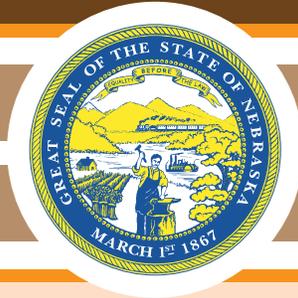


2008 State Highway Needs Assessment

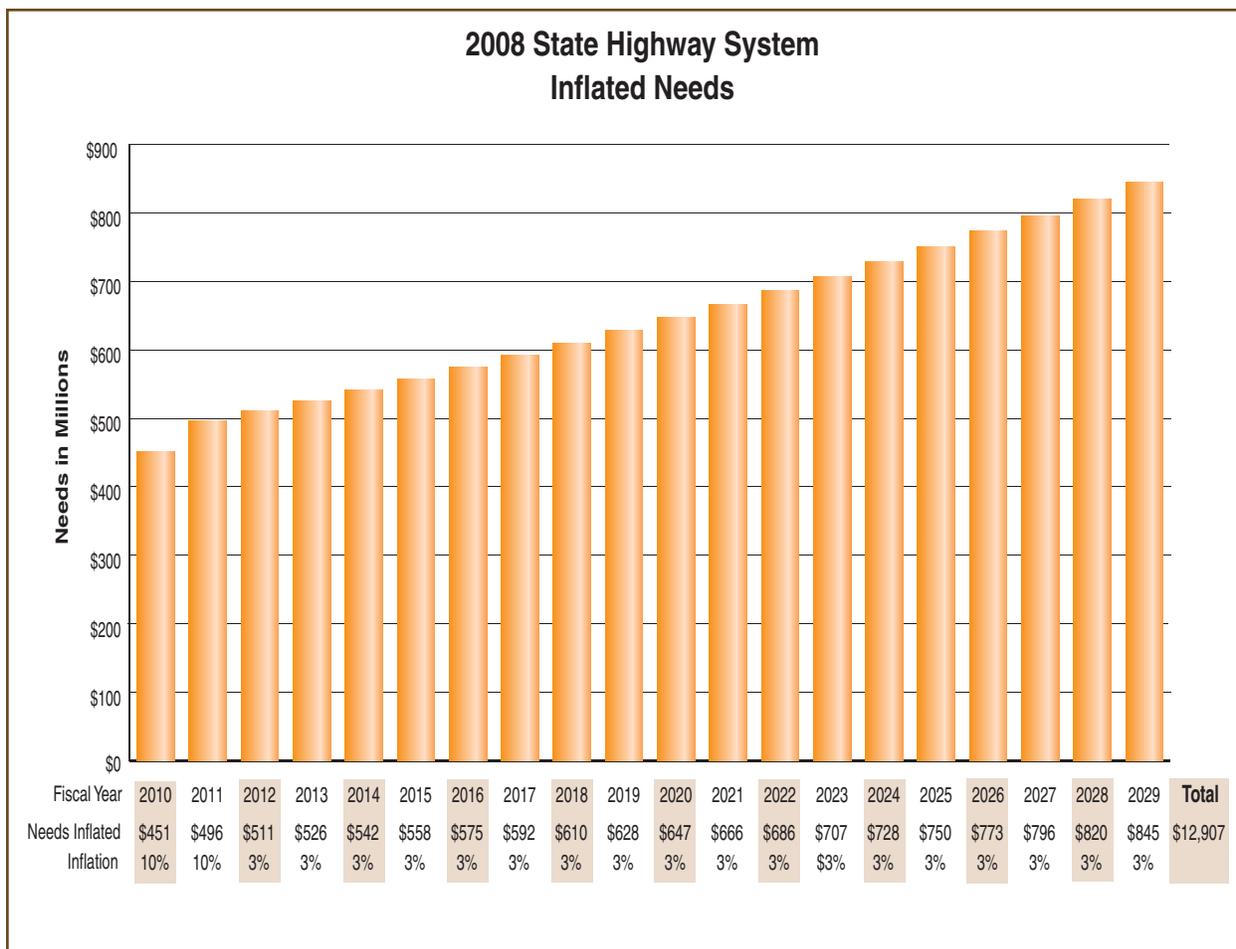


Dave Heineman
Governor

John Craig
Director

NDOR
Nebraska
Department of Roads

Executive Summary



The “2008 State Highway System Needs Assessment” report identifies current needs for the next twenty years at \$8.2 billion, in today’s dollars, compared to \$7.8 billion for the 2007 “needs”. With inflation applied at 10% for FY-2010 and FY-2011, and 3% for the remaining 18 years, over the next twenty years the total cost of the 2008 needs are estimated at \$12.9 billion.

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Introduction

In 1988, by virtue of State Statute 39-1365.02, the Nebraska State Legislature first assigned the Nebraska Department of Roads the task of reporting on the needs of the State Highway System. Since that time, Nebraska has made steady progress towards addressing the dynamic needs of the State Highway System.

The needs of the State Highway System are divided into six categories.

- Rural Geometrics
- Pavement Preservation
- Urban
- Missouri River Bridges
- Railroad Crossings
- Miscellaneous

Following is a brief description on how the needs assessment is compiled.

Rural Geometrics

The non-interstate rural geometrics needs are defined using the criteria shown on page 5. These needs criteria are developed around the new design standards adopted by the Department in 2007. Staff from the Materials

& Research Division compiles the rural geometric needs. Geometric needs include deficiencies such as pavement width, shoulder width, number of lanes, and vertical curves. All contract and as-built plans are reviewed to ensure that the Department's database contains the most current geometric information. The geometric needs are compiled by calculating the construction costs, including resurfacing costs, required to correct the geometric deficiency. These costs are updated annually. The bridge needs of the state are also part of the geometric needs. The Bridge Division has developed and maintains a Bridge Management System, which is used to identify the bridge needs. Each bridge is inspected every two years.

The costs associated with the geometric needs on the Interstate include all the six-lane work from Omaha to Minden, interchanges, and bridge needs. The six-lane needs are determined by projecting when the traffic density will reach level-of-service (LOS) D, as defined in the current version of the Highway Capacity Manual.



Pavement Preservation

Staff from the Materials & Research Division also compiles the pavement preservation needs. The entire State Highway System is rated each year in order to evaluate its overall condition. Factors such as the extent of pavement cracking, severity of pavement cracking, and ride quality are used to complete this evaluation. With the information supplied by these annual ratings, formulas have been developed to calculate the overall condition of the roadway. These condition ratings are then used in a pavement optimization process to identify the 20-year pavement preservation needs. This pavement optimization process includes a benefit/cost analysis, annual pavement deterioration rates, and the ability to calculate the cost to maintain the State Highway System at a specified pavement condition level.

The pavement preservation needs for the Interstate are determined by the Interstate Task Force. The Interstate Task Force is made up of high-level Department staff who annually inspect the Interstate. This task force programs projects to maintain the pavement condition of the Interstate at an acceptable level.

Pavement preservation needs are not constant from one year to the next. There are many different factors that affect the number of miles needing to be addressed, some of which are: previous year's resurfacing, extreme environmental conditions, traffic volumes and loads, and yearly maintenance.

Urban

The District Engineers annually review and update the urban needs. Urban needs are associated with minor widening, major widening, or reconstruction of state highways through urban areas. The urban bridge needs are extracted from the Bridge Management System and are included in this category.

Missouri River Bridges

Staff from the Bridge Division and the Planning & Project Development Division annually review the information for Missouri River bridges and submit any updates to the Materials & Research Division. Only Nebraska's costs are reflected in this report.

Railroad Crossings

The railroad crossing needs are annually reviewed and updated by staff from the Rail & Public Transportation Division. The grade separation and rail crossing/hazard elimination needs for the State Highway System are included in this category.

Miscellaneous

The miscellaneous category includes planning and research, lighting, and traffic signals. Staff from the Controller Division provides the costs for the planning and research. Staff from the Materials & Research Division extracts the lighting and traffic signal data from the program management system.

Needs Assessment Criteria

The needs assessment criteria to identify non-interstate roadway geometric deficiencies are grouped into six Average Daily Traffic (ADT) categories as listed below:

Future ADT

36,000 & greater
(six lanes warranted)

10,000 & greater
(four lanes warranted)

- 12' surfaced lane width
- Outside shoulder
 - 8' of the 10' shoulder will be paved
- Inside shoulder
 - 3' of the 5' shoulder will be paved

4,000 - 9,999

- 12' surfaced lane width
- 8' shoulder width w/6' paved shoulder
- Stopping sight distance
 - No vertical crest curve equal to or less than 50 mph

2,000 - 3,999

- 12' surfaced lane width
- 6' shoulder width w/2' paved shoulder
- Stopping sight distance
 - No vertical crest curve equal to or less than 50 mph

750 - 1,999

- 12' surfaced lane width
- 3' shoulder width
 - When segment is in the Sandhills, 4' shoulder width w/2' paved shoulder
- Stopping sight distance
 - No vertical crest curve equal to or less than 40 mph

Under 750

- 11' surfaced lane width
- 2' shoulder width
 - When segment is in the Sandhills, a 4' shoulder width w/2' paved shoulder will be used.
- Stopping sight distance
 - No vertical crest curve equal to or less than 40 mph



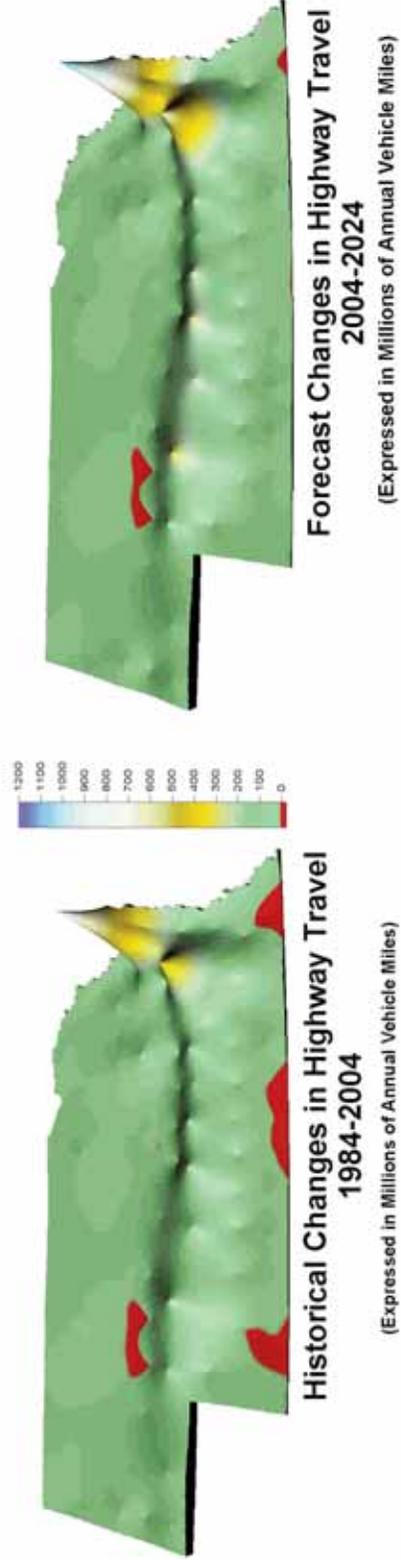
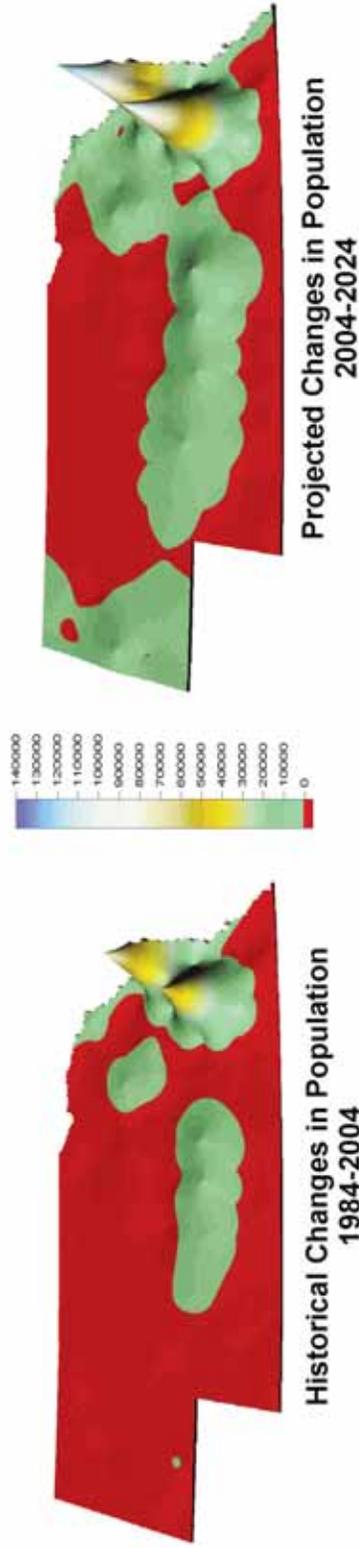
Structures

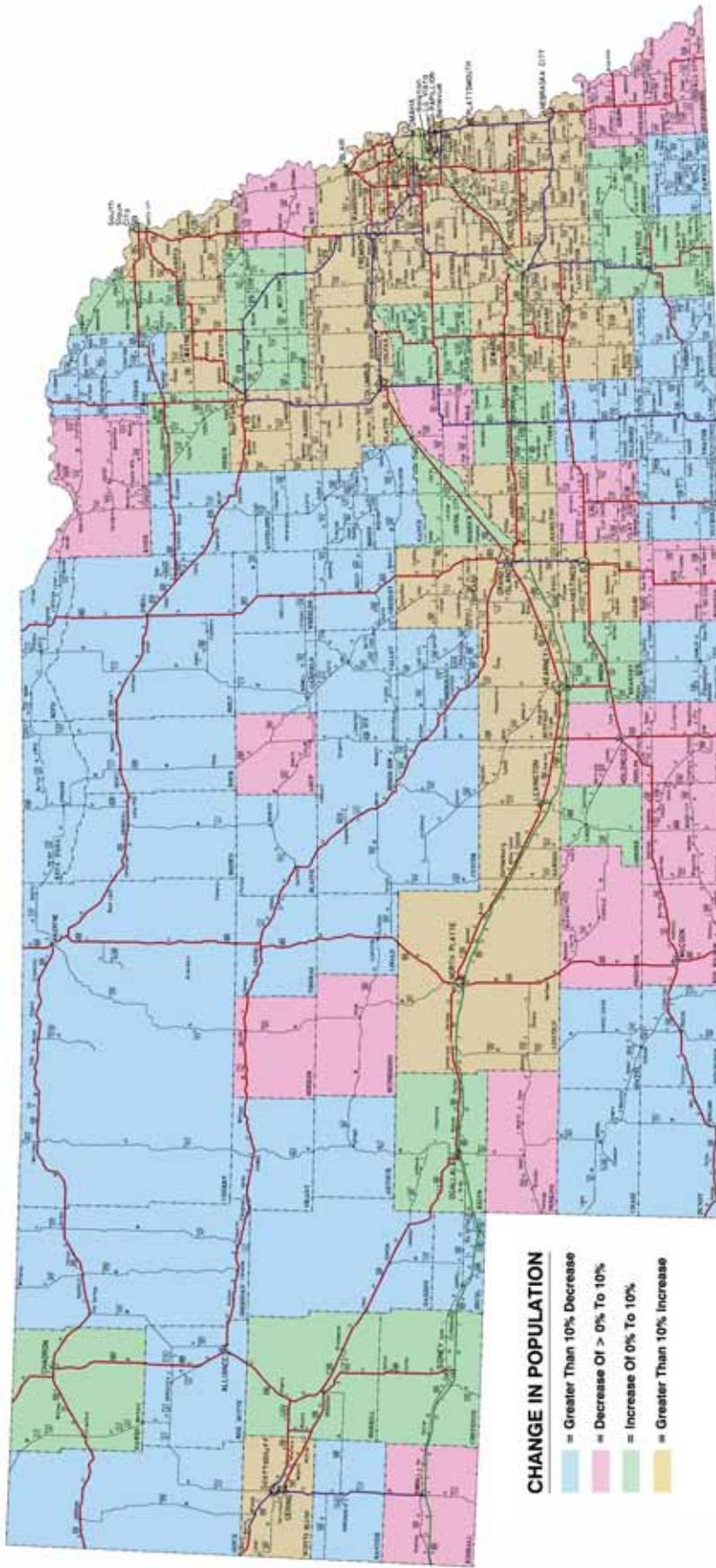
Bridge needs are identified using the current and projected bridge rating data available in the Nebraska Bridge Inventory System. Scour, substructure, and superstructure ratings are examples of the data used to identify bridge deficiencies. Bridges may be used in place if they meet the widths shown below and are structurally sound. Such bridges are identified using the Bridge Management System.

| Future ADT | Minimum Roadway Width |
|-------------------|------------------------------|
| 10,000 & greater | 32' wide |
| 4,000 - 9,999 | 32' wide |
| 2,000 - 3,999 | 28' wide |
| 750 - 1,999 | 28' wide |
| Under 750 | 26' wide |

Note: The District Engineers annually review and update the urban and municipal needs. These needs are associated with minor widening, major widening, or reconstruction of state highways through urban and municipal areas. Using AASHTO design criteria, the Interstate Task Force determines the needs for the Interstate System.

Historical and Projected Changes in Population and Highway Travel





Changing Population

As the population of Nebraska grows, the Department of Roads has been carefully monitoring those areas of the State that are growing the fastest. Given the important roles that transportation plays in promoting and assisting economic development, the Department wishes to ensure that these areas are adequately served now and in the future. Above is a map that shows the projected change in population from 2000 to 2020 for the counties throughout the State.

Summary of Highway Needs by Category

The following is a summary of the estimated costs (in 2008 dollars), identified for each category of needs.

Pavement Preservation

The projected 20-year pavement preservation needs for this assessment are listed at \$4,909,462,000. These needs will never be completely eliminated simply because of the annual deterioration of our pavements. The Department continues to explore new technology and materials, which may lead to improved pavement performance and extend pavement life.



Rural Geometrics

The projected 20-year geometric needs for rural highways are \$2,697,303,000.

The geometric needs for rural and municipal highways include \$288,395,000 for bridge needs. Bridge needs include the cost to rehabilitate or replace bridges, approach slabs, guardrail and culvert needs.



Miscellaneous

The total needs estimated for the Miscellaneous category is \$195,490,000. The planning and research projects are based on federal allocations for each item along with additional state funds. The projected 20-year need for planning and research is \$170,000,000. The projected 20-year need for miscellaneous work such as guardrail updating, traffic signals, rest areas, etc., is \$25,490,000.



Urban (population > 5,000)

The 2008 urban needs total is \$232,307,000. These urban needs include \$34,420,000 for deficient bridges.



The Long-Range Transportation Plan established a goal of upgrading existing signals or adding new signals at 240 rail/highway crossings throughout the state, both on and off the State Highway System. Currently, there are 32 of these crossings on the state system in need of upgrading. The cost to upgrade these crossings is \$12,800,000.



Railroad Crossings

The needs in this category are comprised of grade separation needs and rail crossing/hazard elimination needs, which total \$152,800,000. This 20-year total includes \$140,000,000 for 28 grade separations and \$12,800,000 for signals.

As train and vehicle volumes fluctuate, exposure factors and grade separation needs change. Currently, there are 65 locations where grade separations may be needed in the State of Nebraska. Of the 65 locations, 28 are on the State Highway System. These 28 locations would cost \$140,000,000 to upgrade.

The remaining 37 grade separations are off the State Highway System. These locations would cost \$185,000,000 to upgrade. These costs are not included in the needs assessment. Each of the identified crossings will be reviewed to determine the appropriate corrective strategy. These off-system needs are provided for information purposes only.

Missouri River Bridges

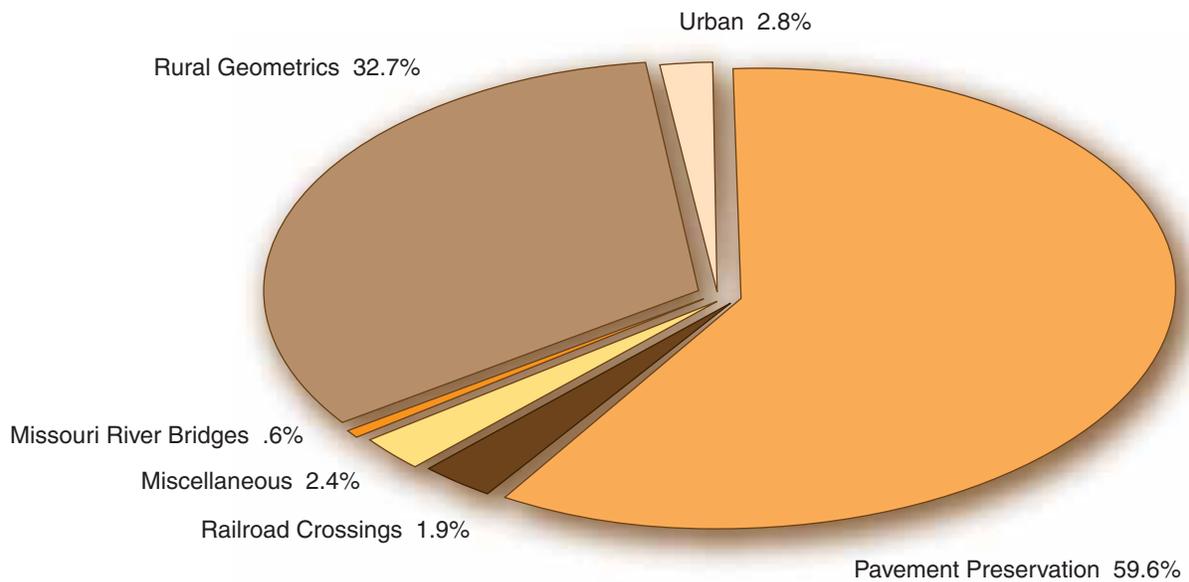
Missouri River bridges under state jurisdiction that require rehabilitation or replacement are included in our 20-year needs assessment. Nebraska's share of the current total cost for these bridges is \$49,807,000 as compared to last year's cost of \$73,687,000.



Summary of Needs

| | 2007 | 2008 |
|------------------------|------------------------|------------------------|
| Pavement Preservation | \$4,252,230,000 | \$4,909,462,000 |
| Rural Geometrics | 2,620,419,000 * | 2,697,303,000 * |
| Miscellaneous | 441,618,000 | 195,490,000 |
| Urban | 207,063,000 | 232,307,000 |
| Railroad Crossings | 157,800,000 | 152,800,000 |
| Missouri River Bridges | 73,687,000 | 49,807,000 |
| Grand Total | \$7,752,817,000 | \$8,237,169,000 |

* Includes costs for right-of-way, bridge, and municipal work.



State Maintenance and Other Needs

Although state maintenance and other needs are not included as a part of the total 20-year needs reporting, it may be of interest to the reader to know the costs of these support programs and functions.

Routine maintenance (system preservation, operations, snow and ice control, disaster operations, etc.) requirements over the 20-year period are \$2,700,000,000.

Administration, supportive services and capital facilities costs total \$640,000,000 for 20 years.

Three other areas are: construction overhead, public transportation assistance/rail planning, and the Carrier Enforcement Program (administered by the State Patrol, but funded by the Department of Roads). The cost of these functions total \$648,000,000.

All these support programs and functions add up to a total of \$3,988,000,000 over a 20-year period.

MISSION STATEMENT

We provide and maintain, in cooperation with public and private organizations, a safe, reliable, affordable, environmentally compatible and coordinated statewide transportation system for the movement of people and goods.