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APPENDICES

NEBRASKA
INTELLIGENT TRANSPORTATION SYSTEMS
STATEWIDE STRATEGIC PLAN

Sponsored by the

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APPENDIX A
Cost Estimate Assumptions

Cost Estimate Assumptions

Cost estimates for the design and implementation of the short-range, medium-range and long-range deployment scenarios were made based on the following criteria:

- Unit costs for most items were taken from various sources from other similar Intelligent Transportation Systems (ITS) projects throughout the United States and the Omaha Early Deployment Plan (EDP) Study completed in 1995. Historical costs acquired were assessed a 2.5 percent annual inflation rate from the year that the costs were initially figured.

- Study and design costs were calculated for each specific project and considered to be approximately 15 percent of the total implementation cost depending on the complexity of the project.

- Annual operations and maintenance costs were calculated. A base percentage of 10 percent was applied to operations and maintenance costs.

- Costs were annualized over the project service life using 20 years at 10 percent interest rate and a zero salvage value.

For each deployment scenario category, the assumptions made for cost estimate calculations are as follows:

Implementation Costs

	UNIT	UNIT COST
Traveler Safety & Security		
Study/Design	Each	$ 25,000-100,000
Operational Test/Implementation	Each	25,000
Emergency Notification	System	30,000
Variable Message Signs	Each	183,000
Surveillance	Location	53,800
In-Vehicle Warning Device	Each	1,000
Motorist Assistance Vehicles	Each	50,000
Emergency Services		
Study/Design	Each	25,000-600,000
Operational Test/Implementation	Each	500,000-10,000,000
Communications System	System	3,000,000
Interoperable Radio Communications	System	35,000,000
Coordinated-Based Addressing	System	7,000,000
911 Dispatch Improvement	System	1,300,000

Implementation Costs

	UNIT	UNIT COST
Traveler & Tourism Information		
Highway Advisory Radio	Each	$ 17,000
Internet	Site	47,600
Kiosks	Each	20,600
Tourism Information Warehouse	System	62,400
Public Traveler & Mobility Services		
Pilot Tests	Each	33,000
AVL Unit	Each	2,000
AVL Base Radio Interface	Each	600
Graphic Mapping Interface	Each	15,500
Personal Computer/Monitor	Each	2,000
Infrastructure Operations & Maintenance		
Operational Tests	Each	33,000
Traffic Management Center	Each	5,400,000
Weather Station	Each	40,000
Smart Work Zone	Each	200,000
Maintenance Management	System	1,800,000
Incident Management	System	1,490,000
Traffic Signal Coordination	System	950,000
Fleet Operations & Maintenance		
Oversize/Overweight Routing Tools	System	255,000
Commercial Vehicle Operations		
Information Warehouse	System	125,000
Weigh-in-Motion Scale	Each	500,000
HAZMAT Permitting	System	195,000
Automated Pre-Clearance	System	0.00-75,000
Communications		
Master Plan	System	1,500,000
GIS Strategic Plan	System	250,000
GIS Road Map Network	System	175,000

APPENDIX B
Benefit-Cost Analysis

B.1 INTRODUCTION

A benefit-cost analysis was conducted to provide a basis for comparing the economic value of the projects in the plan. The analysis included only projects for which reasonable estimates of their benefits could be made and expressed in monetary terms. Consequently, feasibility studies, design projects, operational tests, and deployment support programs were not included in the analysis.

The assumptions and method of estimating the project costs used in the benefit-cost analysis are described in Appendix A. The cost of a project was annualized over its service life using a 10 percent interest rate and a zero salvage. Depending on the nature of the project, the benefits used in the analysis included: (1) road user operational and accident cost savings; (2) economic impacts; (3) public health; and/or (4) cost savings to the public sector. The results of the benefit-cost analysis and brief description of the methods used to estimate the benefits of the projects in each Critical Program Area follow.

B.2 TRAVELER SAFETY AND SECURITY

The results of the benefit-cost analysis of the traveler safety and security projects are shown in Table B.1.

B.2.1 School Bus/Railroad Crossing Safety Warning Systems Deployment

It was assumed that the safety warning system would eliminate one school bus collision with a train during the next 20 years. The average cost of a collision between a school bus and train is about $1,800,000. This cost was computed by applying the Nebraska Department of Roads (NDOR) fatality and injury cost figures *(1)* to the average severity of school bus-train collisions nationwide between 1990 and 1998 (*i.e.*, 0.46 fatalities and 4.23 injuries per collision *(2)*).

B.2.2 Private Railroad Crossing Safety Warning Systems Deployment

It was assumed that the safety warning system would reduce the probability of vehicle-train collisions at private crossings in rural areas by 20 percent. The average number of vehicle-train collisions over the past 3 years (1995, 1996, and 1997) in rural areas in Nebraska is 43 *(3)* at an average cost of $676,681 per collision *(1)*. It was also assumed that the percentage of these collisions occurring at private crossings is equal to the percentage of private railroad crossings in Nebraska which is about 41 percent *(4)*.

B.2.3 Emergency Service Railroad Crossing Notification Systems

It was assumed that the statewide deployment of emergency service railroad crossing notification systems would save one life of an individual who would receive emergency services during the next 20 years. The average cost of a person's life is assumed to be $3,100,000 *(1)*. The benefit-cost ratio for the statewide deployment was also used to compute the benefits for the regional deployment in the medium range. (Project M1.3).

Table B.1 Benefit-Cost Ratios for Traveler Safety and Security Projects

Project	Annual Benefit($)	Annual Cost($)	B/C Ratio
S1.1 Statewide Railroad Corridor Study	Not Applicable		
S1.2 School Bus/Railroad Crossing Safety Warning System Operational Test	Not Applicable		
S1.3 Private Railroad Crossing Operational Test	Not Applicable		
S1.4 Emergency Railroad Crossing Notification System	Not Applicable		
S1.5 Variable Message Signs (VMS) Phase I	3,400,000	300,000	11
S1.6 Surveillance - Phase I	1,300,000	120,000	11
S1.7 Motorist Assistance - Phase I	650,000	76,000	8.5
M1.1 School Bus/Railroad Crossing Safety Warning System Deployment	84,000	30,000	2.8
M1.2 Private Railroad Crossing Warning Systems Deployment	8,600	6,700	1.3
M1.3 Emergency Service Railroad Crossing Notification System Deployment	230,000	69,000	3.4
M1.4 Variable Message Signs (VMS) - Phase II	2,200,000	300,000	7.3
M1.5 Surveillance - Phase II	590,000	120,000	5.1
M1.6 Motorist Assistance - Phase II	1,200,000	150,000	8.1
L1.1 Private Railroad Crossing Warning Systems Deployment	8,600	6,700	1.3
L1.2 Emergency Service Railroad Crossing Notification System Deployment	1,300,000	390,000	3.4
L1.3 Variable Message Signs (VMS) - Phase III	2,800,000	760,000	3.7
L1.4 Surveillance - Phase III	220,000	230,000	1.0
L1.5 Motorist Assistance - Phase III	1,500,000	310,000	4.8

B.2.4 Variable Message Signs

Variable message signs (VMSs) advise travelers of traffic and roadway conditions ahead. This information enables drivers to change their routes to avoid problem locations ahead; or, if they decide not to divert to an alternate route, they are better prepared to deal with the conditions ahead when they encounter them. Therefore, for the purpose of this analysis, it was assumed that the primary effects of the VMSs were to divert traffic from the interstate during incidents and snowy or icy road conditions. Consequently, the benefits computed for the projects deploying VMSs on I-80 were the reductions in delay and accident costs associated with the lower traffic demand during incidents on the interstate. Additionally, accident cost savings related to the lower traffic demand during snowy and icy road conditions on the interstate were factored into benefit calculations.

According to previous studies *(5)*, about 15 percent of the traffic can be expected to divert to an alternate route in response to messages relating to "incidents ahead" information posted on VMSs. Previous studies *(6)* have also found that accidents represent about 15 percent of the incidents on a freeway. The expected number of accidents on the interstate was computed using the 1997 interstate accident rate in Nebraska of 85.6 accidents per 100 million vehicle miles *(7)*. Therefore, the total number of incidents occurring on I-80 was estimated by dividing the expected number of accidents by 0.15. The extent of the freeway blockage typically associated with the incidents on 4-lane freeways are: 87 percent shoulder blockages, 11 percent one lane blocked, and 2 percent two lanes blocked; and the reductions in directional capacity for each type of blockage are: 50 percent for a shoulder blockage, 75 percent for one lane blocked, and 100 percent for two lanes blocked *(6)*. The normal capacity of the interstate was computed according to the procedures in the 1997 Highway Capacity Manual *(8)*. The distribution of incidents during the day was assumed to be the same as the hourly distribution of accidents in Nebraska, which is shown in Table B.2.

Table B.2 Hourly Distribution of Accidents in Nebraska. *(7)*

Time of Day	Percent of All Accidents
Mid - 3 am	6
3 am - 6 am	2
6 am - 9 am	14
9 am - Noon	14
Noon - 3 pm	17
3 pm - 6 pm	24
6 pm - 9 pm	14
9 pm - Mid	9
Total	100

The hourly traffic distributions measured by the NDOR automatic traffic recorder stations *(9)* on I-80 were used to determine the demand hourly volumes. These were used to estimate the delays resulting from the occurrence of incidents. An average incident duration of one hour was used. The reduction in delay associated with the 15 percent traffic diversion was computed using the input-output method of delay analysis. The unit value of time used to estimate the delay cost savings was $10 per vehicle hour.

The reduction in secondary accidents resulting from the shorter periods of congestion due to the 15 traffic diversions was estimated by applying 15 percent of the interstate accident rate (85.6 accidents per 100 million vehicle miles) to the reduction in vehicle miles of exposure associated with the shorter periods of congestion. Previous studies *(6)* have found that about 15 percent of the accidents during congestion due to incidents are caused by the incidents themselves. The average accident cost used was $65,728, which was based on the severity of interstate accidents in Nebraska in 1997 (*i.e.*, 1 percent fatal, 41 percent injury, and 58 percent property damage only) *(7)*.

The reduction in accidents during snowy or icy road conditions on the interstate was computed by applying the "15 percent reduction in traffic volume due to diversion" to the expected number of interstate accidents during snowy and icy road conditions. This was 15 percent of the total number of expected accidents in 1997 according the NDOR *(7)*. Again, the average accident rate of 85.6 accidents per 100 million vehicle miles and the average accident cost of $65,728 were used in this calculation.

For the short-range Project S1.5, the benefits were estimated for the section of I-80 between Lincoln and Omaha. In the case of the medium-range Project M1.4, the benefits were estimated for the section of I-80 between Lincoln and Grand Island. The remainder of I-80 was used to estimate the benefits for the long-range Project L1.3.

B.2.5 Surveillance

The benefits of the surveillance projects considered in this analysis were those associated with the faster detection and verification of incidents on I-80. Faster incident detection and verification reduces the duration of the incident, which in turn reduces the amount of congestion and secondary accident exposure associated with the incident. The method of computing the resultant reductions in delay and secondary accidents was similar to that used to estimate the delay and secondary accidents associated with the VMSs. The exception here is that the effect was a shorter incident time instead of a 15 percent reduction in traffic demand due to diversion. It was assumed that the CCTV surveillance would reduce the average incident time by 10 minutes from one hour to 50 minutes. As in the case of the VMS projects, the benefits for the short-range project S1.6, the medium-range project M1.5, and the long-range project L1.4 were estimated for the sections of I-80 between Lincoln and Omaha, Lincoln and Grand Island, and the remainder of I-80, respectively.

B.2.6 Motorist Assistance

The Motorist Assistance projects would reduce the incident and response and clean up times for travelers in areas patrolled. Therefore, it was assumed that the benefits of the these projects would be comparable to those of the surveillance projects.

B.3 EMERGENCY SERVICES

The results of the benefit-cost analysis of the emergency services projects are shown in Table B.3.

Table B.3 Benefit-Cost Ratios for Emergency Services Projects

Project	Annual Benefit($)	Annual Cost($)	B/C Ratio
S2.1 Interoperable Radio Communications System - Phase I	Not Applicable		
S2.2 EMS Communications System - Phase I	Not Applicable		
S2.3 Coordinate-Based Address System - Phase I	Not Applicable		
S2.4 EMS Communications Forum - Phase I	Not Applicable		
S2.5 Mayday Systems - Phase I	Not Applicable		
S2.6 Improve 911 Dispatch	Not Applicable		
M2.1 Interoperable Radio Communications System - Phase II	2,500,000	2,200,000	1.2
M2.2 EMS Communications System = Phase II	Not Applicable		
M2.3 Coordinate-Based Address System - Phase II	1,100,000	160,000	6.5
M2.4 EMS Communications Forum - Phase II	Not Applicable		
M2.5 Mayday Systems - Phase II	Not Applicable		
M2.6 911 Dispatch Network Operational Test	Not Applicable		
L2.1 Interoperable Radio Communications System - Phase III	3,300,000	3,300,000	1.0
L2.2 EMS Communications System - Phase III	1,400,000	220,000	6.5
L2.3 Coordinate-Based Address System - Phase III	8,700,000	1,300,000	6.5
L2.4 EMS Communications Forum - Phase III	Not Applicable		

B.3.1 Interoperable Radio Communications System

It was assumed that an interoperable radio communications system would improve the efficiency of emergency services by approximately 10 percent. Therefore, the benefits were estimated to be 10 percent of the budget for traffic enforcement operations of the Nebraska State Patrol.

B.3.2 Coordinate-Based Addressing System

A coordinate-based addressing system would facilitate the delivery of emergency services and reduce the amount of time occupants would have to wait before receiving emergency care. According to the 1996 Annual Report of the Nebraska Ambulance and Rescue Service Information System *(10)*, 231 patients died in the emergency room and 45 occupants died en route to the emergency room. It was assumed that a coordinated-based addressing system would reduce the probability of these deaths by 0.1 percent.

B.3.3 Mayday Systems

Mayday systems are designed to immediately notify emergency response agencies of the need for help and the location of occupants when a Mayday-equipped vehicle is involved in a crash or other emergency. Consequently, the injured occupants of the vehicle are able to receive emergency care much sooner. Approximately 10 percent of the emergency vehicle runs in 1996 were vehicular trauma runs *(10)*. Therefore, it was assumed that 10 percent of the 276 occupants who died either en route to, or in, the emergency room were vehicle crash occupants. It was also assumed that Mayday systems would reduce the probability of these deaths by one percent.

B.3.4 EMS Communications System

Improved EMS communications was assumed to provide benefits comparable to a coordinate-based addressing system.

B.4 TRAVELER AND TOURISM INFORMATION SERVICES

The results of the benefit-cost analysis of the traveler and tourism information services projects are shown in Table B.4.

B.4.1 Highway Advisory Radio

The benefits of the highway advisory radio (HAR) projects were computed in the same way as those of the VMSs. However, instead a of 15 percent traffic diversion, only a 5 percent traffic diversion was assumed, which is consistent with the findings of earlier studies *(5)*. The benefits of the medium-range Project M3.1 were computed for the segment of I-80 from Lincoln to Grand Island, and the benefits of the long-range Project L3.1 were computed for the portion of I-80 west of Grand Island.

B.4.2 Kiosks

The benefits of the kiosk projects were also computed in the same way as those of the VMSs. However, instead a 15 percent traffic diversion, only a 2 percent traffic diversion was assumed, which is consistent with the findings of earlier studies *(5)*. The benefits of the short-range Project S3.3 were estimated for the segment of I-80 between Lincoln and Omaha. The benefits for the medium-range Project M3.2 were computed for the segment of I-80 from Lincoln to Grand Island, and the benefits of the long-range Project L3.2 were computed for the portion of I-80 west of Grand Island.

Table B.4 Benefit-Cost Ratios for Tourism and Traveler Information Services Projects

Project	Annual Benefit($)	Annual Cost($)	B/C Ratio
S3.1 Traveler Information Group - Phase I	Not Applicable		
S3.2 Highway Advisory Radio (HAR) - Phase I	Not Applicable		
S3.3 Kiosks - Phase I	300,000	59,000	5.0
S3.4 Internet Site	300,000	37,000	8.0
S3.5 Tourist Information Warehouse - Phase I	Not Applicable		
S3.6 Feasibility Study for Statewide 211/511 Traveler Toll Free Telephone System	Not Applicable		
S3.7 Traveler & Tourism Information Forum - Phase I	Not Applicable		
M3.1 Highway Advisory Radio (HAR) - Phase II	1,300,000	80,000	16
M3.2 Kiosks - Phase II	270,000	89,000	3.0
M3.3 Tourist Information Warehouse - Phase II	300,000	36,000	8.2
M3.4 Video Log Data Production Study	Not Applicable		
M3.5 Traveler & Tourism Information Forum - Phase II	Not Applicable		
L3.1 Highway Advisory Radio (HAR) - Phase III	340,000	37,000	9.0
L3.2 Kiosks - Phase III	310,000	89,000	3.5
L3.3 Tourist Information Warehouse - Phase III	890,000	200,000	4.5
L3.4 Traveler & Tourism Information Forum - Phase III	Not Applicable		

B.4.3 Internet Site

As in the case of the HAR and kiosk projects, the benefits of the Internet site was also computed in the same way as those of the VMSs. However, instead a 15 percent traffic diversion, only a 2 percent traffic diversion was assumed, which is consistent with the findings of earlier studies *(5)*. The benefits of the short-range Project S3.4 were estimated for the segment of I-80 between Lincoln and Omaha.

B.4.4 Tourist Information Warehouse

According to previous studies *(11)*, 9 percent of the traveler who used traveler information centers at rest areas extend their stay by 2.4 days, which according to Nebraska Travel and Tourism Facts *(12)* would amount to an average additional expenditure of $164. The economic impact of tourism dollars is 2.7 times the actual expenditure. Therefore, the economic impact of each extended stay

dollars is 2.7 times the actual expenditure. Therefore, the economic impact of each extended stay would amount to $440. For the medium-range Project M3.3, it was assumed that 5 percent of the travelers on I-80 would use the tourist information warehouse. The number of travelers, or tourists, on I-80 was assumed to be equal to 50 percent of the additional ADT on I-80 during the months of June, July, and August. In the case of the long-range Project L3.3, the portion of tourists using the the tourist information warehouse was increased to 15 percent.

B.5 PUBLIC TRAVELER SERVICES AND PUBLIC MOBILITY SERVICES

The results of the benefit-cost analysis of the public traveler services and public mobility services projects are shown in Table B.5.

B.5.1 Statewide Transit Coordination

Statewide coordination of rural public transportation services is expected to improve the efficiency of rural transit services. It was assumed that the improvement in efficiency would be equivalent to 5 percent of the total funding for these services in Nebraska.

B.6 INFRASTRUCTURE OPERATIONS AND MAINTENANCE

The results of the benefit-cost analysis of the infrastructure operations and maintenance projects are shown in Table B.6.

B.6.1 Statewide Traffic Management Center

A statewide traffic management center would serve as the focal point for the fusion and dissemination of traffic information and the coordination of traffic and incident management activities. Therefore, the center would significantly improve the timeliness and credibility of traveler information and the timeliness and effectiveness of traffic and incident management. It was assumed that the benefits of the center would be equivalent to 10 percent of the sum of the benefits estimated for the traveler information systems (*i.e.*, VMS, HAR, kiosks, and Internet projects), the surveillance system, the smart work zones, the incident management projects, and the automated enforcement projects.

B.6.2 Statewide Maintenance Management System

A statewide maintenance management system would improve the efficiency of maintenance operations. It was assumed that the benefits of the system would be equal to one percent of the NDOR budget for maintenance operations.

B.6.3 Weather Stations

Weather stations would provide more timely and reliable information about the weather and pavement conditions. Consequently, better information could be given to the travelers and countermeasures to address problems associated with inclement weather could be implemented in a more effective and efficient manner. Therefore, it was assumed that the benefits of weather stations would be equivalent to 5 percent of the accident cost savings for snowy and icy road conditions computed for the traveler information systems (*i.e.*, VMS, HAR, kiosks, and Internet projects) plus 5 percent of the NDOR budget for snow and icy removal operations.

Table B.5 Benefit-Cost Ratios for Public Traveler and Public Mobility Services Projects

Project	Annual Benefit	Annual Cost	B/C Ratio
S4.1 Kearney/ Buffalo County Transit Coordination Pilot Project	Not Applicable		
S4.2 Beatrice Transit Tracking Study	Not Applicable		
S4.3 Rural Transit Forum - Phase I	Not Applicable		
M4.1 Statewide Transit Coordination Plan - Phase I	Not Applicable		
M4.2 Rural Transit Forum - Phase II	Not Applicable		
L4.1 Statewide Transit Coordination - Phase II	100,000	460,000	0.2
L4.2 Rural Transit Forum - Phase III	Not Applicable		

B.6.4 Incident Management System

The incident management system project would be designed to improve the coordination among the responders to incidents on the interstate system and remove the time required to respond to and remove incidents. It was assumed that this would provide a 10-minute reduction in the average duration of an incident on the interstate. Therefore, it was assumed that the benefits of the incident management system projects were equivalent to those of the surveillance projects.

B.6.5 Smart Work Zones

Smart work zones would utilize advanced traveler information and traffic management systems to improve the safety and efficiency of traffic flow through work zones. Previous studies conducted in Nebraska *(13,14)* and elsewhere *(5)* indicate that these systems would be able to increase work zone capacity by 20 percent, reduce speeds through the work zone, and achieve a 15 percent traffic diversion during periods of congestion. Therefore, the benefits computed for the smart work zone projects were the reductions in delay associated with the 20 percent higher capacity and 15 percent traffic diversion and a 20 percent reduction in traffic accidents in the work zones.

The reductions in delay were computed in the same manner as those computed for the VMSs projects. The accident cost savings were computed using a 34 percent increase in the average interstate accident rate of 85.6 per 100 million vehicle miles. Previous studies *(15)* indicate that the average accident rate in work zones on interstates is 34 percent higher than the normal accident rate on interstates. The average accident cost that was used is $69,963, which was based on the average interstate work zone accident severity of 1 percent fatal, 44 percent injury, and 55 percent property damage-only accidents *(15)*.

Table B.6 Benefit-Cost Ratios for Infrastructure Operations and Maintenance Projects

Project		Annual Benefit	Annual Cost	B/C Ratio
S5.1	Statewide Traffic Management Center (TMC) - Phase I	Not Applicable		
S5.2	Statewide Maintenance Management System - Phase I	Not Applicable		
S5.3	Weather Stations - Phase I	Not Applicable		
S5.4	Incident Management System - Phase I	Not Applicable		
S5.5	Smart Work Zones - Operational Test	Not Applicable		
M5.1	Statewide Traffic Management Center (TMC) - Phase II	Not Applicable		
M5.2	Statewide Maintenance - Phase II	Not Applicable		
M5.3	Weather Stations - Phase II	57,000	16,000	3.5
M5.4	Automated Safety Enforcement - Phase I	Not Applicable		
M5.5	Incident Management System - Phase II	1,600,000	97,000	16
M5.6	Smart Work Zone Implementation - Phase I	700,000	110,000	6.4
M5.7	Traffic Signal Coordination - Phase I	230,000	140,000	1.7
L5.1	Statewide Traffic Management Center (TMC) - Phase III	Not Applicable		
L5.2	Statewide Maintenance Management System - Phase III	Not Applicable		
L5.3	Automated Safety Enforcement - Phase II	80,000	15,000	5.3
L5.4	Incident Management System - Phase III	2,100,000	240,000	8.9
L5.5	Smart Work Zone Implementation - Phase II	1,100,000	170,000	1.4
L5.6	Traffic Signal Coordination - Phase II	260,000	150,000	1.7

In computing the benefits, it was assumed that the average length and duration of the work zone were 10 miles and 120 days, respectively. The demand volumes used in the calculations were representative of traffic volumes on I-80 during the construction season (May, June, July, August, and September).

B.6.6 Traffic Signal Coordination

The traffic signal coordination projects would be designed to improve the efficiency of traffic operations at the ramp terminals at high volume locations along I-80. Based on studies *(16)* conducted at interstate interchanges in Nebraska in 1998, a 10 percent reduction in average delays could be expected as the result of such improvements. Therefore, it was assumed that these projects would provide a 10 percent reduction in vehicular delay at the 2 signalized intersections on the crossroads at the interchanges. It was also assumed that the intersections would operate with an average delay of sixty seconds per vehicle during 4 hours each day without the improvements. The unit value of time that was used was $10 per vehicle hour.

B.6.7 Automated Safety Enforcement

The automated safety enforcement systems would be designed to reduce the speed of traffic on the roadways and thereby reduce speeding-related accidents. For the purposes of this analysis, the benefits were computed as the reduction in accident costs associated with a 10 percent reduction in speeding-related accidents on I-80 between Lincoln and Omaha. According to NDOR *(7)*, the major contributing human factor in 10 percent of all accidents is "speed too fast for condition." Therefore, it was assumed that 10 percent of the accidents were related to speed. The average 1997 Nebraska interstate accident rate of 85.6 accidents per million vehicle miles and severity of $65,728 were used to compute the accident cost savings *(7)*.

B.7 FLEET OPERATIONS AND MAINTENANCE

The results of the benefit-cost analysis of the fleet operations and maintenance projects are shown in Table B.7.

B.7.1 Automatic Vehicle Location Systems

The automatic vehicle location systems would improve the efficiency of the maintenance and enforcement operations to which they are applied. It was assumed that the resultant benefits would be equivalent to one percent of the budgeted amount for the particular operations.

B.7.2 Oversize/Overweight Routing Tools

The primary effect of the oversize/overweight routing tools would be to increase the rate at which oversize/overweight permits could be issued. It was assumed that the benefits of these tools would be equal to 50 percent of the personnel costs associated with issuing these permits.

Table B.7 Benefit-Cost Ratios for Fleet Operations and Maintenance Projects

Project	Annual Benefit	Annual Cost	B/C Ratio
S6.1 Automatic Vehicle Location (AVL) System - Phase I	Not Applicable		
S6.2 Oversize/Overweight (OS/OW) Routing Tools - Phase I	Not Applicable		
M6.1 Automatic Vehicle Location (AVL) System - Phase II	Not Applicable		
M6.2 Oversize/Overweight (OS/OW) Routing Tools - Phase II	250,000	70,000	3.6
L6.1 Automatic Vehicle Location (AVL) System - Phase I	Not Applicable		
L6.2 Oversize/Overweight (OS/OW) Routing Tools - Phase III	490,000	140,000	3.6

B.8 COMMERCIAL VEHICLE OPERATIONS

The results of the benefit-cost analysis of the commercial vehicle operations' projects are shown in Table B.8.

B.8.1 Weigh-In-Motion Improvements

The weigh-in-motion improvements would eliminate the time spent at weigh stations by most trucks and reduce the damage to pavement caused by overweight vehicles. Previous research *(17)* indicates that the average time spent at weigh stations by trucks is about two to five minutes. Therefore, the benefit of not having to stop at a weigh station was assumed to be equal to two minutes per truck. The unit value of time used was $19 per vehicle hour.

The damage caused by overweight vehicles was computed as the reduction in pavement life caused the equivalent single axle loads (ESALs) generated by the overweight vehicles observed on I-80 in Nebraska in 1996 *(18)*. It was assumed that the implementation of the weigh-in-motion at a weigh station would reduce the number of ESALs due to overweight vehicles by 10 percent on the segments of I-80 adjacent to the weigh station. The cost of the interstate pavement was assumed to be $2 million per mile.

B.8.2 Electronic Hazardous Materials Permitting/Routing/Tracking Systems

These systems were assumed to provide benefits comparable to the oversize/overweight routing tools.

Table B.8 Benefit-Cost Ratios for Commercial Vehicle Operations Projects

Project	Annual Benefit	Annual Cost	B/C Ratio
S7.1 CVO Information Warehouse Network - Phase I	Not Applicable		
S7.2 CVO Warehouse Access Improvement System-Phase I	Not Applicable		
S7.3 Weigh-In-Motion Improvement - Phase I	1,100,000	220,000	4.9
S7.4 Electronic Hazardous Materials Permitting System - Phase I	Not Applicable		
S7.5 Hazardous Materials Tracking/Routing System - Phase I	Not Applicable		
S7.6 CVO Forum - Phase I	Not Applicable		
S7.7 Automated Pre-Clearance Screening System - Phase I	Not Applicable		
M7.1 CVO Information Warehouse Network - Phase II	Not Applicable		
M7.2 CVO Warehouse Access Improvement System - Phase II	Not Applicable		
M7.3 Weigh-In-Motion Improvement - Phase II	2,200,000	450,000	4.9
M7.4 Automated Pre-Clearance Screening System -Phase II	800,000	0	Infinite
M7.5 Electronic Hazardous Materials Permitting System - Phase II	58,000	16,000	3.6
M7.6 Hazardous Materials Tracking/Routing System - Phase II	95,000	26,000	3.6
M7.7 CVO Forum - Phase II	Not Applicable		
L7.1 CVO Information Warehouse Network - Phase III	Not Applicable		
L7.2 CVO Warehouse Access Improvement System - Phase III	Not Applicable		
L7.3 Weigh-In-Motion Improvement - Phase III	2,800,000	560,000	4.9
L7.4 Electronic Hazardous Materials Permitting System - Phase III	91,000	25,000	3.6
L7.5 Hazardous Materials Tracking/Routing System - Phase III	91,000	25,000	3.6
L7.6 CVO Forum - Phase III	Not Applicable		

B.8.3 Automated Pre-Clearance Screen System

The primary benefit of this system would be the savings in travel time to motor carriers. It was assumed that this time savings would be equivalent to that provided by the weigh-in-motion systems (*i.e.*, 2 minutes per truck).

B.9 COMMUNICATIONS

The results of the benefit-cost analysis of the communications projects are shown in Table B.9.

B.9.1 Communications Master Plan

Implementation of the communications master plan would be expected to enhance the effectiveness of the rural ITS systems. Therefore, the benefits associated with its implementation were assumed to be equivalent to 10 percent of the sum of the benefits computed for all of the ITS systems included in this plan.

B.9.2 GIS Projects

The GIS project would be expected to enhance the effectiveness of the projects related to maintenance management and fleet operations and maintenance. Therefore, the benefits associated with these projects were assumed to be equivalent to 10 percent of the sum of the benefits computed for the statewide maintenance management system and the fleet operations and maintenance projects.

Table B.9 Benefit-Cost Ratios for Communications Projects

Project	Annual Benefit	Annual Cost	B/C Ratio
S8.1 Communications Master Plan	Not Applicable		
S8.2 GIS Strategic Plan	Not Applicable		
S8.3 Communications Forum - Phase I	Not Applicable		
M8.1 Communications Master Plan	4,500,000	11,000,000	0.4
M8.2 GIS Statewide Road Map Network - Phase I	72,000	33,000	2.2
M8.3 Communications Forum - Phase II	Not Applicable		
L8.1 GIS Statewide Road Map Network - Phase II	18,000	14,000	1.3
L8.2 Communications Forum - Phase III	Not Applicable		

B.10 REFERENCES

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APPENDIX C
Detailed Project Descriptions

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: S1.1 Statewide Railroad Corridor Study

DESCRIPTION: Continue to identify and prioritize railroad-highway grade crossing safety needs statewide and identify ITS applications for improving railroad-highway grade crossing safety.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Highway-Rail Intersection	Short Range (Year 2000-2005)
COSTS: *Study/Design:* Unknown *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for planning and enhancing railroad-highway grade crossing safety improvements statewide.

FUNDING SOURCES:
NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Study underway by HNTB Consultants for NDOR.

COMMENTS: Study to focus on both public and private railroad corridors statewide. Project S1.1 is an outcome of LB 255.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: S1.2 School Bus/Railroad Crossing Safety Warning System Operational Test

DESCRIPTION: Conduct operational test of safety warning systems at a school district in need school district to alert school bus drivers to the presence of approaching trains at railroad-highway grade crossings involving approximately seven school buses. Project includes design, implementation, and evaluation. Success of this operational test will lead to implementation at other high volume railroad corridors throughout the state. Develop warrants for installation.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Highway-Rail Intersection	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $20,000 *Implementation:* $5,000 *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for prioritizing railroad-highway safety improvement.

FUNDING SOURCES:
NDOR, local school districts, Railroad Transportation Safety District, Operation Life Saver, Office of Highway Safety, railroad companies

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnership opportunity with in-vehicle signing equipment vendors.

INSTITUTIONAL CONSIDERATIONS:
School districts will need to coordinate operational tests with NDOR and railroad companies.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Some equipment already in hand for project deployment. HNTB study will aid in identifying hazardous highway-rail intersections.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: S1.3 Private Railroad Crossing Operational Test

DESCRIPTION: Design and implement an operational test to evaluate performance of in-vehicle safety warning systems at private railroad grade crossings. Establish warrants for installation.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Highway-Rail Intersection	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $20,000 *Implementation:* $5,000 *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for prioritizing railroad-highway safety improvements

FUNDING SOURCES:
NDOR, Railroad Transportation Safety Districts, Office of Highway Safety, railroad companies

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnership opportunity with in-vehicle signing equipment vendors.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Some equipment already in hand for project deployment. HNTB study will aid in identifying area for operational test.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: S1.4 Railroad Crossing Notification System - Pilot Study

DESCRIPTION: Conduct pilot project to demonstrate the feasibility of an automated system to notify local emergency dispatchers to the presence of trains at railroad grade crossings. Project includes the implementation and evaluation of railroad crossings planned by the City of Lincoln, NDOR, and Burlington Northern Railroad.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Highway-Rail Intersection En-Route Information	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $25,000 *Implementation:* $10,000 *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for planning and enhancing railroad-highway safety improvements statewide.

FUNDING SOURCES:
NDOR, Railroad Transportation Safety District, Office of Highway Safety, railroad companies, City of Lincoln, HHSS

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnership opportunity with in-vehicle signing equipment vendors.

INSTITUTIONAL CONSIDERATIONS:
Legal issues surrounding liability between Lincoln agencies and the railroad companies may be a barrier to implementation.

LEAD AGENCY:
Railroad Transportation Safety District

PROJECT STATUS:
Active

COMMENTS: Coordination among and between local and state agencies, as well as, the railroad companies may be the greatest challenge.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: S1.5 Variable Message Signs (VMS) Phase I

DESCRIPTION: Design and install permanent VMS on I-80, between Lincoln and Omaha, to alert travelers of real time road, weather, incident and event information. Evaluate system performance and develop guidelines for expansion of system.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traffic Control	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $170,000 *Implementation:* $1,700,000 *Annual Operations & Maintenance:* $304,650	**BENEFITS:** $3,400,000/Year **B/C Ratio:** 11.0

FUNDING SOURCES:
NDOR, FHWA, CMAQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
Possible liability issues as to what sign displays.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: S1.6 Surveillance - Phase I

DESCRIPTION: Install video cameras in key locations on I-80 between Lincoln and Omaha to support incident management and traveler information systems.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traffic Control	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $500,000 *Annual Operations & Maintenance:* $115,476	**BENEFITS:** $1,300,000/Year **B/C Ratio:** 11.0

FUNDING SOURCES:
NDOR, Nebraska State Patrol, network television companies, cable television companies, communication companies, power companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources and public agencies.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues surrounding privacy.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Visual verification/confirmation of accidents and incidents will reduce emergency response time significantly.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: S1.7 Motorist Assistance - Phase I

DESCRIPTION: Extend motorist assistance program on I-80 from the Platte River to Lincoln, Nebraska. Program serves to aid motorists in need of emergency assistance, increase safety and reduce the number of abandoned vehicles along corridor.

APPLICABLE USER SERVICES: Travel and Transportation Management Emergency Management	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* No costs assumed *Implementation:* 100,000 *Annual Operations & Maintenance:* 50,000	**BENEFITS:** $650,000/Year **B/C Ratio:** 8.5

FUNDING SOURCES:
Nebraska State Patrol, NDOR, private sponsors

PUBLIC/PRIVATE PARTNERSHIPS:
Favorable opportunity for partnerships between public and private agencies

INSTITUTIONAL CONSIDERATIONS:
Working out the details for funding and liability may prove most challenging tasks

LEAD AGENCY:
Nebraska State Patrol

PROJECT STATUS: Proposed

COMMENTS: Motorist Assistance program now in operation along I-80 corridor within the Omaha Metropolitan area and from Omaha to Platte River. This project would improve public relations and reduce the duration of incident response times.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: M1.1 School Bus/Railroad Crossing Safety Warning System Deployment

DESCRIPTION: Implement school bus/railroad-highway grade crossing in-vehicle signing project for school districts located near high volume railroad corridors throughout state where installation is warranted.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Highway-Rail Intersections	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $20,000 *Implementation:* $100,000 *Annual Operations & Maintenance:* $29,530	**BENEFITS:** $84,000/Year **B/C Ratio:** 2.8

FUNDING SOURCES:

NDOR, Operation Life Saver, Railroad Transportation Safety Districts, school districts, railroad companies

PUBLIC/PRIVATE PARTNERSHIPS:

Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:

Possible legal issues surrounding liability and delegation of cost and maintenance of equipment.

LEAD AGENCY:

NDOR

PROJECT STATUS:

Proposed

COMMENTS: HNTB study will identify areas needing priority consideration.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: M1.2 Private Railroad Crossing Warning Systems Deployment

DESCRIPTION: Deploy safety warning systems at approximately 10 private railroad-highway grade crossings where installation is warranted based on findings of Project S1.3.

APPLICABLE USER SERVICES: Highway-Rail Intersections	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $20,000 *Implementation:* $12,000 *Annual Operations & Maintenance:* $6,708	**BENEFITS:** $8,600/Year **B/C Ratio:** 1.3

FUNDING SOURCES:
Private land owners, railroad companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues surrounding liability and delegation of cost and maintenance of equipment.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: HNTB study will identify areas needing priority consideration.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: M1.3 Emergency Railroad Crossing Notification System Deployment - Phase II

DESCRIPTION: Establish and evaluate regional network of railroad-highway grade crossing sensor equipment warning emergency dispatchers to the presence of trains based on pilot study S1.4. Evaluate system performance and develop guidelines for deployment statewide.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Highway-Rail Intersections	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $100,000 *Implementation:* $200,000 *Annual Operations & Maintenance:* $68,825	**BENEFITS:** $230,000/Year **B/C Ratio:** 3.4

FUNDING SOURCES:
NDOR, railroad companies, HHSS, NSP, Railroad Transportation Safety Districts

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between railroad companies, NDOR and Railroad Transportation Safety Districts, railroad companies, private land owners.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues surrounding liability, jurisdiction and delegation of cost and maintenance of equipment.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: HNTB study will identify areas needing priority consideration.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: M1.4 Variable Message Signs (VMS) - Phase II

DESCRIPTION: Design and implement expansion of VMS system on I-80 to include additional VMS installations at approximately 10 priority locations with area-wide real-time message generation capabilities provided by Traffic Management Center (TMC).

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traffic Control	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $170,000 *Implementation:* $1,700,000 *Annual Operations & Maintenance:* $304,650	**BENEFITS:** $2,200,000/Year **B/C Ratio:** 7.3

FUNDING SOURCES:
NDOR, FHWA, CMAQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues as to what sign displays.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: M1.5 Surveillance - Phase II

DESCRIPTION: Install additional video cameras at approximately 10 congested locations on I-80. Establish central control of video cameras by TMC.

APPLICABLE USER SERVICES: Traffic Control	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $100,000 *Implementation:* $500,000 *Annual Operations & Maintenance:* $115,470	**BENEFITS:** $590,000/Year **B/C Ratio:** 5.1

FUNDING SOURCES:
NDOR, CMAQ, Nebraska State Patrol, network television companies, cable television companies, communication companies, power companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources and public agencies.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues surrounding privacy

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Visual verification/confirmation of accidents and incidents will reduce response time significantly.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: M1.6 Motorist Assistance - Phase II

DESCRIPTION: Continue activities from Phase I. Phase II to focus on expanding motorist assist program along I-80 from Lincoln Grand Island, Nebraska, if needed. Determine need for motorist assistance along other major highways across state.

APPLICABLE USER SERVICES: Travel and Transportation Management Emergency Management	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* No costs assumed *Implementation:* $200,000 *Annual Operations & Maintenance:* $100,000	**BENEFITS:** $1,240,000/Year B/C Ratio: 8.1

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between and among funding sources and railroad companies.

INSTITUTIONAL CONSIDERATIONS:
Cooperation between and among public agencies and railroad companies.

LEAD AGENCY:
Nebraska State Patrol

PROJECT STATUS: Proposed

COMMENTS: This project would improve public relations and reduce the duration of incident response times.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: L1.1 Private Railroad Crossing Warning Systems Deployment

DESCRIPTION: Deploy safety warning systems at an additional 10 private railroad-highway grade crossings where installation is warranted based on findings from Project's S1.3 and M1.2.

APPLICABLE USER SERVICES: Highway-Rail Intersections	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $20,000 *Implementation:* $12,000 *Annual Operations & Maintenance:* $6,708	**BENEFITS:** $8,600/Year **B/C Ratio:** 1.3

FUNDING SOURCES:
Private land owners, railroad companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues surrounding liability and delegation of cost and maintenance of equipment.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: HNTB study will identify areas needing priority consideration.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: L1.2 Emergency Railroad Crossing Notification System Deployment

DESCRIPTION: Deploy statewide network of railroad-highway grade crossing sensor equipment linked to TMC warning emergency dispatchers to the presence of trains according to guidelines developed in Project M1.3.

APPLICABLE USER SERVICES: Highway-Rail Intersections	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $150,000 *Implementation:* $1,400,000 *Annual Operations & Maintenance:* $392,263	**BENEFITS:** $1,300,000/Year **B/C Ratio:** 3.4

FUNDING SOURCES:
NDOR, railroad companies, HHSS, NSP, Railroad Transportation Safety Districts

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues surrounding liability, jurisdiction and delegation of cost and maintenance of equipment.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: HNTB study will identify areas needing priority consideration.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: L1.3 Variable Message Signs (VMS) - Phase III

DESCRIPTION: Design and implement expansion of VMS system on I-80 to include additional VMS installations at approximately 20 priority locations with area-wide real-time message generation capabilities monitored by TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traffic Control	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $200,000 *Implementation:* $3,400,000 *Annual Operations & Maintenance:* $762,856	**BENEFITS:** $2,800,000/Year **B/C Ratio:** 3.7

FUNDING SOURCES:
NDOR, FHWA, CMAQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues as to what sign displays.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: L1.4 Surveillance - Phase III

DESCRIPTION: Install additional video cameras at approximately 20 locations to extend surveillance on rural interstate and high volume highways.

APPLICABLE USER SERVICES: Traffic Control	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $100,000 *Implementation:* $1,000,000 *Annual Operations & Maintenance:* $229,206	**BENEFITS:** $220,000/Year **B/C Ratio:** 1.0

FUNDING SOURCES:
NDOR, CMAQ, Nebraska State Patrol, network television companies, cable television companies, communication companies, power companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Possible legal issues surrounding privacy.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Visual verification/confirmation of accidents and incidents will reduce response time significantly.

CRITICAL PROGRAM AREA: Traveler Safety & Security

PROJECT: L1.5 Motorist Assistance - Phase III

DESCRIPTION: Continue activities from Phase I and Phase II. Activities in Phase III will focus on expanding motorist assist program statewide and monitored by TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Travel and Transportation Management Emergency Management	Long Range (Year 2010-2020)
COSTS: *Study/Design:* No costs assumed *Implementation:* $400,000 *Annual Operations & Maintenance:* $200,000	**BENEFITS:** $1,460,000/Year B/C Ratio: 4.8

FUNDING SOURCES:
Nebraska State Patrol, NDOR, private companies

PUBLIC/PRIVATE PARTNERSHIPS:
Favorable opportunities for partnerships in all areas of the state

INSTITUTIONAL CONSIDERATIONS:
Sharing expenses among participating agencies and liability may be significant challenges

LEAD AGENCY:
Nebraska State Patrol

PROJECT STATUS: Proposed

COMMENTS: This project would improve public relations and reduce the duration of incident response times.

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: S2.1 Interoperable Radio Communications System - Phase I

DESCRIPTION: Conduct study to determine system requirements, existing system configurations and system architecture for more effective and efficient methods of radio communication between emergency responders and public agencies. Submit results to Legislature in FY 2000.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $600,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for establishing systematic update and replacement of statewide radio communications hardware and infrastructure.

FUNDING SOURCES:
DAS/Division of Communications

PUBLIC/PRIVATE PARTNERSHIPS:
Public/Public partnerships can pool resources to minimize costs to individual agencies.

INSTITUTIONAL CONSIDERATIONS:
Design and performance standards, as well as, procurement regulations may be a concern.

LEAD AGENCY:
Nebraska Radio Task Force

PROJECT STATUS: Active and led by Nebraska Radio Task Force

COMMENTS: Project a result of LB 1120.

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: S2.2 EMS Communications System - Phase I

DESCRIPTION: Work collaboratively with the Statewide Communications Task Force, Trauma System Advisory Board and other EMS organizations to determine system requirements, existing system configurations, coordination with TMC and system architecture to effectively coordinate EMS communications, incident data, minimize communication barriers and improve procedures for incident management.

APPLICABLE USER SERVICES: Emergency Notification and Personal Security	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* $500,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for establishing systematic update and enhancement of statewide EMS communications hardware and infrastructure.

FUNDING SOURCES:
HHSS, NIN, NITC, NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Public/Public partnerships can pool resources to minimize costs to individual agencies.

INSTITUTIONAL CONSIDERATIONS:
Design and performance standards, as well as, procurement regulations may be a concern.

LEAD AGENCY:
HHSS

PROJECT STATUS: Active and led by HHSS

COMMENTS:

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: S2.3 Coordinate-Based Addressing System - Phase I

DESCRIPTION: Conduct study to determine system requirements and existing GIS databases to serve coordinate-based local addressing system to more accurately identify location of emergencies and reduce the need for statewide mile markers and street name labeling. Study to focus on Scotts Bluff county for evaluation. Develop transition plan with costs. Project serves to facilitate Project's M2.6, M4.1, L4.1, M6.1, L6.1, M8.2, L8.2.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Vehicle Management -Route Guidance	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $75,000 *Annual Operations & Maintenance:* $7,500	**BENEFITS:** Basis for establishing systematic improvements to EMS communications and 911 emergency dispatch statewide.

FUNDING SOURCES:
NDOR, NSP, HHSS, utility and communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
GIS performance and equipment standards vary with most counties in Nebraska.

LEAD AGENCY:
State Surveyor's Office

PROJECT STATUS: Partially active and led by Scotts Bluff County Surveyor's Office.

COMMENTS: Coordinate-based addressing system implemented in Scotts Bluff County, NE. GIS Steering Committee working on statewide standards.

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: S2.4 EMS Communications Forum - Phase I

DESCRIPTION: Establish EMS Communications Forum to hold regular meetings with EMS professionals/volunteers and law enforcement officials to discuss emergency communication methods with other jurisdictions, develop common 911 protocols for communication and transport. Continue monitoring and collaborating with Statewide Communication Task Force and Trauma System Advisory Board. Investigate statewide interoperable computer aided dispatch (CAD) systems to facilitate emergency response. Develop new procedures for incident reporting to NDOR and NSP. Produce public service announcements discussing the benefits of multi-jurisdictional emergency response cooperation. Activities in Phase I will focus on organizing and initiating forum and agenda, formulate and implement emergency dispatch training program, as well as, developing time line for task completion.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Short Range (Year 2000-2005)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Facilitates, advises and coordinates deployment of ITS technologies and projects related to Emergency Services.

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
HHSS

PROJECT STATUS: Active and led by HHSS Trauma Systems Coordinator.

COMMENTS:

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: S2.5 Mayday Systems - Phase I

DESCRIPTION: Define system requirements utilizing automatic vehicle location (AVL) technologies to improve emergency response times by knowing location of vehicles in distress to allow quicker response times. Evaluate existing, privately-owned and operated, Mayday systems to determine system performance and user acceptance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $25,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for determining requirements for statewide deployment.

FUNDING SOURCES:
HHSS, communications companies, NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Legal issues surrounding liability on the part of emergency responders and the third party privately owned dispatch centers may be a concern with general public.

LEAD AGENCY:
HHSS

PROJECT STATUS: Partially active and led by privately owned automobile manufacturers and independent Mayday system vendors.

COMMENTS: Some states have dropped research on Mayday systems because automobile manufacturers have taken lead. However, rural areas with no cellular phone coverage and major cities with tall buildings prove ineffective for some Mayday technologies. Evaluations need to be conducted to determine infrastructure requirements and feasibility for statewide application.

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: S2.6 Improve 911 Dispatch

DESCRIPTION: Implement and evaluate improved 911 Emergency Medical Dispatch (EMD) standards and training for 911 dispatchers statewide. Design regionalized 911 system communications architecture for operational test.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $400,000 *Annual Operations & Maintenance:* $40,000	**BENEFITS:** Additional training will improve 911 dispatcher performance resulting in lives saved.

FUNDING SOURCES:
HHSS

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
HHSS

PROJECT STATUS: Active and led by HHSS.

COMMENTS:

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: M2.1 Interoperable Radio Communications System - Phase II

DESCRIPTION: Implement interoperable radio communications hardware based on enabling legislation and the recommendations from Project S2.1. Evaluate interoperable radio communication system for performance and establish guidelines for deployment and maintenance.

APPLICABLE USER SERVICES: Emergency Notification and Personal Security	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:* $10,000,000 *Annual Operations & Maintenance:* $2,164,600	**BENEFITS:** $2,500,000/Year **B/C Ratio:** 1.2

FUNDING SOURCES:
Department of Administrative Services, utility companies, NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships between funding sources possible.

INSTITUTIONAL CONSIDERATIONS:
Developing standards could prove to be a major task.

LEAD AGENCY:
Nebraska Radio Task Force

PROJECT STATUS: Proposed

COMMENTS: NDOR needs to coordinate TMC development with Statewide Communications Infrastructure Plan. Project result of LB 1120.

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: M2.2 EMS Communications System - Phase II

DESCRIPTION: Establish operational test based on Project S2.2 to regionalize several 911 centers in one area and measure performance levels for coordinated emergency response and transport. Evaluate EMS communications system integration and develop guidelines for expansion and project continuation.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $200,000 *Implementation:* $800,000 *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for expanding and modifying EMS communications system statewide.

FUNDING SOURCES:
HHSS, NIN, NITC

PUBLIC/PRIVATE PARTNERSHIPS:
Potential for partnership with Rural/Metro Ambulance and public emergency response providers.

INSTITUTIONAL CONSIDERATIONS:
Local or regional governments may be hesitant or resistant to share EMS communications equipment and/or resources.

LEAD AGENCY:
HHSS

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: M2.3 Coordinate-Based Addressing System - Phase II

DESCRIPTION: Implement coordinate-based address system for Engineering District Number 5 to monitor performance. Evaluate system performance and develop guidelines for regional or statewide implementation.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Vehicle Management -Route Guidance	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $100,000 *Implementation:* $700,000 *Annual Operations & Maintenance:* $163,960	**BENEFITS:** $1,100,000/Year **B/C Ratio:** 6.5

FUNDING SOURCES:
NDOR, NSP, HHSS, utility and communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
GIS performance and equipment standards vary between most counties in Nebraska.

LEAD AGENCY:
State Surveyor's Office

PROJECT STATUS: Proposed

COMMENTS: GIS Steering Committee working on statewide standards.

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: M2.4 EMS Communications Forum Phase II

DESCRIPTION: Continue activities from Phase I. Phase II activities will focus on working out institutional and technical barriers to statewide emergency communications and evaluating communication guidelines.

APPLICABLE USER SERVICES: Emergency Notification and Personal Security	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Facilitates, advises and coordinates deployment of ITS technologies and projects related to Emergency Services.

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
None

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
HHSS

PROJECT STATUS:
Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: M2.5 Mayday Systems - Phase II

DESCRIPTION: Improve communications infrastructure and 911 capabilities to support Mayday systems statewide. Link Mayday systems to statewide TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:* None *Annual Operations & Maintenance:* $100,000	**BENEFITS:** $870,000/Year **B/C Ratio:** 8.7

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between third party emergency dispatchers and local emergency responders.

INSTITUTIONAL CONSIDERATIONS:
Legal issues surrounding liability on the part of emergency responders and the third party privately owned dispatch centers may be a concern with general public.

LEAD AGENCY:
HHSS

PROJECT STATUS: Partially active and led by Nebraska Communications Task Force and HHSS.

COMMENTS: Private Mayday vendors now leading research, development and sales of Mayday equipment for automobiles. Project would coincide with Project's S2.7 and S8.1

CRITICAL PROGRAM AREA: Emergency Services **PROJECT:** M2.6 911 Dispatch Network - Phase I

DESCRIPTION: Deploy and evaluate multi-county network of regionalized 911 dispatch centers based on Project S2.6 for system performance.	
APPLICABLE USER SERVICES: Emergency Notification and Personal Security	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:*$500,000 *Annual Operations & Maintenance:* $108,730	**BENEFITS:** Basis for determining the worthwhileness of regionalizing 911 dispatch centers in rural areas.
FUNDING SOURCES: HHSS, participating counties and local governments	
PUBLIC/PRIVATE PARTNERSHIPS: Not common for this project.	
INSTITUTIONAL CONSIDERATIONS: Establishing communications protocols, funding sources.	
LEAD AGENCY: HHSS	
PROJECT STATUS: Proposed	
COMMENTS:	

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: L2.1 Interoperable Radio Communications System - Phase III

DESCRIPTION: Expand statewide interoperable radio communication system based on findings and recommendations from Phase II (M2.1) to include commercial and non-vital uses where applicable.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Long Range (Year 2010-2020)
COSTS: *Study/Design:* None *Implementation:* $15,000,000 *Annual Operations & Maintenance:* $3,261,900.	**BENEFITS:** $3,300,000/Year **B/C Ratio:** 1.0

FUNDING SOURCES:
Department of Administrative Services, utility companies, NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Developing radio communications standards between public and private agencies may be most difficult task.

LEAD AGENCY:
Nebraska Radio Task Force

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: L2.2 EMS Communications System - Phase III

DESCRIPTION: Expand EMS communications system statewide based on operational test performed in Project M2.2. Link Statewide EMS Communication System to statewide TMC to improve EMS coordination and incident management.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Long Range (Year 2010-2020)
COSTS: *Study/Design:* None *Implementation:* $1,000,000 *Annual Operations & Maintenance:* $217,460	**BENEFITS:** $1,400,000/Year **B/C Ratio:** 6.5

FUNDING SOURCES:
HHSS, NIN, NITC, NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Potential for partnership with Rural/Metro Ambulance and public emergency response providers.

INSTITUTIONAL CONSIDERATIONS:
Local or regional governments may be hesitant or resistant to share EMS communications equipment and/or resources.

LEAD AGENCY:
HHSS

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: L2.3 Coordinate-Based Addressing System - Phase III

DESCRIPTION: Implement coordinate-based address system in additional engineering districts or statewide based on Phase II evaluation performed for Project M2.2.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Vehicle Management -Route Guidance	Long Range (Year 2010-2020)
COSTS: *Study/Design:* None *Implementation:* $6,200,000 *Annual Operations & Maintenance:* $1,348,252	**BENEFITS:** $8,700,000/Year **B/C Ratio:** 6.5

FUNDING SOURCES:
NDOR, NSP, HHSS, utility and communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
GIS performance and equipment standards vary with most counties in Nebraska.

LEAD AGENCY:
State Surveyor's Office

PROJECT STATUS: Proposed

COMMENTS: GIS Steering Committee working on statewide standards.

CRITICAL PROGRAM AREA: Emergency Services

PROJECT: L2.4 EMS Communications Forum - Phase III

DESCRIPTION: Continue activities from Phase I and Phase II. Activities in Phase III will focus on improving EMS communications equipment acquisition and integrating EMS dispatch network with TMC pending operational test evaluation.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Emergency Notification and Personal Security	Long Range (Year 2010-2020)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Forum ensures project's focus and makes recommendations for improvement.

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
None

INSTITUTIONAL CONSIDERATIONS:
Consensus building.

LEAD AGENCY:
HHSS

PROJECT STATUS:
Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: S3.1 Highway Advisory Radio (HAR) - Phase I

DESCRIPTION: Determine need and install HAR units serving the higher volume roadways on I-80 between Lincoln and Omaha to improve reception quality of traveler information. Communications links, voice message recordings, system design, associated signing, and implementation are included. Evaluate system performance and develop guidelines for system expansion.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
En-Route Driver Information Incident Management Route Guidance	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $220,000 *Annual Operations & Maintenance:* $22,000	**BENEFITS:** Basis for establishing guidelines for expanding HAR network.

FUNDING SOURCES:
NDOR, NSP, CMAQ, DAS/Tourism, broadcasting companies, communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility of source information, timeliness, accuracy, applicability.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: S3.2 Kiosks - Phase I

DESCRIPTION: Design and implement kiosks to provide traffic information at major activity centers along I-80 between Lincoln and Omaha. Phase I includes design and installation of kiosks, as well as, system integration with NSP's Weatherline system and NDOR's internet web site.

APPLICABLE USER SERVICES: Pre-Trip Travel Information Incident Management	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* $50,000 *Implementation:* 246,000 *Annual Operations & Maintenance:* $59,368	**BENEFITS:** $300,000/Year **B/C Ratio:** 5.0

FUNDING SOURCES:
NDOR, NSP, DAS/Tourism, broadcasting companies, communications companies (advertisement)

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility and source of information, timeliness, accuracy, applicability, accessibility and location.

LEAD AGENCY:
NDOR

PROJECT STATUS: Partially active and led by the DAS/Division of Tourism.

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: S3.3 Internet Site

DESCRIPTION: Design and implement a computer-based traffic information system for statewide public access. Project includes the design and installation of graphical displays and communications links integrating information from NDOR kiosks. Develop time line for implementation and updating.

APPLICABLE USER SERVICES: Incident Management Pre-Trip Information	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* $10,000 *Implementation:* $5,000 *Annual Operations & Maintenance:* $36,762	**BENEFITS:** $300,000/Year **B/C Ratio:** 8.0

FUNDING SOURCES:
NDOR, NSP, DAS/Tourism, broadcasting companies, communications companies.

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility and source of information, timeliness, accuracy.

LEAD AGENCY:
NDOR

PROJECT STATUS: Active and led by NDOR

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: S3.4 Tourist Information Warehouse - Phase I

DESCRIPTION: Determine system requirements and existing networks containing tourist information. Design system architecture with costs. Include rest area kiosks, truck stop kiosks, airports, bus and train stations, car rental agencies and other major attractions in system design.

APPLICABLE USER SERVICES: Pre-Trip Travel Information Incident Management	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* $62,500 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for establishing traveler and tourist information network to accommodate future information needs.

FUNDING SOURCES:
NDOR, NSP, DAS/Tourism, broadcasting companies, communications companies.

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility and source of information, timeliness, accuracy.

LEAD AGENCY:
DAS/Division of Tourism

PROJECT STATUS: Active and led by DAS/Division of Tourism.

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: S3.5 Feasibility Study for Statewide 211/511 Traveler Toll Free Telephone System.

DESCRIPTION: Determine 211/511 communication system requirements and existing networks containing tourist information access. Identify information service providers. Design detailed system architecture to include costs.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Pre-Trip/En-Route Traveler Information	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $35,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for determining future investment needed for accessible traveler information by telephone.

FUNDING SOURCES:
NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
None.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: S3.6 Traveler & Tourism Information Forum - Phase I

DESCRIPTION: Establish Traveler & Tourism Information Forum to meet with Department of Economic Development representatives and various multi-modal transportation system providers regularly to cross barriers and work out details for expanding kiosk network and/or connecting tourism information warehouse, as well as, conducting commerce from kiosks. Forum will also investigate systems capable for conducting commerce in state owned rights of way and applicable restrictions. Phase I activities will focus on organizing group, initiating group meetings and developing a time line for task completions.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Pre-Trip/En-Route Traveler Information Incident Management	Short Range (Year 2000-2005)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures the needs, quality and standards are met and evaluated properly.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not applicable

INSTITUTIONAL CONSIDERATIONS:
Consensus building key issue.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: M3.1 Highway Advisory Radio (HAR) - Phase II

DESCRIPTION: Design and implement 20 additional HAR systems on I-80 based on results of Project S3.1.

APPLICABLE USER SERVICES: En-Route Traveler Information Incident Management Route Guidance	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $50,000 *Implementation:* $340,000 *Annual Operations & Maintenance:* $79,809	**BENEFITS:**$1,300,000/Year **B/C Ratio:** 16.0

FUNDING SOURCES:
CMAQ, NDOR, NSP, broadcasting and communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility of information in terms of information accuracy, timeliness and applicability.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: M3.2 Kiosks - Phase II

DESCRIPTION: Expand kiosks to include additional locations along I-80. Enhance kiosk capabilities implemented in Phase I to include two-way communications, interactive information access and internet access with e-mail capabilities.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Pre-Trip/En-Route Travel Information Incident Management	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:* $410,000 *Annual Operations & Maintenance:* $89,159	**BENEFITS:**$270,000/Year **B/C Ratio:** 3.0

FUNDING SOURCES:
NDOR, NSP, DAS/Tourism, broadcasting companies, communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility and source of information, timeliness, accuracy, applicability, accessibility, location.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: M3.3 Tourist Information Warehouse - Phase II

DESCRIPTION: Deploy tourist information warehouse utilizing compiled tourism information databases, computer servers and software accessible by internet.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Pre-Trip Travel Information Incident Management	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:* $10,000 *Annual Operations & Maintenance:* $36,175	**BENEFITS:** $300,000/Year **B/C Ratio:** 8.2

FUNDING SOURCES:
NDOR, NSP, DAS/Tourism, broadcasting companies, communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility and source of information, timeliness, accuracy.

LEAD AGENCY:
DAS/Division of Tourism

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: M3.4 Video Log Data Production Study

DESCRIPTION: Determine video log system requirements and existing inventories of video log data and equipment statewide. Explore internet and VHS tape release options of video taped attractions and scenic highways throughout Nebraska. Design detailed system requirements for production, manufacturing, marketing and sales of video log data made available to the public.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traveler Information Services	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $50,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for determining the technical and marketing potential of video log inventory for public use.

FUNDING SOURCES:
NDOR, DED/Division of Tourism

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
DED/Division of Tourism

PROJECT STATUS: Partially active and led by NDOR.

COMMENTS: Private vendor may be needed to produce end products in mass production.

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: M3.5 Traveler & Tourism Information Forum - Phase II

DESCRIPTION: Continue with Phase I activities. Phase II activities will focus on system expansion and unresolved institutional and technical barriers, as well as, integrating HAR, Kiosks and Tourism Information Warehouse with TMC to build real time highway closure information system.

APPLICABLE USER SERVICES: Pre-Trip/En-Route Traveler Information Incident Management	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures the needs, quality and standards are met and evaluated properly.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not applicable.

INSTITUTIONAL CONSIDERATIONS:
Consensus building key issue.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: L3.1 Highway Advisory Radio (HAR) - Phase III

DESCRIPTION: Expand to include additional HAR on I-80 with area-wide real-time message capabilities and pager reception capabilities.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
En-Route Traveler Information Incident Management Route Guidance	Long Range (Year 2010-2020)
COSTS: *Study/Design:* None *Implementation:* $170,000 *Annual Operations & Maintenance:* $36,968	**BENEFITS:** $340,000/Year **B/C Ratio:** 9.0

FUNDING SOURCES:
CMAQ, NDOR, NSP, broadcasting and communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility of information in terms of information accuracy, timeliness and applicability.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: L3.2 Kiosks - Phase III

DESCRIPTION: Expand kiosks to include additional locations. Enhance system to facilitate interactive user features. Evaluate system performance and user acceptance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Pre-Trip/En-Route Travel Information Incident Management	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:* $410,000 *Annual Operations & Maintenance:* $89,159	**BENEFITS:**$310,000/Year **B/C Ratio:** 3.5

FUNDING SOURCES:
NDOR, NSP, DAS/Tourism, broadcasting companies, communications companies.

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility and source of information, timeliness, accuracy, applicability, accessibility, location.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: L3.3 Tourist Information Warehouse - Phase III

DESCRIPTION: Expand tourism information warehouse to include real time event reporting with built-in reservation, ticket ordering and smart card payment capabilities at rest stop and truck stop kiosks.

APPLICABLE USER SERVICES: Pre-Trip Travel Information Traveler Services Information	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $100,000 *Implementation:* $850,000 *Annual Operations & Maintenance:* $196,587	**BENEFITS:** $890,000/Year **B/C RATIO:** 4.5

FUNDING SOURCES:
NDOR, NSP, DAS/Tourism, broadcasting companies, communications companies

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships with and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Credibility and source of information, timeliness, accuracy, accessibility, utility.

LEAD AGENCY:
DAS/Division of Tourism

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Traveler & Tourism Information Services

PROJECT: L3.4 Traveler & Tourism Information Forum - Phase III

DESCRIPTION: Continue with activities in Phase I and Phase II. Phase III activities will focus on system expansion and enhancement of technologies to support information delivery to near real time levels and system integration with TMC.

APPLICABLE USER SERVICES: Pre-Trip/En-Route Traveler Information Incident Management	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures the needs, quality and standards are met and evaluated properly.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not applicable.

INSTITUTIONAL CONSIDERATIONS:
Consensus building key issue

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Public Traveler Services & Public Mobility Services

PROJECT: S4.1 Kearney/Buffalo County Transit Coordination Pilot Project

DESCRIPTION: Design and implement a pilot project to evaluate computer aided dispatch (CAD) to facilitate coordination of services provided by the transportation service providers in Kearney and Buffalo County.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Public Transportation Management Personalized Public Transit	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $30,000 *Implementation:* $20,500 *Annual Operations & Maintenance:* $2,100	**BENEFITS:** Basis for evaluating the use of technology to facilitate rural transit interagency coordination.

FUNDING SOURCES:
HHSS, NDOR, rural transit providers, NATP, FTA

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships for coordination needed between and among funding sources.

INSTITUTIONAL CONSIDERATIONS:
Legal issues may prove most significant challenge.

LEAD AGENCY:
HHSS

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Public Traveler Services & Public Mobility Services

PROJECT: S4.2 Beatrice Transit Tracking Study

DESCRIPTION: Design and implement a pilot project to evaluate the effectiveness of automatic vehicle location (AVL) technologies for improving efficiency of rural transit service.

APPLICABLE USER SERVICES: Public Transportation Management En-Route Transit Information	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* $30,000 *Implementation:* $39,500 *Annual Operations & Maintenance:* $4,000	**BENEFITS:** Basis for evaluating the use of technology to facilitate rural transit efficiency.

FUNDING SOURCES:
HHSS, NDOR, rural transit providers, NATP, FTA

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships for coordination needed between and among funding sources.

INSTITUTIONAL CONSIDERATIONS:
Standards applied to equipment and software need to be coordinated with GIS Steering Committee and Gage County Surveyor.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Public Traveler Services & Public Mobility Services

PROJECT: S4.3 Rural Transit Forum - Phase I

DESCRIPTION: Establish rural transit forum consisting of public agencies and private stakeholders to meet regularly and work collectively to improve transit coordination and facilitate minimizing legal barriers to coordination while improve transit for welfare- to-work participants and youth-at-risk. Analyze statewide infrastructure for AVL, CAD and smart card payment system needs and requirements and address technology and institutional needs to other committees (e.g. GIS Committee, NITC, etc). Phase I activities will focus on organizing group, initiating group meetings and developing a time line for task completions.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Public Transportation Management	Short Range (Year 2000-2005)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures project deployment and evaluations meet needs of users. Recommends improvements and modifications.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not applicable

INSTITUTIONAL CONSIDERATIONS:
Consensus building.

LEAD AGENCY:
NDOR

PROJECT STATUS: Active and led by NDOR

COMMENTS:

CRITICAL PROGRAM AREA: Public Traveler Services & Public Mobility Services

PROJECT: M4.1 Statewide Transit Coordination Plan - Phase I

DESCRIPTION: Develop plan for statewide coordination for rural transit based on results of Project's S4.1 and S4.2.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Public Transportation Management	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $35,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for coordinating technologies and systems to manage rural transit more efficiently.

FUNDING SOURCES:
NDOR, HHSS, Rural Development Commission, FTA

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Public Traveler Services & Public Mobility Services

PROJECT: M4.2 Rural Transit Forum - Phase II

DESCRIPTION: Continue activities in Phase I. Phase II activities will focus on technology applications to benefit welfare-to-work participants and youth-at-risk. Review and recommend improvements to statewide transit coordination plan. Begin integration of rural transit systems with TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Public Transportation Management	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures project deployment and evaluations meet needs of users. Recommends improvements and modifications.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
Consensus building.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Public Traveler Services & Public Mobility Services **PROJECT:** L4.1 Statewide Transit Coordination - Phase II

DESCRIPTION: Implement statewide transit coordination plan developed in Project M4.1.	
APPLICABLE USER SERVICES: Public Transportation Management	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* None *Implementation:* $2,200,000 *Annual Operations & Maintenance:* $458,412	**BENEFITS:** $100,000/Year **B/C RATIO:** 0.2
FUNDING SOURCES: NDOR, HHSS, Rural Development Commission, FTA	
PUBLIC/PRIVATE PARTNERSHIPS: Partnerships possible among and between funding sources.	
INSTITUTIONAL CONSIDERATIONS: Laws restricting entry into rural transit market, technology standards and multi-jurisdictional coordination may be significant challenges.	
LEAD AGENCY: NDOR	
PROJECT STATUS: Proposed	
COMMENTS:	

CRITICAL PROGRAM AREA: Public Traveler Services & Public Mobility Services

PROJECT: L4.2 Rural Transit Forum - Phase III

DESCRIPTION: Continue activities in Phase I and Phase II. Phase III activities will focus on preparing for emerging technology applications in rural transit operations, transit coordination improvement and continued work on institutional barriers to coordination, as well as, CAD and AVL systems integration with statewide TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Public Transportation Management	Long Range (Year 2010-2020)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures project deployment and evaluations meet needs of users. Recommends improvements and modifications.

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
Not applicable.

INSTITUTIONAL CONSIDERATIONS:
Consensus building.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: S5.1 Statewide Traffic Management Center (TMC) - Phase I

DESCRIPTION: Perform feasibility study to determine the need for a TMC. Assemble key stakeholders to discuss costs, benefits, legal issues and institutional barriers. Perform benefit/cost analysis for TMC. Consider applications for virtual and/or regionalized TMC system for initial operational test and evaluation.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Travel and Transportation Management	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** TMC serves to monitor, collect and manage statewide ITS data and management systems.

FUNDING SOURCES:
NDOR, HHSS, NSP, DED, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project

INSTITUTIONAL CONSIDERATIONS:
Consensus building/coordination of services.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: S5.2 Statewide Maintenance Management System - Phase I

DESCRIPTION: Define requirements and existing maintenance systems to determine how to develop maintenance management systems to improve statewide maintenance inventory and tracking to lower costs, increase throughput and enhance safety and customer service. Develop system architecture to facilitate the organization of pavement, traffic signals, work zones, bridge, sign and safety systems and inventory systems, as well as, an integrated means of accessing systems and sensors remotely from TMC. Develop detailed transition plan to include costs.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Travel and Transportation Management	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Foundation for future ITS infrastructure operations and maintenance projects.

FUNDING SOURCES:
NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: S5.3 Weather Stations - Phase I

DESCRIPTION: Determine system requirements and additional weather stations statewide. Develop system architecture with remote access from TMC. Develop detailed plan for implementation with costs.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Travel and Transportation Management	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* None *Annual Operations & Maintenance:* $11,746	**BENEFITS:** Basis for facilitating advanced and accurate weather reporting capabilities for safer and efficient travel.

FUNDING SOURCES:
NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnership with local broadcasting companies.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Partially active and led by NDOR.

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: S5.4 Incident Management System - Phase I

DESCRIPTION: Activities in Phase I to focus on organizing and assembling incident management forum, developing a statewide intergovernmental transition plan for incident management coordinated by TMC and install gates on I-80 to redirect traffic flow under emergency conditions.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Incident Management Hazardous Material Incident Response	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $45,000 *Annual Operations & Maintenance:* $4,500	**BENEFITS:** Basis for future incident management system statewide.

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
Coordinating emergency response and setting response protocols with and between NDOR, NSP and emergency response providers may be most difficult tasks.

LEAD AGENCY:
NDOR

PROJECT STATUS: Partially active and led by NDOR.

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: S5.5 Smart Work Zones - Operational Test

DESCRIPTION: Conduct smart work zone operational test to evaluate advanced traveler information systems, variable speed limit signs and radar detection systems to improve traffic safety and the work zone environment for work zone employees.

APPLICABLE USER SERVICES: Traffic Control	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* $35,000 *Implementation:* $200,000 *Annual Operations & Maintenance:* $20,000	**BENEFITS:** Basis for work zone safety improvement statewide.

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnership with ITS equipment vendors for operational test.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: M5.1 Statewide Traffic Management Center (TMC) - Phase II

DESCRIPTION: Define system requirements for input/output, database and interface functions at TMC. Analyze location, space, resources, operations and funding requirements. Design system architecture to include integration of NDOR, NSP and statewide EMS communications system, rural transit systems, incident management, GPS base station, and traffic data collection sites and sensors. Develop detailed transition plan to include costs.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Travel and Transportation Management	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $250,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** TMC serves to monitor, collect and manage statewide ITS data and management systems. Increases the efficiency and safety for rural travelers

FUNDING SOURCES:
NDOR, HHSS, NSP, DED, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible with rural transit providers and telecommunications companies.

INSTITUTIONAL CONSIDERATIONS:
Consensus building/coordination of services.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: M5.2 Statewide Maintenance Management System - Phase II

DESCRIPTION: Delegate operational tests for each system listed in Project S5.2 to individual NDOR districts. Evaluate operational tests for system performance.

APPLICABLE USER SERVICES: Travel and Transportation Management	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $150,000 *Implementation:* $1,000,000 *Annual Operations & Maintenance:* $235,079	**BENEFITS:** $330,000/Year **B/C Ratio:** 1.4

FUNDING SOURCES:
NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: M5.3 Weather Stations - Phase II

DESCRIPTION: Implement 3 additional weather stations on I-80 statewide capable of TMC remote access. Evaluate system performance.

APPLICABLE USER SERVICES: Travel and Transportation Management	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:* $75,000 *Annual Operations & Maintenance:* $16,310	**BENEFITS:** $57,000/Year **B/C Ratio:** 3.5

FUNDING SOURCES:
NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnership with local broadcasting companies.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Partially active and led by NDOR.

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: M5.4 Automated Safety Enforcement - Phase I

DESCRIPTION: Conduct system requirements study and analyze areas where safety enforcement technologies may be needed to increase overall highway safety and reduce law enforcement operational costs. Develop detailed transition plan to include interface capabilities with Criminal Justice Information Systems (CJIS), TMC with automatic ticketing systems.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traffic Control	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $100,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for the statewide implementation of roadside law enforcement technologies.

FUNDING SOURCES:
NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
Legal issues with privacy and liability.

LEAD AGENCY:
NDOR

PROJECT STATUS: Partially active and led by NDOR.

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: M5.5 Incident Management System - Phase II

DESCRIPTION: Continue with activities in Phase I. Phase II activities to focus on incident management institutional barriers, establishing incident response teams in participating areas and develop reporting procedures and guidelines to TMC.

APPLICABLE USER SERVICES: Incident Management Hazardous Material Incident Response	**DEPLOYMENT SCENARIO:** Medium Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $390,000 *Annual Operations & Maintenance:* $96,555	**BENEFITS:** $1,600,000/Year **B/C Ratio:** 16.0

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
Coordinating emergency response and setting response protocols with and between NDOR, NSP and emergency response providers may be most difficult tasks.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: M5.6 Smart Work Zone Implementation - Phase I

DESCRIPTION: Deploy smart work zone systems in I-80 corridor work zones based on Operational Test S5.5. Link systems with TMC. Evaluate system performance.

APPLICABLE USER SERVICES: Traffic Control	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $30,000 *Implementation:* $400,000 *Annual Operations & Maintenance:* $109,983	**BENEFITS:** $700,000/Year **B/C Ratio:** 6.4

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: M5.7 Traffic Signal Coordination - Phase I

DESCRIPTION: Determine system requirements and existing statewide traffic control coordination systems. Design system architecture for integrated and adaptive statewide traffic signal optimization system accessible and controlled by TMC. Deploy coordinated traffic signal systems in highly congested areas near I-80 on and off ramps. Evaluate traffic control system adaptability to traffic flow conditions and system performance.

APPLICABLE USER SERVICES: Traffic Control	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $100,000 *Implementation:* $300,000 *Annual Operations & Maintenance:* $135,520	**BENEFITS:** $230,000/Year **B/C Ratio:** 1.7

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: L5.1 Statewide Traffic Management Center (TMC) - Phase III

DESCRIPTION: Construct statewide TMC. Begin systems implementation and integration. Conduct preliminary operational systems deployment. Evaluate systems performance. Implement statewide TMC operations in conjunction with emergency and incident management center (s) and NSP dispatch.

APPLICABLE USER SERVICES: Travel and Transportation Management	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $100,000 *Implementation:* $1,100,000 *Annual Operations & Maintenance:* $229,206	**BENEFITS:** $700,000/Year **B/C Ratio:** 3.0

FUNDING SOURCES:
NDOR, HHSS, NSP, DED, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships between funding sources strongly encouraged.

INSTITUTIONAL CONSIDERATIONS:
Consensus building/coordination of services.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance **PROJECT:** L5.2 Statewide Maintenance Management System - Phase III

DESCRIPTION: Deploy regional and statewide maintenance management systems based on operational tests conducted during Phase II (M5.2). Focus deployment on networking systems to allow districts and TMC to access and share information to make informed management decisions.	
APPLICABLE USER SERVICES: Travel and Transportation Management	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $100,000 *Implementation:* $800,000 *Annual Operations & Maintenance:* $205,714	**BENEFITS:** $660,000/Year **B/C Ratio:** 3.3
FUNDING SOURCES: NDOR	
PUBLIC/PRIVATE PARTNERSHIPS: Not common with this project.	
INSTITUTIONAL CONSIDERATIONS: None	
LEAD AGENCY: NDOR	
PROJECT STATUS: Proposed	
COMMENTS:	

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: L5.3 Automated Safety Enforcement - Phase II

DESCRIPTION: Conduct operational tests of safety enforcement technologies in areas identified in Project M5.4. Evaluate operational tests.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traffic Control	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $30,000 *Implementation:* $20,000 *Annual Operations & Maintenance:* $15,190	**BENEFITS:** $80,000/Year **B/C Ratio:** 5.3

FUNDING SOURCES:
NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible with operational tests.

INSTITUTIONAL CONSIDERATIONS:
Legal issues concerning privacy and liability.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: L5.4 Incident Management System - Phase III

DESCRIPTION: Continue with activities noted in Phase I and Phase II. Activities in Phase III will focus on incident management systems integration with TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Incident Management	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $100,000 *Implementation:* $1,100,000 *Annual Operations & Maintenance:* $240,952	**BENEFITS:** $2,100,000/Year **B/C Ratio:** 8.9

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
Coordinating emergency response and setting response protocols with and between NDOR, NSP and emergency response providers may be most difficult tasks.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: L5.5 Smart Work Zones Implementation - Phase II

DESCRIPTION: Deploy smart work zone systems statewide in areas needed. Continue linking work zone systems with statewide TMC for remote evaluations.

APPLICABLE USER SERVICES: Traffic Control	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $0 *Implementation:* $430,000 *Annual Operations & Maintenance:* $170,000	**BENEFITS:** $1,100,000/Year **B/C Ratio:** 6.4

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Infrastructure Operations & Maintenance

PROJECT: L5.6 Traffic Signal Coordination - Phase II

DESCRIPTION: Deploy adaptive signal control systems and ramp metering systems in areas near I-80 and other major attractions based on Project M5.7. Link traffic signal control systems to TMC. Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Traffic Control	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $100,000 *Implementation:* $650,000 *Annual Operations & Maintenance:* $153,095	**BENEFITS:** $260,000/Year **B/C Ratio:** 1.7

FUNDING SOURCES:
NDOR

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Fleet Operations & Maintenance

PROJECT: S6.1 Automatic Vehicle Location (AVL) System - Phase I

DESCRIPTION: Define system requirements and infrastructure support to determine how AVL technologies can effectively benefit the management of fleet maintenance vehicles and reduce costs. Develop transition plan and hardware/software support needed with costs. Conduct operational test on snow plows and Nebraska State Patrol vehicles in one NDOR district utilizing AVL systems. Evaluate system performance.

APPLICABLE USER SERVICES: Route Guidance Emergency Vehicle Fleet Management	**DEPLOYMENT SCENARIO:** Short Range (Year 2000-2005)
COSTS: *Study/Design:* $30,000 *Implementation:* $30,000 *Annual Operations & Maintenance:* $2,000	**BENEFITS:** Basis for determining performance of AVL technology on fleet vehicles statewide.

FUNDING SOURCES:
HHSS, NDOR, NSP, rural transit providers, NATP, FTA

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships for coordination needed between and among funding sources.

INSTITUTIONAL CONSIDERATIONS:
Coordination among and between funding sources may prove most significant challenge.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Project S4.2 can be coordinated with this project.

CRITICAL PROGRAM AREA: Fleet Operations & Maintenance

PROJECT: S6.2 Oversize/Overweight (OS/OW) Routing Tools - Phase I

DESCRIPTION: Analyze consultant study once completed. Define system requirements and evaluate existing OS/OW routing procedures to maximize the efficiency of fleet vehicle mobility and minimize road and bridge stress and wear. Develop transition plan with costs for integration to include system support of real time tracking by TMC. Conduct operational routing test with existing routing software and GIS base road maps. Evaluate operational test.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Route Guidance Traffic Control	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $30,000 *Annual Operations & Maintenance:* $3,000	**BENEFITS:** Basis for improving OS/OW vehicle routing systems statewide to extend life of pavement and safety to travelers.

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Perceptions of ineffective regulations.

LEAD AGENCY:
NDOR

PROJECT STATUS: Partially active and led by NDOR.

COMMENTS:

CRITICAL PROGRAM AREA: Fleet Operations & Maintenance

PROJECT: M6.1 Automatic Vehicle Location (AVL) Systems - Phase II

DESCRIPTION: Expand AVL system project to snow plows and Nebraska State Patrol vehicles in additional engineering districts based on results of Project S6.1. Evaluate system performance.

APPLICABLE USER SERVICES: Route Guidance Emergency Vehicle Fleet Management	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $50,000 *Implementation:* $75,000 *Annual Operations & Maintenance:* $27,844	**BENEFITS:** $140,000/Year **B/C Ratio:** 5.0

FUNDING SOURCES:
HHSS, NDOR, NSP, rural transit providers, NATP, FTA

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships for coordination needed between and among funding sources.

INSTITUTIONAL CONSIDERATIONS:
Coordination among and between funding sources may prove most significant challenge.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Project M4.1 can be coordinated with this project.

CRITICAL PROGRAM AREA: Fleet Operations & Maintenance

PROJECT: M6.2 Oversize/Overweight (OS/OW) Routing Tools - Phase II

DESCRIPTION: Deploy statewide computerized OS/OW vehicle routing system with internet broadcasting capabilities based on operational test. Expand computerized base maps to include county roads (see Project M8.2). Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Route Guidance Traffic Control	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $50,000 *Implementation:* $225,000 *Annual Operations & Maintenance:* $69,756	**BENEFITS:** $250,000/Year **B/C Ratio:** 3.6

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Potential citizen protest over designated routes ("Not In My Backyard" syndrome).

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Fleet Operations & Maintenance

PROJECT: L6.1 Automatic Vehicle Location (AVL) System - Phase III

DESCRIPTION: Expand AVL system to snow plows and Nebraska State Patrol vehicles statewide for real time tracking by TMC. Evaluate system effectiveness and performance.

APPLICABLE USER SERVICES: Route Guidance Emergency Vehicle Fleet Management	**DEPLOYMENT SCENARIO:** Long Range (Year 2010-2020)
COSTS: *Study/Design:* $50,000 *Implementation:* $330,000 *Annual Operations & Maintenance:* $96,845	**BENEFITS:** $320,000/Year **B/C Ratio:** 0.5

FUNDING SOURCES:
HHSS, NDOR, NSP, rural transit providers, NATP, FTA

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships for coordination needed between and among funding sources.

INSTITUTIONAL CONSIDERATIONS:
Coordination among and between funding sources may prove most significant challenge.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Project L4.1 can be coordinated with this project.

CRITICAL PROGRAM AREA: Fleet Operations & Maintenance

PROJECT: L6.2 Oversize/Overweight (OS/OW) Routing Tools - Phase III

DESCRIPTION: Expand statewide computerized routing system to include real time infrastructure detail, border state information with tracking capabilities by TMC. Evaluate system effectiveness and efficiency.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Route Guidance Traffic Control	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $30,000 *Implementation:* $500,000 *Annual Operations & Maintenance:* $136,258	**BENEFITS:** $490,000/Year **B/C Ratio:** 3.6

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources.

INSTITUTIONAL CONSIDERATIONS:
Potential citizen protest over designated routes ("Not In My Backyard" syndrome).

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: S7.1 CVO Information Warehouse Network - Phase I

DESCRIPTION: Define system requirements and existing support systems to establish electronic permitting process with real time border state information and requirements index including information on infrastructure capacity limitations and routing systems for oversize/overweight and seasonal/harvesting transport to save CVO operators time and money while increasing highway safety. Include system architecture for hazardous materials permitting and tracking systems. Develop transition plan with costs. Identify leading information service provider.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $150,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for establishing electronic pipeline of information to all commercial carriers to decrease travel time, enhance safety and increase commercial mobility

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources, as well as, advertisement revenues.

INSTITUTIONAL CONSIDERATIONS:
Intergovernmental agency cooperation and information sharing.

LEAD AGENCY:
NDOR

PROJECT STATUS: Partially active and led by Department of Motor Vehicles.

COMMENTS: Project needs to be included with system architecture of Statewide TMC.

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: S7.2 CVO Warehouse Access Improvement System - Phase I

DESCRIPTION: Define system requirements and infrastructure support for improved access to CVO information warehouse. Develop system architecture and system integration of CVO information warehouse with Project's S3.2, S3.3, toll free telephone system, pagers, internet and truck stop, rest area kiosks and TMC. Develop transition plan with costs.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for enhancing multiple communication transport media to deliver pre-trip and en-route CVO information to all commercial carriers.

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources, as well as, advertisement revenues.

INSTITUTIONAL CONSIDERATIONS:
Intergovernmental agency cooperation and information sharing.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Project needs to be included with system architecture of Statewide TMC. Project serves to facilitate Project S7.1.

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: S7.3 Weigh-In-Motion (WIM) Improvement - Phase I

DESCRIPTION: Evaluate current Eastbound WIM station near North Platte. Expand WIM sites to Westbound I-80 near North Platte and Eastbound and Westbound I-80 near Waverly to increase the efficiency and safety of highway transport. Evaluate WIM sites on I-80 for system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Electronic Clearance	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $30,000 *Implementation:* $1,000,000 *Annual Operations & Maintenance:* $220,000	**BENEFITS:** $1,100,000/Year **B/C Ratio:** 4.9

FUNDING SOURCES:
NDOR, NSP, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NSP/Carrier Enforcement

PROJECT STATUS: Active and led by NSP/Carrier Enforcement.

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: S7.4 Electronic Hazardous Materials Permitting System - Phase I

DESCRIPTION: Define system requirements and existing system of hazardous materials permitting. Develop system architecture and software to include integration with CVO warehouse to improve overall highway safety and monitoring. Develop transition plan with costs.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for determining how hazardous materials permitting can be operated and maintained statewide.

FUNDING SOURCES:
NDOR, NSP, FHWA, DMV, DEQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
DMV

PROJECT STATUS: Proposed

COMMENTS: DEQ may qualify as lead agency.

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: S7.5 Hazardous Materials Tracking/Routing System - Phase I

DESCRIPTION: Design tracking system to utilize AVL technologies and routing software to effectively control and monitor the safe transport of hazardous materials statewide. Develop transition plan to coincide with Project's S6.1 and S6.2. Develop hazardous materials vehicle inventory system utilizing computer software routing tools to report departure, expected route of travel and time of arrival at destination. Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration On-Board Safety Monitoring	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $200,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for statewide hazardous materials tracking and routing.

FUNDING SOURCES:
NDOR, NSP, FHWA, DMV, DEQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NSP

PROJECT STATUS: Inactive

COMMENTS: System should be designed to be controlled by Statewide TMC.

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: S7.6 CVO Forum - Phase I

DESCRIPTION: Establish CVO Forum to meet regularly consisting of public and private key stakeholders to guide development of an efficient and effective CVO information warehouse network, formulate partnerships, oversee and recommend improvements to the development for broadcasting CVO information warehouse statewide, monitor and recommend improvements to statewide WIM and automated pre-clearance screening systems, monitor CVO information service provider and make recommendations on border state information improvement and hazardous materials permitting and tracking needs.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Operations	Short Range (Year 2000-2005)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensure CVO/ITS projects effectively contribute to the safety of travelers and the mobility of CVO transporters. Ensure technologies are explored, utilized and properly evaluated.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
Consensus building.

LEAD AGENCY:
NSP

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: S7.7 Automated Pre-Clearance Screening System - Phase I (Electronic Screening)

DESCRIPTION: Define system requirements and system architecture for automated pre-clearance screening station for safety and credentialing of CVO vehicles at North Plate I-80 Eastbound. Develop system architecture to coincide with WIM sites for more efficient statewide deployment of automated pre-clearance screening to enhance safety for travelers and reduce the travel time for CVO operators. Evaluate screening site performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Electronic Clearance	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $100,000 *Implementation:* $0.00 *Annual Operations & Maintenance:* $0.00	**BENEFITS:** Basis for optimizing CVO mobility statewide without causing delays.

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NSP/Carrier Enforcement

PROJECT STATUS: Partially active and led by NSP/Carrier Enforcement.

COMMENTS: Project should be designed to support Project's S5.1(TMC) and S7.3 (WIM).

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: M7.1 CVO Information Warehouse Network - Phase II

DESCRIPTION: Develop CVO information warehouse database to include permitting, infrastructure specifications on road, bridges and border state information and requirements. Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $65,000 *Implementation:* $15,000 *Annual Operations & Maintenance:* $44,397	**BENEFITS:** $80,000/Year **B/C Ratio:** 1.8

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources, as well as, advertisement revenues.

INSTITUTIONAL CONSIDERATIONS:
Intergovernmental agency cooperation and information sharing.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS: Project shares information from Project's M8.2, M5.2, S5.4, and L5.2.

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: M7.2 CVO Warehouse Access Improvement System - Phase II

DESCRIPTION: Deploy CVO information warehouse network on internet. Evaluate system performance statewide.

APPLICABLE USER SERVICES: Commercial Vehicle Administration	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $10,000 *Implementation:* $20,000 *Annual Operations & Maintenance:* $38,524	**BENEFITS:** $80,000/Year **B/C Ratio:** 2.0

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources, as well as, advertisement revenues.

INSTITUTIONAL CONSIDERATIONS:
Intergovernmental agency cooperation and information sharing.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: M7.3 Weigh-In-Motion (WIM) Improvement - Phase II

DESCRIPTION: Deploy approximately five additional WIM sites focusing at existing weigh stations. Develop remote access and operations architecture between WIM sites and TMC. Evaluate WIM sites at weigh stations and elsewhere for system performance.

APPLICABLE USER SERVICES: Commercial Vehicle Electronic Clearance	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $50,000 *Implementation:* $2,100,000 *Annual Operations & Maintenance:* $452,539	**BENEFITS:** $2,200,000/Year **B/C Ratio:** 4.9

FUNDING SOURCES:
NDOR, NSP, FHWA, Nebraska Motor Carriers Association

PUBLIC/PRIVATE PARTNERSHIPS:
Potential partnerships between commercial carriers and NSP.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NSP/Carrier Enforcement

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: M7.4 Automated Pre-Clearance Screening System - Phase II

DESCRIPTION: Expand automated pre-clearance screening sites to coincide with WIM site deployment to reduce costs and increase safety. Evaluate system performance.

APPLICABLE USER SERVICES: Commercial Vehicle Electronic Clearance	**DEPLOYMENT SCENARIO:** Medium Range (Year 2005-2010)
COSTS: *Study/Design:* None *Implementation:* $0.00 *Annual Operations & Maintenance:* $0.00	**BENEFITS:** $800,000/Year **B/C Ratio:** Infinite

FUNDING SOURCES:
NDOR, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NSP/Carrier Enforcement

PROJECT STATUS: Proposed

COMMENTS: "Pre-Pass" is a system that charges carrier operators per vehicle through a electronic screening system and is no charge to state government for equipment, operations or maintenance. "TransCorp" screening system costs the state approximately $150,000 per site plus maintenance. Project costs for Project's S7.7 and M7.4 reflect Pre-Pass automatic pre screening systems.

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: M7.5 Electronic Hazardous Materials Permitting System - Phase II

DESCRIPTION: Conduct hazardous materials permitting software operational tests utilizing internet. Evaluate operational tests.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $20,000 *Implementation:* $30,000 *Annual Operations & Maintenance:* $16,190	**BENEFITS:** $58,000/Year **B/C Ratio:** 3.6

FUNDING SOURCES:
NDOR, NSP, FHWA, DMV, DEQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
DMV

PROJECT STATUS: Proposed

COMMENTS: DEQ may qualify as lead agency.

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: M7.6 Hazardous Materials Tracking/Routing System - Phase II

DESCRIPTION: Expand Phase I to include operational tests for customized GIS mapping software to analyze performance and accuracy of tracking hazardous materials transporters equipped with GPS transmitters by TMC. Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration On-Board Safety Monitoring	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* $40,000 *Implementation:* $100,000 *Annual Operations & Maintenance:* $26,445	**BENEFITS:** $95,000/Year **B/C Ratio:** 3.6

FUNDING SOURCES:
NDOR, NSP, FHWA, DMV, DEQ

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible with ITS vendors for operational tests.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NSP

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: M7.7 CVO Forum - Phase II

DESCRIPTION: Continue activities from Phase I. Activities in Phase II will focus on marketing available CVO information available on internet, integrating WIM/automated pre-clearance sites with TMC and expanding CVO information warehouse to include additional states' CVO credentialing and permitting requirements.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Operations	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensure CVO/ITS projects effectively contribute to the safety of travelers and the mobility of CVO transporters. Ensure technologies are explored, utilized and properly evaluated.

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
Consensus building.

LEAD AGENCY:
NSP

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: L7.1 CVO Information Warehouse Network - Phase III

DESCRIPTION: Expand CVO information warehouse to include real time infrastructure data collection and integration with TMC, as well as, networking with other states' CVO credentialing and permitting sites. Evaluate system data collection and integration performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $30,000 *Implementation:* $75,000 *Annual Operations & Maintenance:* $22,333	**BENEFITS:** $80,000/Year **B/C Ratio:** 3.6

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources, as well as, advertisement revenues.

INSTITUTIONAL CONSIDERATIONS:
Intergovernmental agency cooperation and information sharing.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: L7.2 CVO Warehouse Access Improvement System - Phase III

DESCRIPTION: Expand methods statewide for real time information delivery to include HAR, truck stop and rest area kiosks, pagers, dedicated television channels, highspeed internet access and e-mail.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Long Range (Year 2010-2020)
COSTS: *Study/Design:* None *Implementation:* $150,000 *Annual Operations & Maintenance:* $32,619	**BENEFITS:** $80,000/Year **B/C Ratio:** 2.5

FUNDING SOURCES:
NDOR, NSP, Motor Carriers Association, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Possible partnerships among and between funding sources, as well as, advertisement revenues.

INSTITUTIONAL CONSIDERATIONS:
Intergovernmental agency cooperation and information sharing.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: L7.3 Weigh-In-Motion (WIM) Improvement - Phase III

DESCRIPTION: Expand WIM sites statewide where needed and integrate system access and control by TMC. Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Electronic Clearance	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $150,000 *Implementation:* $2,500,000 *Annual Operations & Maintenance:* $561,269	**BENEFITS:** $2,800,000/Year **B/C Ratio:** 4.9

FUNDING SOURCES:
NDOR, NSP, FHWA

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NSP/Carrier Enforcement

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: L7.4 Electronic Hazardous Materials Permitting System - Phase III

DESCRIPTION: Integrate hazardous materials permitting system with CVO information warehouse network and TMC. Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $30,000 *Implementation:* $100,000 *Annual Operations & Maintenance:* $25,270	**BENEFITS:** $91,000/Year **B/C Ratio:** 3.6

FUNDING SOURCES:
NDOR, NSP, FHWA, DMV, DEQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
DMV

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: L7.5 Hazardous Materials Tracking/Routing System - Phase III

DESCRIPTION: Integrate hazardous materials tracking software and GPS base station with CVO information warehouse network and TMC. Integrate hazardous materials remote monitoring system with TMC. Evaluate system performance.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Administration On-Board Safety Monitoring	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $30,000 *Implementation:* $100,000 *Annual Operations & Maintenance:* $25,270	**BENEFITS:** 91,000/Year **B/C Ratio:** 3.6

FUNDING SOURCES:
NDOR, NSP, FHWA, DMV, DEQ

PUBLIC/PRIVATE PARTNERSHIPS:
Not common with this project.

INSTITUTIONAL CONSIDERATIONS:
Technical coordination among and between funding sources needed.

LEAD AGENCY:
NSP

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Commercial Vehicle Operations (CVO)

PROJECT: L7.6 CVO Forum - Phase III

DESCRIPTION: Continue activities from Phase I and Phase II. Activities in Phase III to focus on integrating hazardous materials tracking and permitting systems with CVO information warehouse network and centralizing all CVO highway safety, monitoring and enforcement networks and operations with statewide TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
Commercial Vehicle Operations	Long Range (Year 2010-2020)
COSTS: *Study/Design:* None *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensure CVO/ITS projects effectively contribute to the safety of travelers and the mobility of CVO transporters. Ensure technologies are explored, utilized and properly evaluated.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
Consensus building.

LEAD AGENCY:
NSP

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Communications

PROJECT: S8.1 Communications Master Plan

DESCRIPTION: Develop communications master plan to support the implementation of the statewide ITS plan.

APPLICABLE USER SERVICES:
All

DEPLOYMENT SCENARIO:
Short Range (Year 2000-2005)

COSTS:
Study/Design: $400,000
Implementation: None
Annual Operations & Maintenance: None

BENEFITS:
Basis for establishing network of technologies, networks and management systems to facilitate deployment of all statewide ITS projects.

FUNDING SOURCES:
DAS/Division of Communications

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
DAS/Division of Communications

PROJECT STATUS: Partially active and led by DAS/Division of Communications.

COMMENTS: Search is on for communications engineering, inventory and assessment consultant.

CRITICAL PROGRAM AREA: Communications

PROJECT: S8.2 GIS Strategic Plan

DESCRIPTION: Define GIS system requirements and evaluate existing infrastructure to expedite a statewide computerized road map database to facilitate AVL, transportation management systems and other related ITS applications. Develop intergovernmental transition plan with costs. Develop system architecture to accommodate statewide access.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
All User Services	Short Range (Year 2000-2005)
COSTS: *Study/Design:* $250,000 *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Basis for establishment of an intergovernmental GIS network for ITS project deployment.

FUNDING SOURCES:
NDOR, utility companies, railroad companies

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible between funding sources and private businesses.

INSTITUTIONAL CONSIDERATIONS:
Public as well as private agencies will need to share GIS information databases and agree to standards development.

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Communications

PROJECT: S8.3 Communications Forum - Phase II

DESCRIPTION: Establish communications forum consisting of public and private stakeholders to monitor ITS related communications infrastructure development and opportunities for public/private partnerships and act as liaison to GIS Steering Committee and Nebraska Information Technology Committee on ITS issues.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
All	Short Range (Year 2000-2005)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures communications needs are facilitated by ITS projects. Provides communications advice. Evaluates ITS projects and makes recommendations for communication improvements and enhancements.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Communications **PROJECT:** M8.1 Communications Master Plan

DESCRIPTION: Implement communications master plan developed in project S8.1.	
APPLICABLE USER SERVICES: All	**DEPLOYMENT SCENARIO:** Medium Range (Year 2000-2005)
COSTS: *Study/Design:* None *Implementation:* $100,000,000 *Annual Operations & Maintenance:* $11,174,600	**BENEFITS:** $4,500,000/Year **B/C Ratio:** 0.4
FUNDING SOURCES: DAS/Division of Communications	
PUBLIC/PRIVATE PARTNERSHIPS: Not common for this project.	
INSTITUTIONAL CONSIDERATIONS: None	
LEAD AGENCY: DAS/Division of Communications	
PROJECT STATUS: Proposed	
COMMENTS:	

CRITICAL PROGRAM AREA: Communications

PROJECT: M8.2 GIS Statewide Road Map Network - Phase I

DESCRIPTION: Continue to build GIS database to a network of approximately 100,000 miles of roads to support sign and bridge inventory systems, pavement and safety management systems, as well as, railroad grade crossing inventory systems in areas capable of being monitored and detected. Integrate network for central data processing at TMC. Evaluate system performance.

APPLICABLE USER SERVICES: All	**DEPLOYMENT SCENARIO:** Medium Range (Year 2000-2005)
COSTS: *Study/Design:* $30,000 *Implementation:* $125,000 *Annual Operations & Maintenance:* $33,206	**BENEFITS:** $72,000/Year **B/C Ratio:** 2.2

FUNDING SOURCES:
NDOR, Railroad Transportation Safety District, HHSS, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible with companies with current GIS databases and companies who have vested interests in detail of Nebraska road network.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Communications

PROJECT: M8.3 Communications Forum - Phase II

DESCRIPTION: Continue activities in Phase I. Activities in Phase II will focus on implementation of communications master plan and work on institutional barriers, networking issues and software issues, as well as, GIS standards and communications integration with local governments and statewide TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
All	Medium Range (Year 2005-2010)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures communications needs are facilitated by ITS projects. Provides communications advice. Evaluates ITS projects and makes recommendations for communication improvements and enhancements.

FUNDING SOURCES:
Not needed

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Communications

PROJECT: L8.1 GIS Statewide Road Map Network - Phase II

DESCRIPTION: Continue with activities in Phase I. Phase II will focus on integrating GIS network with TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
All User Services	Long Range (Year 2010-2020)
COSTS: *Study/Design:* $30,000 *Implementation:* $50,000 *Annual Operations & Maintenance:* $14,397	**BENEFITS:** $18,000/Year **B/C Ratio:** 1.3

FUNDING SOURCES:
NDOR, railroad transportation safety districts, HHSS, NSP

PUBLIC/PRIVATE PARTNERSHIPS:
Partnerships possible with companies with current GIS databases and companies who have vested interests in detail of Nebraska road network.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

CRITICAL PROGRAM AREA: Communications

PROJECT: L8.2 Communications Forum - Phase III

DESCRIPTION: Continue activities listed in Phase I and Phase II. Activities in Phase III will focus on sharing data and information, identifying other emerging communications technologies and systems integration with TMC.

APPLICABLE USER SERVICES:	**DEPLOYMENT SCENARIO:**
All	Long Range (Year 2010-2020)
COSTS: *Study/Design:* No costs assumed *Implementation:* None *Annual Operations & Maintenance:* None	**BENEFITS:** Ensures communications needs are facilitated by ITS projects. Provides communications advice. Evaluates ITS projects and makes recommendations for communication improvements and enhancements.

FUNDING SOURCES:
Not needed.

PUBLIC/PRIVATE PARTNERSHIPS:
Not common for this project.

INSTITUTIONAL CONSIDERATIONS:
None

LEAD AGENCY:
NDOR

PROJECT STATUS: Proposed

COMMENTS:

APPENDIX D
List of Documents

LIST OF DOCUMENTS AND PUBLICATIONS ACQUIRED BY ITS STUDY TEAM

Advanced Public Transportation Systems: The State of the Art (1996), U.S. Department of Transportation, Federal Transit Administration, Publication Number FHWA-JPO-96-0033.

Advanced Rural Transportation System (1997), Strategic Plan & Program Plan-Executive Summary, U.S. Department of Transportation, Federal Highway Administration.

Benefits Assessment of Advanced Public Transportation Systems (1996), U.S. Department of Transportation, Federal Transit Administration, Office of Mobility Innovation.

Business Plan for Information Resource Management (1998), Nebraska State Patrol.

Cellular Phone Coverage Map (1997), Aliant Communications.

Cellular Phone Coverage Map (1997), Cellular One Corporation.

City of Scottsbluff, Nebraska Comprehensive Plan (1996), Transportation Chapter, pp. 51-54.

Comprehensive Development Plan for the City of Beatrice (1992), Prepared by RDG Martin Shukert Inc. in association with Ciaccio Dennell Group Inc. Kirkham, Michael and Associates with the Citizens of the City of Beatrice, Chapter Four: Mobility for All, pp. 99-128.

Comprehensive Trails Plan for the State of Nebraska (1994), Department of Economic Development.

Connections: Rural Mobility at the Crossroads (1995), U.S. Department of Transportation, Federal Transit Administration.

Criminal Justice Information System-Strategic Plan (1997), State of Nebraska.

Current Radio Systems and Needs Summary (1996), State of Nebraska, RAM Communications Consultants, Inc.

Dawson County Comprehensive Plan (1996), Circulation Plan, Hanna:Keelan Associates, P.C. Community Planners, pp.34-43.

Data Transmission Network (DTN) Corporation Weather Center Proposal (1998), Bob Stoupa, Director of Sales-Travel Industry & Don Wilmes, Director of Sales-Public Sector.

Dodge County Comprehensive Development Plan-Draft (1998), Transportation Plan, pp.72-78.

Exploring the Application of Benefit/Cost Methodologies to Transportation Infrastructure Decision Making (1996), Searching for Solutions-A Policy Discussion Series, U.S. Department of Transportation, Federal Highway Administration, Number 16

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Future Transportation in Nebraska-Nebraska's Statewide Long-Range Transportation Plan-Draft 1995-2015 Implementation Plan (1995), Nebraska Department of Roads, Transportation Planning Division.

Hastings' Vision 2004 (1994), Hastings, Nebraska Comprehensive Plan, pp. 69-76.

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Institutional and Policy Issues in Adopting Advanced Public Transportation Systems Technology (1995), U.S. Department of Transportation, Federal Transit Administration.

Integrating Intelligent Transportation Systems within the Transportation Planning Process: An Interim Handbook (1998), U.S. Department of Transportation, Federal Highway Administration.

Intelligent Transportation Systems (1998), Real World Benefits, U.S. Department of Transportation, Federal Highway Administration, FHWA-JPO-98-018.

Intelligent Transportation Systems Awareness Seminar (1998), U.S. Department of Transportation, Federal Transit Administration & Federal Highway Administration.

Intelligent Vehicle Highway Systems Projects (1993), U.S. Department of Transportation, Federal Highway Administration.

ITS Public/Private Partnerships Awareness Seminar Pilot Presentation (1998), U.S. Department of Transportation, Federal Highway Administration.

Lexington, Nebraska Comprehensive Plan Update (1990), Circulation Chapter, Hanna:Keelan Associates, P.C., Chapter Eight, pp. 60-66.

Mayer, Robert R. (1985), Policy and Program Planning-A Developmental Perspective, pp.1-201.

Missouri/Niobrara/Verdigre Creek Final General Management Plan/Environmental Impact Statement (1997), United States Department of the Interior, National Park Service.

National Directory of Fire Chiefs and Emergency Departments Seventh Addition (1998), National Public Safety Information Bureau, Span Publishing, pp. 398-411.

Nebraska Emergency Management Agency (NEMA) Duty Officer Contingency List of Actions for Aircraft Incidents, Blizzards/Severe Winter Storms, Dam Failure, Earthquakes, Fires, Flooding, Hazardous Materials, Miscellaneous Incidents, Radioactive Materials Incidents, Nuclear Power Plant Incidents, Terrorist Event, Tornadoes/Severe Summer Storms, Water Supply Emergencies (1997), Nebraska Emergency Management Agency.

Nebraska Human Services Needs Assessment for the Department of Social Services (1996), John Gaber & Sharon Gaber.

Nebraska ITS/CVO Business Plan (1997), Nebraska Department of Motor Vehicles, Nebraska Department of Roads, Nebraska State Patrol Carrier Enforcement Division, Nebraska Motor Carrier Association.

Nebraska Motor Carriers Association Owner's Manual and Directory (1998).

Nebraska Rural Health Plan for the Critical Access Hospital Program (1998), Department of Health and Human Services & Nebraska Association of Hospitals and Health Systems, Office of Rural Health.

Nebraska State Emergency Response Team (SERT) Standard Operating Procedures-Draft (1996), State of Nebraska, State Fire Marshal-Nebraska State Patrol-Department of Environmental Quality, Contents: Hazardous Materials, Standard Operating Safety Guides.

Nebraska Tourism Industry Development Plan (1996), Nebraska Department of Economic Development.

Nebraska Transit Directory (1996), Nebraska Department of Roads, Planning and Administration, Transportation Planning Division.

Nebraska's Statewide Long-Range Transportation Plan Intelligent Transportation System Goals Meeting (1997), Summary of Goals Meeting Report, Nebraska Department of Roads, Transportation Planning Division.

Operation Respond: Lessons Learned (1997), U.S. Department of Transportation, Federal Highway Administration, Office of Hazardous Materials Safety , Publication Number DOT-T-97-16.

Operational Strategies for Rural Transportation-Case Study in Florida (1996), U.S. Department of Transportation, Federal Highway Administration.

Policy, Administrative and Operations Management of a State-Wide Communication System for the State of Nebraska and the Nebraska Public Power District (1996), State of Nebraska, RAM Communications Consultants, Inc.

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Regulations Governing the Practice of Advanced Medical Care (1996), State of Nebraska, Department of Health, Professional and Occupational Licensure Division.

Report for Task 3: Analysis of Alternate Systems (1996), State of Nebraska, RAM Communications Consultants, Inc.

Report for Task 5: Functional System Design and Communications Plan (1996), State of Nebraska, RAM Communications Consultants, Inc.

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Rural Application of Advanced Traveler Information Systems: Recommended Actions (1997), U.S. Department of Transportation, Federal Highway Administration, Publication Number FHWA-RD-97-042.

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Scotts Bluff National Monument General Management Plan/Environmental Assessment-Draft (1998), United States Department of the Interior, National Park Service.

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State-Wide Information Technology Infrastructure Planning Process (1998), Nebraska Information Technology Commission, "http://www.nitc.state.ne.us/98infra.HTM"

Statewide Trauma System (1996), State of Nebraska, Department of Health, Health Systems Planning and Development, EMS Programs.

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Survey of Nebraska Fire Chiefs (1998), Tobin, Bill and University of Nebraska - Lincoln.

Survey sent to 694 Highway Superintendents, Public Works Directors, City Managers, Mayors and City Clerks to all 93 Nebraska Counties (1998)

Technology in Rural Transportation (1997), Simple Solutions, U.S. Department of Transportation, Federal Highway Administration, Publication Number FHWA-RD-97-108.

The City of Grand Island Comprehensive Land Use and Transportation Plan (1992), BRW, pp. 58-82.

The Cowboy Trail Master Plan (1997), Nebraska Game and Parks Commission.

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Top 25 Requested Services at Nebraska Rest Areas (1996), Nebraska Department of Tourism.

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York, Nebraska Comprehensive Plan & Economic Profile & Plan 2006 (1996), Hanna:Keelan Associates, P.C. Community Planners, pp. 5.29-5.39.

APPENDIX E
List of Contacts

LIST OF PEOPLE CONTACTED BY ITS STUDY TEAM

Name Title Organization	Address	Critical Program Area							Communications
		1	2	3	4	5	6	7	8
Albin, Marlene & Bob Grain Sorghum Board	301 Centennial Mall South PO Box 94982 Lincoln, NE				X				
Albrecht, Henry Wynne Transport Service, INC.	PO Box 1048 Omaha, NE				X				
Andersen, Steve Assist. Planning Manager NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE	X	X	X	X	X	X	X	X
Anderson, Kent Co. Hwy Supt. Keith County	511 N Spruce PO Box 149 Ogallala, NE	X					X	X	X
Anderson, Steve Director of Transportation OPPD	Omaha Public Power District 4302 Leavenworth Omaha, Ne	X					X	X	X
Bailey, Judy Lt. NE State Patrol	3920 W. Kearney Street Lincoln, NE				X				
Barrett, Thomas Agency Legal Council NE State Fire Marshall	246 South 14th Street Lincoln, NE	X	X						
Beaver, David Business Manager Ponca Tribe of Nebraska	PO Box 288 Niobrara, NE	X	X	X	X	X	X	X	X
Becker, Carla Health Data Manager NE Health & Human Services System	301 Centennial Mall So. PO Box 95007 Lincoln, NE	X							
Bertram, David Nebraska State Fire Marshall	200 South Silber North Platte, NE				X				
Botsford, Joe Project Leader NE Dept. of Motor Vehicles	PO Box 94789 Lincoln, NE				X				
Brown, Jim NE Surveyor's Office State of Nebraska	555 North Cotner Lincoln, NE	X	X	X	X	X	X	X	X
Cady, Dan Director NE Technology Transfer Center	W119 Nebraska Hall 900 N. 16th Street Lincoln, NE		X				X	X	X
Cain, Diane Communications Manager Omaha Public Power District	4302 Leavenworth Omaha, NE								X
Cappel, Bob Executive Director Lexington Area Chamber of Commerce	200 West Pacific PO Box 97 Lexington, NE					X			X
Cater, John Planning Engineer FHWA	PO Box 419715 Kansas City, MO	X	X	X	X	X	X	X	X
Chizek, Jerry Executive Director NE Sheriff's Assoc.	1700 N 17th Street BLDG. 114 Lincoln, NE	X	X		X		X	X	X
Cole, Dean EMS Program Administrator NE Health & Human Services	301 Centennial Mall So. PO Box 95007 Lincoln, NE	X	X						X
Cress, Milo ITS Engineer Federal Highway Administration	100 Centennial Mall North Lincoln, NE	X	X	X	X	X	X	X	X
Crowson, Ginny Project Manager Minnesota Guidestar	117 University Ave. St. Paul, MN	X	X	X	X	X	X	X	X
Cuca, Bud President NE Motor Carriers Assoc.	1701 K Street Lincoln, NE				X				
Cunningham, Andrew Policy Advisor NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE	X	X	X	X	X	X	X	X
Curtis, Allen Executive Director NE Comm. On Law Enforcement & Criminal Justice	PO Box 94946 Lincoln, NE	X	X		X		X	X	X

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		1	2	3	4	5	6	7	8
Doggett, Jim Nebraska State Patrol	1600 Highway 2 Lincoln, NE				X				
Doland, Frank Engineer FHWA	Federal Building Room 220 Lincoln, NE						X	X	
Dooley, Ron NE Dept. of Roads	PO Box 94759 Lincoln, NE				X				
Ebito, John Planner NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE	X	X	X	X	X	X	X	X
Farrell, Jim Director of Fiber Optics & Asset Utilization Union Pacific Railroad	1416 Dodge Street Omaha, NE								X
Figard, Roger City Engineer City of Lincoln	1001 North 6th Street Lincoln, NE								X
Gaber, Sharon Associate Professor University of Nebraska-Lincoln	Architecture Hall Lincoln, NE	X	X	X	X	X	X	X	X
Gaber, John Assistant Professor University of Nebraska-Lincoln	Architecture Hall Lincoln, NE	X	X	X	X	X	X	X	X
Gakle, Marlene Executive Director NE Assoc. of Trans. Providers	1810 Sara Rd. Beatrice, NE		X	X		X	X	X	
Genrich Richard Geographic Information Services Manager NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE								X
Gordon, Bruce Telecom Manager NE Public Power District	PO Box 499 Columbus, NE								X
Hahn, Roger Executive Director Nebraska Information Network	500 South 16th Street PO Box 81309 Lincoln, NE								X
Hale, David Lozier Corporation	6336 John J. Pershing Dr. Omaha, NE				X				
Hansen Sherril Co-Chair Mid-Nebraska Community Services	PO Box 2788 Kearney, NE		X	X			X		
Helms, Roy Brotherhood of Locomotive Engineers	Lincoln, NE	X	X					X	
Hoy, Chris ITS Planner Castle Rock Consultants	2600 Eagan Woods Drive, Suite 460 Eagan, MN								X
Jefferies, Mike NE Div. Of Communication	521 South 14th Street, Suite 300 Lincoln, NE								X
Jobman, Rob EMS Specialist NE Health & Human Services System	3423 2nd Ave. Kearney, NE	X	X						
Jobman, Virgil Jurgens Oil	PO Box 86 Filley, NE				X				
Johnston, Paul Chief, Public Affairs US Army Corps of Engineers	12565 West Center Road Omaha, Ne					X			
Kastanek Ray NE State Patrol	Lincoln, NE								X
Kim Customer Service Hertz Rent-A-Car	300 O Street Lincoln, NE						X		
Klein, Randy Nebraska Com Board	301 Centennial Mall South 4th Floor Lincoln, NE				X				
Kontos, Ron Permits Manager NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE				X		X	X	
Kruse Jon Blue Valley CO-OP	RR 2, Box 26 Seward, NE				X				
Langloss, Charles Federal Highway Administration	Federal Building, Room 230 Lincoln, NE				X				
Licht, Alice Executive Vice President NE Fertilizer & Ag-Chemical Institute, INC.	1111 Lincoln Mall, Suite 308 Lincoln, NE				X				

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		1	2	3	4	5	6	7	8
Lowe , Thyra Trauma Coordinator NE Health & Human Services System	301 Centennial Mall So. PO Box 95007 Lincoln, NE	X	X						
Maas, Ron Nebraska Wheat Board	301 Centennial Mall South Lincoln, NE				X				
McCoy, Pat Professor University of Nebraska-Lincoln	Nebraska Hall, Room W330 Lincoln, NE	X	X	X	X	X	X	X	X
McDowell, Tad Director UNL Parking Services and Transit Services	1941 Y Street Lincoln, NE						X	X	X
McGee, Jim Project Coordinator NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE	X	X	X	X	X	X	X	X
McGraw, Wanda Resource Developer NE Health & Human Services System	PO Box 218 Kearney, NE		X	X			X	X	X
Merchant , James Professor/ Director Center for Advanced Land Management	113 Nebraska Hall University of Nebraska-Lincoln Lincoln, NE								X
Meyer, Eric Assistant Professor University of Kansas	2011 Learned Hall Lawrence, KS	X	X						
Miller, David Director Division of Travel & Tourism	Department of Economic Development 700 South 16th Street Lincoln, NE					X			
Miller, William Director Division of Communications	521 South 14th Street, Suite 300 Lincoln, NE								X
Mitchel, Alan NE Dept. of Agriculture	301 Centennial Mall South PO Box 94947 Lincoln, NE				X				
Morgan, Dave Researcher Biological Systems Engineering	University of Nebraska - Lincoln East Campus Lincoln, NE	X							
Morrow, Kirk Dept. of Environmental Quality	1200 N Street Lincoln, NE		X						
Moseman, Kevin AGP Grain Cooperative	PO Box 2047 Omaha, NE				X				
Mueller, Keith Doctor/ Professor University of NE Med. Center	SLC 3023 UNMC Omaha, NE	X	X						X
Norton Lueng, Yvonne Director NE Policy & Research	State Capitol Building Room 1319 Lincoln, NE								X
Opplinger , Jim Double O Transportation	RR 4, Box 43A Columbus, NE				X				
Ossowski, Larry President NE Transportation Providers Association	Beatrice, NE			X					
Palmquist, Dick Executive Director NE Broadcasters Assoc.	12020 Shamrock Plaza Omaha, NE					X			X
Parker, James Business Manager Omaha Tribal Office	PO Box 368 Macy, NE	X	X	X	X	X	X	X	X
Pearson, R. James ITS Coordinator NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE	X	X	X	X	X	X	X	X
Peters, Randall Traffic Engineer NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE		X		X			X	
Pollard, Ken President NE Fire Fighters Assoc.	Omaha Fire Department Omaha, NE	X	X						
Pollard, Terry SGT. NE State Patrol	14th & Burnham Lincoln, NE	X	X						X
Prevo, Tom NE State Patrol	1500 Highway 2 Lincoln, NE	X	X						X
Quitana, Pat Crete Carriers	400 NW 56th Street PO Box 81228 Lincoln, NE				X				
Ratka, Steve Brotherhood of Locomotive Engineers	Minneapolis, MN		X					X	

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		1	2	3	4	5	6	7	8
Robak, Kim Lt. Governor State of Nebraska	State Capitol Building Lincoln, NE								X
Ronnau, Dalyce Assistant Maintenance Engineer NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE	X	X			X	X	X	X
Rosenthal, Dan Public Transportation Engineer NE Dept of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE		X	X		X	X		
Ryan, Beth Executive Director NE Railroad Assoc.	625 S. 14th Street Apt.-A100 Lincoln, NE		X					X	
Schmidt, Duane NE Dept. of Education	Lincoln, NE	X	X	X			X	X	X
Schor, David Medical Advisor NE Health & Human Services System	310 Centennial Mall South Lincoln, NE	X		X					
Searl, Jim Bossleman Travel Centers	PO Box 1567 Grand Island, NE				X				
Shoup, Dorothy Operations Supervisor Arizona DOT	2302 W. Durango St. Phoenix, AZ	X	X	X	X	X	X	X	X
Sieckmeyer, Ken Planning Manager NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE								X
Six, Florence Regional Public Affairs Officer Natl Park Service; Midwest Region	1709 Jackson Street Omaha, NE					X			
Snitely, David President/CEO Snitely Carr Production Group	1135 M Street, Suite 220 Lincoln, NE					X			
Snow, Carol Business Manager Winnebago Tribal Office	PO Box 687 Winnebago, NE	X	X	X	X	X	X	X	X
Snyder, Kim Executive Director NE Telephone Assoc.	801 Lincoln Sq. 121 South 13th Street Lincoln, NE								X
Staberg Dean Deputy Fire Chief Lincoln Fire Dept.	1801 Q Street Lincoln, NE	X	X				X		X
Stone, Fred Executive Director NE Petroleum Marketers INC.	1320 Lincoln Mall Lincoln, NE				X				
Stott, Duane County Surveyor Scotts Bluff County	Gering, NE								X
Stranberg, Randy Wilfarm, LLC	444 South 10th Street David City, NE				X				
Strand, Jim Cellular Telephone Industry	Aliant Communications Lincoln, NE								X
Sturtevant, Dennis JTI, INC./U.S. Express	PO Box 84550 Lincoln, NE				X				
Svoboda , Steve NE Emergency Management/ Civil Defense	1300 Military Road Lincoln, NE	X	X						
Tim Customer Service National Car Rental	Municipal Airport 2400 W. Adams Street Lincoln, NE					X			
Tobin, Bill Graduate Research Assistant University of Nebraska-Lincoln	Nebraska Hall, Room W332 Lincoln, NE	X	X	X	X	X	X	X	X
Tom Customer Service Budget Rent-A-Car	Municipal Airport 2400 W. Adams Street Lincoln, NE					X			
Tompkins, Elis Director of Intermodal Trans. NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE		X					X	
Trout, Tom Cornhusker Motor Lines	PO Box 27249 Omaha, NE				X				
Trudell, Roger Business Manager Santee Sioux Tribal Office	PO Box 163, RR #2 Niobrara, NE	X	X	X	X	X	X	X	X
Tuma, Bryan Major NE State Patrol	1600 Hwy 2 Lincoln, NE	X	X		X	X	X	X	X

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		1	2	3	4	5	6	7	8
Unzicker, Doy Farm Service Agency	PO Box 57975 Lincoln, NE				X				
Urwin, Al Werner Enterprises	PO Box 45308 Omaha, NE				X				
Von Essen, Susan Doctor/ Assistant Professor University of NE Med. Center	SWH 4016 UNMC Omaha, NE	X							
Wakefield, Gene NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE					X	X		
Westerholt, Duane Planning Administrator Nebraska Game & Parks	2200 N. 33rd St. PO Box 30370 Lincoln, NE					X			X
White, Rose AAA Nebraska	910 North 96th Street Omaha, NE					X			
Wilson, Harry President Butler County Mutual Aid	Brainard, NE	X							
Winkle, Michael Assistant General Manager NE Education & Telecommunications	1800 N. 33rd Street PO Box 83111 Lincoln, NE								X
Wray, Jerry NE Dept. of Roads	1500 Highway 2 PO Box 94759 Lincoln, NE			X		X			
Ziggafoos, Ron Nebraska Grain & Feed Assoc.	1233 Lincoln Mall Suite 200 Lincoln, NE				X				

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APPENDIX F
CVO Focus Group Summary

SUMMARY OF CVO FOCUS GROUP MEETING

One aspect of the needs assessment phase of the Nebraska Intelligent Transportation Systems Statewide Strategic Planning process was to conduct a focus group meeting with Commercial Vehicle Operators (CVO) stakeholders. On June 23, 1998 two focus groups met in Nebraska Hall at the University of Nebraska-Lincoln. The two focus groups ran simultaneously in two rooms and were guided by two facilitators: Dr. John Gaber and Dr. Sharon L. Gaber. As illustrated in Table F-1, John Gaber's focus group participants (Group A) represented Nebraska CVO stakeholders from intra-state transportation issues. Sharon Gaber's focus group participants (Group B) represented Nebraska stakeholders that are interested in the transporting of agricultural products. Below is a brief description of what was discussed in the two focus sessions.

Focus Group A

Each participant in focus group A was required to write their top three needs on separate pieces of paper. Afterwards, the pieces of paper with the identified needs were posted on the wall and then re-organized into distinct themes. A total of six themes were delineated from the pieces of paper and are identified below in Table F-1.

Table F-1 Group A Prioritized Written Identified Needs

1. Travel Information
Weather conditions
Travel information
Town specific weather information
Real-time road and weather
Conditions via satellite
Communication
Combine commercial transponders

2. Education/Safety
Public education for safe drivers
Increase safety of motoring public
Education and safety for all
Safe parking
Better commercial driver licensing
Trained drivers

3. Improve Efficiencies
Time and hassle
Improve capacity of highway system
Improve movement of goods

2. Standards
Regulations
Uniform regulations in different agencies
Uniformity among states
Standardized safety regulations
Standards
Universal standards

3. Emergency
Emergency location
Emergency response management
Type of emergency

4. Other
Cargo, voluntary, road, traffic signal control,
Trailer management, and, more on-ramp yield signs

According to Table F-1, "travel information" was the most common need identified by the focus group participants. All of the focus group members commented on the importance of accurate up-to-date weather information. Accurate weather information was extremely important to CVOs who need to know if they are approaching hazardous weather, for example a snowstorm. Similarly the need by CVOs for accurate and up-to-date travel information, such as road conditions and traffic situations exists. Better information of future road conditions can help CVOs anticipate and react to advance road conditions and get them to a more efficient alternative routes.

The two second most popular needs identified are "education/safety" and "standards." The focus group participants spent most of the time discussing issues relating to standards and did not discuss education/safety issues. It was universally accepted by the participants that there was a need for standardization of regulations across all states in the country. Several focus group members commented on the variations of traffic regulations among different states. Other participants discussed how different federal and state agencies have inconsistent regulatory policies. All of the focus group members agreed that if regulations could be standardized among the states and federal and local governments, it would significantly enhance the efficiency of their work.

The last topic discussed in the meeting was "emergency" issues. Here, focus group members discussed the importance of information in improving the response time and management of roadway emergencies. Types of information that was deemed crucial was the location of the emergency and the payload or type of emergency involved.
In concluding the focus group meeting, members were asked to prioritize their identified needs. Everyone agreed that the group's top two priorities could be synthesized into:
(1) Information safety warehouse
(2) Information access; multi-point access.

Focus group participants felt that all of the discussion in the meeting centered on the role of information as it relates to transportation. Furthermore, everyone agreed that the issue is not generating new information. Instead, what was needed was a central processing "warehouse" which anyone can access at minimal or no cost and that contained accurate and up-to-date information. Basic units of information needed in the warehouse are: weather and road conditions, road maps, driving and payload regulations and procedures, and, highlights on points of interests for popular destinations.

The second prioritized need was for the information warehouse to be available in several different locations. The first primary location for CVOs to access this information is at truck stops. Other points of access identified were roadside message boards and at rest stops.

Focus Group B

Similar to Group A, Group B participants were asked to write down their top three needs on separate pieces of paper. After participants finished writing their needs on a piece of paper, they were then posted on a wall and organized into themes. A total of seven themes were determined from the pieces of paper and are identified below in Table F-2.

According to Table F-2, "seasonal transport" was unanimously agreed upon as the most important need representing the participant's interests. Here, focus group participants discussed the importance of moving large volumes of harvested products as quickly and cost-effectively as possible. This is particularly important for crops like grain that have a small window of opportunity due to harvesting limitations.

Table F-2 Group B Prioritized Written Identified Needs

1. Seasonal Transport
Move the commodities from farms to end users with least amount of problems
Timely movement of grain at harvest
Informing car traffic of truck limits and harvest expectations
Heightened awareness of agricultural equipment on public roads
Transport of large volume at harvest
Transport of large volumes of grain for long distances
Continued improvement in rural infrastructure i.e. field to farm to elevator
DOT rules and regulations applicable to agriculture (seasonal patterns)
Grain movement, large volumes

2. Safety
Safety and efficiency during Spring and Fall seasons
Emergency response
Emergency response per county or region
Safety in movement of goods and products
Safety
Commercial vehicles operate part-time help for safety

3. Inter-modal Communication
Real-time communication with truckers
Communication with rail road
Communication with state groups to better inform drivers of city requirements
Commercial vehicle safety
Accurate information about vehicle registration

4. Infrastructure (tie)
Size of equipment
Most competitive grain transportation system in the world while meeting safety
Effect of closing rail crossings
County roads and bridges not able to withstand semi use

4. Routing (tie)
Routing of trucks to save time; road work
Timely flow of transportation via road system
Efficient balance between rail road and truck for long haul grain transportation
Specific routing - seasonal

5. Hazardous Materials
Exemption for market to farm and arm to market concerning HM200
Custom application of agriculture products moving from place to place
Incident management

6. Borders
Enforcement from business
Generalized rules between states

6. Permits
Proper permitting of vehicles and products
Permit issuance over load at harvest

Focus group participants felt that there was a close connection between the need for seasonal transport with the needs of "routing" and "infrastructure." Routing comments focused on the seasonal routing of trucks during times of harvesting. Participants discussed the importance of the timely flow of trucks in relation to railroad crossings and road work which can stall the transport of agricultural products to market. Focus group participants' discussion of infrastructure centered around rural roads and bridges and their ability to safely accommodate large farm equipment and semi-trailer trucks. Both the routing and infrastructure needs looked at the overall need for better management of rural country roads and their ability to support local agriculture business needs.

The second most significant need identified by the group was "safety." Members discussed the need for better emergency response to accidents on rural roads. This was felt to be a pressing need by many in the group during the harvesting season when vehicle traffic is at its annual peak. Related to safety needs was the "hazardous material" need. One member was concerned with the incident management of hazardous material spill. Others were concerned with the regulating of transporting hazardous material, which are agricultural dependent products. Some members felt that a special exemption should be given for the transportation of agricultural hazardous materials, which are used for agricultural production. These permits should be differentiated from the non-agricultural shipping of hazardous materials.

The third important need identified in the focus group was "inter-modal communication." As indicated in Table F-2, participants' concerns regarding this need were fairly diverse. One person felt that better communication with the railroads was needed while another was interested in getting better real-time communication with truckers. Overall, it was
accepted by members of the group that better communication and more up-to-date information was needed.

Finally, the issue of "borders" dealt with a desire for common regulations between states; while the issue of "permits" emphasized the accurate and expedient issuance of permits.

Regroup

After the two focus groups completed their sessions, they regrouped and talked about the identified needs as a whole. Members from both groups agreed there was some overlap in what they discussed in the focus group meetings.

In comparing the two prioritized needs in Table F-1 and F-2, three shared needs are identified:

(1) Travel Information (Group A) and Inter-modal Communication/Seasonal Transport (Group B)

(2) Emergency (Group A) and Safety (Group B)

(3) Standards (Group A) and Borders (Group B)

Everyone agreed that information on road conditions, weather, and road permit requirements and procedures would be very helpful and important need. Another shared need was emergency situations. Both focus group participants agreed emergency response and management was particularly important, especially during the harvesting season. Finally, both groups agreed that there is a need to standardize CVO regulations between states. Inconsistent state regulations were viewed both an unnecessary burden for truckers and a significant delay in the transporting of goods between states.

However, after further discussion it became apparent that the two groups had distinct geographic differences on which roads they were using and why. Focus Group A, with CVO carriers, was primarily interested in interstate road systems for inter-state travel because their interests lie in commercial trucking. Focus Group B, on the other hand, looked more to county roads with some interstate travel because they were looking at transportation from mostly an agricultural perspective. The geographic differences between the two groups were made apparent when discussing up-to-date weather information. CVO carriers in Group A wanted weather information based on town locations because their maps do not clearly identify counties. Group B wanted weather information based on counties because they have a better mental image of the region by county than by town.

APPENDIX G
Maintenance Survey

STREET/HIGHWAY OPERATIONS & MAINTENANCE SURVEY
NEBRASKA INTELLIGENT TRANSPORTATION SYSTEMS
PLANNING PROJECT

1. Please circle the answer which most accurately describes your job title or function (circle one)

(a) County Highway Superintendent/Pubic Works Director
(b) City Public Works Director/Manager/City Street Superintendent
(c) County Board Chair
(d) Mayor
(e) Other_____

2. For each category below, please circle the rating that best describes the adequacy of the field information you receive where 1=Extremely Inadequate, 2=Inadequate, 3=Meets the Needs, 4=Mostly Adequate, 5=Extremely Adequate (circle one rating for each category)

	Rating				
(a) New bridge construction	1	2	3	4	5
(b) Bridge maintenance	1	2	3	4	5
(c) New road construction	1	2	3	4	5
(d) Road maintenance	1	2	3	4	5
(e) Traffic safety	1	2	3	4	5
(f) Pavement condition	1	2	3	4	5
(g) Sign inventory	1	2	3	4	5

3. Please rate the following categories in terms of information accuracy, reliability and timeliness where 1=Not at all, 2=Sometimes, 3=Average, 4=Mostly, 5=Extremely (for each category circle one for accuracy, one for reliability and one for timeliness)

	Rating														
	Accuracy					**Reliability**					**Timeliness**				
(a) New bridge construction	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
(b) Bridge maintenance	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
(c) New road construction	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
(d) Road maintenance	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
(e) Traffic safety	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
(f) Pavement condition	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
(g) Sign inventory	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

4. Does your organization have a computer? (circle one only) Yes No

If yes, what do you use your computer for? (circle all that apply)

(a) Word Processing
(b) Data Processing
(c) E-mail
(d) Internet
(e) Other_____

5. What percentage of all information within your department relating to the following items is computerized?

Street/Highway Maintenance_____%
Bridge Maintenance_____%
Traffic Safety_____%

6. Please rate the following items based on your city/county's needs where 1=Unimportant, 2=Little Importance, 3=Uncertain, 4=Important, 5=Extremely Important (circle one only)

a) Pavement repairs and maintenance	1	2	3	4	5
b) Sign repair and replacement	1	2	3	4	5
c) Traffic safety/Accident records	1	2	3	4	5
d) Weather information availability	1	2	3	4	5
e) Tracking maintenance and emergency vehicles	1	2	3	4	5
f) Developing and managing more efficient and safe routes for city/county vehicles	1	2	3	4	5
g) Maintaining logs for routine maintenance of vehicles	1	2	3	4	5
h) Road side litter and debris removal	1	2	3	4	5
i) Roadside mowing and weed control	1	2	3	4	5
j) Maintaining wildflower and landscape activities within budget	1	2	3	4	5
k) Railroad grade crossing maintenance	1	2	3	4	5

l) Bridge repairs and maintenance 1 2 3 4 5

m) Erosion and drainage improvements and maintenance 1 2 3 4 5

7. Please circle "Yes" or "No" to indicate whether or not your department is using the following systems? (circle one for each system)

a) Geographic Information Systems (GIS) Yes No If yes, for what purpose(s)?

_____

If no, are you interested in using this system? Yes No

b) Global Positioning Systems (GPS) Yes No If yes, for what purpose(s)?_____

_____

If no, are you interested in using this system? Yes No

c) 911 emergency phone system Yes No Is this system "Enhanced?" Yes No Unsure

d) Pavement management system Yes No

If no, are you interested in using this system? Yes No

(Question #7 continued)
Please circle "Yes" or "No" to indicate whether or not your department is using the following systems? (circle one for each system)

e) Paperless logs Yes No If yes, for what purpose(s)?_____

If no, are you interested in using this system? Yes No

f) Bridge management system Yes No

If no, are you interested in using this system? Yes No

g) Sign inventory management system Yes No

If no, are you interested in using this system? Yes No

h) Remote pavement sensors Yes No If yes, what kind?_____

If no, are you interested in using this technology? Yes No

i) Traffic safety system Yes No If no, are you interested in using this system? Yes No

j) Weather information system Yes No If yes, for what?_____

If no, are you interested in using this system? Yes No

8. Circle the following organizations with which your department is capable of having radio communications on the same frequency. (circle all that apply)

a) Nebraska State Patrol
b) Nebraska Department of Roads
c) Regional Trauma Center
d) Local EMS
e) Local Firefighters
f) Local Police Department
g) Local Sheriff
h) Other(s)_____

If none, do you feel it would be beneficial? Yes No

If you answered "Yes" to the question above and agree it would be beneficial to communicate with other organizations, which organization(s) do you feel your department needs to communicate with?_____

9. Please circle either "Manual" or "Computerized" in reference to the type of technology used by your department. (circle one for each technology)

Type of Technology		
a) Road management/pavement management systems	Manual	Computerized
b) Bridge management systems	Manual	Computerized
c) Equipment/fleet management systems	Manual	Computerized
d) Sign management systems	Manual	Computerized
e) Traffic safety systems	Manual	Computerized
f) Project control	Manual	Computerized
g) Inventory control	Manual	Computerized

10. Does your organization share or coordinate street, highway and bridge information with neighboring communities and/or counties? (circle all that apply)

a) Yes, with agreements in writing
b) Yes, with verbal agreements
c) Yes, electronically
d) Only in emergencies
e) At certain times of the year
f) No

11. In terms of street/highway maintenance, what is your department's number one technological priority?

_____

12. In terms of bridge maintenance, what is your department's number one technological priority?

_____

13. In terms of overall traffic safety, what is your department's number one technological priority?

_____

14. What is the population of the community or county in which you serve?

_____

15. What is the total street/highway mileage within your jurisdiction?

_____

16. How would you describe the city or county you serve? (circle one only)

(a) Rural
(b) Rural with small towns
(c) Rural with some urban areas
(d) City, suburban-rural mix
(e) Urban, suburban

Thank you for participating in this survey.

Please complete and return this survey by July 31, 1998. Results of this statewide survey will be posted on the following web site: www.unl.edu/matc. You can request to have the results mailed to you by calling Bill Tobin at (402)-472-8126.

APPENDIX H
Maintenance Survey Results

NEBRASKA ITS MAINTENANCE SURVEY					Number of Responses		OVERALL	% Responding	
CUMULATIVE RESPONSE					140			20	
Question TWO:									
For each category below, please circle the rating that best describes the adequacy of the									
field information you receive where 1=Extemely Inadequate, 2=Inadequate, 3=Meets the Needs,									
4=Mostly Adequate, 5=Extremely Adequate (circle one rating for each category)									
								OVERALL	
	Extremely	Inadequate		Rating		Extremely	Adequate	RATING	
		1	2	3	4	5			
New bridge const.	a)	8	14	54	23	9		3.1	
Bridge Maint.	b)	6	15	57	24	4		3.0	
New road const.	c)	2	20	55	35	7		3.2	
Road maint.	d)	2	18	67	31	4		3.1	
Traffic safety	e)	2	24	64	29	4		3.1	
Pavement condition	f)	4	30	59	27	1		2.9	
Sign Inventory	g)	4	26	53	32	6		3.1	
Question THREE:									
Please rate the following categories in terms of information accuracy, reliability and timelines where									
1=Not at All, 2=Sometimes, 3=Average, 4=Mostly, 5=Extremely Adequate (for each category									
circle one for accuracy, one for reliability and one for timeliness)									
								OVERALL	
		Not at all	ACCURACY Rating			Extremely		ACCURACY	
		1	2	3	4	5			
New bridge const.	a)	9	3	48	28	11		3.3	
Bridge Maint.	b)	8	6	57	26	3		3.1	
New road const.	c)	3	12	52	35	7		3.3	
Road maint.	d)	1	10	69	30	3		3.2	
Traffic safety	e)	4	14	57	30	7		3.2	
Pavement condition	f)	4	21	56	25	1		3.0	
Sign Inventory	g)	4	17	56	29	7		3.2	

Question THREE continued:

Please rate the following categories in terms of information accuracy, reliability and timelines where 1=Not at all, 2=Sometimes, 3=Average, 4=Mostly, 5=Extremely adequate (for each category circle one for accuracy, one for reliability and one for timeliness)

		Not at all	RELIABILITY Rating			Extremely	OVERALL RELIABILITY
		1	2	3	4	5	
New bridge const.	a)	8	3	47	32	9	3.3
Bridge Maint.	b)	7	6	54	30	2	3.1
New road const.	c)	3	9	54	32	8	3.3
Road maint.	d)	2	11	63	27	7	3.2
Traffic safety	e)	4	9	56	32	7	3.3
Pavement condition	f)	3	18	62	24	2	3.0
Sign Inventory	g)	4	12	59	27	7	3.2

Question THREE:		Not at all	TIMELINESS Rating			Extremely	OVERALL TIMELINESS
		1	2	3	4	5	
New bridge const.	a)	10	8	46	25	6	3.1
Bridge Maint.	b)	7	14	46	27	2	3.0
New road const.	c)	5	13	54	26	6	3.1
Road maint.	d)	3	18	54	27	5	3.1
Traffic safety	e)	5	14	56	25	5	3.1
Pavement condition	f)	7	17	61	23	0	2.9
Sign Inventory	g)	5	18	58	23	4	3.0

Question FOUR:

Does your organization have a computer? (circle one only)

YES	NO
123	16

OVERALL % w/ computer
88

If Yes, what do you use your computer for?

		Response	OVERALL % of computers with each capability
Word Processing	a)	105	85
Data Processing	b)	106	86
E-mail	c)	48	39
Internet	d)	47	38
Other	e)	31	25

	Cogo	Spreadsheet	
	CAD	Accounting	
	Bridge inventory	Sign Inventory	
	Faxing	Design	
	GIS	AutoCAD	
	Billing	Bridge inspection	
	Letters	Hwy. Program	
	Budget	Roadway weather information	

Question FIVE:

What percentage of all information within your department relating to the following items is computerized?

	Total Responses				OVERALL Percent of Information Computerized			
	<25%	25 to 50%	51 to 75%	>75%	<25%	25 to 50%	51 to 75%	>75%
Street/Highway maintenance	79	21	8	19	62	17	6	15
Bridge Maintenance	81	8	6	26	67	7	5	21
Traffic Safety	98	9	3	13	80	7	2	11

Question SIX:

Please rate the following items based on your city/county's needs where 1=Unimportant, 2=Little Importance, 3=Uncertain, 4=Important, 5=Extremely Important (circle one only)

	Rating					OVERALL RATING
	1	2	3	4	5	
a) Pavement repairs and maintenance	6	5	5	67	49	4.1
b) Sign repair and replacement	2	4	17	77	34	4.0
c) Traffic safety/Accident records	3	13	29	62	22	3.7
d) Weather information availability	5	18	42	51	19	3.5
e) Tracking maintenance and emer. Vehicles	10	31	46	36	8	3.0
f) Develop/managing safe/efficient routes	14	31	42	38	7	2.9
g) Maintaining logs for routine maint.	3	16	25	69	18	3.6
h) Roadside litter and debris removal	3	30	40	53	6	3.2
I) Roadside mowing and weed control	2	16	26	70	19	3.7
j) Maintaining wildflower/landscape	32	30	40	37	6	2.7
k) Railroad grade crossing maint.	22	10	26	43	24	3.3
l) Bridge repairs and maint.	17	9	20	50	25	3.5
m) Erosion and drainage improvements	5	9	24	80	15	3.7

Question SEVEN:

Please circle "Yes" or "No" to indicate whether or not your department is using the following systems. (circle one for each system)

	YES	NO	OVERALL % w/ GIS
A) GIS?	12	122	9

If Yes, for what purpose(s)

Mapping	Sewer Collection System
Land surveying	Water Distribution System
Topography	Storm Sewers
Vertical control	Streets
Property measurements	Land use planning
Location	Transportation planning
Future sign inventory & stations	

Question SEVEN continued:

Please circle "Yes" or "No" to indicate whether or not your department is using the following systems. (circle one for each system)

A) GIS?

YES	NO
12	122

OVERALL % w/ GIS
9.8%

If Yes, for what purpose?

- Mapping
- Land surveying
- Topography
- Vertical Control
- Property measurements
- Location
- Future sign inventory & stations
- Sewer collection system
- Water distribution system
- Storm sewers
- Streets
- Land use planning
- Transportation planning

If No, Interested in using this system?

YES	NO
34	59

OVERALL % interested
37

B) GPS?

YES	NO
4	125

OVERALL % w/ GPS
3

If Yes, for what purposes?

- mapping
- land surveying
- 911 system

If No, Interested?

YES	NO
46	63

OVERALL % interested
42

C) 911 emergency phone system

YES	NO
123	10

OVERALL % w/ 911 emergency phone system
92

Enhanced?

YES	NO	Unsure
74	32	17

OVERALL % of 911 systems that are enhanced
60

Question SEVEN continued:													
					YES	**NO**		**OVERALL**	**% w/ pavement management systems**				
D)	Pavement management systems				26	103			20				
					YES	**NO**		**OVERALL**	**% interested**				
		If No, Interested?			43	58			43				
					YES	**NO**		**OVERALL**	**% w/ paperless logs**				
E)	Paperless Logs				9	126			7				
		If Yes, for what purpose(s)											
			Maintenance history										
			Accounting										
			Water system management										
				YES	**NO**		**OVERALL**	**% interested in paperless logs**					
		If No, Interested?		33	69			32					
				YES	**NO**		**OVERALL**	**% w/ bridge management systems**					
F)	Bridge management systems			41	86			32					
				YES	**NO**		**OVERALL**	**% interested in bridge management systems**					
		If NO, Interested?		12	68			15					
				YES	**NO**		**OVERALL**	**% w/ sign inventory**					
G)	Sign inventory			35	89			28					
				YES	**NO**		**OVERALL**	**% interested in sign inventory**					
		If NO, Interested?		42	48			47					

Question SEVEN continued:							
				YES	**NO**	**OVERALL**	**% w/ remote sensors**
H)	Remote pavement sensors			2	131		2
		If Yes, what kind?					
			Traffic counters				
			Surface Systems, INC.				
				YES	**NO**	**OVERALL**	**% interested in remote sensors**
		If NO, interested?		19	95		17
				YES	**NO**	**OVERALL**	**% w/ traffic safety system**
I)	Traffic Safety System?			14	119		11
				YES	**NO**	**OVERALL**	**% interested in a traffic safety systems**
		If NO, interested?		43	59		42
				YES	**NO**	**OVERALL**	**% w/ weather information services**
J)	Weather Information Systems?			25	107		19
		If YES, for what?					
			Weather;				
			Tracking Storms				
			Snow & Ice Removal				
			Flight Services				
			Summer Maintenance Schedule				
		If NO, Interested?		**YES**	**NO**	**OVERALL**	**% interested in weather information services**
				40	57		41

Question EIGHT:

Circle the following organizations with which your department is capable of having radio communications on the same frequency.

(circle all that apply)

	Response
a)	10
NE State Patrol b)	3
Dept. of Roads c)	3
Reg. Trauma Center d)	43
Local EMS e)	50
Local Firefighters f)	54
Local Police Dept. g)	65
Local Sheriff h)	7
Other(s)	

YES	NO
36	23

If NONE, Beneficial?

If YES above, which organizations?

All of the above

OVERALL % of cities/counties capable of having radio communications on the same frequency for each of the following organizations

8
2
2
33
39
42
50
5

OVERALL % w/out any radio communications that feel it would be beneficial

61

Question NINE:

Please circle either "Manual" or "Computerized" in reference to the type of technology used by your department.
(circle one for each technology)

		Type of Technology			
		Manual	Computer	OVERALL	% of each system that is computerized
	a)	108	17		14
Road/Pavement mgmt. systems	b)	73	40		35
Bridge management systems	c)	96	31		24
Equip/Fleet mgmt. systems	d)	99	29		23
Sign mgmt. systems	e)	113	9		7
Traffic safety systems	f)	104	13		11
Project control	g)	86	38		31
Inventory control					

Question TEN:

Does your organization share or coordinate street, highway and bridge information with neighboring communities and/or counties?
(circle all that apply)

		Response
Yes, in writing	a)	37
Yes, verbally	b)	35
Yes, electronically	c)	2
Only in emergencies	d)	18
Certain times of year	e)	27
No	f)	54

Question FOURTEEN:

What is the population of the community or county in which you serve?

Population	Respondents	OVERALL % of area Represented
< 5,000	76	56
5,000 to 10,000	26	19
10,001 to 19,999	15	11
>20,000	19	14

Question FIFTEEN:

What is the total street/highway mileage within your jurisdiction?

CITY		COUNTY	
Miles	**Responses**	**Miles**	**Responses**
< 25	40	< 100	2
25 to 49	15	100 to 199	0
50 to 74	5	200 to 499	4
> 74	25	> 500	33

Question SIXTEEN:

How would you describe the city or county in which you serve? (circle one only)

		Respondents	OVERALL	% Represented
Rural	a)	23		17
Rural w/small towns	b)	73		53
Rural w/urban areas	c)	10		7
City, suburb-rural mix	d)	25		18
Urban, suburban	e)	8		6

APPENDIX I
Results of EMS Survey

RESULTS OF EMS SURVEY

A survey mailed to 490 fire chiefs across Nebraska was conducted in the months of March and April 1998. This survey yielded important information regarding the awareness, knowledge, training and communication readiness of the participating fire departments. This survey facilitated the Emergency Services CPA. Among the 490 surveys mailed, 198 fire chiefs or leading emergency medical specialists responded (approximately 40%) answering the questions and offering their insight related to emergency response issues by way of an open-ended question.

The survey indicated that 80% of the respondents had never heard of ITS which suggests that the concept needs attention of the ITS benefits by, perhaps, organizing an ITS awareness campaign. Most respondents (approximately 64%) indicated that their emergency response times were the quickest they could be. About 58% of respondents indicated that satellite and cellular phone technology could assist their department to be more efficient in emergency response. This response is significant because it indicates that the majority of the fire departments in Nebraska would look at the possibilities of ITS sometime in the future.

Most survey respondents (60%) indicated that their department has adequate resources to respond to medical emergencies and most responded indicating they would support the implementation of technologies that would enable their department to quicken medical emergencies and response times.

The majority of survey respondents (44%) indicated they need no additional training to quicken their emergency response times. Additionally, most respondents felt communications does not need to be coordinated under one regional or statewide system. Also, the majority of survey respondents indicated their department does not have adequate resources to update their technological needs. However, the vast majority of respondents (69%) indicated their departments were well equipped to respond to medical emergencies.

In conclusion, this survey shows that most fire departments are not aware of ITS in Nebraska and if they were, they may be interested in learning how their department can effectively improve emergency response times in their area. The survey also suggests that most fire departments in Nebraska lack sufficient funding to update their technological needs. Additionally, if these departments had adequate funding for better emergency equipment they would be willing to experiment with some suggested ITS technologies and systems.

APPENDIX J
ITS User Services

THE 30 ITS USER SERVICES

Travel and Traffic Management

Pre Trip Travel Information
En Route Driver Information
Traveler Services Information
Route Guidance
Ride Matching and Reservation
Incident Management
Travel Demand Management
Traffic Control
Emissions Testing and Mitigation
Highway-Rail Intersection

Commercial Vehicle Operations

Commercial Vehicle Electronic Clearance
Automated Roadside Safety Inspection
Commercial Vehicle Administrative Processes
On-Board Safety Monitoring
Commercial Fleet Management
Hazardous Material Incident Notification

Public Transportation Management

En Route Transit Information
Public Transportation Management
Personalized Public Transit
Public Travel Security

Electronic Payment

Electronic Payment Services

Emergency Management

Emergency Vehicle Management
Emergency Notification and Personal Safety

Advanced Vehicle Safety Systems

Longitudinal Collision Avoidance
Lateral Collision Avoidance
Intersection Collision Avoidance
Vision Enhancement for Crash Avoidance
Safety Readiness
Pre-Crash Restraint Deployment
Automated Vehicle Operations

APPENDIX K
Relationship of Goals and Objectives to ITS Projects

Nebraska ITS November 1998	CPA 1							
	Traveler Safety & Security							
Projects	GOAL 1					GOAL 2		
	Objectives							
	1	2	3	4	5	1	2	3
S1.1				■				
S1.2		■						
S1.3				■				
S1.4			■		■			
S1.5							■	
S1.6								■
S1.7	■			■	■	■		■
M1.1		■						
M1.2				■				
M1.3					■			
M1.4							■	
M1.5								■
M1.6	■			■	■	■		■
L1.1					■			
L1.2					■			
L1.3							■	
L1.4								■
L1.5	■			■	■	■		■

Nebraska ITS November 1998	CPA 2																
	Emergency Services																
Projects	GOAL 1				GOAL 2				GOAL 3		GOAL 4						
	Objectives																
	1	2	3	4	1	2	3	4	1	2	1	2	3	4	5	6	7
S2.1		■															
S2.2	■																
S2.3			■														
S2.4					■												
S2.5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S2.6					■												■
S2.7			■			■											
M2.1		■			■					■							
M2.2		■			■					■							
M2.3																	
M2.4					■												
M2.5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.6							■			■							■
M2.7								■		■		■	■				
L2.1																	
L2.2											■	■	■			■	
L2.3																	
L2.4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Nebraska ITS November 1998	CPA 3							
	Tourism & Traveler Information Services							
Projects	GOAL 1			GOAL 2			GOAL 3	
	Objectives							
	1	2	3	1	2	3	1	2
S3.1	■	■	■	■	■	■	■	■
S3.2	■		■					
S3.3		■						
S3.4	■							
S3.5	■							
S3.6	■	■	■	■	■	■	■	■
M3.1	■		■					
M3.2		■						
M3.3								
M3.4	■	■	■	■	■	■	■	■
L3.1	■		■					
L3.2		■						
L3.3						■		
L3.4	■	■	■	■	■	■	■	■

Nebraska ITS November 1998	CPA 4							
	Public Mobility & Public Taveler Services							
Projects	GOAL 1						GOAL 2	
	Objectives							
	1	2	3	4	5	6	1	2
S4.1				■			■	
S4.2				■			■	
S4.3	■	■	■	■	■	■	■	■
M4.1					■			
M4.2	■	■	■	■	■	■	■	■
L4.1	■	■	■					
L4.2	■	■	■	■	■	■	■	■

Nebraska ITS November 1998	CPA 5			
	Infrastructure Operations & Maintenance			
Projects	GOAL 1			
	Objectives			
	1	2	3	4
S5.1				■
S5.2			■	
S5.3			■	
S5.4			■	
S5.5			■	
M5.1				■
M5.2			■	
M5.3			■	
M5.4	■			
M5.5			■	
M5.6			■	
M5.7			■	
L5.1				■
L5.2			■	
L5.3	■			
L5.4			■	
L5.5			■	
L5.6				■

Nebraska ITS November 1998	CPA 6										
	Fleet Operations & Maintenance										
Projects	GOAL 1		GOAL 2		GOAL 3			GOAL 4			
	Objectives										
	1	2	1	2	1	2	3	1	2	3	4
S6.1	■	■	■	■							
S6.2					■	■	■				
M6.1				■							
M6.2					■	■	■				
L6.1				■							
L6.2				■	■	■	■				

Nebraska ITS November 1998	CPA 7												
	Commercial Vehicle Operations												
Projects	GOAL 1			GOAL 2				GOAL 3		GOAL 4		GOAL 5	
	Objectives												
	1	2	3	1	2	3	4	1	2	1	2	1	2
S7.1	■												
S7.2		■	■	■	■	■	■						
S7.3								■					
S7.4										■			
S7.5											■		
S7.6	■	■	■	■	■	■	■	■	■	■	■	■	■
S7.7									■				
M7.1	■												
M7.2		■	■	■	■	■	■						
M7.3								■					
M7.4									■				
M7.5										■			
M7.6											■		
M7.7	■	■	■	■	■	■	■	■	■	■	■	■	■
L7.1	■												
L7.2		■	■	■	■	■	■						
L7.3								■					
L7.4									■				
L7.5										■			
L7.6											■		
L7.7	■	■	■	■	■	■	■	■	■	■	■	■	■

Nebraska ITS November 1998	CPA 8							
	Communications							
Projects	GOAL 1				GOAL 2		GOAL 3	
	Objectives							
	1	2	3	4	1	2	1	2
S8.1	■	■	■	■	■	■	■	■
S8.1								■
S8.3	■	■	■	■	■	■	■	■
M8.1	■	■	■	■	■	■	■	■
M8.2							■	■
M8.3	■	■	■	■	■	■	■	■
L8.1	■	■	■	■	■	■	■	■
L8.2							■	■
L8.3	■	■	■	■	■	■	■	■

APPENDIX L
Glossary of Terms

GLOSSARY OF TERMS

AASHTO	**American Association of State Highway and Transportation Officials.** Representing State transportation officials, AASHTO is one of five standards development organizations with which U.S. DOT is working to establish standards for integrated, interoperable ITS deployment.
Advanced Collision Avoidance and Safety Systems Vehicle	These systems employ mostly in-vehicle technologies to help drivers avoid collisions, monitor driver performance, and automatically signal for emergency aid immediately upon collision.
Advantage I-75	Demonstration project started in 1991 to facilitate motor carrier operations along I-75. The project allows transponder-equipped and properly documented trucks to travel any segment along I-75 at mainline speeds with minimal stopping at weigh/inspection stations. Uses AVI and transponder technology.
AHAR	**Automatic Highway Advisory Radio.** U.S. traffic information broadcasting system. Transmissions are received through car radios that automatically interrupt other radio reception and tune in to the correct station.
AHS	**Automated Highway System.** The AHS is a highly advanced system that will redefine the current vehicle-highway relationship by shifting many tasks from the vehicle operator to the roadway itself. The first demonstration of the AHS concept will be in San Diego in August 1997.
APTS	**Advanced Public Transportation Systems.** Collection of technologies to increase efficiency of public transportation systems and offer users greater access to information on system operation.
Architecture	An overarching framework that allows individual ITS services and technologies to work together, share information, and yield synergistic benefits. The national ITS architecture was released as a final document in June 1996.
ARTS	**Advanced Rural Transportation Systems.** ITS technologies aimed at addressing the specific needs of rural communities, particularly the issues of mobility and road safety.
ASD	**Aircraft Situation Display.** Technology applied to air traffic management in the 1970's to allow a clear overview of the entire airspace for every traffic manager.
ASTM	**American Society of Testing and Materials.** One of five standards development organizations with which U.S. DOT is working to establish standards for integrated, interoperable ITS deployment
ATA	**American Trucking Association.** ATA represents commercial users of the Nation's highways. The ATA Foundation is the organization's research foundation.

ATIS	**Advanced Traveler Information Systems.** ATIS technologies provide travelers and transportation professionals with the information they need to make decisions, from daily individual travel decisions to larger scale decisions that affect the entire system, such as those concerning incident management.
ATMS	**Advanced Traffic Management Systems.** ATMS technologies apply surveillance and control strategies to improve traffic flow on highways and streets.
AVC	**Automatic Vehicle Classification.** Used in commercial vehicle operations to identify vehicles by type to reduce the necessity for record keeping by drivers.
AVI	**Automatic Vehicle Identification.** A system that combines an onboard tag **or** transponder with a roadside receiver for the automated identification of vehicles. Used for electronic toll collection and stolen vehicle recovery, among other purposes.
AVL	**Automatic Vehicle Location.** The installation of devices on a fleet of vehicles (e.g., buses, trucks, or taxis) to enable the fleet manager to determine the level of congestion in the road network. AVL is also used to enable the fleet to function more efficiently by pinpointing the location of vehicles in real time.
CDPD	**Cellular Digital Packet Data.** Cellular networks that transmit data in digital format.
CMAQ	**Congestion Management and Air Quality program.** Funding category in the Intermodal Surface Transportation Efficiency Act that targets efforts to reduce metropolitan air pollution. ITS technologies that contribute to improving air quality are eligible for CMAQ funds.
CMS	**Changeable Message Signs.** Electronic road and transit station signs used **to** display information that can be updated, such as warnings of road incidents, hazardous weather conditions, or estimated arrival times of transit vehicles. Used in ATIS and ATMS. Also called Variable Message Signs (VMS).
Commercial Vehicle Administrative Processes	Systems that allow carriers to purchase credentials and collect and report fuel and mileage tax information electronically.
CVISN	**Commercial Vehicle Information Systems and Networks.** A network that connects existing Federal, State, and private sector information systems to improve commercial vehicle movement.
CVO	**Commercial Vehicle Operations.** ITS program to apply advanced technologies to commercial vehicle operations, including commercial vehicle electronic clearance; automated roadside safety inspection; electronic purchase of credentials; automated mileage and fuel reporting and auditing; safety status monitoring; communication between drivers, dispatchers, and intermodal transportation providers; and immediate notification of incidents and descriptions of hazardous materials involved.

DASCAR	**Data Acquisition System for Crash Avoidance Research.** A portable on-board-vehicle-data-gathering system that can monitor and record vehicle performance and the driver's physical reactions.
Data Element	The smallest consistent unit of information used to construct messages.
DOT	**Department of Transportation.** When used alone, indicates U.S. Department of Transportation. In conjunction with a place name, indicates a State, city, or county transportation agency (e.g., Illinois DOT, Los Angeles DOT).
DSRC	**Dedicated Short-Range Communications.** Wireless, short-range digital communications. Uses electronic readers, tags, and software.
EDP	**Early Deployment Plan.**
Electronic Fare Payment Systems	Systems that collect payments using an electronic transponder. Payment types include fees for transit fares, taxis, parking, and tolls. Electronic payment systems can also gather real-time transit information on travel demand for better planning and scheduling of services.
Electronic Toll and Traffic Management	Through the use of "tool tags," electronic sensor systems, and debit or credit transactions, ETTM technologies allow vehicles to pass through special toll plazas without slowing or stopping, dramatically increasing lane throughput.
Emergency Management Systems	Services designed to minimize response time to incidents.
Enabling Research	Applied research that advances existing technologies to enable them to support ITS applications. This research has refined technology for eventual field testing, developed evaluation methods to determine potential benefits and cost effectiveness, developed human factors guidelines, and established performance specifications and criteria.
ETC	**Electronic Toll Collection.** An electronic payment system that collects toll fees using an electronic vehicle tag. This allows the vehicle to pass through the toll without stopping, resulting in decreased delays and improved roadway throughput.
FAA	**Federal Aviation Administration.**
FCC	**Federal Communications Commission.**
FHWA	**Federal Highway Administration.**
FMS	**Freeway Management Systems.** Network systems that allow transportation managers the capability to monitor highway and environmental conditions on the freeway system, identify recurring and nonrecurring flow impediments, implement appropriate control and management strategies, and provide collection and dissemination of critical real-time information to travelers.
FRA	**Federal Railroad Administration.**
FTA	**Federal Transit Administration.**

GCM	**Gary-Chicago-Milwaukee corridor.** One of the ITS priority corridor projects defined by ISTEA to receive funding for applying ITS to assist in reducing extreme or severe ozone problems. The initial GCM priority is real-time data acquisition and sharing of information across the corridor that is useful to both multimodal system operators and travelers.
Geographic Information Systems	Computerized data management systems designed to capture, store, retrieve, analyze, and report on geographic and demographic data.
GPS	**Global Positioning System.** A method of determining the position of vehicles using communications with a satellite. The GPS is a Government owned system of 24 Earth-orbiting satellites. These satellites transmit data to ground-based receivers, rendering extremely accurate latitude/longitude ground positions in coordinates for the military Precise Positioning Service. Deliberate error (selective availability) is introduced into the civilian service (Standard Positioning Service) for defense purposes.
HAR	**Highway Advisory Radio.**
HAZMAT	**Hazardous Materials classification.**
HELP	**Heavy Vehicle Electronic License Plate program.** A multistate, multinational research effort to design and test an integrated heavy vehicle monitoring system using AVI, AVC, and W-I-M technology.
Highway-Rail Intersection (HRI) User Services	User services that integrate ITS technology into existing HRI warning systems to enhance their safety, effectiveness, and operational efficiency. At railroad-grade crossings, both in-vehicle and roadside HRI technologies ensure that train movements are coordinated with traffic signals and that drivers are alerted to approaching trains.
HOV	**High-Occupancy Vehicle.** Any vehicle containing more than one or two persons, such as a bus, carpool, or vanpool.
Human Factors	Research done to understand the impact of automated technology on human decisionmaking and driving behavior.
IEEE	**Institute of Electrical and Electronics Engineers.** One of five standards development organizations with which U.S. DOT is working to establish standards for integrated, interoperable ITS deployment.
IMS	**Incident Management Systems.** Monitoring and surveillance systems that identify incidents in real time so that they can be removed quickly.
INFORM	**Information for Motorists program.** A demonstration project on Long Island, NY, that found that motorist information, provided via variable message signs, can reduce delay caused by congestion and incidents.
Intelligent Cruise Control	A crash avoidance technology that automatically adjusts vehicle cruise speed to maintain safe following distances.

Intelligent Transportation Infrastructure	Core infrastructure that combines conventional and advanced technologies to integrate essential ITS services so that they are interoperable and intermodal.
Intermodalism	Seamless integration of multiple travel modes.
Interoperability	The ability to integrate the operation of diverse networks and systems. The vision of the intelligent transportation infrastructure is a seamless interoperable network from coast-to-coast that allows drivers and information to flow through the system without barriers.
In-Vehicle Navigation	Technology that gives drivers access to route guidance information while en route. Includes location-referencing technology, in-vehicle display units, map information, and audio/text delivery technology.
ISTEA	**Intermodal Surface Transportation Efficiency Act of 1991.** Federal law providing primary Federal funding for highway and other surface transportation programs in the United States through 1997. ISTEA contains the Intelligent Vehicle-Highway System Act. Directs the establishment of a National ITS program that is to include: a strategic plan for ITS in the United States, implementation and evaluation of ITS technologies, development of standards protocols, an information clearinghouse, the use of advisory committees (one of which is ITS America), and funding for ITS research, development, and testing in such efforts as the corridors program.
ITE	**Institute of Traffic Engineers.** One of five standards development organizations with which U.S. DOT is working to establish standards for integrated, interoperable ITS deployment.
ITS	**Intelligent Transportation System(s).** The application of advanced technologies to improve the efficiency and safety of transportation systems.
ITS America	**Intelligent Transportation Society of America.** A nonprofit, public/private scientific and educational corporation that works to advance a national program for safer, more economical, more energy efficient, and environmentally sound highway travel in the United States. Federal advisory committee used by U.S. Department of Transportation.
IVHS	**Intelligent Vehicle-Highway Systems.** Now known as intelligent transportation systems.
JPO	**Joint Program Office** for ITS.
Location Referencing	Technology that more precisely identifies locations of vehicles and travelers. Used with GPS and AVL technologies. Supports user services, such as Mayday, EMS, CVO, ATMS, ATIS, and collision avoidance systems.
Mainstreaming	The act of bringing ITS technology into everyday use by travelers and transportation professionals.
Mayday	An ITS program designed to offer a real-time link between travelers in trouble and transportation officials. Uses location-referencing technologies and communications systems.

MCSAP	**Motor Carrier Safety Assessment Program.** A program designed to equip vehicle inspection sites with pen-based systems and automated inspection selection technology to allow inspectors to single out unsafe carriers for inspection. Part of the SAFER program.
MD1	**Model Deployment Initiative.** A program designed to develop model sites demonstrating intelligent transportation infrastructure and successful jurisdictional and organizational working relationships. The program is also designed to demonstrate the benefits of integrated transportation management systems that feature strong regional, multimodal traveler information services.
Message Set	Structured sets of data used to convey information. Message sets are constructed of data elements based on the definitions found in the data dictionary (see Data Element and TMDD).
MPO	**Metropolitan Planning Organization.** Regional agencies representing local governments. MPOs have planning and programming authority under ISTEA.
NADS	**National Advanced Driving Simulator.** A testing device that will allow controlled risk-free studies of operator behavior in crash-imminent situations; it is expected to be completed by 1999.
NAHSC	**National Automated Highway Systems Consortium.**
NATAP	**North American Trade Automation Prototype.** The application of advanced communication technologies to facilitate the flow of commercial vehicles across borders. The prototype has developed common data elements and processes to process commercial cargo shipment data at borders.
NHS	**National Highway System.** A federally designated network of 255,803 km (160,995 miles) of roads, most of which already exist, that are eligible for priority Federal-aid funding under ISTEA, including the 45,000-mile Interstate system and major State highways.
NHTSA	**National Highway Traffic Safety Administration.**
NII	**National Information Infrastructure.** Originally funded as a Federal project, the NII initiative is now aimed at developing a coordinated, integrated set of systems for information exchange. ITS can benefit from these technologies and, equally important, from the lessons learned through the NII process, which has sparked a proliferation of public and private software developments and applications directed to private and public consumers.
NTCIP	**National Transportation Communications for ITS Protocol.** Required for traffic management operations. Allows for wireline communications between traffic management centers and field equipment.
OMC	**Office of Motor Carriers (of the Federal Highway Administration).** Manages CVO-related ITS projects.
Operation Timesaver	Federal initiative aimed at reducing congestion by building an intelligent transportation infrastructure in 75 of the Nation's largest metropolitan areas within 10 years. The goal is to reduce travel times by 15 percent by the year 2005.

ORNL	**Oak Ridge National Laboratory.**
Priority Corridor	One of the first "deployment" programs established by ISTEA. Originally designed to showcase technology and hardware, the program has created communication channels and organizational frameworks among the numerous agencies that must coordinate to successfully implement ITS.
Protocol	"Envelopes" used to package data for interoperable flow of ITS information. Protocols can include information on addressing, security, priority, and other data handling issues.
Public-Private Partnerships	Agreements with private sector companies to participate in the deployment of ITS through commitment of time, services, products, or capital investment. These partnerships are the foundation of the ITS strategic plan's financial strategy for ITS deployment. The plan assumes that private sector companies will contribute up to 20 percent of testing and deployment costs.
R&D	**Research and Development.**
Radio Broadcast Data System	An alternative broadcast technique that is appropriate for reporting congestion and incidents, but does not offer sufficient data throughput to meet anticipated needs for more detailed traveler information, such as travel time estimates. Testing and evaluation of specialized communication techniques, such as the subcarrier traffic information channel, are necessary to support the deployment of commercially viable traffic and traveler information systems.
Ramp Metering	Traffic-responsive regulation of vehicle entry to a freeway, typically via sensor-controlled freeway ramp stoplights.
Refarming	Process by which the FCC is reallocating spectrum use and auctioning off available space on the spectrum.
RESCU	Proprietary in-vehicle safety and security system manufactured by Ford Motor Company, which provides theft tracking/recovery, navigational assistance, and automated telephone contact of emergency services in the event of an accident.
RF	**Radio Frequency.**
RSPA	**Research and Special Programs Administration** of the U.S. Department of Transportation.
RT-TRACS	**Real-Time Traffic-Adaptive Control System.** Next-generation traffic and transit management system. An advanced dynamic traffic control strategy that uses state-of-the-art traffic signal control based on real-time demand.
SAE	**Society of Automotive Engineers.** One of five standards development organizations with which U.S. DOT is working to establish standards for integrated, interoperable ITS deployment.

SAFER	**Safety and Fitness Electronic Record system.** Currently undergoing an operational test through the ITS/CVO program, SAFER provides access to commercial vehicle and driver information, as well as historical safety information on interstate carriers across the Nation.
SAVME	**System for Assessing the Vehicle Motion Environment.** A roadside measurement system to quantify the movement of vehicles in real traffic.
SDO	**Standards Development Organization.** U.S. DOT is working with five organizations to develop standards in areas relevant to intelligent transportation: State-level participation and roadside infrastructure (AASHTO), dedicated short-range communication systems (ASTM), electronics and communication message sets and protocols (IEEE), traffic management and transportation planning systems (ITE), and in-vehicle and traveler information (SAE)
Shared-Resource Agreements	Innovative method of acquiring needed bandwidth, facilities, devices, and/or services to support ITS. Supplants traditional procurement processes and criteria as a way of involving the private sector in deploying intelligent transportation infrastructure.
Smart Bus	Transit vehicle equipped with ITS applications.
SmarTraveler	One of the first ITS field operational tests. Designed to demonstrate the value of traffic information to travelers of all types, including commuters, transit users, taxi drivers, and salespeople. SmarTraveler tested the user acceptance of, and potential market for, ATIS.
Smart Traveler	FTA-funded APTS projects in Bellevue, CA; Houston; and St. Paul. Focus is on providing information more conveniently to transit users. Technology being tested includes smart cards, ATIS, and mobile communications for HOV and ridesharing applications. Part of the California APTS.
Standards	Specifications that are established to address the need for various technologies, products, and components from different vendors to work together.
TIP	**Transportation Improvement Plan.** An MPO program for transportation projects, developed jointly with the State for a 3- to 7- year period.
TMC	**Traffic Management Center.**
TMDD	**Traffic Management Data Dictionary.** A source of standardized information that defines how information is exchanged and how it flows between ITS devices and systems. The TMDD standardizes message sets for national interoperability.
Traffic Signal Control Systems	Advanced systems that adjust the amount of "green time" for each street and coordinate operation between each signal to maximize traffic flow and minimize delay. Adjustments are based on real-time changes in demand.

TravTek	First demonstration project that provided traffic congestion information, motorist "yellow pages" service information, tourist information, and route guidance through an in-vehicle unit installed in 100 rental cars. The route guidance information reflected real-time traffic conditions.
TRB	**Transportation Research Board.** Part of the National Academy of Sciences, National Research Council, TRB serves to stimulate, correlate, and make known the findings of transportation research.
User Services	Services available to travelers on an ITS-equipped transportation system, as set forth by ITS America. The 30 services are arranged in 7 categories, as follows: (1) travel and transportation management, (2) travel demand management, (3) public transportation operations, (4) electronic payment, (5) commercial vehicle operations, (6) emergency management, and (7) advanced vehicle control and safety systems.
Variable Dynamics Test Vehicle	A test vehicle equipped with computer control of throttle, brake, and steering that can help determine how drivers will react to various proposed ITS crash avoidance designs.
Vehicle Roadside Communications	Used in electronic toll collection, AVI, CVO, and ATMS. Technologies include transponders, readers, cellular telephones, and beacons, among others.
VMS	**Variable Message Signs.** Used in ATMS and ATIS. Also called CMS .