Wyoming Connects

Corridor 16 Plan

I-25 (EXIT 92) TO TORRINGTON

MAY 2013

The Integrated Planning Framework describes the planning process in detail, including the linkage between strategic goals and project programming - and all the steps in between.

The Long Range Transportation Plan evaluates the state transportation needs from a systems level, describes the issues and problems facing the State including future revenue and programming, and presents options for future investments, all within the context of the Integrated Planning Framework.

Corridor Visions are created for each State Significant Corridor (SSC) as a supplement to the LRTP. These define long term goals and objectives for each corridor based on the strategic goals of the Department, the investment goals of the LRTP, and the specific context of each corridor. The SSC system represents high volume routes in the state that connect major activity centers to each other and to points external to Wyoming. Urban areas are also evaluated as a group.

Corridor Plans build on the Corridor Visions by providing a more detailed look at specific needs and location-based solutions. The plans identify a set of solutions and a recommended program of improvements to be implemented over time that address specific, documented needs.

CORRIDOR PLAN PURPOSE

This Corridor Plan is part of a set of documents created through a comprehensive planning process entitled Wyoming Connects. This set of documents captures consistent, transparent, and repeatable planning steps, analysis, and results designed to provide information to guide project selection and programming decision makers. Each document is designed to build upon prior documents and cascade the Strategic Goals of WYDOT forward from the overarching Strategic Plan to the system wide Long Range Transportation Plan, applied in the development of Corridor Visions, and the definition of Needs and potential Solutions to achieve the vision in Corridor Plans.

PERFORMANCE BASED NEEDS

The Corridor Plan utilizes a performance based approach to needs definition. A system of performance measures is used to evaluate the corridor. The architecture of this tiered system is focused on the three Investment Categories identified in the Long Range Transportation Plan: System Preservation, Safety, and Mobility. Performance measures include both absolute and comparative targets. Absolute measures gauge progress towards long term goals, while comparative measures between corridor and system performance provide information to assist in prioritization.

A need is defined as a deviation between these targets and measured performance. The first tier of the system allows for rapid identification of need in each of the Investment Categories through a Performance Indicator. The second tier provides additional information to qualify potential causes through a set of Performance Qualifiers. GIS based Mapping Analysis tools provide for a spatial analysis of these measurements to further investigate causes and identify overlapping needs.

TIERED APPROACH:

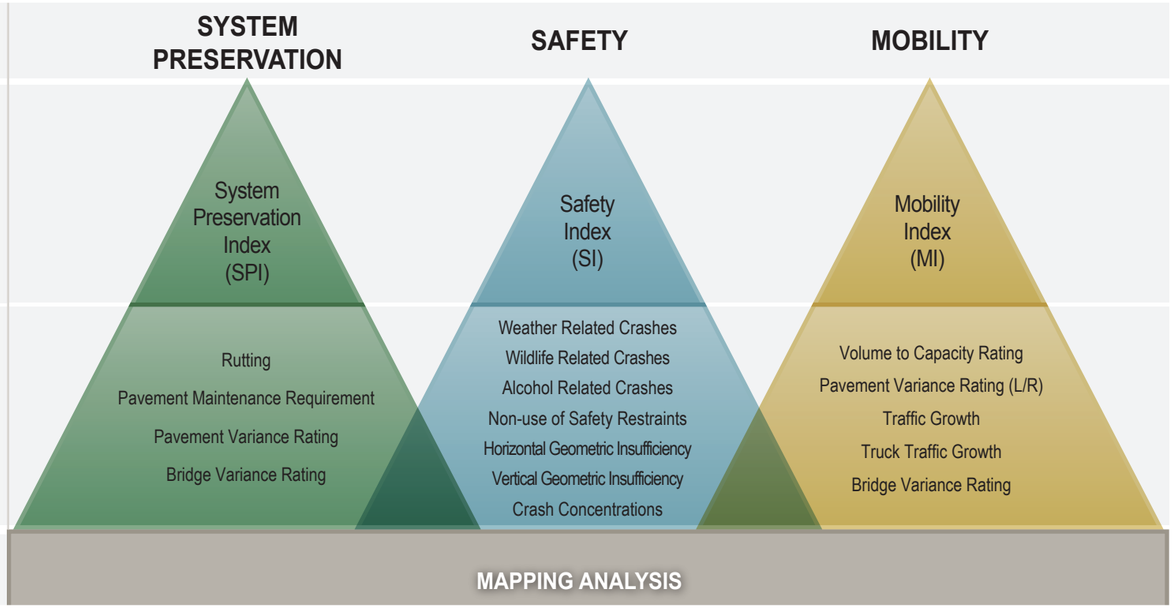
A method to evaluate performance goals at a general level and then advance through the system/hierarchy to filter data and define needs.

INVESTMENT CATEGORY

PERFORMANCE INDICATOR:
These are quantifiable and repeatable measurements that reflect the overall performance of the transportation corridor being analyzed. Targets for these indicators may be absolute and indicate a desired condition or comparative to current performance of the overall system to indicate relative priority.

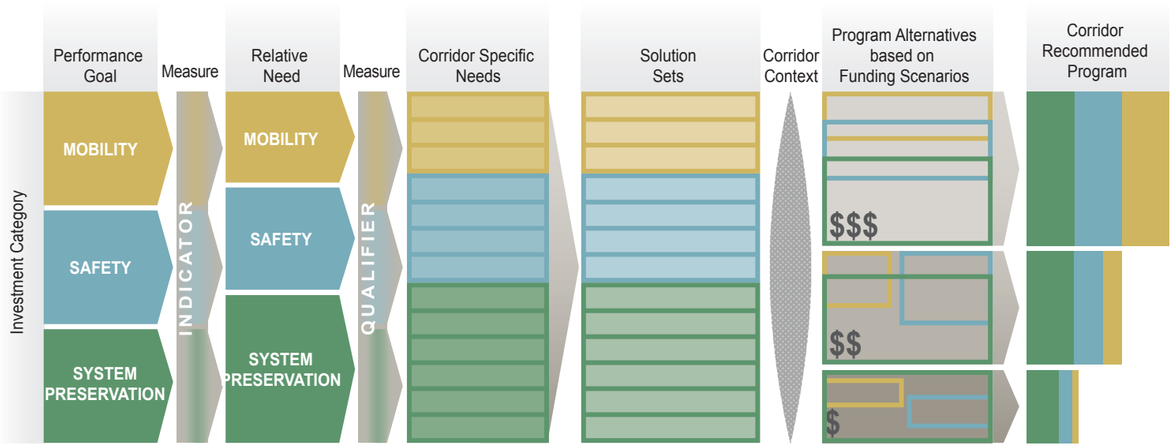
PERFORMANCE QUALIFIER:
These measures include items that may contribute to the results of the indicator. These variables are measurable and actionable. They are used to qualify the need so that solution sets may be applied.

MAPPING ANALYSIS:
Mapping the deviated performance qualifiers against several factors to effectively prioritize, locate, and identify needs.



NEEDS DRIVEN SOLUTIONS:
Performance based needs are captured and documented. These needs remain until the performance is changed. This approach also separates the discussion of need from the discussion of projects, which enhances the transparency of prioritization.

From WYDOT's list of preferred remedies to specific problems, preliminary solutions sets are developed for the identified needs. These sets may be tailored by the specific context of the corridor. For each of the three funding scenarios of the long range plan, the solutions to be considered may vary and the size of the program change. A recommended program can be selected based on anticipated funding levels.



SSC 16 - I-25 (EXIT 92) TO TORRINGTON - US 26
CORRIDOR PLAN

CONTENTS

TABLES

APPENDIX

I. STATE SIGNIFICANT CORRIDOR 16 - DESCRIPTION

CORRIDOR DESCRIPTION

State Significant Corridor (SSC) 16 includes US 26 southeast from I-25 (exit 92) to Torrington and beyond approximately eight miles east to the Wyoming/Nebraska state line. US 26 continues for 21 miles to Scottsbluff and connects to Interstate 80 (I-80) at Ogallala, Nebraska. SSC 16 is a convenient shortcut between I-80 and I-25. SSC 16 and SSC 15 (US 85) overlap for approximately 8 miles west of Torrington. The corridor passes through Platte and Goshen counties and is located in WYDOT District 2.

The area is popular for camping, boating, fishing, and hunting, as well as other recreational activities along the North Platte River and at Guernsey and Glendo State Parks. Guernsey is the site of a National Guard training area, creating periodic large of convoys and slow moving military vehicles along the highway.

Torrington is the only urban area along SSC 16 and is the county seat for Goshen County. It is home to Eastern Wyoming College and serves as the regional trade center for surrounding ranches and farms. Livestock auctions are held several times a week in Torrington. There is also a sugar beet plant that supports local industry. A new prison, Wyoming Medium Correctional Institution, opened in 2010.

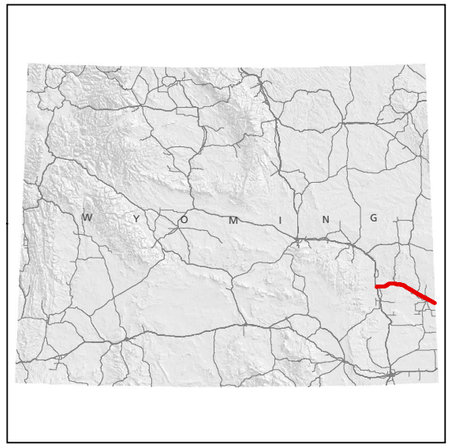
Additional information including environmental context, key issues, and emerging trends is provided in the Corridor Visions and LRTP phases of Wyoming Connects. This Corridor Plan focuses on the identification of the corridor needs through the analysis of corridor performance.

There's a strong agricultural heritage along the corridor.

CORRIDOR SEGMENTS

SSC 16 has been divided into 3 planning segments. Planning segments identify generally consistent sections of the corridor for planning level analysis. The planning segments vary in length depending on the context of the corridor. The corridor was segmented at all urban areas and at the intersection of other SSCs. Other context changes may include: roadway typical section (through lanes, shoulders, etc.), average daily traffic, intersecting routes, and terrain. Each segment break or endpoint was assigned as closely as possible to the nearest maintenance section endpoint; segments generally encompass multiple maintenance sections. The planning segments allow for an appropriate analysis and evaluation of corridor needs at a planning level while still providing geographic reference.

Table 1 and the accompanying map on the next page describe general characteristics of each corridor segment.



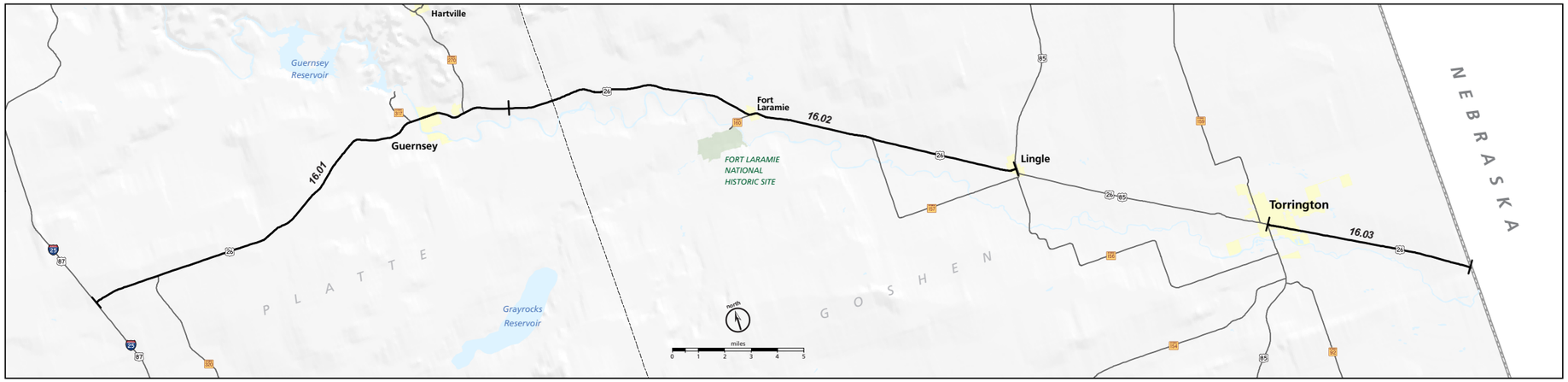


Table 1 - Segments for State Significant Corridor 16

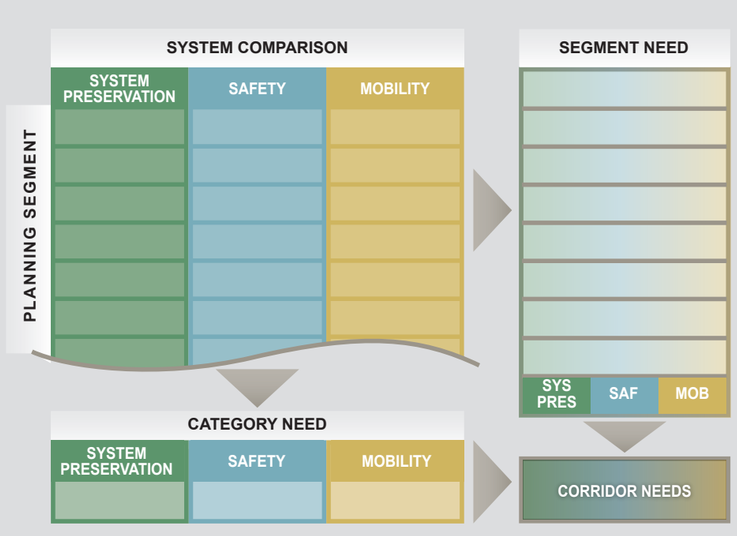
	Segment	ML Route	Begin	End	Length	Description
Corridor 16	16.01	27	0.00	18.50	18.50	**I-25 to Guernsey.** Features: 2-lane cross section with occasional passing lanes; segment begins at SSC 12 (I-25) and intersects Local Routes WYO 320, WYO 317, WYO 270; road close gates; N. Platte River; BNSF Railway grade separation; Guernsey Rest Area; ranch and farm lands; recreation area at Guernsey State Park and Reservoir; flat terrain;
	16.02	27	18.50	38.42	19.92	**Guernsey to Lingle.** Features: 2-lane cross section with short divided section; intersects Local Route WYO 160, WYO 157 and terminates with overlap on SSC 15 (US 85); road close gate; BNSF Railway parallel to route; Whalen Creek, Cottonwood Creek, Interstate Canal, Sand Draw; ranch and farm lands; recreation area on N. Platte River; Ft. Laramie National Historic Site; flat terrain with urban section in Torrington.
	16.03	28	48.30	56.26	7.96	**Torrington Urban Area (pop. 5,514) to State Line.** Features: 2-lane cross section with multilane urban section in Torrington, and center passing lane east of town; segment begins at overlap on SSC 15 (US 85); BNSF Railway parallel to route; ranch and farm lands; recreation area on N. Platte River; flat terrain.

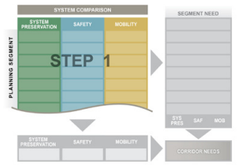
Source: URS Windshield Survey June 2012; Maintenance Section Reference Book 2012; Wyoming Connects: LRTP and Corridor Visions. Note: Descriptions of beginning and endpoints are approximate.

II. EVALUATION OF CORRIDOR PERFORMANCE

This section describes the evaluation of specific corridor needs based on the performance based process defined in the IPF. The Performance Based Needs Process, shown below, illustrates the steps followed for this corridor plan. Indicative Performance measures based on existing or simply defined index measurements for each investment category of System Preservation, Safety, and Mobility were evaluated to preliminarily identify need relative to long term goals. Qualifying performance measures were evaluated to better assess contributing factors to the primary need indicators. The indicators and qualifiers were evaluated and analyzed relative to system averages and, when available, previously specified performance targets. This gap analysis identifies locations where needs exist, qualifies the nature of the need, and provides information on the priority relative to the system of SSCs and available funding.

Many of the measures were established as comparisons to the system average, therefore good performance indicates performance better than the system average. The reverse is also true, poor performance indicates that performance is below the average or rated as poor for a particular indicator or qualifier. As additional corridors are evaluated, specific performance targets may be set to measure absolute performance. The IPF process recommends a mix of absolute measures to evaluate true need relative to long term goals and comparative measures to assist in determining priority.





STEP 1: SUMMARY OF INDICATOR AND QUALIFIER PERFORMANCE MEASURES

This corridor plan evaluates System Preservation, Safety, and Mobility performance using the process described in the Integrated Planning Framework, published separately. The plan analyzes the performance of planning segments described in Table 1 as compared to system averages. It identifies good, fair, poor or less, average, more performance for each segment in an overall index and for each contributing qualifier measurement.

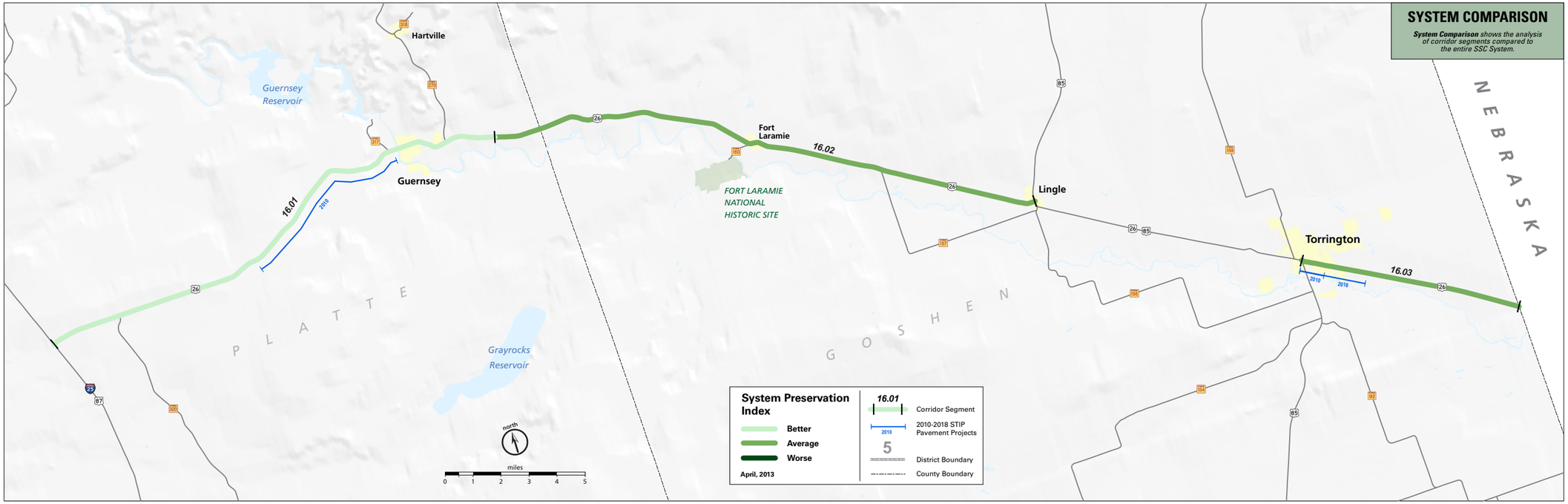
Throughout this report, the color green is used to represent System Preservation, blue represents Safety, and yellow represents Mobility. Lighter shades represent better performance and darker shades represent worse performance compared to the system average.

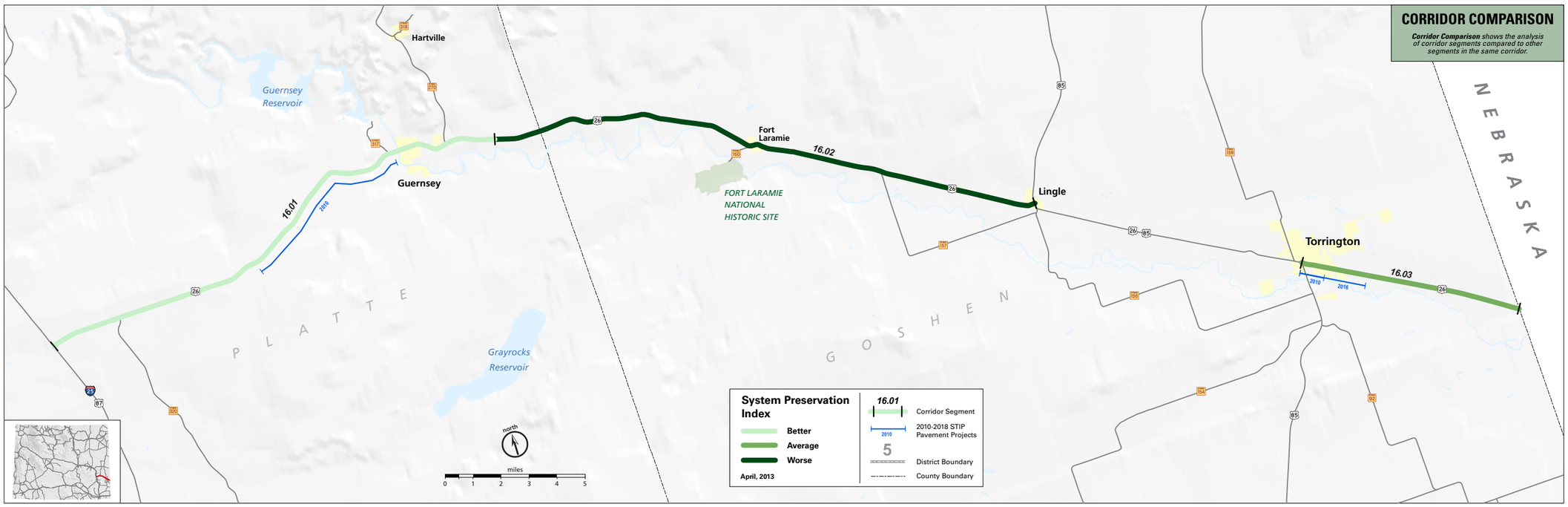
Table 2 summarizes the results for each performance index and qualifier for each planning segment on the corridor.

Table 2 - Indicator and Qualifier Performance of SSC 16

	SYSTEM PRESERVATION					SAFETY								MOBILITY					
Segment	System Preservation Index	Rutting	Pavement Maint. Requirement	Pavement Variance Rating	Bridge Variance Rating	Safety Index	Weather Related Crashes	Wildlife Related Crashes	Alcohol Related Crashes	Non-use of Safety Restraints	Horizontal Geometric Insufficiency	Vertical Geometric Insufficiency	Crash Concen-trations	Mobility Index	Volume to Capacity Rating	Pavement Variance Rating (L/R)	Traffic Growth	Truck Traffic Growth	Bridge Variance (L/R)
16.01	Better	Good	Average	Good	Less	Poor	Average	Average	Less	Average	Average	Average	Good	Average	Good	Fair	Average	Average	Less
16.02	Average	Fair	Average	Good	Average	Good	Less	More	Average	Less	Average	Average	Good	Better	Good	Poor	Less	Average	Less
16.03	Average	Fair	More	Good	Less	Poor	Less	Average	Less	Average	Less	Less	Poor	Better	Good	Fair	Average	Average	Less

CORRIDOR 16


SYSTEM COMPARISON
System Comparison shows the analysis of corridor segments compared to the entire SSC System.
Hartville
Guernsey Reservoir
Guernsey
16.01
2010
Fort Laramie
16.02
FORT LARAMIE NATIONAL HISTORIC SITE
Lingle
Torrington
16.03
2010
2016
NEBRASKA
PLATTE
GOSHEN
Grayrocks Reservoir
north
miles
0 1 2 3 4 5
System Preservation Index
Better
Average
Worse
April, 2013
16.01
Corridor Segment
2010
2010-2018 STIP Pavement Projects
5
District Boundary
County Boundary


CORRIDOR COMPARISON
Corridor Comparison shows the analysis of corridor segments compared to other segments in the same corridor.
Hartville
Guernsey Reservoir
Guernsey
16.01
2010
Fort Laramie
16.02
FORT LARAMIE NATIONAL HISTORIC SITE
Lingle
Torrington
16.03
2010
2016
NEBRASKA
PLATTE
GOSHEN
Grayrocks Reservoir
north
miles
0 1 2 3 4 5
System Preservation Index
Better
Average
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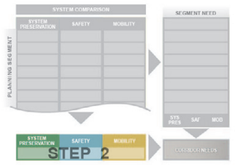
16.01
Corridor Segment
2010
2010-2018 STIP Pavement Projects
5
District Boundary
County Boundary



Performance Index

The System Preservation Index is average or better across all segments.

Refer to the sections below for more information.

	SYSTEM PRESERVATION				
Segment	System Preservation Index	Rutting	Pavement Maint. Requirement	Pavement Variance Rating	Bridge Variance Rating
16.01	Better	Good	Average	Good	Less
16.02	Average	Fair	Average	Good	Average
16.03	Average	Fair	More	Good	Less

Performance Qualifiers

Rutting

There are no locations where the pavement falls within the poor category for rutting.

Pavement Maintenance Requirements

The pavement maintenance sections that were recommended by the Pavement Management System (Agile Assets) and not yet selected to receive funding within the STIP will continue to decline. If not treated fairly soon, the treatments will become more costly as conditions deteriorate.

No segments have been identified as having a 1S need within Corridor 16.

Approximately 65% of Corridor 16 has been identified as having a 2S need. This represents 30 miles of pavement. Segments 16.01, 16.02, and 16.03 have 2S treatments recommended by the Pavement Management System. Based upon current available funding, only 1 project, representing 2.6 miles of pavement, has been selected to be completed within the next several years.

Approximately 34% has been identified as having a 3S need. This represents 16 miles of pavement. Segments 16.01, and 16.02 have 3S treatments recommended by the Pavement Management System. Based upon current available funding, no projects have been selected to be completed within the next several years.

Pavement Variance Rating

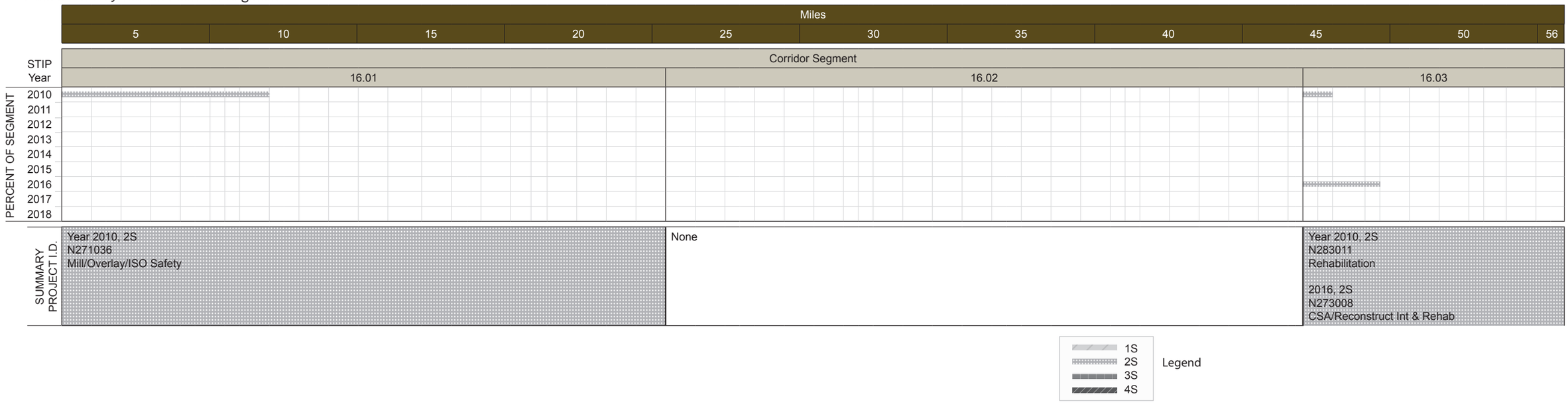
The Pavement Variance Rating is good for the entire corridor. There are no pavement hotspots identified.

Bridge Variance Rating

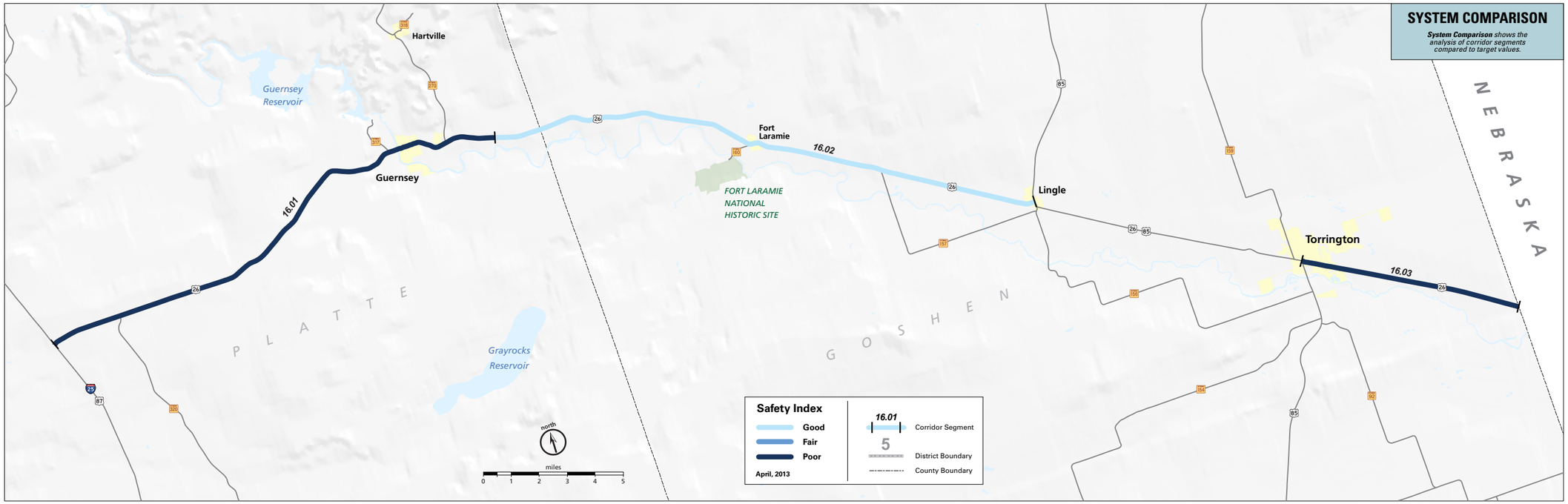
The Bridge Variance Rating for most of the corridor is average or better than the system average. All segments except segment 16.03 have at least one bridge. There is one structurally deficient bridge along SSC 16, one with a bridge deck of 5,565 ft^2 and the lowest WYDOT severity rating. The structurally deficient bridge is in segment 16.02, resulting in a Bridge Variance Rating of average when compared to the system average.

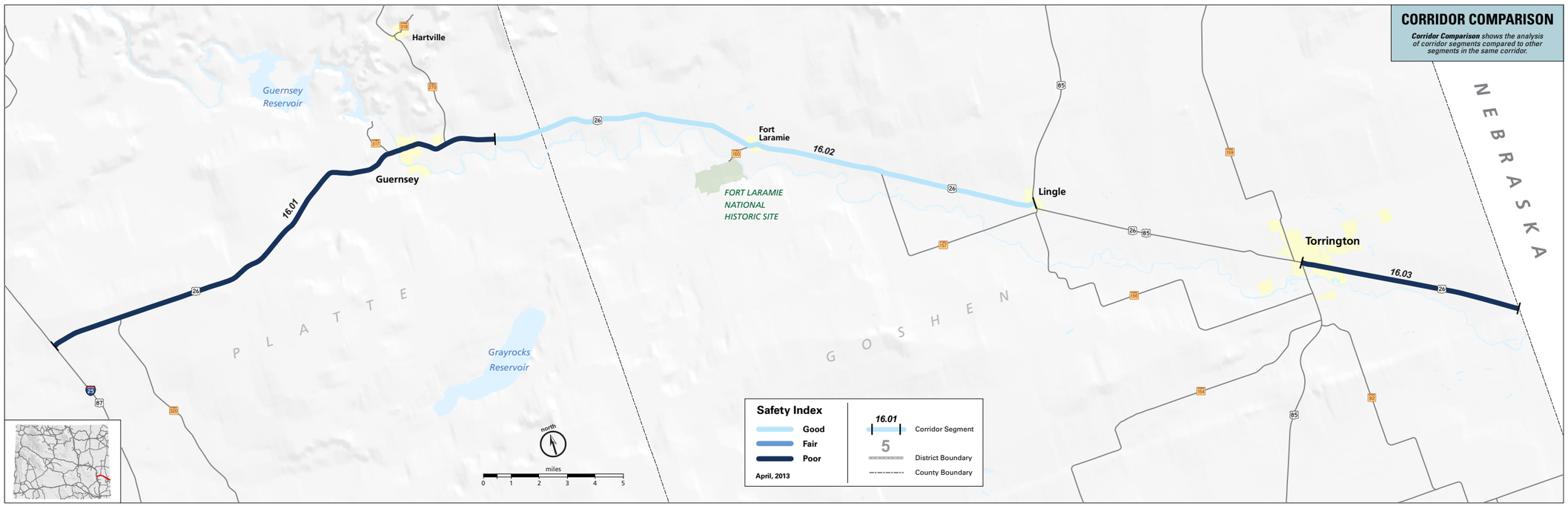
NOTE: See Appendix for maps documenting each performance qualifier.

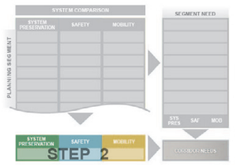
Table 3 - STIP by Year and Corridor Segment



CORRIDOR 16


SYSTEM COMPARISON
System Comparison shows the analysis of corridor segments compared to target values.
Hartville
Guernsey Reservoir
Guernsey
16.01
Fort Laramie
16.02
FORT LARAMIE NATIONAL HISTORIC SITE
Lingle
Torrington
16.03
NEBRASKA
PLATTE
GOSHEN
Grayrocks Reservoir
Safety Index
Good
Fair
Poor
April, 2013
16.01
Corridor Segment
5
District Boundary
County Boundary
north
miles
0 1 2 3 4 5


CORRIDOR COMPARISON
Corridor Comparison shows the analysis of corridor segments compared to other segments in the same corridor.
Hartville
Guernsey Reservoir
Guernsey
16.01
Fort Laramie
16.02
FORT LARAMIE NATIONAL HISTORIC SITE
Lingle
Torrington
16.03
NEBRASKA
PLATTE
GOSHEN
Grayrocks Reservoir
Safety Index
Good
Fair
Poor
April, 2013
16.01
Corridor Segment
5
District Boundary
County Boundary
north
miles
0 1 2 3 4 5



Performance Index

The Safety Performance Index ranges from good to poor across the corridor. Segments rated poor include 16.01 and 16.03.

Performance qualifiers with poor performance include:

- Wildlife Related Crashes are more than the average on segment 16.02.
- Crash Concentrations are rated poor on segment 16.03.

Refer to the sections below for more information.

	SAFETY							
Segment	Safety Index	Weather Related Crashes	Wildlife Related Crashes	Alcohol Related Crashes	Non-use of Safety Restraints	Horizontal Geometric Insufficiency	Vertical Geometric Insufficiency	Crash Concen-trations
16.01	Poor	Average	Average	Less	Average	Average	Average	Good
16.02	Good	Less	More	Average	Less	Average	Average	Good
16.03	Poor	Less	Average	Less	Average	Less	Less	Poor

Performance Qualifiers

Weather Related Crashes

The ratio of weather related crashes to total crashes was below the system average. Segments 16.02 and 16.03 had relatively low rates of crashes during hazardous weather conditions, at approximately 7% and 9% of the total number of crashes, respectively. Within this corridor, the highest percentage of weather related crashes occurred in Segment 16.01 (19%); more than half of those crashes occurred during snow or blowing snow conditions.

Wildlife Related Crashes

The three segments which make up Corridor 16 have accidents which involve wildlife: segment 16.01 has a rate of 31%, segment 16.02 has a rate of 55%, and segment 16.03 has a rate of 34%.

Segment 16.02 is a 20-mile segment of rural highway from Guernsey to Lingle. The wildlife crashes along this segment primarily involve deer and occur in the darkness. There was a noticeable increase in the number of wildlife related crashes near route markers (RM) 26 and 36. There is no correlation with migration routes documented by the Wyoming Game and Fish Department.

Alcohol Related Crashes

The percentage of alcohol related crashes is below the system average. Segment 16.01 did not have any alcohol related crashes.

Non-use of Safety Restraint

In SSC 16, the ratio of crashes in which a restraint device was not worn to total crashes is below the system average. Segments 16.01 and 16.03 both had the highest percentage (58%) of crashes in which seat belts were not worn.

Horizontal Geometry Insufficiency

Corridor 16 has four horizontal alignments that were found to be insufficient based on the associated posted speed and an assumed emax of 8%. The horizontal alignment insufficiency was calculated along ML 27 at RM 12.1, 13.8, 15.9, and 28.6. Three crashes were recorded at the horizontal insufficiency at RM 12.1, no crashes were recorded at RM 13.8 and 15.9, and one crash was recorded at RM 28.6.

Further study will need to take place at RM 12.1 to determine specific needs of each alignment and the constraints to which it was designed and built. The data is not clear if the crashes were directly related to geometry. However, locations with several accidents should be further studied.

Table 4 - Horizontal Geometry Insufficiency

Segment	ML Route	Route Marker	# of Crashes
16.01	ML27	12.08	3

Vertical Geometry Insufficiency

Corridor 16 has 6 vertical alignments that were found to be insufficient based on the associated posted speed and the length of the curve for stopping sight distance. Two crashes were recorded at the crest curves along ML 27 at RM 12.0 and 12.05. The data is not clear if the crashes was directly related to the geometry. Further study will need to take place to determine specific needs of this alignment and the constraints to which it was designed and built.

The remaining 4 vertical insufficiencies within corridor 16 had zero to one crash reported. Because of the low number of crashes, it is suggested funding be spent in other locations where there are more crashes that can be attributed to poor roadway geometry.

Table 5 - Vertical Geometry Insufficiency

Segment	ML Route	Route Marker	Curve Type	# of Crashes
16.01	ML27	12.04	CREST	2
16.01	ML27	12.50	CREST	2

Crash Concentrations

Crash concentrations are identified by locating spatially significant clusters of individual crash events that are of the similar severity level. The concentrations fall into one of two severity types: Critical, which consists of only "Critical" level crashes; and Other, which consists of "Severe" and "Damage" level crashes.

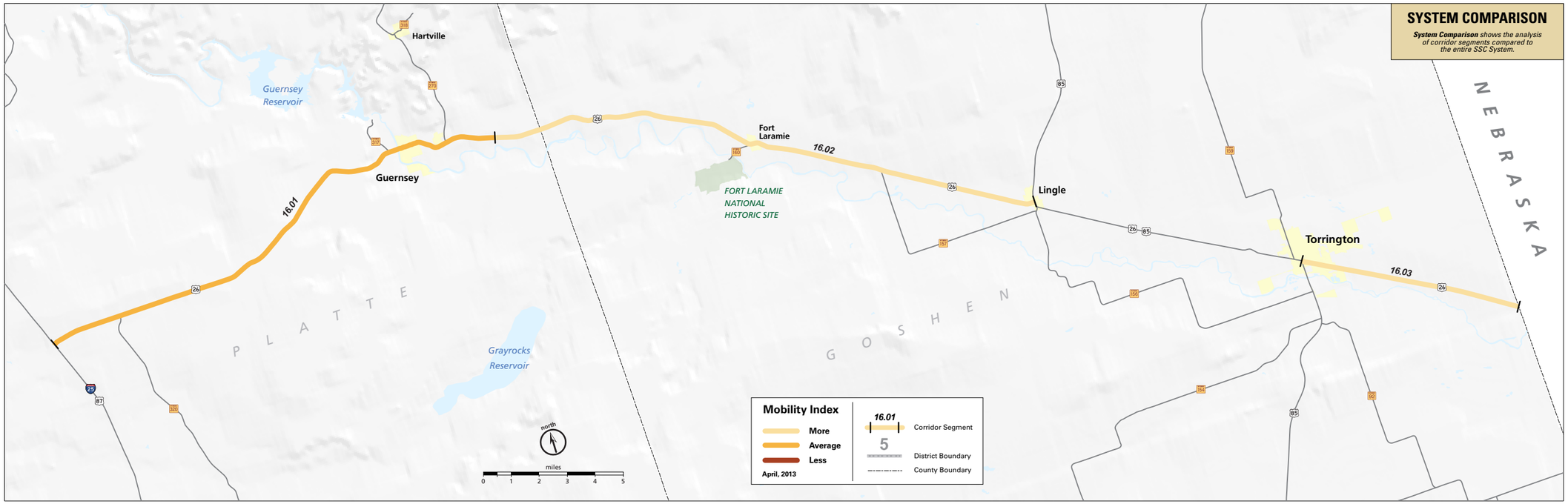
There are two Critical concentrations on Corridor 16, which are listed in Table 6. Additionally, there is one Other type concentration. Segment 16.03 through Torrington exhibits the most crash concentrations with 2 Critical concentrations, which occur between RM 50.5 and 50.9 and RM 55.7 and 56.2.

Table 6 - Critical Crash Concentrations

Segment	ML Route	Route Marker	
		From	To
16.03	ML27	50.5	50.9
16.03	ML27	55.7	56.2

NOTE: See Appendix for maps documenting each performance qualifier.

CORRIDOR 16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Guernsey
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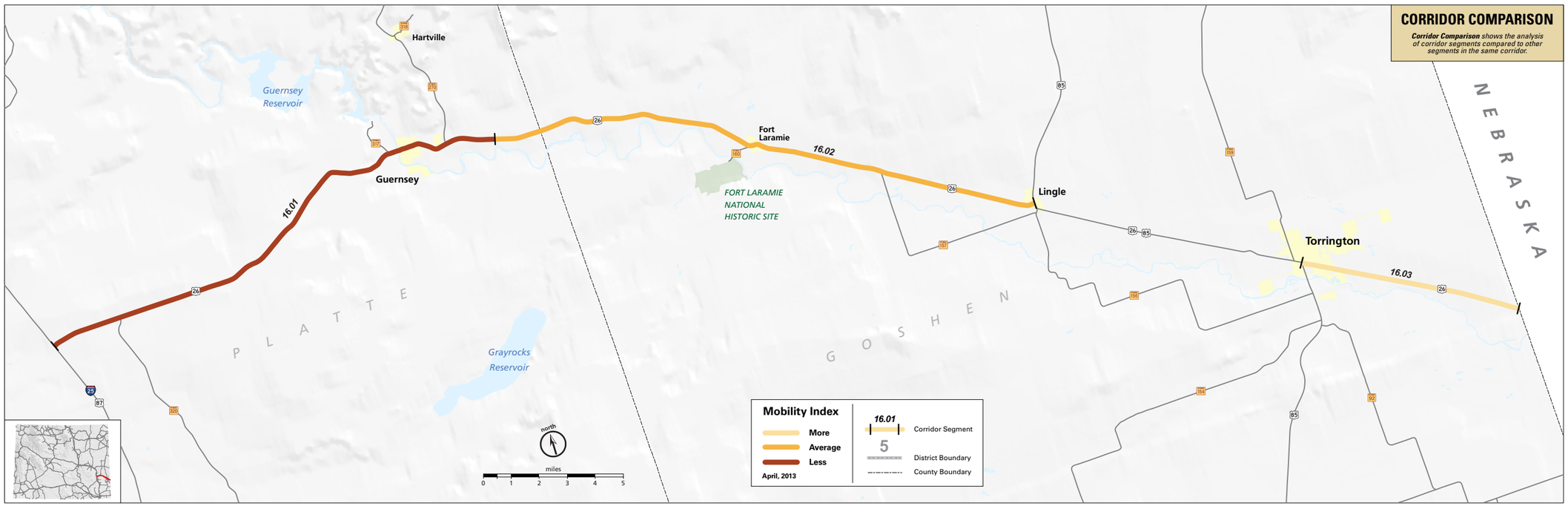
Torrington
16.03
NEBRASKA
PLATTE
GOSHEN
Grayrocks Reservoir
north
miles
0 1 2 3 4 5
Mobility Index
More
Average
Less
April, 2013
16.01
Corridor Segment
5
District Boundary
County Boundary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Guernsey Reservoir
Guernsey
16.01
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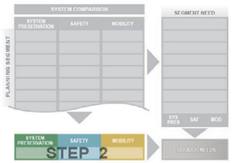
Lingle
Torrington
16.03
NEBRASKA
PLATTE
GOSHEN
Grayrocks Reservoir
north
miles
0 1 2 3 4 5
Mobility Index
More
Average
Less
April, 2013
16.01
Corridor Segment
5
District Boundary
County Boundary

STEP 2: ANALYSIS OF INVESTMENT CATEGORY NEEDS - MOBILITY



Performance Index

The Mobility Performance Indicator for SSC 16 ranges from average to better than average.

	MOBILITY					
Segment	Mobility Index	Volume to Capacity Rating	Pavement Variance Rating (L/R)	Traffic Growth	Truck Traffic Growth	Bridge Variance (L/R)
16.01	Average	Good	Fair	Average	Average	Less
16.02	Better	Good	Poor	Less	Average	Less
16.03	Better	Good	Fair	Average	Average	Less

No regional routes connect to SSC 16. The condition of local routes is associated with a planning segment and directly influences the mobility of that segment.

SSC 16 follows the North Platte River and is an interstate connection to Nebraska. Typical 2'- 8' shoulder widths and occasional narrower shoulders, with some rumble strips, were noted in field observations. This is only adequate for low volume highways. Most of this corridor has low to moderate volumes.

Table 7 - Major Traffic Generators

Major Traffic Generators
Employment center - Torrington
Correctional Facility - Torrington
Glendo and Guernsey State Parks and Reservoirs
Hawk Springs Recreation Area
Ft. Laramie National Historic Site
Agriculture/ranching farm to market transport

Performance Qualifiers

Volume to Capacity Rating

Volume to Capacity Ratio (V/C) is a measure that reflects mobility and quality of travel of a corridor or section of a corridor. It compares roadway demand (vehicle volumes) with roadway supply (carrying capacity). The volume to capacity rating for the entire SSC 16 is good.

Traffic Growth

The average traffic growth within the SSC System is 1.42%. All segments within Corridor 16 are below this average. Segment 16.03 has the highest average annual traffic growth rate. This segment connects Torrington to the Nebraska state line on ML28.

Table 8 - Traffic Growth

Segment	AADT 2010	Average 20 Year Growth
16.01	2,039	1.24%
16.02	1,905	0.81%
16.03	4,622	1.34%

Truck Traffic Growth

The average truck traffic growth within the system is 1.34%. All segment of SSC 16 are at this average or below this average. All segments of this corridor have a roadway classification of 2-lane rural. Segment 16.01, the segment from I-25 east to Guernsey via ML27, has the highest growth at 1.34%.

Table 9 - Truck Traffic Growth

Segment	AADTT 2010	% Trucks 2010	Truck Traffic Growth
16.01	398	20.09%	1.34%
16.02	332	17.14%	1.12%
16.03	459	9.83%	0.77%

Local and Regional Roads

Local and Regional Routes that connect to the SSC affect the Mobility Performance Indicator. These routes serve the important function of connecting rural areas to the primary routes. While traffic volumes are typically low on these secondary routes, maintaining them in acceptable condition is important to general mobility for the state. This analysis includes pavement and bridge condition as qualifiers.

Local and Regional Roads Impacting Pavement Variance Rating (L/R)

The Mobility Index may be affected by local and regional routes that have poor pavement condition as reflected by the Pavement Variance Rating (PVR). The PVR is the product of Pavement Sufficiency Rating (PSR) calculated as the deviation from the system average. Poor PSR is reported on local/regional routes associated with segments 16.01 and 16.02. Table 10 lists the local/regional routes with poor PSR.

Table 10 - Local/Regional Routes with Poor PSR

Segment	Average PVR	ML Route	Route Marker		Average PSR
			Begin	End	
16.01	0.81	ML1400	495.47	535.87	2.44
16.02	0.90	ML806	0.00	7.99	2.35

Bridge Variance Rating (L/R)

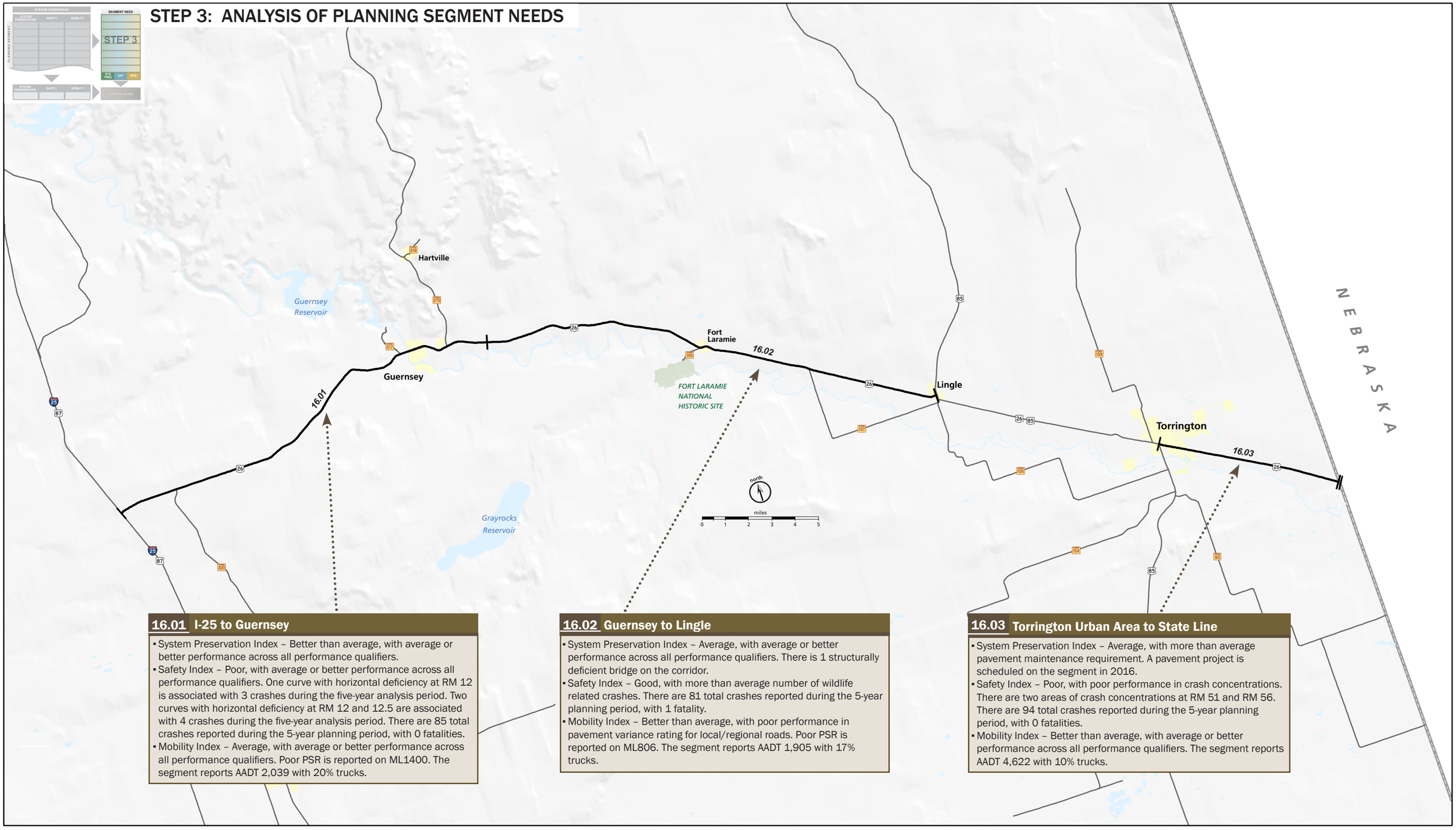
The bridge variance rating for local and regional routes on SSC 16 shows no structurally deficient bridges.

Table 11 - SSC 16 Structurally Deficient Bridges on Local/Regional Routes

Segment	ML Route	Route Marker
No deficient bridges		

NOTE: See Appendix for maps documenting each performance qualifier.

STEP 3: ANALYSIS OF PLANNING SEGMENT NEEDS



16.01 I-25 to Guernsey

- System Preservation Index – Better than average, with average or better performance across all performance qualifiers.
- Safety Index – Poor, with average or better performance across all performance qualifiers. One curve with horizontal deficiency at RM 12 is associated with 3 crashes during the five-year analysis period. Two curves with horizontal deficiency at RM 12 and 12.5 are associated with 4 crashes during the five-year analysis period. There are 85 total crashes reported during the 5-year planning period, with 0 fatalities.
- Mobility Index – Average, with average or better performance across all performance qualifiers. Poor PSR is reported on ML1400. The segment reports AADT 2,039 with 20% trucks.

16.02 Guernsey to Lingle

- System Preservation Index – Average, with average or better performance across all performance qualifiers. There is 1 structurally deficient bridge on the corridor.
- Safety Index – Good, with more than average number of wildlife related crashes. There are 81 total crashes reported during the 5-year planning period, with 1 fatality.
- Mobility Index – Better than average, with poor performance in pavement variance rating for local/regional roads. Poor PSR is reported on ML806. The segment reports AADT 1,905 with 17% trucks.

16.03 Torrington Urban Area to State Line

- System Preservation Index – Average, with more than average pavement maintenance requirement. A pavement project is scheduled on the segment in 2016.
- Safety Index – Poor, with poor performance in crash concentrations. There are two areas of crash concentrations at RM 51 and RM 56. There are 94 total crashes reported during the 5-year planning period, with 0 fatalities.
- Mobility Index – Better than average, with average or better performance across all performance qualifiers. The segment reports AADT 4,622 with 10% trucks.

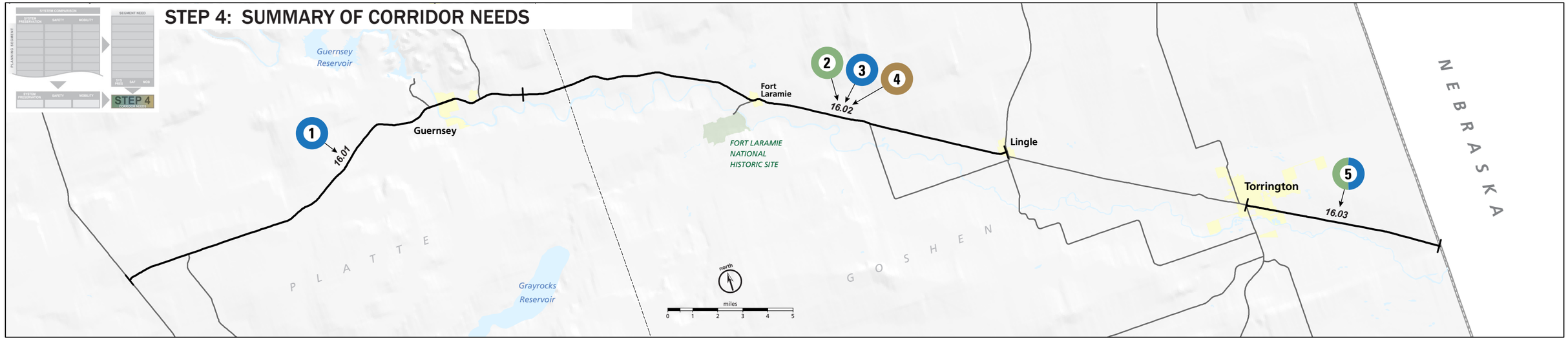
Environmental Overview

The Wyoming Interagency Spatial Database and Online Management System (WISDOM) was queried to identify natural resources that could be impacted by transportation projects. The following summary lists the general type of potentially impacted resources. The project development phase should investigate these resources in more detail to determine if mitigation activities are required. Please see Appendix and http://wisdom.wygisc.org/ for detailed information.

There are eight different terrestrial habitat types located throughout the four special management areas within SSC 16. Three federally listed species within the corridor fall into one of three categories, candidate, endangered, and threatened. One big game species and twelve raptor species are found in SSC 16. There are two different categories that fall under the aquatic habitat. There are six watersheds, and two combined crucial priority areas. See Table 12 for general locations.

Table 12 - Environmental Considerations

Category	WEST (I-25 - Guernsey)	CENTRAL (Guernsey - State Hwy 85)	EAST (Hwy 85 - East State line)
Big Game Crucial Range	Pronghorn Antelope	na	na
Big Game Migration Route	na	na	na
WGFD Aquatic Crucial Priority Areas SHP	na	na	na
WGFD Terrestrial Crucial Priority Areas SHP	na	na	na
WGFD Combined Crucial Priority Areas SHP	Lower Laramie & North Laramie River Watersheds	na	Goshen Hole & Lower Horse Creek
Occurrence & Distribution (Federally Listed Species)	Greater Sage Grouse	Black-footed Ferret Greater Sage Grouse	Yellow-billed Cuckoo



Summary of Needs

This section summarizes needs by planning segment for each of the three performance indicators and the supporting performance qualifiers. The summary identifies overlapping needs, which provides guidance in the efficient prioritization of projects to best address deficiencies. The practice of completing projects that simultaneously address multiple needs may present cost savings as well as being most effective in improving performance indexes across the system. The summary also lists other needs in each of the three performance measurement areas. For more information about needs at the corridor level, see the maps in the appendix which compare both system level and corridor level needs.

SSC 16 needs are minimal but occur in each Performance Index: pavement maintenance requirement, a structurally deficient bridge, wildlife related crashes, crash concentrations, and pavement variance rating on local/regional routes.

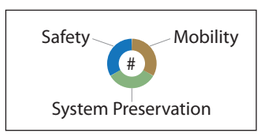
Big game crucial range for Pronghorn Antelope is present on the west end of the corridor. The Wyoming Game and Fish Department recognizes four Combined Crucial Priority Areas on the Lower Laramie and North Laramie River Watersheds, Goshen Hole, and Lower Horse Creek. Three federal endangered species are listed with range in the corridor. These items, at a minimum, should be considered in all project planning.

Based on the needs identified in this analysis and the recommended strategies and solution sets, this plan does not identify specific needs to preserve or acquire additional rights of way to accommodate needed improvements. Local and specific ROW requirements based on urban on needs in Torrington should be evaluated in the Urban Areas Corridor Plan in cooperation with local governments and planning organizations.

Corridor Needs

Needs are identified on all segments:

1. 16.01 - SAFETY Index
2. 16.02 - SYSTEM PRESERVATION: Structurally Deficient Bridge
3. 16.02 - SAFETY: Wildlife Related Crashes
4. 16.02 - MOBILITY: Pavement Variance Rating (L&R)
5. 16.03 - SYSTEM PRESERVATION/SAFETY: Pavement Maintenance Requirement, Crash Concentrations



III. SOLUTION SETS

A solutions menu was created to address the needs identified in the previous sections. This menu identifies potential solution strategies grouped by performance measure categories. The strategies are a preliminary list based on industry accepted approaches and the efforts to date of WYDOT programs to document preferred approaches. This list is not intended to be all-inclusive, but represents types of improvements that may be employed to address documented needs.

Section IV recommends how the solution sets may be efficiently grouped depending on funding availability.

Table 13 - Recommended Solution Sets to Improve Performance in Each Index

System Preservation

Pavement Maintenance Requirement & Pavement Variance Rating

Rutting
- Mill
- Mill and overlay

1S Treatments
- Mill and overlay
- Seal Coat
- Cleaning and sealing joints
- Patching pavement
- Micro surfacing

2S Treatments
- Roadway Restoration

3S Treatments
- Reconstruct Roadway
- Roadway widening
- Upgrade geometric design

Bridge Variance Rating
- Bridge Replacement
- Channel reconstruction
- Cleaning and sealing bridge members
- Lower weight limits
- Restore drainage systems
- Scour countermeasures

Safety

Weather Related
- Signage
- Automated anti-icing systems
- Grooved pavement
- ITS
- Larger signs
- Snow berms/grading
- Snow fencing
- Warning beacons

Wildlife Related
- Animal detection systems
- Animal jump-out or one-way gates
- ITS
- Remove brush from ROW
- Signage
- Warning beacons
- Wildlife bridge/underpass
- Wildlife fencing

Alcohol Related
- Centerline rumble strips
- ITS
- Law Enforcement
- Media campaign
- Shoulder rumble strips

Horizontal Geometry
- Centerline rumble strips
- Dynamic curve warning system
- Guardrail
- Improve/restore superelevation
- Lighting
- Oversize/length restrictions
- Reconstruction/realignment
- Reduce posted speed
- Reflectors
- Shoulder rumble strips
- Signage
- Warning beacons

Vertical Geometry
- Larger signs
- Reconstruction/realignment
- Reduce posted speed
- Reflectors
- Signage
- Warning beacons

Safety Restraints
- ITS
- Law Enforcement
- Media campaign

Mobility

Volume to Capacity Rating & Traffic Growth / Truck Traffic Growth
- Acceleration lane
- Capacity improvements
- Deceleration lane
- Increase lane width
- Intersection/interchange improvements
- Multimodal improvements
- Passing lanes
- Shoulder widening
- Through lanes
- Turn lane

Bridge Variance (L/R)
- Bridge Replacement
- Channel reconstruction
- Cleaning and sealing bridge members
- Lower allowable weight limits on bridge
- Restore drainage systems
- Scour countermeasures

Pavement Variance Rating (L/R)

Rutting
- Mill
- Mill and overlay

1S Treatments
- Cleaning and sealing joints
- Micro surfacing
- Mill and overlay
- Patching pavement
- Seal Coat

2S Treatments
- Roadway Restoration

3S Treatments
- Reconstruct Roadway
- Roadway widening
- Upgrade geometric design

IV. RECOMMENDATIONS

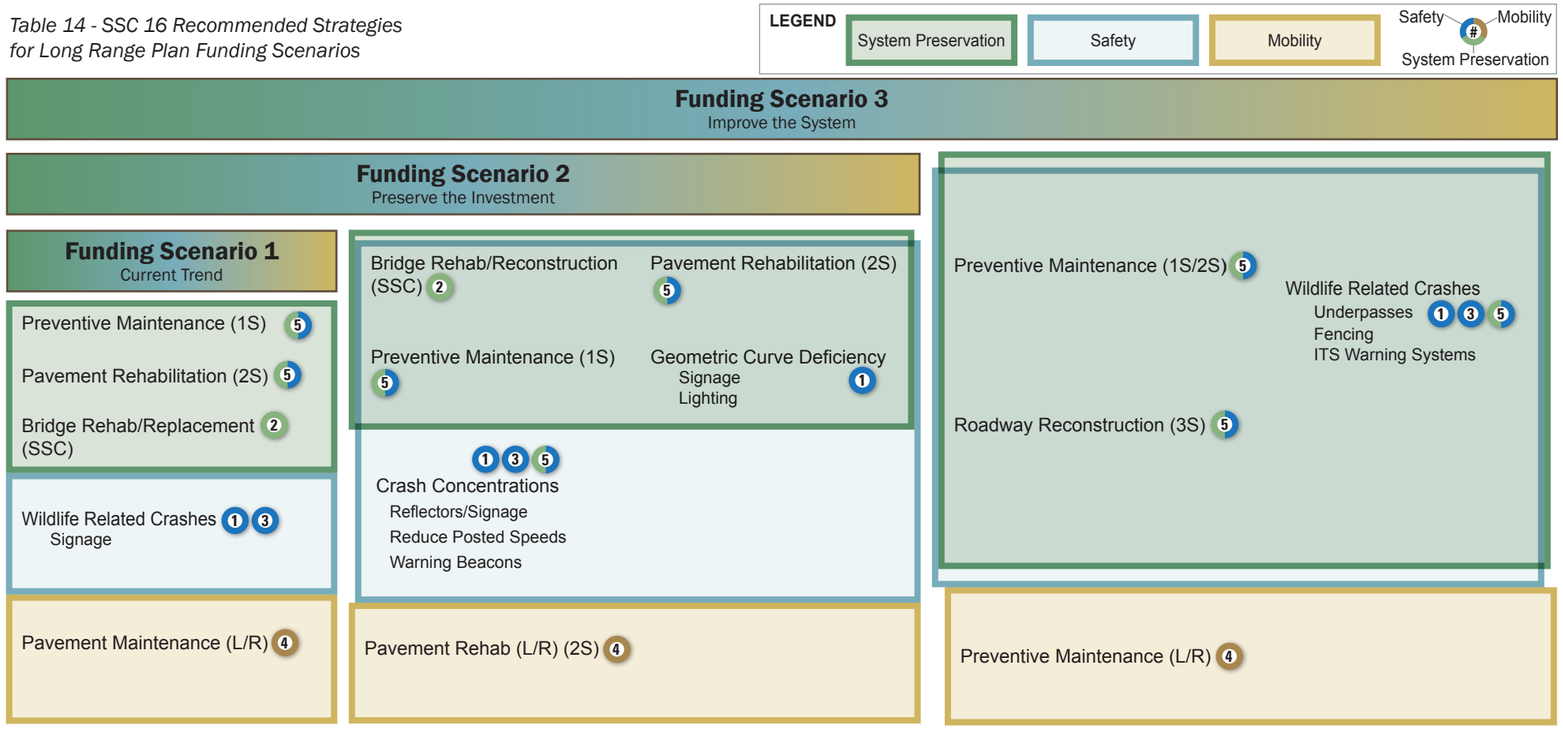
This section describes recommendations for strategies and priorities to address corridor needs. The selected strategies address the needs described in previous sections and are organized by the three strategic performance areas: System Preservation, Safety, and Mobility. These recommendations provide information and guidance consistent with the Strategic and Long Range Plans to help WYDOT select projects in coordination with the STIP process.

The recommended strategies have been packaged into solution sets that recognize the inherent overlap that investments may have across performance areas. For example, truck passing lanes may simultaneously improve traffic flow (Mobility) and reduce crashes (Safety).

The solution sets are tiered to the three Funding Scenarios identified in the Long Range Transportation Plan. The funding scenarios describe a progressively increasing budget, with generally defined allocations to System Preservation, Safety, and Mobility. With each succeeding level of investment, additional funding is allocated to address shortfalls in performance-based goals.

- Funding Scenario 1 – The continuation of program funding at current levels. Most funding is directed to System Preservation needs. System characteristics are expected to decline with inflation and increasing construction costs over time. Few major projects to address Safety, other than with specially restricted and allocated funds, or Mobility would be implemented.
- Funding Scenario 2 – Funding over and above the base level would allow additional investments in pavement and bridge projects to meet WYDOT goals.
- Funding Scenario 3 – Additional funding over and above Scenario 2 would allow WYDOT to maintain and improve existing conditions, achieve pavement and bridge condition goals, plus invest in major projects to improve Mobility.

Table 14 - SSC 16 Recommended Strategies for Long Range Plan Funding Scenarios



Funding Scenario 1

Funding Scenario 1, defined as the continuation of current program funding, is focused primarily on addressing System Preservation needs through preventive maintenance efforts. System Preservation needs are few for this corridor; the plan recommends that funds remain allocated to preventive pavement maintenance, along with reserving a portion to address identified safety needs. Safety needs include specific wildlife-related crash prone areas and two areas identified as critical crash concentrations. These needs may be only partially met under current funding and should be focused on areas with documented overlapping needs. Additional needs that cannot be met under Scenario 1 may be delayed pending additional funds under Scenarios 2 or 3.

- Minor surface treatments on the SSC mainline, including mill and overlay, including pavement hotspots.
- Bridge rehabilitation or replacement of structurally deficient bridges on the SSC mainline.
- Minor projects to improve safety not involving major construction, such as signage in wildlife crash areas, as well as other areas of critical crash concentrations.

Funding Scenario 2

If sufficient funds to preserve the system in at least its current operational form are made available, WYDOT will direct funding to strengthen pavement and bridge conditions across the system, including on local and regional routes. SSC 16 has one structurally deficient bridge on the main route. This scenario would allow investments to fully achieve WYDOT goals in pavement and bridge conditions. Additional investments should be made to improve safety for wildlife related crashes and other areas of crash concentrations.

- Preventive maintenance could be deferred and/or advanced, depending on life cycle, as recommended by the Pavement Management System.
- Improvement of pavement condition of local and regional routes, to include preventive maintenance or mill and overlay.
- Minor projects to improve safety not involving major construction, such as rumble strips and lighted signage to address wildlife-related crashes.

Funding Scenario 3

If additional funds are made available to WYDOT under Funding Scenario 3, opportunities would be created to address all three investment categories, thus preserving the investment and improving the overall "health" of the system. Additional funds allow project selection to address overlapping needs, therefore investing funds most effectively. The additional funds would expand to include other items to improve performance in the Mobility Index.

- Roadway reconstruction (3S) to meet long term goals.
- Pavement and bridge maintenance to meet long term goals

Performance Measurement over Time

As these performance measures are continually monitored over time it will become evident how the recommended solution strategies and the selected projects address the needs of the corridor and the overall system. Addressing deficiencies documented in the corridor plan will effectively improve the System Preservation, Safety, and Mobility indexes at both the corridor and system level.

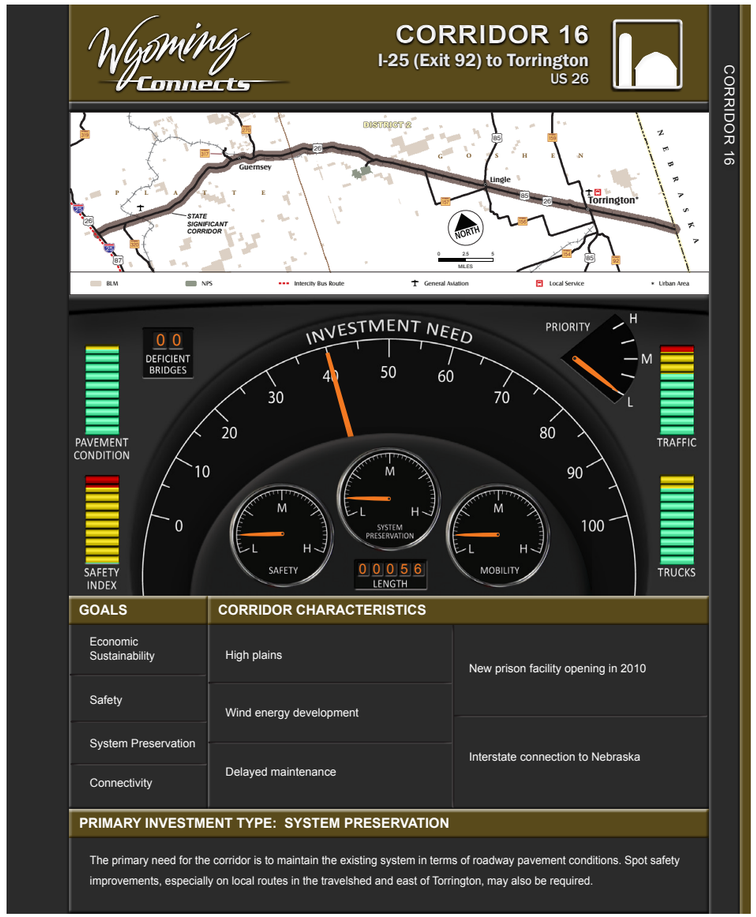
Ongoing performance measure documentation is critical to identify trends, capture the existing health of the system, and allowing an accurate forecast of the future health of Wyoming's Transportation system. The need for additional funding and/or more aggressive solutions will become evident if performance measures fail to meet WYDOT goals.

REALIZING THE CORRIDOR VISION

As part of the statewide Wyoming Connects and Long Range Transportation Plan, the Corridor Vision for SSC 16 - and all SSCs - focuses on the identification of overall system performance aggregated from the evaluations of each individual corridor's "health" relative to WYDOT's long-term Strategic Goals. The identified types of investment needs (system preservation, safety, and mobility) expressed in the Corridor Vision are reflected in the three primary need indicators of this Corridor Plan. The analysis of each investment type generated goals representing corridor health issues as communicated by the planning and public process used in development of the Vision. See ***Wyoming Connects:*** *Corridor Visions* for more information.

Corridor Vision Goals

The I-25 (Exit 92) to Torrington Corridor Vision captured Key Issues and Emerging Trends of critical importance and how SSC 16 could best serve the communities it connects over the long term. While issues were identified relative to each investment type, the Primary Investment Type is System Preservation:



Dashboard from Corridor Visions

The primary need for the corridor is to maintain the existing system in terms of roadway pavement conditions. Spot safety improvements, especially on local routes in the travelshed and east of Torrington, may also be required.

Additional goals which reflect the full context, character, and issues of SSC 16 were set as high priority goals as indicated in Table 15. A review of these Vision Goals compared to the findings of this Corridor Plan provides for a conformance check and identifies additional issues to be considered when evaluating potential projects and implementation plans.

Table 15 - Review of Corridor Vision Goals and Other Considerations

Corridor Visions		High Priority	Other Considerations
Investment Category	**Goal**		
System Preservation	Support farm to market economic sustainability		Maintaining acceptable pavement and bridge conditions on local and regional routes is important for general mobility and supporting the agricultural economy.
	Preserve the existing transportation system	✓	Corridor plan identifies specific locations with a high need for pavement maintenance on the main corridor as well as on local and regional routes.
Safety	Reduce fatalities, injuries, and property damage crash rate	✓	The Corridor Plan identifies wildlife crashes as an area of concern.
Mobility	Improve public transportation opportunities		The corridor provides interstate connectivity along the Platte River valley between Wyoming and Nebraska.

CORRIDOR PERFORMANCE

Table 16 shows SSC 16 corridor performance compared to the system. The center of each chart indicates the value of the performance index, with each section indicating the performance qualifier for each measure.

Table 16 - Corridor Performance

System Preservation – The System Preservation Index is average compared to all other corridors. Performance qualifiers had average to better than average performance across all qualifiers.

Safety – The Safety Index is fair compared to all other corridors. The performance qualifiers show worse than average or poor performance in Crash Concentrations.

Mobility - The Mobility Index is average compared to all other corridors. Performance qualifiers had average to better than average performance across all qualifiers.

Coordination with System Priorities

The corridor comparison can be used to help assign a priority level to entire corridors, if conditions warrant. The Corridor Plans – Executive Summary is published under separate cover and provides an overview of corridor comparisons. The summary identifies areas of greatest need within all performance indexes and for performance qualifiers across the state system. By addressing these areas of greatest need, whether by program, corridor, or corridor segment WYDOT will ensure positive changes in reported conditions throughout Wyoming.