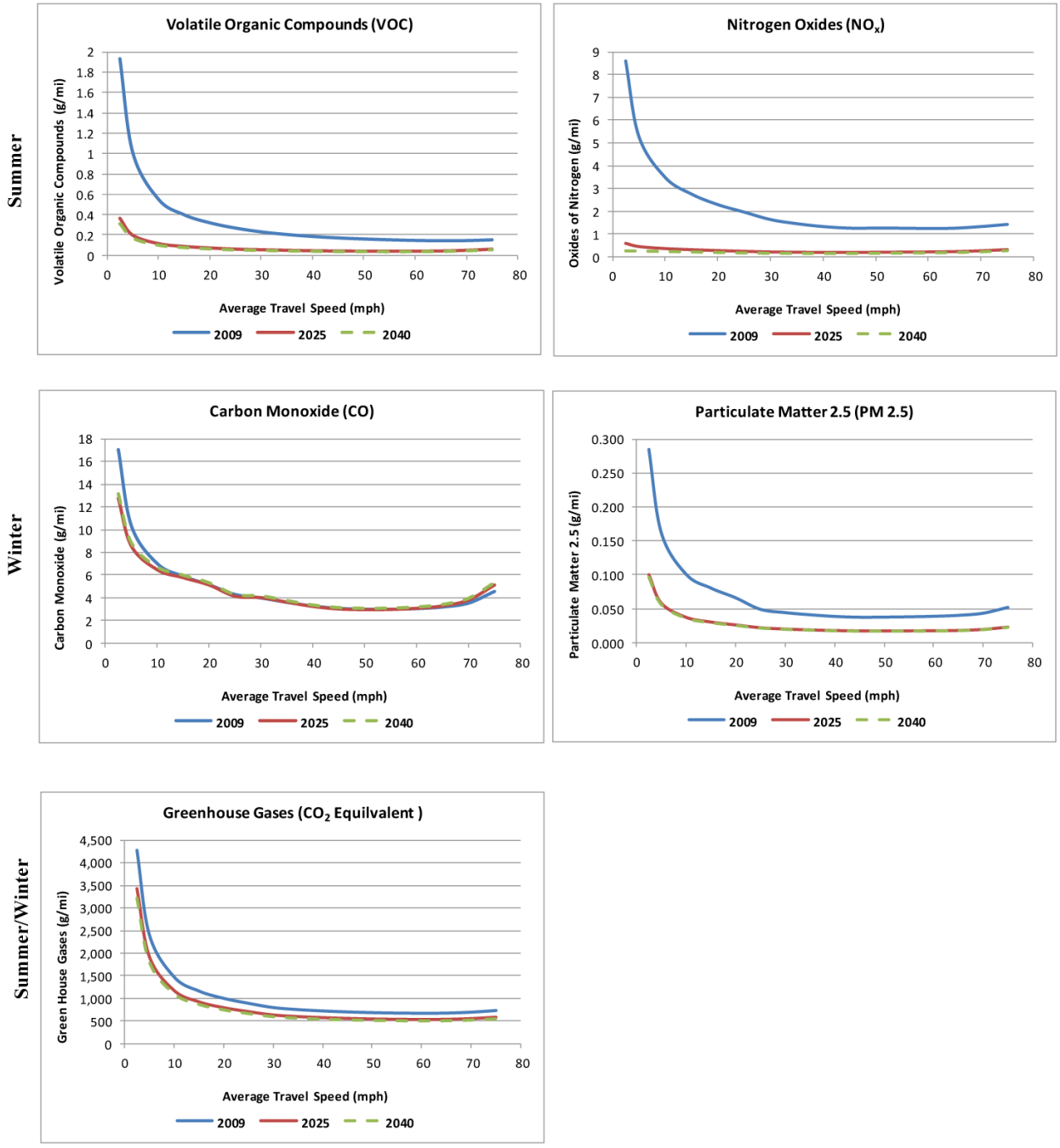


Table 1: Emission Rates

Emission Type	2009	2025	2040
VOC (grams/VMT) – Summer	0.81	0.23	0.14
NOX (grams/VMT) – Summer	1.44	0.35	0.28
CO (grams/VMT) – Winter	11.8	7.0	5.9
PM 2.5 (grams/VMT) – Winter	0.058	0.023	0.020
Greenhouse Gases / CO2 Equivalent (grams/VMT) – Summer / Winter	505	424	408

As presented, the future year emissions for the City of Lincoln and Lancaster County for an average of vehicle types and travel speeds will result in lower emissions per VMT. The data suggests that improved vehicle efficiency and more efficient travel speeds has a greater impact on reducing emissions of VOC, NOx, CO, and PM2.5, which are reduced by about 50-80%, than on CO2 emissions, which are reduced by about 20%.

TOTAL EMISSIONS

Total City of Lincoln and Lancaster County emissions by type for 2009, 2025, and 2040 are presented in Table 2 and Figure 2. Also included in this table are forecast VMT for comparison. As can be seen, VMT will increase by approximately 30% by 2025 and by 60% by 2040.

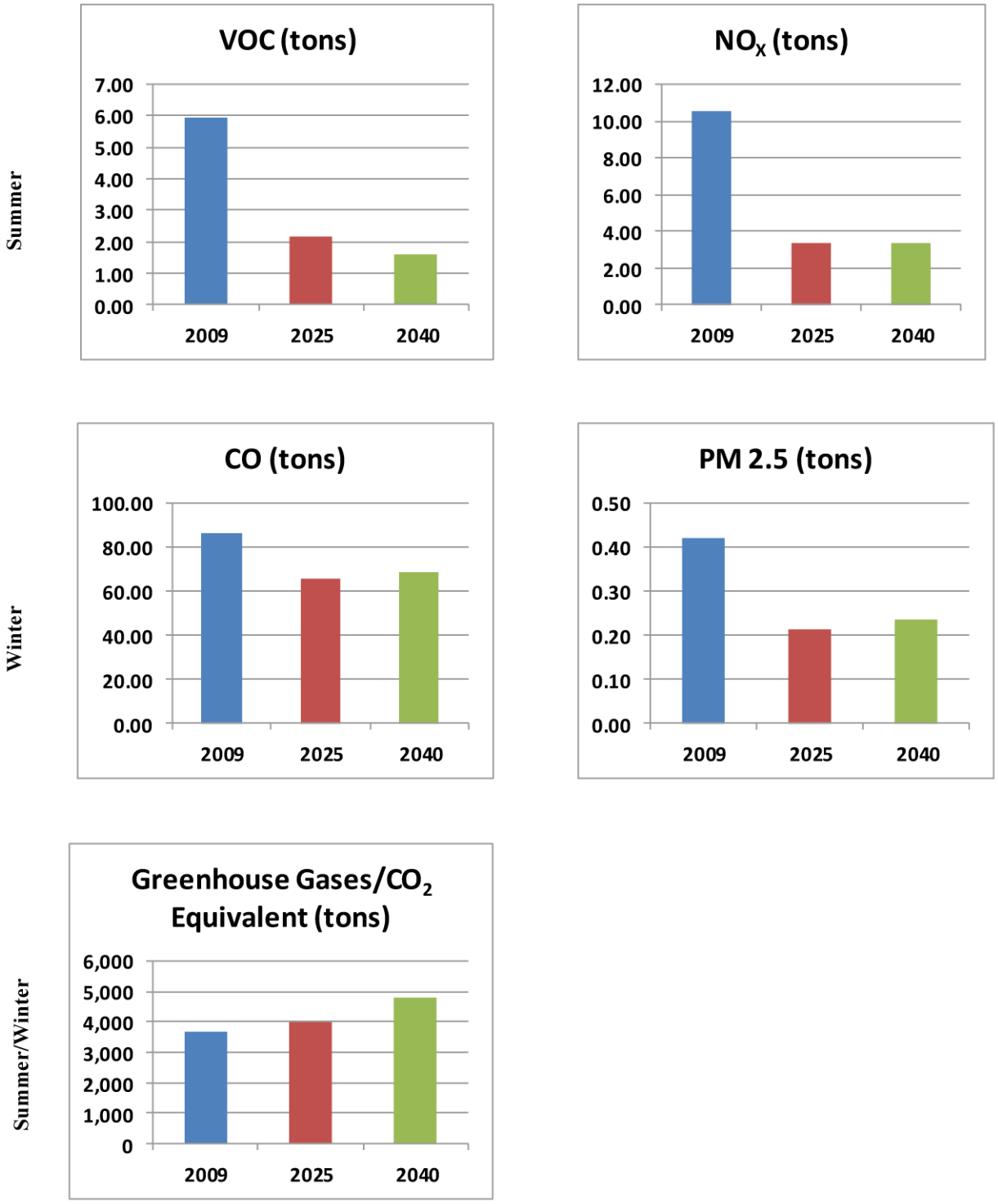
Table 2: Daily Emission Totals

Emission Type	2009	2025	2040
VMT (Thousand VMT)	6,623	8,587	10,610
Volatile Organic Compounds (Tons VOC) – Summer	5.9	2.2	1.6
Nitrogen Oxides (Tons NOX) – Summer	10.5	3.3	3.3
Carbon Monoxide (Tons CO) – Winter	86.1	65.8	68.9
Particulate Matter (Tons PM 2.5) – Winter	0.42	0.21	0.23
Greenhouse Gasses (Tons CO2 Equivalent) – Summer / Winter	3,687	4,012	4,771

As presented, the summer emissions of VOC and NOx will drop between today and 2025 and continue to drop to 2040, even with a 60% increase in VMT. The winter emissions of NOX and CO will similarly see a drop between today and 2025, but remain relatively flat between 2025 and 2040 as the increase in VMT will out-pace current projected reductions in vehicle emissions.

The one forecast area of impact is greenhouse gases. Greenhouse gases trap heat in the atmosphere and are suspected contributors to global climate change. Unlike the other emissions that impact the local region, greenhouse gases impact the world, regardless whether they were produced in Lincoln, Nebraska or any other place in the world.

Figure 2: Total Emissions



CONCLUSIONS

Based on traffic forecasts of the Lincoln/Lancaster Comprehensive Land Use and Transportation Plan, coupled with air quality forecasts from MOVES, air quality will continue to improve due to vehicle emission and fuel technologies for most emission types, even with increased VMT. This technology has resulted in significant improvements in air quality over the past few decades and will continue to provide reductions in VMT emission with current vehicle fuel efficiency and emission mandates scheduled for the future. The question that is asked, will these VMT emission reductions continue to outpace growth in VMT? Based on the MOVES analysis, the answer is yes. Future air quality is forecasted to continue to improve at least to 2025 and possibly 2040 for all emissions except greenhouse gases.

Because greenhouse gases (CO2) is a natural product of the burning process of fossil fuels, the long-term solution is through further improvements in gas mileage and reductions in VMT. The proposed City of Lincoln and Lancaster County Comprehensive and Long Range Transportation Plan does include elements to help reduce the growth in VMT through promoting more walkable, mixed-use activity centers and providing alternative transportation choices.

CHAPTER 10: ENVIRONMENTAL, SOCIAL, AND CULTURAL IMPACT ASSESSMENT

This is a discussion of the potential environmental, social and cultural impacts that may result from transportation system improvements implemented as a result of this Plan. As the Plan is implemented, the possible mitigation activities are to be developed in consultation with federal, state and tribal wildlife, land management, and regulatory agencies. Potential environmental impacts and mitigation measures were considered in the evaluation of alternatives system improvements.

FEDERAL REQUIREMENTS

AGENCY CONSULTATION

SAFETEA-LU states that the MPO must document in the LRTP how the agencies in the following areas are consulted with in the transportation planning process: environmental protection, wildlife management, land management and historic preservation. The process for consulting with agencies is described below.

ENVIRONMENTAL MITIGATION

The LRTP must include discussion of potential environmental mitigation activities to be developed in consultation with federal, state and tribal wildlife, land management, and regulatory agencies. Potential environmental impacts and mitigation measures were included in the evaluation of multimodal alternatives. This discussion is included in this.

ENVIRONMENTAL, SOCIAL AND CULTURAL RESOURCES IN LANCASTER COUNTY

Lancaster County boasts a diverse set of environmental, social and cultural resources. Lancaster County is characterized by flat and rolling plains, sloping toward the east from a high elevation of 1,520 feet in the southwest, to its lowest point of 1,080 feet in the northeast portion of the county. The Salt Creek basin defines most of the County's topography, with portions of three other basins also entering the County. Surface water flows in over 400 miles of warm water streams over the gentle slope, contributing to numerous ponds and lakes. Approximately 13.8% of Lancaster County is covered by floodplains. Native prairies are the region's prevailing natural condition and Lancaster County has about 8,640 acres of native prairie remaining, mainly in the west central portion of the county. Wildlife includes white-tailed deer, a wide variety of birds, mammals, and a variety of fish species. Lancaster County is also home to several State and Federal threatened and endangered species. The county has many acres of land identified as wetlands and saline wetlands. Saline wetlands in particular, played a large part in the founding of Lancaster County, as settlers were attracted by the salt deposits. They provide habitat to a number of threatened and endangered species of plants and animals.

The County is predominantly of one race, White, but it has diversified over time. High in-migration during the nineties has given the county a diverse set of social and ethnic groups. The most recent 2010 census numbers show that the county has about 5.85% Hispanic population, 3.38% Black or African-American and 3.47% of Asians.

ENVIRONMENTAL RESOURCES

For the purpose of this document, seven environmental resources have been identified. A brief description and source of data for each of the seven resources is given below. The following resources are most likely to be impacted by a transportation project and will likely need mitigation measures.

Wetlands and Saline Wetlands

Fresh water wetlands and saline wetlands are a significant environmental asset for Lancaster County. The Eastern Nebraska saline wetlands are a unique resource, providing habitat to both rare and common species. Freshwater and saline wetlands are a regulated resource requiring special consideration during the planning and project development phases.

The source of information for the wetlands is the National Wetland Inventory (NWI), supplemented by GIS data from the Planning Department and the U.S. Fish and Wildlife Service. NWI is a nationally accepted information source and used for wetland delineation and analysis. The screening process identifies freshwater and saline wetlands as separate resources.

Tree Mass

The screening process utilized aerial photographs and GIS to determine the acres of tree masses. The information and maps used were digitized from aerials as part of Natural Resource Geographic Information Systems (NRGIS) study in 2000; updated in 2004 and 2007. Street widening and new roadways often result in the removal of trees that may exist adjacent to the streets or within the area of the roadway. Often the trees may not be in the right-of-way of the road projects but in the area beyond that is graded in conformance with the right-of-way.

Grasslands and Prairies

As mentioned before, native tall grass prairies are the region's prevailing natural condition. Lancaster County has about 8,640 acres of native prairie remaining, mainly in the west central portion of the county. The prairie inventory used for Lancaster County groups the prairie into three categories: Native Hay, Native Pasture and Native Seeding.

Native hay is identified as land used primarily for the production of hay from long-term strands of adapted native forage plants including grasses, grass like plants, forbs and shrubs.

Native Pastures is identified as land used primarily for grazing by livestock and/or large game dominated by grasses, grass like plants, forbs and shrubs.

Native Seeding is identified as land that is considered too hazardous (wind or water erosion) for crops and has a mixture of adapted forbs and grasses.

Floodplain and Floodways

Floodprone areas can be found throughout Lancaster County. As described above, the Salt Creek basin defines most of the County's topography and approximately 13.8% of Lancaster County is covered by floodplains. As they crisscross the area, floodplains and floodways pose unique challenges and constraints on the development of roadways and trails.

Areas in floodplain are identified using the digital maps from the National Flood Insurance Program, sponsored by the Federal Emergency Management Agency.

Protected Area for Endangered Species

Endangered species in Lancaster County include the Salt Creek tiger beetle, as well as Saltwort and Western Prairie Fringed Orchid. Saltwort is a state-endangered plant species that can be found in saline wetland habitats. Western Prairie Fringed Orchid is a state-threatened plant species that can be found in mesic grassland prairie habitats.

The information source for the location of the tiger beetle habit is the U.S. Fish and Wildlife Service. Nebraska Game and Parks Commission provided the source maps for the other two endangered species. Given the dispersed nature of these species and the desire of resource agencies to prevent possible vandalism, habitat destruction or other human activities that may affect theses species, exact locations

are not provided on the maps. The maps only show the mile-section within which the species may be found.

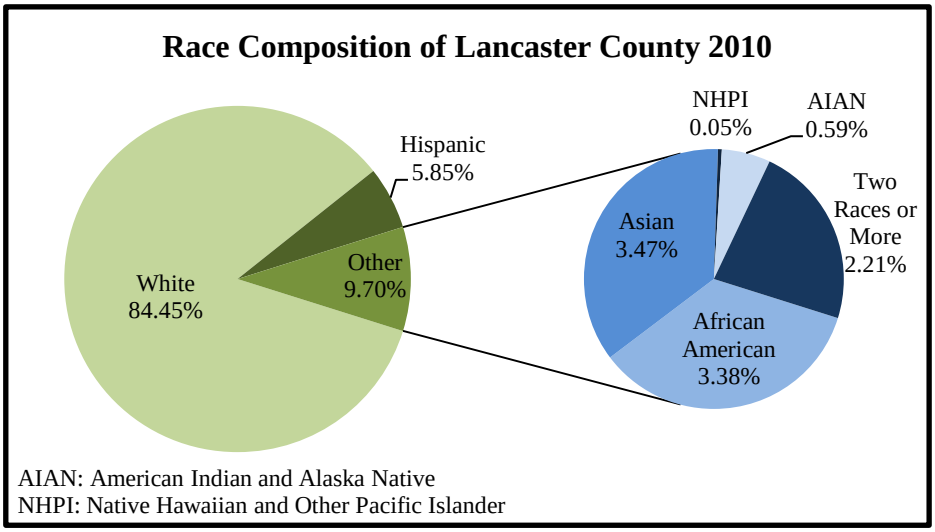
Social Resources

Title VI of the 1964 Civil Rights Act requires that no person, because of race, color, religion, national origin, sex, age, or handicap, be excluded from participation in, denied benefits of, or be subjected to discrimination by any federal aid activity. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, issued on February 11, 1994, broadens this requirement to mandate that disproportionately high and adverse health or environmental impacts to minority and low-income populations be avoided or minimized to the extent feasible. Projects that include actions that are proposed, funded, authorized or permitted by federal agencies are subject to this Executive Order. The federal nexus for the proposed action is FHWA and FTA funding for the development and implementation of the Lincoln MPO 2040 Long Range Transportation Plan.

In accordance with the Federal Regulations, the Lincoln MPO has created an Environmental Justice Strategy Document that guides the screening process for social resources. This strategy was used in the development of the 2040 Plan, and information collected during the process was considered during the project selection process.

Lancaster County Demographics

The Census 2010 is the latest data available for Lancaster County. The county is still predominantly Non-Hispanic White but it has become more diverse in the last decade. As of 2010, the total population of Lancaster County is 285,407. The chart below shows the composition of different races and ethnicity for Lancaster County. With about 16% ethnic minority population in the county, the potential impacts of various transportation projects increases.



Hispanic or Latino

The census Bureau defines Hispanic or Latino as “those people who classified themselves in one of the specific Spanish, Hispanic, or Latino categories listed on the Census 2000 questionnaire -"Mexican, Mexican Am., Chicano," "Puerto Rican", or "Cuban" -as well as those who indicate that they are "other Spanish/Hispanic/Latino." Persons who indicated that they are "other Spanish/Hispanic/Latino" include those whose origins are from Spain, the Spanish-speaking countries of Central or South America, the Dominican Republic or people identifying themselves generally as Spanish, Spanish-American, Hispanic, Hispano, Latino, and so on.”

In Lancaster County, about 6% of the population falls in this category. The majority of this population resides in the core and the western part of the city, with about 23 of 73 census tracts having population of Hispanics higher than the county average of 5.85%.

Asian

The Census Bureau defines Asian as “A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. It includes "Asian Indian," "Chinese," "Filipino," "Korean," "Japanese," "Vietnamese," and "Other Asian."
In Lancaster County, about 3.5% of the population falls in this category. The majority of this population resides in the core and the northern part of the city, with about 23 of 73 census tracts having population of Asians higher than the county average of 3.47%.

Black or African American

The Census Bureau defines Black or African American as “A person having origins in any of the Black racial groups of Africa. It includes people who indicate their race as "Black, African Am., or Negro," or provide written entries such as African American, Afro American, Kenyan, Nigerian, or Haitian.”
In Lancaster County, about 3.5% of the population falls in this category. The majority of this population resides in the core, the western and the northern part of the city, with about 31 of 73 census tracts having population of African Americans higher than the county average of 3.38%.

Native Hawaiian & Pacific Islander

The Census Bureau defines Native Hawaiian & Pacific Islander (NHPI) as “A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. It includes people who indicate their race as "Native Hawaiian," "Guamanian or Chamorro," "Samoan," and "Other Pacific Islander."
In Lancaster County, less than 0.1% of the population falls in this category. The majority of this population resides in the core, the western and the northern part of the city, with about 23 of 73 census tracts having population of NHPI higher than the county average of 0.05%.

American Indian & Alaskan Native

The Census Bureau defines American Indian & Alaskan Native (AIAN) as “A person having origins in any of the original peoples of North and South America (including Central America) and who maintain tribal affiliation or community attachment."
In Lancaster County, less than 0.1% of the population falls in this category. The majority of this population resides in the core, the western and the northern part of the city, with about 27 of 73 census tracts having population of AIAN higher than the county average of 0.59%.

Low/Moderate Income

The U.S. department of Housing and Urban Development defines Low Income as “A household whose income does not exceed 80 percent of the median income for the area, as determined by HUD, with adjustments for smaller or larger families” and moderate income as “Households whose incomes are between 81 percent and 95 percent of the median income for the area, as determined by HUD, with adjustments for smaller or larger families.” However, Low and Moderate Income together “means a household having an income equal to or less than the Section 8 low-income limit established by HUD.” According to the 2000 Census, Lancaster County’s median household income was $41,850, median family income was $53,676, and per capita income was $21,265. Among persons for whom poverty status was determined, approximately 9.5 percent were categorized as having low-moderate income.

Cultural Resources

Historic landmarks and areas, archaeological sites, historic buildings and structures, landscapes, and objects are the fabric of our national heritage. Collectively known as cultural resources (or sometimes heritage assets), they are our tangible links with the past. Established communities and neighborhoods such as Near South, locally identified special areas such as Haymarket and other historically significant sites such as the Capitol, are our cultural resources. The Planning Department maps such areas and sites that are on the National Register or are locally identified. There are 133 historic sites identified in Lancaster County and 23 historic districts.

The list of historic sites and historic districts in Lancaster County is given below.

List of Historic Sites in Lancaster County

Name	Register	Year Built	Year Designated
A Street Water & Power Station (WaterPark)	LL/NR	1921	1986
Alpha Xi Delta	LL	1929	2004
Antelope Grocery	LL/NR	1922	1987
AT&T Switching Station	CoBrd	1941	1989
Barr Terrace	LL	1889-1891	1982
Beattie-Miles House	LL	1892	1983
Bell (Jasper Newton) House	NR	1913	1984
Bridge/W Pioneers & Beals Slough	NR		1992
Bridge/W Stagecoach & Olive Branch Rd	NR		1992
Brown (Guy A) House	NR	1874	1998
Burckhardt (OJ & Anna) House	NR	1903	1999
Burnett House	NR	1904	2006
Calhoun (James D.) House	LL	1889	1983
Candy (Professor Albert L) House	LL	1888/1907	1995
CB&Q Locomotive 710	NR	1901/1928	1997
Charlton (Wm. H.) House	NR	1872	1996
Christian Record Bldg	NR	1936	1986
College View Library	NR	1914	1984
Comfort Station	NR	1924	2004
Cultra Duplex	LL	1894	1993
Delta Delta Delta	LL	1926	2006
Delta Gamma	LL	1926	1999
Dial (Elias) House	LL	1904	1988
East Lincoln Baptist Church	LL	1907	1990
Eddy-Taylor House	NR/LL	1891	1983
Fairview	NL	1901	1964
Fawell (George) House	LL	1916	1983

Federal Trust Bldg	NR	1926-1927	2002
Ferguson (William H.) House	NR	1909-1911	1972
First National Bank Building	NR	1910	1998
First State Bank of Bethany	NR	1914	1986
Foster House	LL	1881	2008
Gamma Phi Beta Sorority	LL	1927	2007
German Evangelical Lutheran Immanuel Church	LL	1910	1986
Gillen House	LL	1904/1919	1983
Gold & Co Department Store	NR	1924	1982
Grainger House	LL	1910	1985
Griswold House	LL	1935	2008
Hall (F. M.) House	LL	1884	1998
Harris House	NR/LL	1902-1903	1982
Hayward School	LL/NR	1904	1983
Heidenreich House	LL	1912	2007
Helmer-Winett-White Flats	NR/LL	1898	1979
Hitchcock House	LL	1922	2002
Hotel Capital	NR	1925-1926	1983
Kappa Alpha Theta	LL	1925	2001
Kappa Kappa Gamma	NR	1925	1999
Kappa Sigma House	LL	1924	2005
Kennard (Thomas P.) House	NR	1869	1969
Kiesselbach (Prof. Theodore) House	NR	1904	1994
Krull House	CoBrd	1870	2005
Lally House	LL	1889	2005
Lancaster Block	NR	1890	1989
Lancaster County Poor Farm Residence	LL	1916	1989
Lau (A. C.) House	LL	1907	1995
Lewis-Syford House	NR/LL	1878	1971
Lincoln Army Air Field Chapel	NR	1942	1993
Lincoln Liberty Life Building	NR	1907/1936	1988
Lincoln Womens Club	LL	1955	2000
Little-Atwood House	LL	1894	1984
Lone Oak	LL	1945	1990
LT&T #4 Exchange	LL	1936	1989
Lyman Terrace	LL	1890	1992

Maple Lodge	NR	1909-1910	1977
Masonic Temple	NR	1935	2005
McWilliams (Trago T.) House	NR	1890	1999
Mt. Zion Baptist Church	LL	1930	1998
Nebraska State Capitol	NL	1922-1932	1970
Nebraska Telephone Co Building	NR/LL	1894	1978
Nine Mile Prairie	NR		1986
Noble-Dawes House	LL	1885	1985
Northeast Branch Library	LL	1908	2009
Noyes-Rogers House	LL	1914	1983
Old City Hall	NR	1874-1879	1969
Old Federal Building	LL/NR	1905/15/39	2002/2004
Old Main (Nebraska Wesleyan University)	NR	1887-1888	1975
Old University Library (UN-L)	NR	1891-1895	1975
Pace-Woods House	LL	1887	2001
Palisade Apartments	NR	1928	1998
Park Hill	NR	1896	2010
Pauley (Ray) House	LL	1918	1983
Phi Delta Theta Fraternity House	LL/NR	1937	1985
Phi Kappa Psi Fraternity	NR/LL	1917	2008
Phi Kappa Tau	NR	1928	2006
Phillips Castle	NR	1890	1979
Pioneers Park	NR	1930	1993
President & Ambassador Apartments	NR	1928-1929	1993
Quinn Chapel African Methodist Episcopal Church	NR	1900/15/26	1999
Regent Apartments	NR	1928	1998
Reimers Bungalow	LL	1913	2009
Ricketts (A. & E.) House	LL/NR	1909	1994
Ricketts (A. &. L.) Mansion	LL	1890	2009
Roberts (Chas. W.) House	LL	1917	1996
Rock Island Depot	NR	1893	1971
Ross (Nimrod) House	NR	1903	1999
Royer-Williams House	NR/LL	1885	1982
Ryons-Alexander House	NR/LL	1907	1982
Scottish Rite Temple	NR	1916	1986
Security Mutual Bldg	NR	1887/1916	1979

Sheldon House	LL	1889	1990
Sigma Chi Fraternity Hous	NR/LL	1931	2008
Sigma Nu	LL	1927	2002
Sigma Phi Epsilon	LL	1929	2002
Slattery (Dr. Wm. H.) House	LL	1921	2008
South Telephone Exchange	LL	1909	1984
Spalding (Frank M) House	NR	1907	1999
St. Charles Apartments	NR	1924	1985
St. Francis Chapel	LL	1921	1990
Stake (R. O.) House	LL	1919	2004
Standard Oil Company Barn	LL	1915	2009
State Arsenal	NR	1913	1981
Stuart Bldg	NR	1928-1929	2003
Taylor (John) House	LL	1890	1993
Teeters (Sophy) Nurses Residence	LL	1928/1940	2002
Temple B'nai Jeshurun	NR	1924	1982
Terminal Bldg	NR	1916	1986
Thayer (Gov. John M.) House	NR	1889	2002
Tifereth Israel Synagogue	NR/LL	1913	1983
Trinity United Methodist	LL	1887/1910	2007
Tuttle-Schaupp House	LL	1902	2010
Tyler (William) House	NR/LL	1891	1978
Veith Building	NR	1884	1980
Watkins (Albert) House	NR	1887	1989
Weese Farmstead	LL	1923	2009
Weil (Morris) House	LL/NR	1902-1903	1994
Whitehall	NR	1910	1982
Woods (Frank) House	NR	1916	1995
Woods Bros Companies Building	NR/LL	1920	1980
Wyuka Cemetery	NR	1869	1982
Yates (Chas.) House	LL/NR	1890	1998
Yost (John & Christina) House	NR	1912	2002
YWCA	NR	1932	1984
Zimmer Grocery Store	LL	1900/1906	2005

Note: LL – Local Landmark, NR – National Register

List of Historic Districts in Lancaster County

Name	Type	Year Designated
Hawley Landmark Districtrict	LL	1998
Haymarket Landmark District	LL	1982
E Lincoln/Elm Park District	LL	1991
Woods Park Bungalow District	LL	1991
Mt Emerald/Capitol Addition	LL	1980
Clark-Leonard District	LL	1983
Mt Emerald/Capitol Addition	LL	1980
Mt Emerald District	LL	1980
Mt Emerald/Capitol Addition	LL	1980
Mt Emerald/Capitol Addition	LL	1980
Capitol Addition District	LL	1983
Mt Emerald District	LL	1980
Sidles-Rogers-Grainger-Wa	LL	1983
Mt Emerald/Capitol Addition	LL	1980
Franklin Heights	LL	1995
Greek Row Historic District.	NR	1997
East Campus Neighborhood	LL	2002
South Bottoms Historic District	NR	1986
Everett Historic District	LL	1998
Havelock Avenue District	LL	2007
Chas F Creighton District	LL	1985
Boulevards Historic District	NR	2008
Woodsshire Res Historic District	NR	2011

Note: LL – Local Landmark, NR – National Register

SCREENING PROCESS

Focus Group Input

Early evaluation of the location of proposed projects in relationship to sensitive environmental and cultural features is an essential component of transportation planning and provides the framework for later, more detailed pre-construction project specific analysis that is required by the National Environmental Policy Act (NEPA).

In December 2010, the natural resources that have the potential to be affected by development in Lancaster County were identified. These included the seven resources discussed previously, as well as eight major ethnic minority groups in the county and low-moderate income groups in accordance with the recently revised Environmental Justice Strategy.

In January 2011, the Planning Department identified environmental social agencies and organizations that could provide input for the screening process. The environmental groups included most State and Federal agencies, the Mayor's Environmental Task Force, County Ecological Advisory Committee and other local groups and chapters that support environmental protection and preservation. The social agencies and organizations included most community centers, state departments overseeing minority

affairs, human services agencies and other groups and agencies that work with the community with respect to the identified social resources.

The first step was to set up initial contact and identify a person(s) of contact, who would coordinate the work effort. An email was sent on January 31, 2011 to 10 environmental agencies and 15 social agencies asking them for a person of contact and a brief description of the upcoming work effort. They were also asked to inform us if we missed an agency that may be of help in the process. Follow-up phone calls were made to agencies that did not respond within a week. The agencies contacted are listed below.

Environmental Agencies – Primary

1. Lower Platte South NRD
2. Lincoln Parks and Recreation
3. Sustainability Coordinator for City of Lincoln
4. Lincoln Watershed Management – Division PWU Dept.
5. Nebraska Game and Parks Commission
6. Nebraska Department of Environmental Quality
7. Army Corps of Engineers
8. Nebraska Department of Natural Resources
9. U.S. Fish and Wildlife Service
10. Natural Resource Conservation Service

Environmental Agencies and Organizations – Secondary

1. Mayor's Environmental Task Force
2. County Ecological Advisory Committee
3. Nebraska Land Trust
4. University of Nebraska Foundation (Nine-Mile Prairie Director)
5. Friends of Wilderness Park
6. Great Plains Trails Network
7. Joslyn Castle Institute
8. Lower Platte River Corridor Alliance
9. Lower Platte South NRD Board
10. Nebraska Environmental Trust
11. Wachiska Audubon Society
12. Nebraska Audubon
13. Nebraska Chapter Sierra Club
14. Nebraska Chapter Bluestem Group
15. The Nature Conservancy Nebraska Field Office
16. Nebraska League of Conservation Voters
17. Audubon Nebraska

Social and Cultural Agencies and Organizations – Primary

1. Human Services Federation
2. Lincoln Housing Authority
3. NE Commission for the Blind and Visually Impaired
4. NeighborWorks Inc.
5. Malone Center
6. The Indian Center
7. The Mexican American Commission
8. The Asian Cultural and Community Center
9. El Centro de las Americas
10. Nebraska Commission on Indian Affairs
11. Lancaster County Health Board
12. People's City Mission
13. Community Action Partnership
14. Center for People in Need
15. Lancaster County Human Services
16. NAF Multicultural Human Development Corporation
17. Ed Zimmer – Historic Preservation Planner, Lincoln-Lancaster County Planning Department
18. Nebraska State Historical Society

The next two months were spent finalizing the information packages and instructions to be sent to the agencies. The details of the information package created, containing maps and an excel worksheet, is discussed in the next section.

The environmental groups were sent the information package along with instructions and expectations through email with an attached excel file and links to FTP site server that hosted the maps on March 30, 2011. The agencies were given about 22 days to respond. Follow-up phone calls were made a week later to answer any questions or clarify details about the work task, and to ensure that the contact person received and understood the work involved. Many agencies asked for time extensions and they were granted. Reminder emails were sent a week before the due date to ensure a response.

This information was also shared with the secondary environmental agencies and organizations such as the Mayor's Environmental Task Force and the County Ecological Advisory Committee. The secondary environmental contacts are listed above.

The social agencies were sent the material on April 13, 2011 and they were given 14 days to respond. The material sent to the social agencies was customized to include only their area of interest. Phone calls were made to the social agencies prior to sending the email with a follow up a week later. Input from the social agencies contacted early in the process resulted in additional agencies being contacted. Finally, material and instructions were sent to about 16 social agencies and followed up with phone calls to explain/clarify the work involved. A reminder email was sent the day after the due date to inquire if agencies wanted more time. Many agencies asked for an extension and they were granted.

The responses received, by email and paper, are included in the report.

The Information Package:

Roadway Projects:

The roadway projects identified were broadly based upon the currently adopted 2030 LRTP, which includes approximately 114 state and local roadway projects. These include both road widening and new roads in new areas. This comprehensive list was included to ensure that environmental mitigation strategies and social impacts were considered for all potential 2040 Plan projects. Because

environmental input was sought early in the process, project selection was still underway. Thus, the review was more inclusive, but the project list included all projects considered and ultimately selected for inclusion in the Financially Constrained Plan and the Needs Based Plan.

	2030 LRTP Urban Area Street System Improvements	
Project Number	**Facility**	**Improvement**
	State Projects	
1	US-34 East, 84th Street to east county line	4 lanes + turn lanes
2	US-34 West, west city limits to west county line	4 lanes + turn lanes
3	US-6 West, west city limits to west county line	4 lanes + turn lanes
4	US-6 (Sun Valley Boulevard), "O" Street to Cornhusker Highway (80% of Project Cost)	4 lanes + turn lanes
5	US-77 and Warlick Boulevard Intersection	Interchange
6	US-77 and West Pioneers Boulevard Intersection	Interchange
7	South Beltway, US-77 South to Nebraska Highway 2 (80% of Project Cost)	4 Lane Expressway
8	South Beltway, US 77 to Hwy-2	Corridor Protection
9	US-79, US-34 to County Line	Paving Improvements
10	NW 40th Street, W. Vine Street to US-6, including I-80 Overpass	Overpass
11	Safety Projects (80% of state safety projects)	
	Lincoln Airport Authority Projects	
12	NW 38th Street, W. Adams Street to W. Holdrege Street	2 lanes + turn lanes
	Proposed Projects	
13	Intelligent Transportation System Capital Program of Projects ($500,000 annual program)	
14	Intersection Capacity Improvement Projects	
15	Safety Projects (20% of state safety projects)	
16	Travel Demand Management Program of Projects ($200,000 annual program)	
17	W. Adams Street, NW 70th Street to NW 56th Street	2 lanes + turn lanes
18	W. Adams Street, NW. 48th Street to NW 38th Street	2 lanes + turn lanes
19	Adams Street, N. 90th to N. 98th Street	4 lanes + turn lanes
20	Adams Street, N. 98th Street to East Beltway	2 lanes + turn lanes
21	W. Alvo Road, NW 27th Street to NW 12th Street	2 lanes + turn lanes
22	W. Alvo Road, NW 12th Street to N. 1st Street	Additional 2 lanes
23	Alvo/Arbor Road, N. 1st Street to N. 70th Street	4 lanes + turn lanes
24	Alvo Road, N. 98th Street to 1/4 mile east of N. 120th	2 lanes + turn lanes
25	Antelope Valley P2, Adams Street, 35th St. area over 33rd to Huntington Ave.	4 lanes + turn lanes
26	Antelope Valley P2, Ant.Valley Rdwy, East Leg End to N/O Corn. Hwy. to Superior, Salt Creek	4-lanes + turn lanes + bridge
27	Antelope Valley P2, Huntington Ave., P1 connection to N. 33rd Street AV	4 lanes + turn lanes + underpass
28	Antelope Valley P2,N. 33rd St. US-6 to Huntington Ave. RR Rdwy Underpass	Underpass
29	W. "A" Street, SW. 40th Street to Coddington Avenue	2 lanes + turn lanes
30	W. "A" Street, Coddington to Folsom	4 lanes + turn lanes
31	"A" Street, S. 112th Street to S. 120th Street	2 lanes + turn lanes
32	"A" Street, S. 84th Street to S. 112th Street	4 lanes + turn lanes
33	S. Coddington Avenue, Van Dorn Street to Denton Road	4 lanes + turn lanes
34	US-6 (Corn. Hwy), I-80 Exit 399 (NW 12th) to N. 11th Street	6 lanes + turn lanes

35	US-6 (Corn. Hwy), N. 11th Street to Waverly Interchange (Exit 409)	6 lanes + turn lanes
36	W. Cummings Street, NW 56th Street to NW 52nd Street	2 lanes + turn lanes
37	W. Cummings Street, NW 48th Street to NW 38th Street	2 lanes + turn lanes
38	W. Denton Road, Coddington Avenue to Folsom Street	4 lanes + turn lanes
39	Denton Road, S. Folsom Street to Amaranth Lane	4 lanes + turn lanes
40	East Beltway, I-80 to Hwy-2, " Corridor Protection" Freeway	Corridor Protection
41	East Beltway, I-80 to Hwy-2	4 lane Freeway
42	W. Fletcher Avenue, NW 31st Street to NW 27th Street	4 lanes + turn lanes
43	W. Fletcher Avenue, NW 27th Street to NW 13th Street	Additional 2 lanes
44	Fletcher Avenue, N. 14th Street to Tellride Drive	Additional 2 lanes
45	Fletcher Avenue, US-6 to East Beltway	2 lanes + turn lanes
46	S. Folsom Street, Pioneers Boulevard to Denton Road	4 lanes + turn lanes
47	S. Folsom Street, W. Van Dorn Street to Pioneers Boulevard	2 lanes + turn lanes
48	Havelock Avenue, N. 70th Street to N. 98th Street	2 lanes + turn lanes
49	Hwy-2, Van Dorn Street to S. 84th Street	6 lanes + turn lanes
50	W. Holdrege Street, NW 56th Street to NW 40th Street	2 lanes + turn lanes
51	Holdrege Street, N. 86th Street to N. 98th Street	4 lanes + turn lanes
52	Holdrege Street, N. 98th Street to N. 112th Street	2 lanes + turn lanes
53	Normal Boulevard, S. 58th Street to Van Dorn Street	4 lanes + turn lanes
54	US-34 ("O" St.), Antelope Valley N/S Rdwy. (19th St.) to 46th Street	6 lanes + turn lanes
55	US-34 ("O" St), Wedgewood Drive to 98th Street	6 lanes + turn lanes
56	W. Old Cheney Road, Coddington Avenue to US-77	2 lanes + turn lanes
57	Old Cheney Road, S. 88th Street to S. 98th Street	4 lanes + turn lanes
58	Pine Lake Road, S. 57th Street to Hwy-2	4 lanes + turn lanes
59	Pine Lake Road, S. 98th Street to East Beltway	2 lanes + turn lanes
60	W. Pioneers Boulevard, Coddington Avenue to US-77	2 lanes + turn lanes
61	Pioneers Boulevard, S. 86th Street to East Beltway	4 lanes + turn lanes
62	Rokeby Road, S. 27th Street to S. 84th Street	4 lanes + turn lanes
63	Saltillo Road, US-77 to S. 84th Street	2 lanes + turn lanes
64	South Beltway, US-77 to Hwy-2 (20% Local Match)	4 Lane Expressway
65	US-6 (Sun Valley Blvd.), Corn. Hwy (US-6) to W "O" St.(US-6), including R.R Overpass (local 20% share)	4 lanes + turn lanes
66	Sun Valley Blvd. Extension, US-6 to Rosa Parks Way, including Overpass	4 lanes + turn lanes
67	W. Superior Street, NW 70th Street to NW 56th Street	2 lanes + turn lanes
68	W. Van Dorn Street, SW 40th Street to Coddington Avenue	2 lanes + turn lanes
69	W. Van Dorn Street, Coddington Avenue to US-77	4 lanes + turn lanes
70	Van Dorn Street, Normal Boulevard to S. 112th Street	4 lanes + turn lanes
71	Van Dorn Street, S. 112th Street to S. 120th Street	2 lanes + turn lanes
72	W. Webster Street, NW 38th Street to NW 31st Street	2 lanes + turn lanes
73	Yankee Hill Road, S. 14th Street to S. 27th Street	Additional 2 lanes
74	Yankee Hill Road, S. 40th Street to Hwy-2	4 lanes + turn lanes
75	NW 70th Street, W. Superior Street to W. Adams Street	2 lanes + turn lanes
76	NW 56th Street, W. Partridge Lane to W. "O" Street	2 lanes + turn lanes
77	NW. 56th Street, W. Cummings Street to W. Superior Street	2 lanes + turn lanes
78	NW 48th Street, US-34 to US-6	4 lanes + turn lanes
79	NW 40th Street, W. Holdrege Street to W. Vine Street	2 lanes + turn lanes
80	SW 40th Street, W. "A" Street to W. Van Dorn Street	4 lanes + turn lanes
81	NW 38th Street, W. Cummings Street to W. Webster Street	2 lanes + turn lanes
82	NW 31st Street, W. Webster Street to US-34	2 lanes + turn lanes
83	NW 27th Street, HIghway 34 to Alvo Road	2 lanes + turn lanes

84	NW 12th Street, W. Alvo Road to Fletcher Avenue , US 34 Overpass	4 lanes + turn lanes
85	NW 12th Street, W. Fletcher Avenue to Highlands Boulevard	Additional 2 lanes
86	SW 12th Street, W. Pioneers Blvd. to Denton Road	2 lanes + turn lanes
87	N. 1st Street, Alvo Road to US-34	4 lanes + turn lanes
88	N. 10th Street, US-6 to Military Road, including Salt Creek Bridge	4 lanes + turn lanes
89	N. 14th Street and US-6, Interchange	Interchange
90	S. 14th Street, Garrett Lane to Yankee Hill Road	Additional 2 lanes
91	S. 27th Street, Whispering Wind Boulevard to Saltillo Road	4 lanes + turn lanes
92	S. 40th Street, Yankee Hill Road to Saltillo Road	4 lanes + turn lanes
93	N. 48th Street, Doris Bair Circle to Greenwood Street (*)	4 lanes + turn lanes
94	S. 56th Street, Thompson Creek Boulevard. to Yankee Hill Road	4 lanes + turn lanes
95	S. 56th Street, Yankee Hill Road to Saltillo Road	2 lanes + turn lanes
96	N. 70th Street, Arbor Road to US-6	4 lanes + turn lanes
97	S. 70th Street, Pine Lake Road to Saltillo Road	4 lanes + turn lanes
98	N. 84th Street, US-6 to US-34	6 lanes + turn lanes
99	S. 84th Street, Amber Hill Road to Yankee Hill Road	4 lanes + turn lanes
100	S. 84th Street, Yankee Hill Road to Saltillo Road	2 lanes + turn lanes
101	S. 91st Street, Pine Lake Road to Hwy-2	Additional 2 lanes
102	N. 98th Street, US-6 to Adams Street	2 lanes + turn lanes
103	N. 98th Street, Adams Street to Holdrege Street	4 lanes + turn lanes
104	S. 98th Street, US-34 to Old Cheney Road	4 lanes + turn lanes
105	N. 112th Street, Holdrege Street to US-34	4 lanes + turn lanes
106	S. 112th Street, US-34 to Van Dorn Street	4 lanes + turn lanes
107	S. 112th Street, Van Dorn Street to Pioneers Boulevard	2 lanes + turn lanes
108	S. 120th Street, US-34 to Van Dorn Street	2 lanes + turn lanes
109	S. 14th Street and Hwy-2	Major Intersection Work
110	S. 14th Street / Warlick Boulevard / Old Cheney Road	Major Intersection Work
111	S. 27th Street and Hwy-2	Major Intersection Work
112	S. 40th Street / Normal Boulevard / South Street	Major Intersection Work
113	S. 56th Street / Hwy-2 / Old Cheney Road	Major Intersection Work
114	84th Street and US-34	Major Intersection Work

Trails Projects:
Similar to the roadway projects list, the trails projects identified are also based on the currently adopted 2030 LRTP, which includes approximately 305 miles of trails projects.

Transit Projects:
The existing transit routes were also included in the analysis. The existing routes were used because no change is anticipated at this time in the fiscally constrained plan. In the needs based plan, transit would definitely increase but we have no definite routes selected or the type of transit to consider for potential impacts.

Environmental Resource Conflict Identification

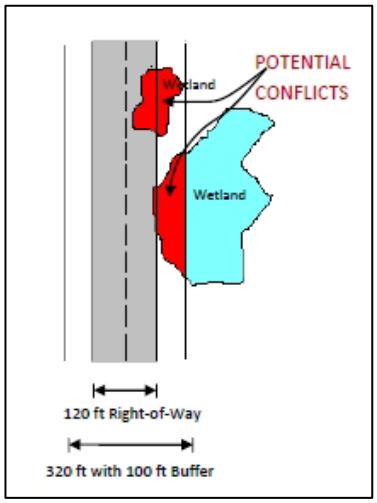
Right of Way:
All roads were assumed to have 120 ft right-of-way regardless of their hierarchy. If at present, the road was a collector, it has the potential to be an arterial later. Therefore, all roads were assumed to have the same 120 ft right-of-way. These were mapped using the GIS database.

Buffer:
A buffer of 100 ft on either side of the right-of-way for roadway projects was established to help determine potential impacts on the environmental resources. While the right-of-way may only be 120

ft, the leveling and grading associated with building the roadway may extend beyond the 120 ft. The decision for a 100 ft buffer was based on discussions with some agencies that regularly work with impact assessment. While the impact assessment changed the range of buffers depending on the project, 100 ft was considered a generally good distance to measure for impacts. Each street project was analyzed for impacts within a total width of 320 feet (the actual buffer used for enumeration of the conflicts was 160 ft each side due to a small mapping error. The mistake was identified after letters and the information package were sent to the agencies for review. Hence, the table below enumerates impacts within a total width of 440 feet). The extended buffer used was to ascertain that the process captures all possible resource conflicts.

For trails, the buffer considered was 50 ft on either side. No right-of-way width was assumed for the trails and each project was analyzed for impact within a total of width of 100 ft.

Resource Maps:
A base map that mapped all the natural resources identified earlier was created which was included in the review. A map for each individual natural resource was also created for the impact analysis.



Potential Conflicts:
The roadway and trail projects with their buffers were overlaid on these individual resource maps and all areas of a resource that was wholly or partially within the 320 ft or the 100 ft were identified as potential conflict. For example, if a road segment went through a wetland that was wholly within the 320 ft, then that was enumerated as conflict, measured in acres. Also, if a road project and its buffer, running parallel to a wetland, intersected it and some point, then the intersected area was enumerated as a potential conflict. These conflicts were documented on the maps as highlighted areas and in an excel worksheet as acres of potential conflict associated with each roadway project or trails project.

Social Resource Conflict Identification

Concentration Areas in the County:
Separate maps were created for the five ethnic/minority groups and the three low-moderate income groups. The maps highlighted census tracts that had a higher than the county average population of each of the identified groups. For example, the county average for the Hispanic population is 5.85% and the map highlighted all the 23 tracts in the county that have Hispanic population greater than or equal to 5.85%.

Roadway, Trails and Transit Projects:
For the social resource analysis, center-line miles for each project was used instead of right-of-way. GIS layers were created to show all the projects as line segments, indicating the center-line in miles.

Potential Conflicts:
The conflicts were calculated as center-line miles of potential transportation projects that cross through the concentration area of an ethnic/minority or low-moderate income group. For example, Adams Street project from NW 70th street to NW 38th street is roughly 2 miles, but only about 0.62 miles of the road crosses through a census tract with a concentration of Black or African American. Conflicts with trails and transit routes were documented in a similar manner. These conflicts were documented on the maps as highlighted line segments and in an excel worksheet as miles of potential conflict associated with each roadway project, trails and transit project.

Cultural Resources Conflict Identification

Location of Landmarks and Historic Districts:
Landmarks and historic districts in the county were identified as the main cultural resource. A map was created to show these areas.

Buffers:
The buffers for the roadway projects and the trails projects used are the same as used for environmental impact review, i.e. 100 ft for roadway projects and 50 ft for trails projects on either side.

Potential Conflicts:
Potential conflicts were measured as miles of roadway project (and its buffer) within 300 ft of a historic site/district and miles of trails project (and its buffer) within 100 ft of a historic site/district. For example, about 1.75 miles of 'O' street improvements are within 300 ft of many historical sites in the Downtown/Haymarket area.

ISSUES AND MITIGATION STRATEGIES

The responses received from the various environmental social agencies and organizations varied from project specific information to very broad issues. In addition, environmental agencies were asked to suggest some mitigation measures for the resource conflicts. Some of the responses received provided updates on current conditions with reference to a specific project.

Summary of Environmental Agencies Input

- Appreciated the material sent for review
- Identified resource conflicts we had missed
- Provided some mitigation strategies for wetlands, water quality, tree mass, floodplain etc
- Without actual project details, it is difficult to provide much input

Summary of Social Agencies Input

- Most comments were related to transit and the trail network
- Transit – hours of operation and no weekend service is a common concern
- Maintenance of the existing road network in the city is more important for most ethnic groups and low-moderate income groups
- Most road projects are in the newer neighborhoods and not of much consequence to most ethnic groups and low-moderate income groups
- Linking the bike trails with the transit system and creating a network is important
- Think about unintended consequences of concentrated transit provision such as creation of pockets of poverty in the city and accessibility

Summary of Cultural Agencies Input

- The mapping of Pioneers Park as a single site (point) is misleading in this type of review. The park should be considered as a district (polygon) as it encompasses 500 acres, putting it in proximity to Coddington and West Van Dorn trails and street projects.
- Woodsshire Historic District is not mapped, but there were no streets or trails projects in proximity to this area.
- For the broad-brush level of planning, mapping to identify designated cultural resources in proximity to potential projects is appropriate. However, actual project planning should consider both designated cultural resources and those eligible for the National Register of Historic Places, but not yet identified; that projects that are federal undertakings (federal funding or approvals) require review under Section 106 of the National Historic Preservation Act; that early planning, once actual projects are programmed, helps avoid, minimize, or mitigate adverse impacts on cultural resources.
- Proximity alone does not constitute adverse impact, and in fact well-designed improvements and especially system maintenance can benefit historic resources, especially neighborhood districts.
- Trails may have no adverse impact or even be beneficial to the livability of historic residential areas and revitalization of commercial areas.

All comments were reviewed and taken into consideration during the development of the 2040 LRTP. When appropriate, comments relating to specific programs were forwarded to responsible agencies and staff for further follow-up. The detailed agency comments and potential conflict identification tables are available in Appendix I of the Technical Report, as are the detailed maps that were used as part of the information packets sent to respective agencies for review.