

STATE OF NEVADA  
DEPARTMENT OF TRANSPORTATION

**2009**  
**PERFORMANCE AND MAJOR PROJECTS**  
**ANNUAL REPORT**



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August, 2009

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## INTRODUCTION

Assembly Bill 595 was passed in the 2007 Legislative Session. This bill provided the Department of Transportation additional bonding capacity for super and mega (major) projects identified by the Department as priority projects for the State of Nevada. The bill requires the Department to develop a plan for measuring its performance, which must include performance measures approved by the Board of Directors of the Department of Transportation (defined as 'Board' by NRS 408.033). The bill also included requirements for reporting to the Governor, Board, and Legislative Counsel Bureau.

Assembly Bill 595 included four main reporting requirements: three are for annual reports and one is for a quarterly report. The Department has combined all reporting requirements into one annual report that will be submitted to the recipients identified above following the fall meeting of the Board. Additionally, the quarterly report will satisfy a portion of this annual report, but will be submitted independently on the required quarterly basis. The specific requirements are as follows:

### **1. Section 47.2 – Annual Report on Performance Measures and General Project Information**

Prior to December 31 of each year, the Director of Transportation shall prepare a report as follows:

- Goals and objectives of the department and current status of meeting those goals
- Scheduling, scope, cost and progress of any current or proposed highway project
- Funding sources, amount and expenditures of the department
- The rationale used to establish priorities
- Transportation Board and Legislative Directives
- Recommended Plan Amendments

Submit the report to:

- The Board
- The Director of the Legislative Counsel Bureau for transmittal to the Interim Finance Committee

As of June 30 of 2009, there were no directives from either the Board or Legislature and no recommendations to amend the performance measures plan.

### **2. Section 47.3 – Annual Report on Cost-Benefit Analysis for capacity projects that cost at least \$25 million (NRS 408.3195).**

The annual report will include the criteria used in the cost-benefit analysis. The resulting benefit/cost ratios will be reported to the Board. Additionally, a written description of the analysis for any project must be submitted to the Board before the Board approves funds for project construction.

This annual report must be made available to the Board and public when the agenda is posted for the meeting at which the report will be submitted to the Board for approval. This meeting will

occur in the fall timeframe along with the approval of the statewide Transportation System Project documents for yearly submittal to U.S. Department of Transportation.

**3. Section 55.3 – Annual Report on projects funded through the Las Vegas Convention and Visitors Authority funding.**

The report will include funding, descriptions, status, timelines, and information on the completed projects, if any (NRS 244A.638).

Submit report to:

- The Governor
- The Director of the Legislative Counsel Bureau for transmittal to the Interim Finance Committee

**4. Section 55.5 – Quarterly Report on General Project information for the Blue Ribbon Task Force projects and any proposed super and mega (major) highway projects.**

The report will include funding, descriptions, status, timelines, and information on the completed projects, if any.

Submit the quarterly report to supplement annual reports required under Section 47.2 to:

- The Board
- The Director of the Legislative Counsel Bureau for transmittal to the Interim Finance Committee.

The content of this annual report includes a discussion of Department goals followed by the presentation of the performance measures to meet these goals and the Department's Strategic Plan. The next topic is the project status report that is followed by the cost-benefit analysis of capacity projects. The annual expenditure report and project priority rationale complete the annual report.

## DEPARTMENT GOALS

As stated earlier, the Department is to report on goals (Section 47.2), which are supported by mission and vision statements, and a list of core values. The purpose of Departmental goals is to help focus the attention and efforts of employees toward fulfilling the Department's **Mission**, which is:

**Providing a better transportation system for Nevada through our unified and dedicated efforts.**

Our employees are provided an image for the ideal condition of the Department with the following **Vision** statement:

**The Department is the nation's leader in delivering transportation solutions, improving Nevada's quality of life.**

The efforts of Department employees to attain the Department goals will be governed by the following Department's **Core Values**:

**Integrity – Doing the right thing**

**Honesty – Being truthful in our actions and our words**

**Respect – Treating others with dignity**

**Commitment – Putting the needs of the Department first**

**Accountability – Being responsible for our actions**

The fulfillment of the Mission of the Department is to be attained within the guidelines of the Department's seven **Strategic Plan Goals**. They are:

**To optimize safety**

**To be in touch with and responsive to our customers**

**To innovate**

**To be the employer of choice**

**To deliver timely and beneficial projects and programs**

**To effectively preserve and manage our assets**

**To efficiently operate the transportation system**

## PERFORMANCE MEASURES

The Department has fifteen performance measures among the four major divisions that were developed to achieve of the Department Goals (Section 47.2). These performance measures are intended to quantify progress in meeting those goals. The performance measures are listed below:

### ADMINISTRATION DIVISION

1. Reduce Work-Place Accidents  
Number of work-place injuries and illnesses per 100 employees and number of injuries and illnesses requiring medical attention per 100 employees
2. Provide Employee Training  
Percentage of employees trained in accordance with prescribed training plans and legal requirements
3. Improve Employee Satisfaction  
Numerical rating obtained from employees' satisfaction surveys.
4. Streamline Agreement Execution Process  
Percentage of Agreements executed within 45 days from when division submits agreement to the date when it is fully executed
5. Improve Customer Outreach/Satisfaction  
Numerical ratings obtained from public opinion and customer/user surveys

### PLANNING DIVISION

6. Reduce Congestion on the State System  
Percentage of daily vehicle miles traveled that occur at Level of Service E (unstable traffic flow) or worse on the state system

### OPERATIONS DIVISION

7. Streamline Project Delivery – Schedule and Estimate from Bid Opening to Construction Completion  
Percentage of projects within established range of cost estimate and schedule to completion
8. Maintain State Roadways  
Percentage of state maintained pavements needing annual preservation in order to maintain the pavement International Roughness Index rating of fair or better condition
9. Maintain State Fleet  
Percentage of fleet meeting (requiring) replacement criteria and percentage of fleet in compliance with condition criteria
10. Maintain State Facilities  
Percentage of Department building facilities in compliance with regulatory building and safety codes

11. Provide Continuity of Business Operations  
Percentage of seven Department Emergency Plans that have been completed

#### ENGINEERING DIVISION

12. Reduce Fatal Crashes  
Number of fatalities on Nevada's streets and highways
13. Streamline Project Delivery – Schedule and Estimate after NEPA Approval to Bidding  
Percentage of projects completed within range of established estimate and schedule after the environmental process
14. Maintain State Bridges  
Percentage of Department-owned bridges which are eligible for federal funding and are categorized as structurally deficient or functionally obsolete
15. Streamline Permitting Process  
Percentage of permits issued or rejected within 45 days of receipt

The actual Performance Measures Plan is contained in Appendix A. For reader convenience a summary of the Department's progress meeting the performance measures follows on the next three pages.

Another significant effort for the performance measures has been the development of a draft transportation policy, TP 1-11-2, entitled Performance Measures Policy. Appendix B contains a copy of this draft policy that is currently being circulated for review and comment.

**Annual Performance Measures Summary Status Report  
7/1/08 through 6-30-09**

<b>Performance Measure Topic</b>	<b>Performance Measure</b>	<b>Target for Year</b>	<b>Current Status</b>
1. Reduce Work Place Accidents	Injuries per 100 employees	10% reduction	<b>On target</b>
	Injuries needing medical attention per 100 employees	10% reduction	<b>Not on target See Comment</b>
Comments: Safety Specialist position was filled in February 2009. The Safety Specialist has proven valuable by increasing the safety presence in the field and availability to staff for questions and general safety assistance. Injuries needing medical attention currently have seen a reduction of 7.5%.			
2. Provide Employee Training	% employees trained	15%	<b>On target</b>
Comment: Six of 8 training classes met or exceeded the Ultimate Target. By encouraging employees to track their own compliance with state mandated training plus heightened management oversight, it is likely the Ultimate Target for all state mandated courses will be met within the next two years.			
3. Improve Employee Satisfaction	Survey rating number	75% employee satisfied	<b>Not On Target See Comment</b>
Comment: The 2009 Performance Measure Survey was launched on July 13, 2009, and closed on August 2, 2009. Currently the percentage of satisfied employees is at 67%.			
4. Streamline Agreement Process	% processed within 45 days	50%	<b>Not On Target See Comment</b>
Comment: During the second quarter of 2009 138 agreements were submitted and 155 were executed, 48 within 45 days with a range of one day to 184 days. Average days for execution was 48 but only 31% of the total were below 45 days.			
5. Improve Customer Outreach	Survey rating number	To be determined	<b>Not On Target See Comment</b>
Comment: The customer surveys are currently being conducted under contract with UNR as part of a maintenance and operations division survey. The results are expected by September 30, 2009			



6. Reduce Congestion on Highways	% daily Vehicle miles of travel at Level of Service E or worse	To be determined	<b>Not On Target See Comment</b>
Comment: The level of congestion, 9% of daily vehicle miles traveled occurring at Level of Service E (unstable traffic flow) or worse on the state system, has recently been determined. The values for the ultimate and annual targets will be determined after a fiscal analysis of the cost of achieving different levels is completed prior to the 2011 legislative session.			
7. Streamline Project Delivery: Schedule And Estimate From Bid Opening To Construction Completion	% projects completed within schedule and estimate	25% improvement	<b>On Target</b>
Comment: None			
8. Maintain State Highways	% of state pavements receiving annual preservation work to maintain fair or better condition rating	8% of the total system pavements need annual work to maintain the desired condition	<b>Not On Target See Comment</b>
Comment: Only 6% of the preservation needs were addressed this Fiscal Year. For the Department of Transportation to keep current with present roadway conditions, approximately \$300 million is needed annually, which represents almost 8% of the total system. As of 2007, 1,028 centerline miles of the statewide 5,318 centerline miles of NDOT maintained highway are in need of overlay or reconstruction, which totals approximately \$570 million. For next year, 19% of the state highway system will need preservation action to catch up.			
9. Maintain State Fleet	(A) % fleet meeting (requiring) replacement condition criteria	1% decrease	<b>Not On Target See Comment</b>
	(B) % fleet in compliance with condition criteria	1% increase	<b>On Target</b>
Comment: Part (A) 0.6% increase; Part (B) 6.0% increase			
10. Maintain State Facilities	% buildings up to code	3% increase	<b>Not On Target See Comment</b>
Comment: Currently, 82 % of our facilities are compliant with regulatory building and safety codes. This means that 18% of our facilities violate a safety or building code in some manner. Our short-range strategies are to continue our efforts in prioritizing our condition assessment data and scheduling deferred maintenance work. We have begun assessing and prioritizing ADA deficiencies in Highway Rest Areas, as well as, other NDOT Facilities. Design work for these projects will commence in FY 09. With budget limitations the annual target needs to be revised.			
11. Provide Continuity of Business Operations	% of emergency plans implemented	50% for FY 2009	<b>On Target</b>
Comment: In 2009, we conducted a functional exercise to test our capability of physically setting up the NDOT Emergency Operation Center (EOC), we are also testing management's ability to effectively operate the NDOT EOC during this functional exercise. An After Action Report will be completed after the exercise to identify areas of improvement.			

12. Reduce Fatal Crashes	Fatalities on Nevada road system	Reduce by 100 fatalities	<b>Not On Target for CY 2008 See Comment</b>
Comment: There were 372 fatalities in calendar year 2007; and 324 for calendar year 2008. While total fatalities dropped significantly, the decrease did not meet the target of 100. However, 48 few people died.			
13. Streamline Project Delivery: Schedule And Estimate After NEPA Approval To Bidding	% projects within budget and schedule after NEPA	25% improvement	<b>On Target</b>
Comment: Changes to Performance Measure are being considered.			
14. Maintain State Bridges	% reduction in structurally deficient of functionally obsolete bridges	1 bridge biennially	<b>On Target</b>
Comment: None			
15. Streamline Permitting Process	% action within 45 days	95%	<b>On Target</b>
Comment: None			

## MAJOR PROJECT STATUS REPORT

There are project status reporting requirements in Assembly Bill 595, namely, any current or proposed highway projects (Sec 47.2), highway projects using NRS 244A.637 (Las Vegas Convention and Visitor Authority) funding (Sec 55.3), and highway projects identified by the 2006 Blue Ribbon Task Force Report and other super or mega (major) projects (Sec 55.5). The Department has combined all the reporting requirements into one annual report that will be submitted to the recipients as required by the 2007 Assembly Bill 595 following the fall meeting of the Board. The fall meeting is when the Board approves the Transportation System Projects document for submittal to the U.S. Department of Transportation which is required prior to October 1<sup>st</sup> of each year. The June 30<sup>th</sup> quarterly report submission requirement will be satisfied by this section, and Appendix C, of this annual report, and will be submitted independently on the required quarterly basis, and placed on the Department's website.

The Department has converted its major project status system to a new format that will meet the reporting requirements of the 2007 Assembly Bill 595 projects. Additionally, projects estimated to cost at least \$25 million and increase capacity are included. Below are the specific major highway projects that require a status report as per Assembly Bill 595:

### Blue Ribbon Task Force Highway Projects

#### *Southern Nevada*

I-15 North Corridor – Spaghetti Bowl to Apex Interchange  
US-95 Northwest Corridor – Washington to Kyle Canyon  
Beltway Interchanges – US-95, I-15 & Summerlin Parkway  
I-15 – Tropicana Avenue to Spaghetti Bowl  
I-515 – Foothills Road to Spaghetti Bowl  
I-15 South Corridor – Stateline to I-215 Beltway  
Boulder City Bypass

#### *Northern Nevada*

I-80 – Robb Drive to Vista Boulevard  
US-395 – Spaghetti Bowl to Stead Boulevard  
Pyramid Highway – Nugget Avenue to Calle De La Plata Drive

### Las Vegas Convention and Visitor Authority Projects

I-15 – Tropicana Avenue to Sahara Avenue  
I-15 – Blue Diamond Road (SR-160) to Tropicana Avenue

Appendix C contains the status report of these and other important projects as of June 30, 2009.

As a part of the reporting requirements in Section 55.5 of the 2007 Assembly Bill 595, the Department is to report the number of major projects for which construction was completed during each quarter. For each completed project, the Department is to report on the following:

1. Whether the project was completed early or on time.
2. Whether the project remained within its planned scope.

3. Whether the project was completed for less than or for the amount of its budgeted expenses.
4. Any specific measures of transportation improvement resulting from the project.

For the quarter ending on June 30, 2009, the Department did not complete any major projects during FY 2009.

## COST- BENEFIT ANALYSIS OF CAPACITY PROJECTS

One of the provisions in Assembly Bill 595 in the 2007 Legislative Session was the requirement for the Department to conduct an analysis of costs and benefits for larger highway capacity projects (NRS 408.3195). Specifically, prior to submitting a project to the Board for approval, the Department will prepare such a written analysis for highway projects that will increase capacity on the State Highway System and cost at least \$25 million. Subsequently, this analysis was done and is being reported on active projects before the Department requests the Board to approve funding for construction, including right-of-way acquisition and utility work. The B/C ratio calculations are being done on the larger capacity projects that are expected to be funded for construction within 10 years and, thereby, appear in the Transportation System Projects document. The policy that governs the analysis of benefits and costs, TP 1-11-1, is included in Appendix D.

The B/C ratios for several projects have been determined in FY 2008 and 2009 using a software package called STEAM (Surface Transportation Efficiency Analysis Model). This package is described in Appendix E including the data requirements, and limitations of the STEAM analysis in particular and B/C ratio calculations in general.

Table 1 reports the B/C ratio of a total of 7 projects that are in the Transportation System Projects document. The table reports results of the analysis: net present value of B/C ratio at a 7 percent discount rate. Appendix-F contains the written B/C analysis for the only projects expected to receive construction funding in FY 2010. They are: US 95 Northwest Corridor – Phase 1, US 395 – Moanna to I-80 Northbound - add one lane, and US 395 Carson City Freeway, East Williams to Fairview Drive, - bridges only. The other projects are programmed in later fiscal years.

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**Table 1. RESULTS OF THE COST-BENEFIT ANALYSES**

<b>Blue Ribbon Task Force Projects (FY 2008)</b>	NPV B/C*
I-15 South Corridor – Tropicana Avenue to Sloan Road	4.11
US 95 Northwest Corridor – Rainbow Blvd to Kyle Canyon Road	3.63
I-15 North Corridor – Spaghetti Bowl to Apex	3.39
I-15 – NEON (Sahara Avenue to Spaghetti Bowl)	1.97
I-515 – Spaghetti Bowl to Foothills Road	1.94
<b>Other Major Projects (FY 2009)</b>	
US 395 – Moana to I-80 Northbound Add Lane	2.34
US 395 – Carson City Freeway (1996 updated in 2009)	4.44

\*Notes:

NPV B/C – net present value of benefit/cost ratio at a 7 percent discount rate

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A B/C ratio was developed for Boulder City Bypass Phase I project; however, a special study is underway due to anticipated funding limitations that might substantially change the project scope. There are several other large capacity projects that are not contained within the Transportation System Projects document or have not advanced enough to establish a project scope sufficient to conduct and report a B/C ratio. They include:

Beltway Interchanges – US-95, I-15 & Summerlin Parkway (B/C analyses for US-95 and I-15 included interchanges with the Beltway.)

Boulder City Bypass Phase II

I-80 – Robb Drive to Vista Boulevard

US-395 – Spaghetti Bowl to Stead Boulevard

Pyramid Highway – Nugget Avenue to Calle De La Plata

US 395 Corridor in Douglas County

The cost data analyzed included: accidents/crashes, fuel consumption, non-fuel vehicle operating, travel time, construction, and emissions. There are some costs that were not included, namely, transit costs (and benefits) and highway maintenance, which need consideration at times.

Other limitations to the B/C ratio that deserve consideration on many projects include 1) the cost of impacts on human communities, 2) the management of roadway assets, especially roadway preservation, 3) the impact of large capacity highway projects on system-wide congestion, 4) there are projects having an economic development benefit, but it is very difficult to quantify, and 4) the level of favorable public opinion toward a project. These limitations are discussed in detail in Appendix E.

In summary, when determining the priority of large capacity projects, the Department will work with and encourage the Regional Transportation Commissions and other Metropolitan Planning Organizations to consider community impacts, roadway preservation, system congestion, and public acceptance in addition to the B/C Ratio.

## **ANNUAL REVENUE AND EXPENDITURE REPORT**

Assembly Bill 595 in the 2007 Legislative Session included the requirement for the Department to report on the funding sources, amount and expenditures (Section 47.2). There is an annual report entitled “Highway Special Revenue Fund” for State Fiscal Year ending June 30, 2009 that is under development, but will not be finalized until November; consequently, financial data for FY 2008 is included herein. The following three tables provide the required information:

1. Schedule of Revenues and Receipts – Budgetary Basis
2. Comparative Schedule of Expenditures and Disbursements – Budgetary Basic
3. Highway Fund Balance – Budgetary Basis

The first table reports that total revenues into the State Highway Fund were approximately \$1 billion while the second table contains the total actual expenditures, which were approximately \$1 billion.

The third table also indicates that the Highway fund balance increased from approximately \$348.3 million in FY 2007 to \$415.7 million FY 2008. The total Department of Transportation actual expenditures for FY 2008 were approximately \$648.7 million, which is shown on the second table.

These two tables also include other detailed financial data about transportation-related revenues and expenditures.

State of Nevada  
Highway Special Revenue Fund  
Schedule Of Revenues And Receipts - Budgetary Basis  
For The Years Ended June 30, 2008 and 2007  
(In thousands)

	<u>2008</u>	<u>2007</u>
State user taxes		
Gasoline taxes	\$ 197,567	\$ 200,174
Motor vehicle fees and taxes		
Vehicle registration & bicycle safety fees	103,945	104,717
Motor carrier fees	41,201	44,055
Drivers license fees	14,212	13,704
Special fuel taxes	96,374	96,968
Total motor vehicle fees and taxes	<u>255,732</u>	<u>259,444</u>
Total state revenue	<u>453,299</u>	<u>459,618</u>
Federal Aid reimbursement		
Bureau of Reclamation	-	-
Department of Interior	35	
Federal Aviation Administration	388	222
Federal Emergency Management Administration	-	-
Federal Highway Administration	230,047	307,870
Federal Rail Administration	-	-
Federal Transit Administration	3,933	6,103
US Forest Service	-	-
Total Federal Aid	<u>234,403</u>	<u>314,195</u>
Miscellaneous receipts		
Departments of Motor Vehicles & Public		
Safety authorized revenue	81,000	80,300
Appropriations from other funds	23,215	26
Proceeds from sale of bonds	134,995	198,965
Agreement income	9,554	31,521
Interest	19,807	20,119
Sale of surplus property	11,307	222
Other sales & reimbursements	18,075	25,203
Total miscellaneous receipts	<u>297,953</u>	<u>356,356</u>
Total revenue and receipts - budgetary basis	<u>\$ 985,655</u>	<u>\$ 1,130,169</u>



**State of Nevada**  
**Highway Special Revenue Fund**  
 Comparative Schedule of Expenditures and Disbursements - Budgetary Basis  
 For the Fiscal Year Ending June 30, 2008 and 2007  
 (In thousands)

	2008			2007
	Budgeted	Actual Using Budgetary Basis	Variance Favorable (Unfavorable)	Actual Using Budgetary Basis
Department of Transportation				
Labor	\$ 132,385	\$ 123,280	\$ 9,105	\$ 115,371
Travel	2,498	2,064	434	1,672
Operating	67,054	64,723	2,331	56,858
Equipment	18,480	11,798	6,682	16,076
Capital improvements	357,327	337,700	19,627	455,470
Bond expenditures	285,650	94,643	191,007	167,407
Other programs	20,320	10,964	9,356	11,277
Total operations	<u>883,714</u>	<u>645,172</u>	<u>238,542</u>	<u>824,131</u>
Cost of fuel sold to other agencies	<u>3,542</u>	<u>3,542</u>	<u>0</u>	<u>2,945</u>
Total Department of Transportation	<u>887,256</u>	<u>648,714</u>	<u>238,542</u>	<u>827,076</u>
Department of Motor Vehicles	121,298	95,583	25,715	88,253
Department of Public Safety	<u>85,014</u>	<u>78,222</u>	<u>6,792</u>	<u>74,550</u>
	<u>206,312</u>	<u>173,805</u>	<u>32,507</u>	<u>162,803</u>
Appropriations to other funds				
Department of Administration	-	-	-	131
Transportation Services Authority	2,482	2,349	133	2,189
Public Works Board	1,837	1,709	128	234
Traffic Safety	199	199	-	176
Investigations	315	313	2	298
DMV Training Division	1,002	870	132	1,365
Risk Management	-	-	-	-
Legislative Counsel Bureau	133	113	20	12,548
Dept of Information Technology	-	-	-	13,983
Total appropriations to other funds	<u>5,968</u>	<u>5,553</u>	<u>415</u>	<u>30,924</u>
Other disbursements				
Transfer to bond fund	<u>85,000</u>	<u>84,338</u>	<u>662</u>	<u>76,382</u>
Total other disbursements	<u>85,000</u>	<u>84,338</u>	<u>662</u>	<u>76,382</u>
Total expenditures & disbursements				
- Budgetary basis	<u><u>\$1,184,536</u></u>	<u><u>\$ 912,410</u></u>	<u><u>\$ 272,126</u></u>	<u><u>\$1,097,185</u></u>

**DEPARTMENT OF TRANSPORTATION  
HIGHWAY FUND BALANCE (BUDGETARY BASIS)  
FISCAL YEARS 2006 - 2008**

	<b>ACTUAL FISCAL YEAR 2006</b>	<b>ACTUAL FISCAL YEAR 2007</b>	<b>ACTUAL FISCAL YEAR 2008</b>
<b>BEGINNING FUND BALANCE:</b>			
GENERAL OBLIGATION BONDS	\$18,613,292	\$119,091,562	\$150,650,074
RESTRICTED FUNDS	\$1,672,864	\$2,487,721	\$2,799,305
OTHER HIGHWAY FUND	277,195,844	207,437,717	194,809,621
<b>TOTAL BEGINNING FUND BALANCE:</b>	<b>\$297,482,000</b>	<b>\$329,017,000</b>	<b>\$348,259,000</b>
<b>ADDITIONS:</b>			
REVENUES	\$815,554,668	\$931,203,530	\$850,659,733
BOND PROCEEDS	199,314,532	198,965,425	134,994,976
<b>TOTAL ADDITIONS:</b>	<b>\$1,014,869,200</b>	<b>\$1,130,168,955</b>	<b>\$985,654,709</b>
<b>DEDUCTIONS:</b>			
EXPENDITURES AND APPROPRIATIONS			
DEPT OF TRANS. NON-BOND EXPENDITURES	\$643,642,783	\$658,978,868	\$553,976,123
DEPT OF TRANS. BOND EXPENDITURES	98,836,261	167,406,913	94,643,385
EXPEND. & APPROP. TO OTHER AGENCIES	231,173,873	270,796,646	263,789,188
<b>TOTAL DEDUCTIONS:</b>	<b>\$973,652,917</b>	<b>\$1,097,182,427</b>	<b>\$912,408,696</b>
<b>ADJUSTING ENTRIES:</b>			
CONTROLLERS OFFICE CAFR ADJUSTMENTS	-\$9,681,283	-\$13,744,529	-\$5,774,012
<b>TOTAL ADJUSTING ENTRIES:</b>	<b>-\$9,681,283</b>	<b>-\$13,744,529</b>	<b>-\$5,774,012</b>
<b>ENDING FUND BALANCE:</b>			
GENERAL OBLIGATION BONDS	\$119,091,562	\$150,650,074	\$191,001,665
RESTRICTED FUNDS	2,487,721	2,799,305	5,655,551
OTHER HIGHWAY FUND	207,437,717	194,809,621	219,073,784
<b>TOTAL ENDING FUND BALANCE:</b>	<b>\$329,017,000</b>	<b>\$348,259,000</b>	<b>\$415,731,000</b>

# PROJECT PRIORITY RATIONALE

## Introduction

Every year, the Department is responsible for the programming of federal and state funding for a wide range of transportation improvement projects across the state. Allocating these significant resources in an equitable, efficient, and effective manner requires a multifaceted approach. The Department has adopted flexible, yet accountable procedures to meet the needs of the traveling public, advance the Department's goals and priorities, and address the needs of a myriad of constituencies across the state.

The Board, comprised primarily of elected officials, provides oversight on the project selection process. The Board annually approves the Transportation System Projects, which contains the Statewide Transportation Improvement Program (STIP), Annual Work Program, and Short and Long-Range Elements. Upon its approval in the fall of every year, the Transportation System Projects document is forwarded to the U.S. Department of Transportation for final approval.

Project priority rationale should be guided by our "Statewide Long-Range Transportation Plan" containing 'Guiding Principles' that provide policy guidance for the development and operation of the Nevada Transportation System. These guiding principles include the following topics: 1) Safety, 2) Mobility and Accessibility, 3) Environmental Stewardship, 4) Fiscal Responsibility, 5) Freight Movement, 6) Asset Management, and 7) Customer Service. For the purpose of this discussion, these principles that directly affect the transportation system are characterized as follows:

- 1) Safety – To improve the safety of all modes of travel
- 2) Mobility – To provide a multimodal, interconnected and efficient system
- 3) Environmental – To ensure the system is considerate to the human and natural environment
- 4) Fiscal Responsibility – To maximize the transportation funding and invest it wisely
- 5) Freight Movement – To improve the safety and efficiency of motor carriers
- 6) Asset Management – To protect the transportation system assets

The following subsections describe the more significant funding programs used by the Department to follow the guiding principles of the Statewide Long-Range Transportation Plan. The programs include: Capacity Projects, Bridge, State Highway Preservation, Highway Safety Improvement, and Transportation Enhancement.

## Capacity Projects Program

The Department cooperates in the development and ensures adoption of Regional Transportation Plans and Regional Transportation Improvement Programs in Nevada. Projects within the jurisdiction of the four Metropolitan Planning Organizations must be included within the Transportation System Projects document without change from regional planning documents approved by the Metropolitan Planning Organizations.

The Department evaluates the capacity project budget by focusing on that portion of the Department budget that is both available to apply towards capacity projects and under the direct control of the Department. This "Potential Capacity Budget" is calculated by adding federal and

state components that meet the above criteria. With the approval of the 2007 AB 595, the Department now requires a benefit/cost analysis on capacity improvement projects that cost at least \$25 million. In addition, the Department requires that major projects included in the Transportation System Projects document be evaluated by standard criteria including project feasibility.

As of 2005, entities not within Metropolitan Planning Organizations' jurisdictions are requested to submit a Project Submittal Application for proposed transportation improvement projects. Applications are due to the Program Development Division by January 1. Those projects submitted for consideration are evaluated by a project evaluation team utilizing criteria based on current conditions, project impact, and project complexity. Using these criteria, proposed transportation improvement projects are ranked and submitted to the Director for consideration. The Director recommends the selection of projects advancing into the Annual Work Program of the Transportation System Projects document.

### **Bridge Program**

Highway assets are managed using two systems: A pavement management system and a bridge management system. Both systems provide an inventory of existing assets, their condition, needed repairs, and repair priorities. The bridge management system aids in identifying bridges in need of replacement and rehabilitation. Federal Highway Bridge Program funds are available to replace and rehabilitate substandard publicly owned highway bridges. While the primary focus of this program is to replace or rehabilitate bridges, these funds can also be used for:

- Conducting federally mandated inspection on all existing bridges
- Compiling federally mandated inventory information
- Upgrading bridges to resist seismic activity
- Mitigating potential scouring of bridge supports due to flooding

Eligible expenses are funded at ninety-five percent federal funds with a five percent match by the bridge's owner. A minimum of fifteen percent of the federal funds must be applied to bridges off the federal-aid system. The remaining balance of federal funds may be applied to bridges on the federal-aid system. Bridges on federal and tribal lands are also eligible but are neither authorized nor administered by the Department.

There are approximately 1819 bridges open to the public in Nevada that are owned and maintained by the Department and local agencies. Additionally, several bridges are owned and maintained by federal agencies and a few by private entities. Of the State and Local bridges, 96 are currently eligible for federal funding. Eligibility and the priority of replacement and rehabilitation projects are based on a bridge's Sufficiency Rating. The Sufficiency Rating is a numerical assessment of a bridge's serviceability, and is calculated based on a compilation of select inventory data and condition assessment data. The importance of a bridge to the transportation system and rate of deterioration are also considered when selecting replacement and rehabilitation projects.

### **State Highway Preservation Program**

The Department maintains 5,376 miles of highways. The total number of miles fluctuates annually as new highways are constructed and others are eliminated due to Relinquishment and

Road Transfer activities to counties and cities, prompted by the 1999 Assembly Concurrent Resolution (ACR) 3. These highways carry 58 percent of Nevada's traffic and 87 percent of the heavy trucks. The Department is responsible for protecting highway assets and preserving existing highways. Highway assets are managed using two systems: a pavement management system and a bridge inventory system. Both systems provide an inventory of existing assets, their condition, needed repairs, and repair priorities. The basic principle of pavement preservation is that timely lower-cost improvement will save money and better serve the public. For example, timely overlays will cost about 25 percent of the cost of waiting a few more years when reconstruction is necessary. At present, approximately \$300 million is needed annually for pavement preservation projects to maintain the present quality of highway pavements. To preserve the state highway system at low cost, action plans are used that optimize the use of available funds. The Department's action plan in priority order is as follows:

1. To apply timely overlays on Interstate and other Principal Arterials, Minor Arterials, and other moderate to high volume roads.
2. To further develop economical repair strategies for our low-volume roads.
3. To continue coordinating and integrating routine pavement maintenance activities with planned overlay and reconstruction work.

Within this action plan, individual projects are prioritized based on pavement age, traffic volume, axle loads, and condition. From this analysis, an action list is formulated based on the financial consequences of not doing the project. Further assessment data is collected from field surveys in conjunction with district-engineer offices. Collaboratively, repair strategies are formulated along with an appropriate funding level to accomplish the Department's preservation and other goals.

### **Highway Safety Improvement Program**

The overall objective of the Highway Safety Improvement Program is to implement effective safety measures that reduce the number and severity of crashes on Nevada highways. The Highway Safety Improvement Program consists of several components, namely:

1. Collecting and maintaining data files for crashes, traffic volumes, and highway features.
2. Analyzing data files to determine high crash sites
3. Conducting engineering studies of high crash locations in order to develop highway safety improvements.
4. Establishing priorities for implementing safety improvements.
5. Programming and implementing highway safety improvement projects.
6. Evaluating crashes before and after the implementation of safety improvements.
7. Determining the overall effectiveness of the prescribed safety improvements.

The Department also cooperates with the agencies listed below to implement the Nevada Strategic Highway Safety Plan.

Department of Health/Bureau of Family Health Services  
RTC of Washoe County  
Department of Public Safety/Office of Traffic Safety

Department of Public Safety/Nevada Highway Patrol  
Federal Motor Carrier Safety Administration  
Department of Motor Vehicles  
Federal Highway Administration  
Nevada Sheriffs' and Chiefs' Association  
RTC of Southern Nevada  
Nevada Association of Counties

### **Transportation Enhancement Program**

The Transportation Enhancement Program requires that ten percent of the Federal Surface Transportation Program (STP) monies apportioned to each state be set aside for the funding of enhancements to the transportation system. Transportation Enhancement Program funding includes activities such as:

- Pedestrians and bicycles facilities
- Safety and educational activities for pedestrians and bicyclists
- Acquisition of scenic easements and scenic or historic sites
- Landscaping and other scenic beautification
- Rehabilitation of historic transportation buildings, structures, or facilities
- Environmental mitigation of water pollution and habitat connectivity
- Establishment of transportation museums

Local governments, state agencies, and federal agencies may submit applications for project funding. Private groups may apply for project funding, but must apply through a public entity or agency. Projects must be for one of the categories specified by law and must be related to surface transportation.

Enhancement projects are prioritized for funding by the Statewide Transportation Technical Advisory Committee. Members of this committee represent a wide range of transportation interests, including several local, state, and federal agencies. Within the urbanized area, the Metropolitan Planning Organizations initially prioritizes projects in their jurisdictions. A subcommittee of the Statewide Transportation Technical Advisory Committee prioritizes projects from the non-urbanized areas of the state. The Statewide Transportation Technical Advisory Committee approves and recommends to the Director a final priority list of projects. Upon the Director's approval, the enhancement projects are included in the Statewide Transportation Improvement Program (STIP).



APPENDIX A  
PERFORMANCE MEASURES PLAN



## INTRODUCTION

The Department has developed performance measures among the four major divisions that were developed to support the achievement of the seven Department Strategic Plan Goals, which are to:

1. Optimize safety
2. Be in touch with and responsive to our customers
3. Innovate
5. Be the employer of choice
6. Deliver timely and beneficial projects and programs
5. Effectively preserve and manage our assets
7. Efficiently operate the transportation system

These performance measures are designed to quantify progress in meeting those goals. The fifteen performance measure topics are listed below. The following performance measures plan includes the actual performance measures, annual and ultimate targets, the performance measure champions, brief discussion of the strategy plan support, measurement and supporting data, and short and long range strategies. Additionally, an annual evaluation of the performance measures is included.

### ADMINISTRATION DIVISION

1. Reduce Work-Place Accidents
2. Provide Employee Training
3. Improve Employee Satisfaction
4. Streamline Agreement Execution Process
5. Improve Customer Outreach/Satisfaction

### PLANNING DIVISION

6. Reduce Congestion on the State System

### OPERATIONS DIVISION

7. Streamline Project Delivery: Schedule and Estimate from Bid Opening to Construction Completion
8. Maintain State Roadways
9. Maintain State Fleet
10. Maintain State Facilities
11. Provide Continuity of Business Operations

### ENGINEERING DIVISION

12. Reduce Fatal Crashes
13. Streamline Project Delivery: Schedule And Estimate after NEPA To Bidding
14. Maintain State Bridges
15. Streamline Permitting Process

# 1. REDUCE WORK PLACE ACCIDENTS

## Performance Measure:

Number of work place injuries and illnesses per 100 employees and number of injuries and illnesses requiring medical attention per 100 employees as documented through annual OSHA 300 Log Reporting data. Data is based on calendar year per federal reporting requirements.

Ultimate Target: Zero

Yearly Target: 10 % Reduction

## Champion:

Human Resources Manager  
Safety and Loss Control Manager

Support Divisions: All

## Strategy Plan Support:

Safety extends to all aspects of the Department from the roadways to the office. Identifying and reducing risk to the Department, our employees and the public is continuous. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Optimize Safety and Be the Employer of Choice.

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## Measurement and Supporting Data:

Calendar Year	2004	2005	2006	2007	2008	Baseline		CY 2009	
						Ave	Ave/4	Mid-Year	End
Injuries/Employees	15.6	22.6	12.0	15.7	12.44	13.67	3.42	10.29	-
Medical/Employees	7.7	9.2	6.3	7.0	7.9	7.62	1.90	7.5	-

The annual Baseline is the average of 2004 through 2008 values while the quarterly Baseline is ¼ of that annual average. The quarterly Baseline is compared to the quarterly progress report. For the first half for calendar year 2009, the injury rate indicator was on target with a decrease >15%. This is assuming a straight-line projected injury rate, which is usually not the case due to an increase in injuries in the winter months due to the level of overtime and severe weather during that time of year.

## Strategies for Improvement:

Short range to next reporting:

Safety Specialist position was filled in February 2009. after. The Safety Specialist has proven valuable by increasing the safety presence in the field and availability to staff for questions and general safety assistance. Safety related training has increased to some minor degree. Safety training will continue to increase as the training database is developed, which will better inform management as to required safety training and track those employees who are

compliant with safety training required specifically for the tasks they perform such as trenching & excavating, sand and gravel operations, respiratory protection, scaffolding and utility notification. Work has commenced and will continue in cooperation with the Training Section to develop a Learning Management System and database that will be accessible to managers to track required safety training.

Long range:

- 1) Identify and implement means to reach staff with increased safety messages in order to bring safety to the forefront of their thoughts and actions, including but not limited to a monthly newsletter, brief communication to targeted work groups pertaining to safety issues specific to them, participating in NDOT academies and annual meetings as workload permits.
- 2) Increase ratio of staff in the Safety and Loss Control Section to total number of NDOT employees, which has had three staff since 1969. This will provide improved support and consultation services to the Divisions and Districts on a consistent and continued basis and aid in maintaining agency compliance with State and federal safety regulations. This is requisite if the department's safety program is to perform at optimum and to attain compliance with State and federal safety requirements.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the semi-annual target met?** Yes

**What 'Strategies for Improvement' were successful?** Completion of the hiring process for a Safety Specialist has increased the presence of safety in the field but it is too early to identify this as a reason for improved performance. Cooperative efforts between the Training Section and Safety and Loss Control to work and plan for the implementation of a Learning Management System (LMS) have been very productive. Actions to move some training components to NEATS such as class registration have been slow. It is still unclear whether NEATS will be able to generate the reports and to track training expiration dates as requisite. Steps have been taken to get all the Training Coordinators and District safety staff to list all their safety training classes, excluding equipment training, on NEATS but this has not been done. Parameters for entering classes such as limiting to a specific location and insuring all class titles start with "NDOT Safety" to facilitate identification has been established and course titles are being entered as time permits and the need arises.

**What 'Strategies for Improvement' were not successful? Why?** Efforts to upgrade the Safety Specialist position in order to hire a competent and professional level staff were completed but constraints on the series description necessitated changing the position to Loss Control Coordinator per the Department. of Personnel (DOP). The discussions with the DOP extended the time in which to fill the vacancy and compounded the backlog of work for the Safety Manager. This resulted in databases such as the Vehicle Accident Database and Worker Comp reporting to fall as far as 2 years behind. Reports of accidents and injuries are integral to the safety program in order to identify areas of need and focus for the Districts and Divisions. In order to achieve effective program oversight and insure compliance, the number

of staff in the Safety and Loss Control Section must increase. Federal OSHA was created in 1970 and the requirements for compliance have increased ever since, yet the safety staff at NDOT has remained the same.

**What new 'Strategies for Improvement' will be initiated in FY2010?**

**Short range to next reporting:** 1) Increased outreach efforts; 2) improving current databases and updating the information so that relevant reports can be generated for management; 3) evaluate the benefit of an Employee Safety Survey in order to assess the agency's culture or attitude as it pertains to safety; and 4) continue cooperative efforts with the Training Section to implement a LMS.

**Long range:** To take the information from the Employee Safety Survey and to evaluate it to determine areas of need within the safety program. Due to the lack of staff and ever increasing workload, hiring a consultant to evaluate NDOT's Safety Program, to identify areas needing improvement and assisting with implementation of solutions would be a possibility; however, budget constraints may prevent moving forward with such an action.

**Does this performance measure effectively measure what is desired?** Yes

**Is there a better performance measure that should be considered?** No

**Will meeting the next yearly target have a fiscal impact? If so, explain.** Fiscal impact would be to a minor degree. Consulting services are estimated to be less than \$70,000.00 for long term assistance. Hiring additional safety staff within the Safety and Loss Control Section would have a fiscal impact due to the increase in staffing. However, those costs should be recouped in the long term with the realization of decreased worker injuries and associated costs.

## 2. PROVIDE EMPLOYEE TRAINING

Performance Measure:

Percentage of employees trained in accordance with prescribed training plans and State statute requirements.

Ultimate Target: 100%

Annual Target: 15%

Champion:

Human Resources Manager  
Employee Development Manager

Support Divisions: All

Strategy Plan Support:

Training of the workforce keeps them safe in the workplace. It also provides the skills and abilities to excel at their duties and to maintain staff expertise. This benefits the Department and our customers by having qualified staff. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety by providing adequate training for supervisors, be the employer of choice. Both NAC and Matrix training will be required.

Summary FY09:

Six of 8 training classes met or exceeded the Ultimate Target. By encouraging employees to track their own compliance with state mandated training plus heightened management oversight, it is likely the Ultimate Target for all state mandated courses will be met within a year or two.

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**Measurement and Supporting Data:**

General Department Training Requirements (Updated March 2004)					Fiscal Year 2009	
Requirement	Who is Required to Attend	# of Employees Needing Training	Frequency of Training	# of Employees Needing Training Per Year	# of Employees Trained	% of Compliance
Employee Appraisal	Supervisors and Managers	428	Every 9 Years	48	71	148%
Progressive Discipline	Supervisors and Managers	428	Every 9 Years	48	56	117%
EEO	Supervisors and Managers	428	Every 9 Years	48	34	71%
Interviewing and Hiring	Supervisors and Managers	428	Every 9 Years	48	72	150%
Grievance Procedures	Supervisors and Managers	428	Every 9 Years	48	79	165%
Alcohol/Drug Program	Supervisors and Managers	428	Every 9 Years	48	3	6%
Sexual Harassment Prevention	All Employees	1754	Every 2 Years	877	1877	214%
Hazardous Communication Training	All Employees	1754	New Hires		Not Tracked	

Requirement	Who is Required to Attend	# of Employees Needing Training		# of Hours of Training Needed Per Year	# of Hours of Qualified Training	% of Compliance
40 Hours of Supervisor/Manager Training Every 3 Years	Supervisors and Managers	428		5,707	6,670	117%

## **Strategies for Improvement:**

### **Short range to next reporting:**

- Implement a Learning Management System database that will be accessible to managers and employees to track each employee, their training needs and progress to desired goals. Database will also generate reports of results and needs of organization and employees.
- Create and implement a promotional campaign to encourage NDOT employees to achieve the requisite level of compliance with state mandated training courses.
- Provide more training opportunities that will improve the skills of employees utilizing a wider variety of delivery methods, to include instructor-led, video conferencing, web-conferencing, and blended-elearning.
- Identify safety training that was conducted in 2007 and 2008 in order to establish a safety training baseline and needs assessment for 2009.

### **Long range:**

- Facilitate division training matrix update biennially to include safety training topics, and timeframe / conditions under which refresher training would be required. This will be implemented in the short term, but due to manpower limitations, we expect it will be a long-term project.
- Do more training needs analysis, course development, and training outreach by increasing Training Officer Staff.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Were the targets met?** Yes, the Ultimate Target of 100% was exceeded, while the Annual Target of 15% was missed slightly, largely due to the quality update of the Leadership Academy program. Program revisions necessitated the cancellation and postponement of several courses during March-May of 2009.

### **What ‘Strategies for Improvement’ were successful?**

1. Providing more Sexual Harassment class dates and related announcements brought NDOT into compliance.
2. Revising the Leadership Academy program reduced operating costs, provided more NDOT relevant content, and brought program competencies in alignment with NDOT leadership competencies.
3. We are now in compliance with six out of eight classes in FY09, compared to five out of eight classes in FY08.

### **What ‘Strategies for Improvement’ were not successful? Why?**

Though significant progress was achieved in the planning, approval and research for a training tracking database, that effort did not, in itself, help us meet our FY09 goal. We expect the fruits of these efforts to be realized in FY10.

**What new ‘Strategies for Improvement’ will be initiated in FY2010?**

**Short range to next reporting:**

1. Select and implement a Learning Management Systems database.
2. Increase the library of elearning course offerings to better meet the learning needs of NDOT divisions.
3. Begin facilitating the update of division training matrices, to include developing a table of training required by position number.
4. Add eight new leadership course offerings to our training calendar.
5. Initiate blended online training courses on program management and office skills.
6. Inaugurate training and informational events utilizing a combination of video conferencing and web conferencing technology.
7. Create and implement a promotional campaign to encourage NDOT employees to achieve the requisite level of compliance with state mandated training courses.

**Long range strategy:**

To gather information in such a way as to be able to identify by supervisor, who has the required training hours and who does not. This will be accomplished with the Learning Management System tracking database implementation. Once the LMS is implemented, it will be a tool to encourage individual diligence and management oversight.

**Does this performance measure effectively measure what is desired?**

Once the new database is in place, this performance measure will effectively measure our compliance with mandatory training. Training of the workforce keeps them safe in the workplace. It also provides the skills and abilities to excel at their duties and to maintain staff expertise. This benefits the Department and our customers by having qualified staff. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety by providing adequate training for supervisors, Be the employer of choice.

**Is there a better performance measure that should be considered?**

It is recommended that we continue to track the metrics stated within the present Performance Measure. Ultimately, with the expected benefits realized that our current strategies focus on, we can progress to the next logical step in training section accountability: training results.

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

If we want to include more employees in the Leadership Academy or CPM Program to help them meet the requirement for refresher training, it will affect our budget. Offering college classes to increase skill levels, whether instructor-led or web-based, have adverse fiscal impact. Up to this point we have been able to absorb those costs in our Category 04 funds. This year, the Learning Management System will add to our cost, though we expect to share the burden with Safety and EEO. As we add training programs, increase quality, and implement better oversight, we also reap the cost-enhancing benefits that technology brings to reduced administrative costs that are reflected throughout the organization. We are more diligent with our operating costs and we expect to deliver savings through delivery of more on-line programs.



### 3. IMPROVE EMPLOYEE SATISFACTION

Performance Measure:

Percentage rating obtained from employees' satisfaction surveys.

Ultimate Target: Overall rating of 80%. Annual Target: Overall rating 75%

Champion: Chief Human Resources

Support Divisions: All

Strategy Plan Support:

Positive employee moral is critical to the success of the workplace. It is the backbone of a skilled and dedicated workforce and essential in attracting and retaining a quality staff. A satisfied workforce will excel at their duties. This benefits the Department and our customers. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety, Be in touch with and responsive to our customers, Innovate, Be the employer of choice, Deliver timely and beneficial projects and programs, effectively preserve and manage our assets, and efficiently operate the transportation system.

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Measurement and Supporting Data:

2007 FY (Base Number)	70%	
2008 FY	67%	
2009 FY	Rating	Change

#### **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

##### **Was the annual target met?**

No. Sixty-seven percent (67%) of employees are extremely (20%) or somewhat satisfied (47%) with NDOT as an employer as compared to seventy percent (70%) last year.

The 2008 Performance Measure Survey was launched on July 14, 2008 and closed on August 15, 2008. 764 employees responded to the 2008 survey.

The 2009 Performance Measure Survey was launched on July 13, 2009, and closed on August 2, 2009. 616 employees responded to the 2009 survey.

##### **What 'Strategies for Improvement' were successful?**

The Department of Transportation implemented strategies to improve communication by management from the top down to keep our employees informed and to update our

Transportation Policies and create new work manuals. These strategies appeared to have positive results. Employees who strongly or somewhat agree that management communicates the missions/goals of NDOT have increased three percent (3%.) Employees who strongly agreed or somewhat agreed that management applies policy decisions consistently throughout NDOT has increased seven percent (7 %.)

**What ‘Strategies for Improvement’ were not successful? Why?**

The overall target was to increase employee satisfaction from seventy percent (70%) to seventy-five percent (75%.) A review of the comments for those employees who are somewhat dissatisfied or extremely dissatisfied indicates that eighteen percent (18%) commented on furloughs, pay, and or benefits. The current economic environment and overall State pay and benefits have a direct impact on the satisfaction of NDOT employees.

**What new ‘Strategies for Improvement’ will be initiated in FY2009?**

**Short range to next reporting:**

1. Continue to improve on communications from management to employees including the Director’s Report and Division Head Staff Meetings.
2. Continue to update Transportation Policies and new work manuals.
2. Implement a NDOT Ethics Policy.
3. Encourage and require supervisory training in compliance with regulations that include communication, management styles, and coaching. This strategy directly correlates with Performance Measure #2.
4. Implement lunchtime training sessions to assist employees with real life issues such as financial planning, stress management, and other topics to assist them during this time of economic downturn.

**Long range:**

Continue conducting and analyzing annual satisfaction surveys and make appropriate recommendations the Director’s Office to improve employee satisfaction

**Does this performance measure effectively measure what is desired?**

This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety, Be in touch with and responsive to our customers, Innovate, Be the employer of choice, Deliver timely and beneficial projects and programs, effectively preserve and manage our assets, and efficiently operate the transportation system.

**Is there a better performance measure that should be considered?**

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

#### 4. STREAMLINE AGREEMENT EXECUTION PROCESS

Performance Measure:

Percentage of Agreements executed within 45 days from when division submits agreement to the date when it is fully executed.

Ultimate Target: 95%

Annual Target: 50%

Champion: Asst. Director Administrative Services  
Chief of Administrative Services

Support Divisions: All (*modify when the specific level of agreement is identified*)

Strategy Plan Support:

Agreements are the core of all of our business practices, and must be completed prior to any action being taken. A delay has a tremendous impact in the operations of the Department. This performance measure works toward meeting the Department of Transportation Strategic Plan goals as follows: Speeding up the agreement process will help deliver timely and beneficial projects and programs. It also assists with being responsive to our customers.

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Measurement and Supporting Data: Use agreement log.

	Total	Quarterly*
2007 FY (Base Number)	5%	
2008 FY – Third Quarter	59%	92%
2008 FY – Fourth Quarter	54%	85%
2009 FY – First Quarter	51%	74%
2009 FY – Second Quarter	31%	25%

During the second quarter of 2009 138 agreements were submitted and 155 were executed, 48 within 45 days with a range of one day to 184 days. Average days for execution were 48 but only 31% of the total was below 45 days. Overall percentage below 45 was 46%. \*If analyzed only on a quarterly basis with a percentage submitted and processed during the quarter, overall 59% were processed in 45 days. There were 23 agreements during the year that were over 150 days and they averaged 283 days to process. 16 were agreements with other governments, 2 with railroads, 1 with RTC and 3 were for our Information Services Division.

Strategies for Improvement:

Short range to next reporting:

Update agreement manuals and forms for recent legislation. Conduct Agreement training for Department staff, consultants, contractors, and local government agencies. A review of the process for district contracts is currently underway.

Long range:

Formally assess the agreement process every three years. There has been a lot of work done with local public agencies to speed up the process by creating an acceptable contract template.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

### **Was the annual target met?**

The target was not met by 4% for total agreements processed during the year. On a quarterly basis, agreements submitted and executed in a quarter, 59% were processed in 45 days, which exceeds the 50% target.

**What ‘Strategies for Improvement’ were successful?** It is too soon to evaluate the strategies that have been implemented.

**What ‘Strategies for Improvement’ were not successful? Why?**

**What new ‘Strategies for Improvement’ will be initiated in FY2010?**

#### **Short range to next reporting:**

Agreement Services will be implementing a new tracking mechanism using an existing Excel database. The tracking feature will allow us to set parameters for every division we send the agreements to and if the time frames are exceeded, we will receive a notification so we can follow up with the specific division for resolution. We believe this will help us keep a better eye on the processing time to avoid unnecessary delays in agreements getting stuck in one division.

**Long range:**

**Does this performance measure effectively measure what is desired?**

It measures the time for processing agreements however much of the time is with the second party, which NDOT has minimal impact.

**Is there a better performance measure that should be considered?** It is too soon to evaluate.

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

## 5. IMPROVE CUSTOMER SATISFACTION

Performance Measure:

Numerical ratings obtained from public opinion and customer/user surveys.

Annual Target: **To be determined**

Ultimate Target:

Annual increases in public opinion and customer/user ratings.

Champion: Chief of the Communications Office

Support Divisions:

Districts, Public Information, Program Development, Intermodal Planning, Right of Way  
Others to be determined

Strategy Plan Support:

Public opinion, user (customer), and elected official surveys will assess public information and outreach activities, customer processes, and how well the Department is performing in the eyes of our customers. This is important so we know that we are doing the right things to be transparent, accountable, and efficient. This performance measure works toward meeting the Department of Transportation Strategic Plan goal to be in touch with and responsive to our customers.

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Measurement and Supporting Data:

2009 FY (Base Number)	N/A – this is a new measure
2010 FY	Rating

The customer surveys are currently being conducted under contract with UNR as part of a maintenance and operations division survey. The results are expected by September 30, 2009.

Strategies for Improvement:

Short range to next reporting:

Rigorously assess the results of the surveys to determine specific areas for improvement (such as more concerted or varied public outreach techniques, better and more user friendly customer processes in dealing with contractors/trucking industry/consultants, etc.). The survey is expected to provide statistically valid results for each district, and strategies will be formulated for each district, as well as statewide, based on the results.

Long range:

Constant improvement over the reporting periods (once per year), and determine whether the survey instruments adequately ask the questions we want answered.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

### **Was the annual target met?**

The survey is being conducted under contract with UNR as part of a maintenance and operations division survey. The results are expected by September 30, 2009.

### **What ‘Strategies for Improvement’ were successful?**

The survey is ongoing and will not be completed until September 30, 2009.

### **What ‘Strategies for Improvement’ were not successful? Why?**

The survey has not been completed yet.

### **What new ‘Strategies for Improvement’ will be initiated in FY2010?**

This will be determined once we see the results of the survey.

### **Short range to next reporting:**

Once the results of the survey are compiled, strategies for improvement will be formulated. The survey is expected to provide statistically valid results for each district, and strategies will be formulated for each district, as well as statewide, depending on the results.

### **Long range:**

Constant improvement over the survey reporting periods. It is anticipated that surveys will be conducted annually. We also need to determine whether the survey instruments adequately ask the questions we want answered

### **Does this performance measure effectively measure what is desired?**

Do not know as yet, but we believe it will.

### **Is there a better performance measure that should be considered?**

No.

### **Will meeting the next yearly target have a fiscal impact? If so, explain.**

We are currently formulating a request for proposal to solicit a firm to assist in statewide public outreach efforts. As part of that, polling will be conducted on this specific performance measure. There will be a cost, but it is as yet undetermined.

## 6. REDUCE CONGESTION ON STATE SYSTEM

### Performance Measure:

Percentage of daily vehicle miles traveled that occur at Level of Service E (unstable traffic flow) or worse on the state system. This measure has been labeled as the ‘system congestion index.’

The establishment of targets is requiring further analysis.

Ultimate Target: **To be determined based on fiscal analysis** Yearly Target: **To be determined based on fiscal analysis**

Champion: Assistant Director – Planning  
Chief Traffic Information

### Support Divisions:

Roadway Systems, Location, Program Development, Design, Construction, Districts, Maintenance and Operations, Intermodal Planning

### Strategy Plan Support:

This performance measure addresses congestion on our state highway system. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: By reducing congestion, the probability of collisions is reduced that will help optimize safety, be in touch with and responsive to our customers by reducing the level of congestion, and efficiently operate the transportation system by reducing the level of congestion.

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### Measurement and Supporting Data:

2008 FY – Fourth Quarter (Base Number)                      9%

The level of congestion, 9% of daily vehicle miles traveled occurring at Level of Service E (unstable traffic flow) or worse on the state system, has recently been determined. The values for the ultimate and annual targets will be determined after a fiscal analysis of the cost of achieving different levels is completed prior to the 2011 legislative session.

### Strategies for Improvement:

Short range to next reporting:

The first challenge is to develop the capability of calculating the current value electronically through the use of integrated databases. Then we will be able to explore innovative ideas to provide funding for highway improvements – Public Private Partnerships, leasing air rights above state highways, constructing quiet pavements in lieu of sound walls, and collect impact fees from major land developments.

Every capacity project will be evaluated to identify the improvement in the performance measure that was realized by completion of the project.

Be sure that any and all permits to access state highways will add sufficient capacity to accommodate the trips the permit applicant will add to the highway.

Encourage the development and expansion of transit systems that will reduce peak period traffic flows.

Study potential travel behavior trends that may be affected by e-commerce, home based employment, and high fuel prices.

Planning has conducted meetings to clarify and refine the problem. Cost effective solutions are being evaluated. The committee is not on track to have implementable ideas any time soon, but progress is being made.

Long range:

Work with other state agencies to demonstrate the concept of the Neighborhood Employment Center where state employees with significant commute distances can work at a local employment center with computer video communication with home office. The centers will enable some state workers to walk, bike or jog to work. At most, workers would have a short commute to a center.

Establish a demonstration program that would offer an opportunity for some NDOT employees to work at home part-time.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met?** Targets have not yet been determined.

**What ‘Strategies for Improvement’ were successful?** Strategies for improvement have not been developed yet.

**What ‘Strategies for Improvement’ were not successful? Why?** Strategies for improvement have not been developed yet.

**What new ‘Strategies for Improvement’ will be initiated in FY2010?**

**Short range to next reporting:** Develop the ability to electronically determine the performance measure value.

**Long range:** Develop a process that will serve as the foundation for a policy that will ensure every “capacity” improvement project has a measurable improvement to the performance



measure. The process will also identify necessary levels of funding required to achieve target levels.

**Does this performance measure effectively measure what is desired?** Yes

**Is there a better performance measure that should be considered?** Yes, there are several including person hours of delay. However, we must first develop the ability to measure existing person hours of delay which is much more complex an endeavor than is measuring % VMT occurring at LOS E.

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

Even though targets have not been established, any target that reduces congestion will require an increase in the current revenue stream to the Department.

**7. STREAMLINE PROJECT DELIVERY: SCHEDULE AND ESTIMATE FROM BID OPENING TO CONSTRUCTION COMPLETION**

Performance Measure:

Percentage of projects within established range of cost estimate and schedule to completion

Yearly Target:

Reduce number of projects falling outside of estimated schedule range by 25% starting in fiscal year 2009.

Improve number of projects falling within the estimated budget range by 25% in FY 2009.

Ultimate Target: 100%

Champion:

- Assistant Director – Operations
- Assistant Director – Engineering
- Chief Construction Engineer
- District Engineers

Support Divisions: Districts, All Division

Strategy Plan Support:

This performance measure works towards meeting the Department of Transportation Strategic Plan goals by providing timely, beneficial construction projects using innovative project delivery methods. This measure helps to optimize safety for road users, be in touch with and responsive to our customers (road users), and efficiently operate the transportation system.

Measurement and Supporting Data:

New measure and will need time to generate data for the measure.

	% completed Within budget	% completed within schedule
FY 2008 – End of Third Quarter (Base Number)	-	-
FY 2008 – End of Fourth Quarter	100	100
FY 2009 – End of First Quarter	100	100
FY 2009 – End of Second Quarter	100	100
FY 2009 – End of Third Quarter	100	100
FY 2009 – End of Fourth Quarter	100	33
FY 2009 – Summary	100	83

The Performance Measure for end of the fourth quarter FY 2009 is based on the following projects:

**Contract 3347- I 80 FROM 0.89 MILES EAST OF PUMPERNICKEL VALLEY INTERCHANGE TO THE BEGINNING OF CONCRETE PAVEMENT.**

- This project was originally scheduled for completion early May 2009. The contractor got off to a late start due to permitting issues at the Material Site and the bankruptcy of a major asphalt cement supplier. This project should be complete in the first quarter FY 2010 under budget.

**Contract 3359- Valley View Boulevard, North of Sahara Avenue (SR 589) to El Camino Avenue**

- This project was completed last quarter on time and within budget.

**Contract 3360- SR 170, Bunkerville Road, at the Virgin River Bridge (B-89), 0.96 Miles South of Mesquite Boulevard**

- This project was originally scheduled for completion May 2009. Working Days were suspended due to a delay in delivery of structural steel and bearing pads. Also, a possible differing site conditions issue was encountered with the construction and repair of CIDH foundations at Piers 3 and 4 which contributed to the schedule delay. This project should be complete by the second quarter FY 2010. .

**Strategies for Improvement:**

**Short range to next reporting:**

- Improve the quality of design to reduce problems during construction.
- Schedule bidding to take advantage of market variations.
- Minimize change orders which extend the project duration.
- Provide better coordination with parties involved in concurrent work.
- Provide realistic project schedules
- Provide better predictions for weather and other delays

**Long range:**

- Continue and enhance training of personnel.

**Additional Background:**

Percentage of projects constructed within established budget.

This measurement is tracked the same way we were tracking change order percentages which was misleading because the number included dollars spent on quantity overruns, i.e., the contract paid to date.

The budget number is the contract award amount plus the contingency amount. In the past the contingency amount has been 3% or less. The proposal for the FY 09 work program is to change the programmed contingency to 7% for contracts up to \$3 million, 5% for \$3 to \$25 million and 3% for contracts over \$25 million which would be more realistic. Approximately 60% of the FY

07 contracts completed by 7-01-08 were within the budget. The FY 09 goal is suggested at 50% because of the impact of the escalation clauses, and change orders dealing with the asphalt shortage will have on the FY 08 numbers and the proposed changes of the contingency rate has not yet gone into effect.

Value added change orders count against this measurement. With dramatic price increases this type of change might become common. Asphalt and fuel escalation clauses in contracts reduce the probability of inflated bids because the contractor will not need to hedge their bids.

#### Percentage of projects completed by the scheduled completion date.

There was no similar tracking of this type of information before this performance measurement was developed. We are now tracking the contract schedules from bid date to the calendar date of the last working day charged.

The scheduled completion date is the bid date plus award period (30 days), plus Notice to proceed period (this varies from 30 to 90 days based on the projects complexity, location and size), plus the contract working days (working days are projected on the calendar allowing for planned suspensions, such as winter shut, weather days, holidays and special events). Working days added by change order count against this measurement.

### **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met?** Yes, and Ultimate Target as well.

#### **What ‘Strategies for Improvement’ were successful?**

- Improve the quality of design to reduce problems during construction.
- Minimize change orders which extent the project duration.
- Provide better coordination with parties involved in concurrent work.
- Provide realistic project schedules.
- Continue and enhance training of personnel.

#### **What ‘Strategies for Improvement’ were not successful? Why?**

- Schedule bidding to take advantage of market variations.  
Is not successful because we are not looking at market variations. Variations can be very volatile and difficult to predict. This may not be a realistic strategy. It does not appear we schedule bidding for seasonal variations either. We should consider the time of the year when scheduling bidding.
- Provide better predictions for weather and other delays.  
Is not being incorporated into baseline schedules. We are working on that.

**What new ‘Strategies for Improvement’ will be initiated in FY2010?** New additions are recommended.

**Short range to next reporting:**

- Develop better methods for tracking Contract expenses
- Develop more realistic Contract estimated budget ranges
- Develop more sophisticated methods for project scheduling

**Long range:**

- Effectively project Contract costs and schedules

**Does this performance measure effectively measure what is desired?**

Not really in regards to schedule performance. Quarterly data is being compiled on only those projects scheduled to be complete in that quarter. It does not review all active Contracts in that quarter. Will look at taking more of a Time vs. Earned Value approach. This will be addressed before the end on the first quarter FY 2010.

Not really in regards to budget performance. Contracts completed in the previous quarter are no longer being considered in the measure. Yet expenditures may still being encountered due to completing Change Orders and Contract Closeouts.

**Is there a better performance measure that should be considered?**

This performance measure is not a direct measure of NDOT’s performance due to many factors beyond our control (increased / decreased competition, contractor bids, market forces, acts of God, contractor expertise). But time and money are important factors in any construction project. And they are an important indicator of NDOT’s performance and we need to continue to measure it.

Not convinced the yearly targets on 25% improvement have real meaning. Setting a quarterly / annual goal for all projects may be better (i.e. 90% on time and within budget). The ultimate target of 100% should be maintained.

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

Yes. Monitoring schedule and budget performance have fiscal impacts due to contractor payments, increased labor costs, increased administration costs, etc... They must be monitored to minimize those impacts.

## 8. MAINTAIN STATE ROADWAYS

### Performance Measure:

Percentage of state maintained pavements needing annual preservation in order to maintain the pavement International Roughness Index (IRI) rating of fair or better condition.

Yearly target: Due to the 2009 ARRA funds being released, the percentage of centerline miles preserved is up from the previous year, 6% vs. 3%, but we are not meeting the required amount of 8% to keep us at status quo due to the funding limits for overlay/reconstruction projects.

Ultimate Target: 100%

### Champion:

Assistant Director – Operations  
Chief - Materials Division

### Support Divisions:

Materials, Maintenance, Construction, Design, Project Management, Operations Analysis, and Districts

### Strategy Plan Support:

Proactive pavement has a huge benefit is maximizing limited funds. Being proactive instead of reactive (maintaining a high percentage) is more cost effective (4:1) in utilizing transportation project dollars. Pavement condition is also directly related to user vehicle maintenance and safety, and highway capacity. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: optimize safety and be in touch with and responsive to our customers by providing smooth, quality pavements. The effectively preserve and manage our assets goal is supported by implementing the Department's pavement preservation program.

For the Department to keep current with present roadway conditions, approximately \$300 million is needed annually for overlays and reconstruction, which averages almost 8% (centerline miles) of the total system. As of 2009, 1,028 center lane miles of the statewide 5,323 center lane miles of NDOT maintained highway are in need of overlay or reconstruction, which totals approximately \$570 million in costs (paving and ancillary).

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### Measurement and Supporting Data:

- FY 2008 – Preservation action of 3% was achieved, while the preservation needs were at 24%.
- FY 2009 - Preservation action of 6% is expected, while the preservation needs are actually decreased to 19%. This decrease from FY 2008 is due to: the unusually low construction prices because of the economic recession, the ARRA funds that financed many overlay/reconstruction projects and the increased use of betterment

funds for roadway maintenance. In the long term the back log will continue to increase dramatically.

- State Highway Preservation Report

#### Strategies for Improvement:

##### Short range to next reporting:

“1. Maintain our Interstate system at a high level of serviceability along with our principal arterials-non interstate by applying timely overlays, where possible, and reconstructing inferior segments.

2. Maintain our non-Interstate principal arterials by applying maintenance treatments such as chip seals and flush seals.

3. To apply seal coats or other short-term treatments to all other routes.” [2009 Preservation Report.]

##### Long range:

“1. Continue to maintain our Interstate system and high-volume roads at a high level of serviceability by applying timely overlays and reconstructing inferior segments.

2. Continue to maintain our non-Interstate principal arterials, minor arterials, and other moderate volume roads at a modest to high level of serviceability by applying timely overlays and reconstructing inferior segments.

3. To further develop economically sound methods to improve our low-volume roads and maintain them at a limited, but acceptable, level of serviceability.

4. To continue coordinating and integrating our routine pavement maintenance activities with planned overlay and reconstruction work.” [2009 Preservation Report.]

5. Work with Legislature to provide sufficient funding to reach the ultimate target.

#### **Background Information**

The Pavement Analysis Section collects pavement condition data and ride data only in the odd years. In addition, ride is collected in the even years for the National Highway System, only.

Roadway Categories

Category	Description
1 Concrete	Controlled Access PCCP
1 Asphalt	Controlled Access Asphalt
2	ESAL > 540 OR ADT > 10,000
3	540 >= ESAL >405 OR 1600 < ADT <= 10,000 + NHS
4	405 >= ESAL > 270 OR 400 < ADT <= 1600
5A	280 < ADT <=400
5B	120 < ADT <= 280
5C	ADT ≤ 120

PCCP – Portland cement concrete pavement

The ride quality shown in the graph, “Condition of the System Based on Ride Quality from 1980 to 2007” is based on the following criteria:

Condition	Slope Variance 1980 to 1992	International Roughness Index (IRI) thresholds from FHWA 1992 to 2007
Good	0 to 7	< 95
Fair	8 to 10	95 to 170
Poor	> 10	> 170

The IRI thresholds that have been used by NDOT where Roadway Category is considered included in the graph, “Performance of Roadway System per Year Based on IRI Data”:

Condition	Interstate	Non-IR NHS, and STP w/ ADT >805	Low Volume Roads
Good	< 71	< 100	< 95
Fair	71 to 105	100 to 130	95 to 170
Poor	> 105	> 130	> 170



Percent of the System receiving construction or maintenance betterment (preservation action)

Year	Centerlane Miles	% of System
2008	172.00	3
2007	108.44	2
2006	261.31	5
2005	410.91	8
2004	240.32	5
2003	223.42	4
2002	314.17	6
2001	265.22	5
2000	388.09	7
1999	714.19	13

**ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met?**

No, current funding levels do not allow for meeting the target. The ARRA funds allocated to overlays did improve when compared to the previous year.

**What ‘Strategies for Improvement’ were successful?**

The additional ARRA funds improved on the percentage when comparing 2009 (expected) vs. 2008. The Pavement Analysis section of the Materials Division has added maintenance treatments to the Pavement Management System data base. There is a good coordination effort among the Districts, Maintenance and Operations, and the Materials Divisions.

**What ‘Strategies for Improvement’ were not successful? Why?**

Reconstructing inferior segments of the Interstate system is very costly. Current funding levels do not allow for any reconstruction effort except in cases where concurrent capacity improvements occur. Approximately 1% of the Interstate system needs reconstruction.

**What new ‘Strategies for Improvement’ will be initiated in FY2009?**

**Short range to next reporting:**

The District maintenance forces will see increased demand for both preventive and reactive maintenance treatments in able to keep up with maintenance needs on higher category roads that have been traditionally received overlays.

**Long range:**

Review of our system, incorporating state of the art practices and new technologies and materials.

**Does this performance measure effectively measure what is desired?**

The IRI is a worldwide standard for measuring pavement smoothness and is used throughout the United States.

Although pavement deterioration eventually shows up in the pavement smoothness measurements (IRI), the decline in pavement smoothness measurements lags behind of the pavement condition decline (damage may exist before can be seen in IRI). However, the condition of the pavements is monitored in the Pavement Management System.

The target is to maintain the current level of service and it includes the proactive treatments as established by the minimum operating condition of the road network as defined by the 3R program. Maintenance activities are not included but if not performed, the road network deteriorates faster or operated under unsafe conditions.

**Is there a better performance measure that should be considered?**

No, the IRI is an important performance measure as it is meaningful to the public as well as transportation professionals.

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

We would like to stay committed to the philosophy that "Good roads cost less." Proactively applying well-timed treatments and other technologies to pavements can actually extend its lifetime and reduce costly, time consuming rehabilitation and reconstruction projects with associated traffic disruptions. Proactive pavement treatments and maintenance will extend the lifetime of the roadway for a minimal investment. Such activities will cost far less than replacing pavements prematurely or postponing work until a more expensive rehabilitation is required. The cumulative effect of systematic, successive preservation treatments is to postpone costly rehabilitation and reconstruction. Additionally, performing a series of successive pavement preservation treatments during the life of a pavement is less disruptive to uniform traffic flow than the long closures normally associated with reconstruction projects.

## 9. MAINTAIN DEPARTMENT FLEET

### Performance Measures:

There are two performance measures for the maintenance of the Department's fleet of mobile equipment:

(A) Percentage of fleet requiring replacement – this measure is the percentage of the fleet that have reached the age or mileage that requires replacement.

(B) Percentage of fleet in compliance with condition criteria – this measure is the percentage of the fleet that is maintained as per Department preventive maintenance requirements so that the expected life span of our vehicles is not compromised. As the fleet is maintained on the mileage and/or hourly requirements, compliance has been met.

### Annual Target:

(A) Declining Rate of 1% per year

(B) Increasing rate of 1% per year.

### Ultimate Targets:

(A) 10%

(B) 95% rate of compliance for mileage/hourly requirements

### Champion:

Equipment Superintendent of Equipment Division

### Support Divisions:

Districts

Divisions

### Strategy Plan Support:

The vehicles in the fleet are important to deliver projects and maintain a safe highway system. Equipment in good condition ensures the ability to perform NDOT's business practices and provides a safe and secure tool for staff. These performance measures work towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety, Be in touch with and responsive to our customers, Innovate, Be the employer of choice, Deliver timely and beneficial projects and programs, Effectively preserve and manage our assets, and Efficiently operate the transportation system.

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Measurement and Supporting Data:	(A)	(B)	Change	
	Replacement Criteria	Condition Criteria	(A)	(B)
	Measured Annually	Measured Quarterly		
2007 FY (Base Number)	38.65 %	60.30 %		
2008 FY – Final	34.96%	62.55 %	-3.69%	+2.75 %
2009 FY – First Quarter		64.45 %		+4.15 %
2009 FY – Second Quarter		67.26 %		+6.96 %
2009 FY – Third Quarter		63.96 %		+3.66 %

2009 FY – Fourth Quarter		69.96 %		+9.66 %
2009 FY – Final	39.18 %	66.30 %	+0.56 %	+6.00 %

The FY 09 budget adversely affected the fleet replacement and maintenance program.

Strategies for Improvement:

Short range to next reporting:

- (A) 1. Revise replacement criteria by increasing usage criteria in selected class codes
- 2. Removing age criteria in other specified class codes.
- 3. Implement policy controls for equipment replacement.
- (B) 1. Analyze quarterly Preventive Maintenance (PM) due and accomplished on core fleet.
- 2. Develop enforceable policy for non-compliance of PM standards.

Long range:

- (A) 1. Reduce fleet size by usage assessments.
- 2. Minimize retention of replaced vehicles.
- (B) 1. Perform annual fleet condition audit.
- 2. Develop Predictive Maintenance Program.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met?** No on A. Yes on B.

**What ‘Strategies for Improvement’ were successful?**

- (A) Minimize retention of replaced vehicles

**What ‘Strategies for Improvement’ were not successful? Why?**

**What new ‘Strategies for Improvement’ will be initiated in FY2010?**

**Short range to next reporting:**

- (A) 1. Removing age criteria in other specified class codes.
- (B) 1. Develop enforceable policy for non-compliance of PM standards.

**Long range:**

- (A) 1. Reduce fleet size by usage assessments.
- (B) 1. Perform annual fleet condition audit.
- 2. Develop Predictive Maintenance Program.

**Does this performance measure effectively measure what is desired?**

**Is there a better performance measure that should be considered?**

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

There is concern likely budget limitations will not allow measures to be attained.

## 10. MAINTAIN STATE FACILITIES

Performance Measure:

Percentage of building facilities that comply with regulatory building and safety codes.

Annual Target: Increase by 3%

Ultimate Target: 100%

Champion: Chief Maintenance Engineer

Support Divisions: Districts, Administrative Services

Strategy Plan Support:

This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety, Be in touch with and responsive to our customers, Innovate, Be the employer of choice, Effectively preserve and manage our assets, and Efficiently operate the transportation system.

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Measurement and Supporting Data:

2007 FY (Base Number)	82 Percent
2008 FY – Third Quarter	82 Percent
2008 FY – Fourth Quarter	82 Percent

Strategies for Improvement:

Short range to next reporting:

Currently, 82 % of our facilities are compliant with regulatory building and safety codes. This means that 18% of our facilities violate a safety or building code in some manner. Our short-range strategies are to continue our efforts in prioritizing our condition assessment data and scheduling deferred maintenance work. We have begun assessing and prioritizing ADA deficiencies in Highway Rest Areas, as well as, other NDOT Facilities. Design work for these projects will commence in FY 09.

Long range:

Our current Long-Range Plan is to increase the total code compliant building facilities from 82% to 84% by the end of FY 2010. We will then focus on making yearly increases of 2 % per year over the next 8 years. This goal will then allow the Department to achieve the ultimate target of 100% fully compliant building facilities by FY 2018. Because of substantial budget reductions to the Architecture Program (67% reduction), we have need to extend the time of 100% facility compliance from FY 2013 to FY 2017.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met? YES**

In 2009 a list of NDOT residences (52+) was made, and a chart categorizing common deficiencies/improvements (code, energy, maintenance) is under development. Three residences at the Blue Jay Maintenance Station were completely rewired. The HQ building ADA parking and first floor restrooms were upgraded to ADA codes. The HQ 1<sup>st</sup> floor was fully equipped with fire sprinklers as well as the 4<sup>th</sup> floor in a previous FY - (the 2<sup>nd</sup> and 3<sup>rd</sup> floor remain to be fully equipped).

**What ‘Strategies for Improvement’ were successful? We are still gathering critical information and prioritizing our work plan. Use of in-house assessment databases, specifically developed for this performance measure, has already proven extremely valuable in the prioritization process. The list of NDOT residences with categories of deficiencies/improvements helps track previous improvements completed, current improvements and future improvements. The residence list and chart will show which residences have not been upgraded in each common category.**

**What ‘Strategies for Improvement’ were not successful? Why?\_N/A**

**What new ‘Strategies for Improvement’ will be initiated in FY2010?**

**Short range to next reporting:**

In FY2010 a HQ Lab addition will be bid. This project includes fully equipped with fire sprinklers all spaces in the older sections of the Lab building. This is a code and insurance requirement. Other projects that improve code and energy efficiency are planned for the 2010 FY Work Program that is being approved.

**Long range:** Defined work plan with prioritized projects, tied to Architecture’s budget, will be used as a roadmap for successful accomplishment of goals and objectives.

**Does this performance measure effectively measure what is desired? YES**

**Is there a better performance measure that should be considered? NO**

**Will meeting the next yearly target have a fiscal impact? If so, explain.** Yes – The majority of the Architecture budget is spent on maintenance, repair, and major upgrades – many of these projects include code and safety issues. Therefore, items that pertain to this specific Performance Measure are constantly being worked on.

## 11. EMERGENCY MANGEMENT, SECURITY AND CONTINUITY OF OPERATIONS

Performance Measure:

The percent of work efforts completed in the following areas, on a biennial basis:

1. Develop and complete seven emergency plans for the Department
  - Continuity of Operations Plan
  - State Level Emergency Operations Plan
  - District Level Emergency Operations Plan
  - Southern Nevada Evacuation Plan
  - Infrastructure Security Plan
  - Mobile Fleet Security Plan
  - Department Access Management Plan
2. Provide training and education to appropriate personnel for each plan.
3. Test and exercise the plans.
4. Update plans to accommodate changes in departmental processes, federal guidelines, etc.

Ultimate Target: 100%

Annual Target: 50% for FY 2009  
75% for FY 2010

Champion: Assistant Director – Operations  
Assistant Chief Operations Engineer

Support Divisions: All

Strategy Plan Support:

NDOT's Emergency plans provide clear guidance on how NDOT will continue to perform critical functions and operations in the event of an emergency or disaster. Being prepared and ready for an emergency is paramount in keeping systems operating during such times, as well as being in a position to respond to health and safety issues. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to:

*Optimize safety* by decreasing NDOT response and recovery times during a major disaster,

*Be in touch with and responsive to our customers* by ensuring we are prepared to quickly and effectively respond to major emergency issues which affect our customers,

*Innovate* to incorporate the most up-to-date methods of responding to and recovering from emergencies/disasters,



*Deliver timely and beneficial projects and programs* such as an emergency training and exercises program to ensure NDOT is as prepared as possible for emergencies/disasters,  
*Effectively preserve and manage our assets* by ensuring NDOT is prepared to quickly respond to emergencies to prevent additional damage, and  
*Efficiently operate the transportation system* by ensuring NDOT is prepared to restore transportation infrastructure as soon as possible following an emergency/disaster.

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Measurement and Supporting Data:

2007 FY (Base Number)	N/A - this is a new performance measure
2008 FY	25% completion (Target Met)
2009 FY	50% completion (Target Met)
2010 FY	75% completion (Planned)
2011 FY	100% completion (Planned)

Strategies for Improvement:

Short range to next reporting:

50 % completion of the education, training and exercising for FY 2008 & FY 2009 has been accomplished.

In 2009, we conducted a functional exercise to test our capability of physically setting up the NDOT Emergency Operation Center (EOC); we are also testing management's ability to effectively operate the NDOT EOC during this functional exercise. An After Action Report will be completed after the exercise to identify areas of improvement.

In January of 2010 we are conducting a Table Top Exercise for District I. In May of 2010 we are involved with NLE-2010 in District I. This major exercise is being conducted by FEMA and is affecting all ESF's within the state. This exercise involves Federal participants along with State and County participants. These two exercises will test Districts I's capabilities.

Within the next year we will complete the Continuity of Operations Plan (COOP). We will combine the State Level Emergency Operations plan and the District Emergency operations Plan. Completion of this work, including the related training and exercising should enable us to meet our 75% goal for FY 2010.

Within the next year we will also combine the Mobile Fleet Security Plan with the Facility and Infrastructure Security Plan.

By combining the State Level Emergency Operations Plan and the District Emergency Operations Plan as well as the Mobile Fleet Security Plan with the Facility and Infrastructure Security Plan, we will reduce redundancies within these plans.

Long range:

Continue combining Department exercises and training with exercises planned by other entities and agencies to enable us to meet the following goals:

75% completion third year  
100% is expected by the end of 4 years.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met? Yes**

**What ‘Strategies for Improvement’ were successful?**

By conducting a table top exercise along with a functional exercise we were able to identify areas that needed improvement. These improvements were identified in the After Action Reports, and we have updated the plans to reflect these changes.

**What ‘Strategies for Improvement’ were not successful? None. Why?**

**What new ‘Strategies for Improvement’ will be initiated in FY2010?**

**Short range to next reporting:**

We will continue to complete and/or update plans, as well as exercise and train appropriate personnel to reach the 75% goal.

**Long range:**

We will continue to complete, combine and/or update plans, as well as exercise and train appropriate personnel to reach subsequent goals.

**Does this performance measure effectively measure what is desired? Yes, however, this is possible because we revised the original performance measure to accurately reflect the work that is done in the Emergency Operations/Security area.**

**Is there a better performance measure that should be considered? No, however, we suggest renaming it to “EMERGENCY MANGEMENT, SECURITY AND CONTINUITY OF OPERATIONS”.**

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

We use approximately \$500.00 of Cat 04 funds per exercise to purchase supplies/materials for our exercises. We are working with Financial Management to add funding to our budget in this category so that we can continue to meet our goals in the future.

## 12. REDUCE FATAL CRASHES

### Performance Measure:

Number of fatalities on Nevada's streets and highways.

Ultimate Target: Zero

Annual Target: Reduce fatalities by 100 lives

Champion: Chief Traffic/Safety Engineer

Support Divisions: All

### Strategy Plan Support:

All drivers and highway system users should expect a safe highway system. Through efforts of engineering, enforcement, education, emergency response and the will of the highway users, fatal crashes can be eliminated. The strategies for this performance measure will be based on the Nevada Strategic Highway Safety Plan. This performance measure also works towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety, Be in touch with and responsive to our customers, Innovate, Deliver timely and beneficial projects and programs, Effectively preserve and manage our assets, and Efficiently operate the transportation system.

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### Measurement and Supporting Data:

2003 CY	362 fatalities
2004 CY	398 fatalities
2005 CY	421 fatalities
2006 CY	432 fatalities
2007 CY	372 fatalities
2008 CY	324 fatalities

### Strategies for Improvement:

#### Short range to next reporting:

- Market and implement the State's Strategic Highway Safety Plan
- Continue to implement cost effective improvements to keep vehicles in their lane
- Increase pedestrian safety by constructing crosswalk refuge islands and upgrading signals
- Follow the principles of access management
- Implement geometric intersection improvements
- Cooperate with and support the Office of Traffic Safety's efforts with public education programs for TV/radio 'spots' to increase safer behavior by the public.
- Analyze crash data to locate site with a high number of run-off-road crashes and install shoulder and centerline rumble strips

#### Long range:

- Spend NDOT's safety funds on a wide variety of engineering strategies

- Team with and share funding with non-traditional partners to increase the effectiveness of NDOT's safety funds

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

### **Was the annual target met?**

No.

### **What 'Strategies for Improvement' were successful?**

The evaluation period has not been long enough to determine what NDOT strategies have been effective. The current reduction is most likely a result of the coordinated work by all of our partners in implementing the strategies of the Strategic Highway Safety Plan.

### **What 'Strategies for Improvement' were not successful? Why?**

Same answer as above.

### **What new 'Strategies for Improvement' will be initiated in FY2010?**

#### **Short range to next reporting:**

Given the short duration for implementation of our strategies the Safety Division does not contemplate revising our short term strategies. We will continue to implement strategies identified in the Strategic Highway Safety Plan and working closely with our safety partners to continue to reduce fatal crashes.

#### **Long range:**

Review and update the Nevada Strategic Highway Safety plan.

### **Does this performance measure effectively measure what is desired?**

No. This measure is an indicator of how the entire State is performing in regards to reducing traffic fatalities. The Department can not hope to achieve the goal without the cooperation and assistance of our partners in the areas of law enforcement, education, emergency medical response and other local agencies.

### **Is there a better performance measure that should be considered?**

Yes. If the desire is to measure the NDOT performance then a measure more closely aligned to our program and that can be directly influenced by this Department should be considered.

### **Will meeting the next yearly target have a fiscal impact? If so, explain.**

Yes. The Department will continue to spend funds for improving the safety of the State's transportation system. We will also continue working with our partners to take advantage of opportunities to reduce the severity and frequency of motor vehicle crashes throughout the State.

13. STREAMLINE PROJECT DELIVERY: SCHEDULE AND ESTIMATE AFTER NEPA APPROVAL TO BIDDING

Performance Measure:

Percentage of projects completed within range of established estimate and schedule after the environmental process.

Annual target:

Reduce number of projects falling outside of estimated schedule range by 25% starting in fiscal year 2009.

Improve number of projects falling within the estimated budget range by 25% in FY 2009.

Ultimate Target: 100% of projects completed in the scheduled fiscal year and falling within the estimated budget range.

Champion:

Assistant Director – Engineering  
Project Management Chief  
Chief Roadway Design Engineer

Support Divisions:

All units within the Department that are involved with project development.

Strategy Plan Support:

This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Be in touch with and responsive to our customers, Deliver timely and beneficial projects and programs, Optimize safety and effectively preserve and manage our assets. Goals are met by:

- Keeping NDOT customers appraised of project risks, opportunities, costs, scope and scheduling issues;
- Implementing standards to improve communication, coordination, and decision making resulting in efficient delivery of projects;
- Focusing and managing available resources towards implementing projects that preserves NDOT's assets, improves safety and relieves congestion.

---

Measurement and Supporting Data:

2008 FY – End of Third Quarter	100% (both projects on schedule and w/i budget.)
2008 FY – End of Fourth Quarter	No change
2009 FY – End of First Quarter	No change (17% on schedule, 71% on budget)
2009 FY – End of Second Quarter	On Target

## **Strategies for Improvement – Project Management Division**

### Project Management Division Strategies

#### Short range to next reporting:

- Implement new guidelines for developing project scope, cost & schedule by end of December 2008.
- Establish base numbers for all projects by end of Feb. 2008.
- Monitor/evaluate new procedures and implement corrective actions by end of December 2009.
- Define roles and responsibilities of project teams by end of December 2009.
- Improve project development process and linkage between planning and engineering divisions by end of December 2009.
- Work toward establishing a Project Management Office (refer to long range strategies).

#### Long Range:

##### Establish a Project Management Office responsible for:

- Program (Portfolio) Management:
  - Organizing, managing and prioritizing transportation projects based on resource availability
- Project management support functions to include:
  - Developing and implementing Department's Project Management process (development and application of guidelines, tools, standards, and techniques to project activities to meet project requirements)
  - Development and implementation of Risk management guidelines
  - Development and implementation of Cost Estimation Validation Process (CEVP).
  - Development of project scheduling tools and guidelines
  - Providing project management training
- Project Delivery Methods
  - Standardizing and upkeep of project delivery methods to include: Design-bid- build, Design-bid and Public Private Partnership methods.
  - Develop and implement reporting and tracking protocols for project's managed by local agencies.

### **ANNUAL EVALUATION OF PERFORMANCE MEASURE (Roadway Design and PM Divisions combined)**

#### **Was the annual target met?**

Yes

#### **What 'Strategies for Improvement' were successful? .**

- Guidelines for cost estimating and the newly developed Wizard Cost Estimating tool have allowed project teams to develop reasonable and defensible cost estimate ranges.
- It's too early to assess impact of guidelines for project scheduling

- It's too early to assess impacts of the project management guidelines and processes on project delivery

**What 'Strategies for Improvement' were not successful? Why?**

- None at this point. Need to assess impacts and benefits of new processes over a longer period of time.

**What new 'Strategies for Improvement' will be initiated in FY2010?**

**Short range to next reporting:**

- Develop internal (PM division) policies and procedures to ensure project management guidelines are followed.
- Develop and implement project management training.
- Develop standard major milestones and deliverables for both Design-Bid-Build and Design-Build.
- Monitor/evaluate project management guidelines and implement corrective actions

**Long range:**

Should be revised to improve departmental wide processes for project delivery. Strategies will be developed based on the following objectives:

- **Streamline existing policies and procedures:** existing policies, processes, procedures are reviewed and streamlined in support of new procedures to ensure cost savings occur and projects delivered on time.
- **Train staff:** PMs and project teams are trained on the intent and usage of the PM Guidelines; their roles/responsibilities and their authorities.
- **Ensure sustained and widespread usage of PM guidelines:** Ensure PMs within all divisions are developing project management plans, schedules and estimates per PM guidelines for projects that they are responsible for.
- **Establish functional project teams:** Decision making authority is lowered, project teams are empowered and they are working as a high performing team
- **Assess performance of project teams:** ensure team members are following the guidelines, participating in development of project's costs and schedules; and most importantly working together as a high performing team.
- **Outreach to local agencies:** Ensure new project development processes including cost estimating, scoping process, scheduling and reporting requirements are acceptable by local agencies. Creating consistency between the Department and local agencies on how project costs, schedules are developed, tracked and reported will improve project delivery.
- **Demonstrate leadership support:** Create a sustained outreach effort to demonstrate Front Office's full support of the new processes.
- **Create a unified strategic annual work plan based on available resources:** Department's Programs and projects should be prioritized annually and delivered based on direct input of resource manager's to minimize project delays and improve

cost savings. This will ensure that the Department's core project development resources are effectively used in support of delivering an annual work plan.

- **Assess effectiveness & Performance of new processes:** identify objectives are met, develop and implement corrective actions.

**Does this performance measure effectively measure what is desired?**

This measure should be revised to include annual targets based on deliverables and milestones.

**Is there a better performance measure that should be considered?**

See below for proposed changes.

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

No

**PROPOSED CHANGES**

Performance Measure:

Percentage of projects meeting their established construction estimate and schedule targets.

Annual target:

- 70% of projects meeting their established annual milestones and deliverables targets.
- 70% of projects falling within established construction estimate range.

Ultimate Target: 100% of projects meet their established construction estimate and schedule targets

Champion:

Assistant Director – Engineering  
Project Management Chief  
Chief Roadway Design Engineer

Support Divisions:

All units within the Department that are involved with project development.

Strategy Plan Support:

This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Be in touch with and responsive to our customers, Deliver timely and beneficial projects and programs, Optimize safety and effectively preserve and manage our assets. Goals are met by:



- Keeping NDOT customers apprised of project risks, opportunities, costs, scope and scheduling issues;
  - Implementing standards to improve communication, coordination, and decision making resulting in efficient delivery of projects;
  - Focusing and managing available resources towards implementing projects that preserves NDOT's assets, improves safety and relieves congestion.
- 

#### Measurement and Supporting Data:

2008 FY – End of Third Quarter  
 2008 FY – End of Fourth Quarter  
 2009 FY – End of First Quarter  
 2009 FY – End of Second Quarter

#### **Procedure:**

1. Track 3R and Major Projects
2. Measure performance for the final design phase of projects only.
3. Baselines for Major Projects are established either after completion of NEPA or approval of the Finance Plan (not all project will require a finance plan).
4. Baselines for 3R projects are established at the time the 3R report is approved by Director's Office.
5. Baselines are established and reported in ranges: cost (\$xx - \$xx), final design (xx to xx) per PM guidelines. These baselines will not change unless the definition/scope of project changes. For example: Boulder City Bypass Phase 1 or CC Freeway Phase 2: we have broken these projects into smaller packages for delivery. These smaller packages will be our new baselines for measurement.
6. Performance measurement will be based on annual reporting: Sept to Sept.
7. Performance measurement will be based on annual targets for projects. Targets are:
  - a. Major milestones and deliverables identified to be accomplished during period of measurement. Example: Project baselines for project x are: Final Design: 2011-2013. Major milestones/deliverables for this project for 2011 are: Geotechnical report, drainage report and 30% design. If these milestones/deliverables are met in 2011, then the project is on target.
  - b. Construction estimate - Yearly measurement of construction estimate: Target is met as long as updated construction estimate is within established baselines.
8. Annual targets will be established by Chief Roadway Design and Chief Project M

## 14. MAINTAIN STATE BRIDGES

### Performance Measure:

Percentage of Department owned bridges which are eligible for federal funding and are categorized as structurally deficient or functionally obsolete. Base figure is 37 of 1,045 bridges (*State Highway Preservation Report – 2007*).

Ultimate Target: Zero%

Yearly Target: Reduce the percentage of Department owned structurally deficient or functionally obsolete bridges by one bridge biennially.

### Champion:

Chief Structures Engineer

### Support Divisions:

Design, Project Management and Districts

### Strategy Plan Support:

This performance measure works towards meeting the Department of Transportation Strategic Plan goals to: Optimize safety, Innovate, Deliver timely and beneficial projects and programs, and effectively preserve and manage our assets. These goals can be met in the following ways: Safety for the motoring public will be optimized by replacing structurally deficient and rehabilitating functionally obsolete bridges. The Structures Division will seek and implement innovative solutions to the challenges faced by the Bridge Program. The Division will deliver timely and beneficial bridge projects and programs. Meeting this performance measure will help effectively preserve and manage Department assets.

---

### Measurement and Supporting Data:

2007 FY – There are 37 State owned bridges in Nevada that are structurally deficient or functionally obsolete and are eligible for federal funding. Additionally, there are 34 bridges needing repair/replacement owned by local agencies that are also eligible for federal funding.

### Strategies for Improvement:

#### Short range to next reporting:

Evaluate programmed projects for possible preservation actions, corrective maintenance and risk reduction activities and include these activities into project scope as appropriate.

NDOT Structures Division provides information regarding state bridge policies and practices to local agencies in order to cooperate with and assist them.

#### Long range:

Perform bridge rehabilitation and replacement as allowed under the Highway Bridge Program. Continue to utilize preservation strategies to extend performance and serviceability of elements commonly causing deterioration of structures. These include repairs such as deck repair/replacement, deck overlays, replacement of bridge joints, fatigue crack repair and repainting of steel structures. Maintain seismic retrofit program and scour mitigation program to minimize risks from these extreme events.

Seek additional funds to reduce the time frame of eliminating structurally deficient or functionally obsolete bridges, which is estimated to take at least 76 years with present funding level, based on the current number of deficient bridges. This time frame will increase as Nevada's bridges age and the number of bridges categorized as structurally deficient or functionally obsolete increases.

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met?** The target is expected to be met.

**What 'Strategies for Improvement' were successful?** It is too soon to evaluate the strategies.

**What 'Strategies for Improvement' were not successful? Why?**

**What new 'Strategies for Improvement' will be initiated in FY2010?**

**Short range to next reporting:** While not a new strategy, the Structures Division typically includes updated inventory data on newly constructed and other replaced bridges that are a part of major construction and are not a funded through the Highway Bridge Program.

**Long range:** Structures Division will seek and implement innovative Bridge Management strategies, to improve bridge asset management processes.

**Does this performance measure effectively measure what is desired?** The Department's bridge database uses the number of bridges, rather than a percentage; therefore, the number of bridges is a better performance measure indicator.

**Is there a better performance measure that should be considered?** It is recommended that the Performance Measure be changed from 'percentage' to 'number'.

**Will meeting the next yearly target have a fiscal impact? If so, explain.**

## 15. STREAMLINE PERMITTING PROCESS

### Performance Measure:

Percentage of permits issued or rejected within 45 days of receipt.

Ultimate Target: 95%

Annual Target: 95%

Champion: Chief Right of Way

### Support Divisions:

Districts, Project Management, Design, Traffic/Safety and Others as needed

### Strategy Plan Support:

Every encroachment to connect or work on state right of way requires a permit. This is a large area of our customer service. We must be assured the impact to the system is safe and will not negatively compromise the system, but we must meet the customer's needs for a timely response for their economic development. The majority of permits are relatively simple; however some are very complicated and require an extended technical review, thus the reason for the goal being less than 100%. Current estimates are that 90% of permits are issued or rejected within 60 days. This performance measure works towards meeting the Department of Transportation Strategic Plan goals to Optimize safety, Be in touch with and responsive to our customers, Innovate, and Deliver timely and beneficial projects and programs.

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### Measurement and Supporting Data:

2007 FY (Base Number)	90%
2008 FY – Third Quarter	93%
2008 FY – Fourth Quarter	95%
2009 FY – First Quarter	95%
2009 FY – Fourth Quarter	96%

### Strategies for Improvement:

Short range to next reporting: The goal has always been 95%. The long range goal is to never fall below 95% for any given quarter.

There is a new Transportation Policy has been finalized that sets fixed review times for the various sections who must review permits. Revision of TP if and when necessary.

The Right-of-Way Division is working toward doing permit applications on line. This will shorten the process. The goal is to not only have 95% success within the required 45 days but also to gradually shorten the time frames as much as possible.

Implement access management recommendations contained in Corridor Studies. This is an area where very little has been accomplished. Further coordination with Planning, Safety, Environmental and Roadway Design is necessary.

Long range: The conversion to the IRWIN system is not complete and must be accomplished in the next six months.

Achievement of the ultimate target is expected within the first year; consequently, a long range strategy is not needed

## **ANNUAL EVALUATION OF PERFORMANCE MEASURE**

**Was the annual target met?** Yes

**What ‘Strategies for Improvement’ were successful?** Development of the Encroachment Permit Processing Time Schedule TP, which allowed for timely processing of encroachment permits. The new policy established simultaneous reviews by affected Divisions rather than previous method of sequential review. The TP established 10 day maximum response time for each Division.

**What ‘Strategies for Improvement’ were not successful? Why?** The IRWIN system is not yet complete.

**What new ‘Strategies for Improvement’ will be initiated in FY2009?**

Several changes have now been implemented that should enable the Department to attain the ultimate target of 95%. The new Transportation Policy regarding the permit processing time schedule has been completed and has been in effect since July 1<sup>st</sup>. The new procedure has implemented simultaneous review by all affected Divisions with established dates for the completion of those reviews. The permits database has been modified to establish the exact number of days that a permit has been in process so that instantaneous reports can be developed for specified time frames to measure performance. The report will indicate by percentage rate how many permits are being completed within the specified time frame. The report will also list those that fall outside of the time frame so that permit processing personnel can review those individually to determine why they were not completed within the time frame and what might be done to again improve on performance.

**Does this performance measure effectively measure what is desired?** YES

**Is there a better performance measure that should be considered?** NO

**Will meeting the next yearly target have a fiscal impact? If so, explain.** The IRWIN system is expensive but has been a part of the yearly budget for many years, including fiscal 2010.



APPENDIX B

**DRAFT**

TRANSPORTATION POLICY FOR PERFORMANCE MEASURES

STATE OF NEVADA DEPARTMENT OF TRANSPORTATION

**DRAFT – Out for Review and Comment**

TP 1-11-2

Approved \_\_\_\_\_ PERFORMANCE MEASURES POLICY

1. PURPOSE

To establish a policy, process and procedures for developing and reporting performance measures that have been established for the purpose of monitoring progress toward achieving the goals of the Department of Transportation.

2. POLICY

It is Department of Transportation policy to develop performance measures for each Division of the Department and the Department as a whole, and to submit a report each year to September meeting to the State Transportation Board of Directors and, additionally, to the Director of the Legislative Counsel Bureau for transmittal to the Interim Finance Committee.

3. SCOPE

This Transportation Policy shall apply to all Department of Transportation Districts and Divisions.

4. RESPONSIBILITY

- a. The Chief Operations Analysis Engineer is responsible for revising this Transportation Policy in accordance with TP-1-1. In addition, he/she is responsible for providing assistance and cooperation, as necessary, to other Division heads with regard to the presentation of individual performance measures in the final report each year. He/She is also responsible for developing the format and preparing the “draft” final annual report prior to August 1st of each year and submitting it to the Director for approval. Additionally, he/she will be responsible to compile a midyear status report for the Director by February 1st
- b. The Director will appoint a champion(s) for each performance measure. These champions, typically Division Heads and District Engineers, are responsible for collecting and compiling data relevant to calculating the performance measures, ensuring that data is accurate, and reporting the performance measure values to the Operations Analysis Division. The data submitted by these individuals must comply with the formats established by the Chief Operations Analysis Engineer and shall consist of a narrative that includes but is not limited to what was measured, how it was measured, when it was measured, how it supports strategic



Department goal(s), short and long range improvement strategies, annual and ultimate targets, and any other factors that may have influenced the outcome. This report must be submitted as requested by the Chief Operations Analysis Engineer and contain data for the preceding State fiscal or calendar year, whichever is appropriate.

- c. Assistant Directors in cooperation with their Division heads are responsible for developing performance measures for their areas of responsibility and ensuring they are developed and reported in accordance with this policy.
- d. The Assistant Director for Planning is responsible for submitting the performance measures report to the State Transportation Board of Directors at the September meeting and the Director of the Legislative Counsel Bureau for transmittal to the Interim Finance Committee soon thereafter.

## 5. DEFINITIONS

- a. Performance Measure: A numerical representation of progress made toward a specific goal(s) based on quantifiable and verifiable data utilizing strategies established to meet one or more of the Departments stated goals.
- b. Performance Measure Report: A document that at a minimum includes the following:
  - (1) The goals and objectives of the Department, and the current status of the Department in relation to meeting those goal and objectives;
  - (2) Any applicable directives from the State Transportation Board of Directors or Legislature since the most recent report prepared pursuant to this policy;
  - (3) The scheduling, scope, cost and progress of any current or proposed highway projects;
  - (4) The sources, amount and expenditure of any funding received during the immediately preceding fiscal year;
  - (5) The rationale used to establish priorities for the completion of highway projects; and
  - (6) Any recommendations for changes to the performance criteria previously established for the Department by the State Transportation Board of Directors.

## 6. PROCEDURE

- a. Process for Developing Performance Measures:
  - (1) Each July, Division Heads and District Engineers review their progress toward attaining the goals associated with their performance measures. Additionally, they will evaluate the existing strategies and actions, and whether and how those strategies and actions are important in meeting the Department's goals. The evaluation shall consider new strategies and actions that might better attain Department goals. Furthermore, the evaluation will

determine if there are other performances measures that will better assess the attainment of Department goals.

- (2) Each July the Assistant Director will meeting with their assigned Division Heads and discuss their evaluations and determine necessary modifications to the performance measures, strategies and actions. In addition, the Assistant Directors will discuss how the individual strategies likely overlap with other Divisions and how to benefit from the overlaps.
  - (3) The two Deputy Directors will annually in July and jointly lead a discussion with the District Engineers on what modifications to the performance measures, strategies and actions will be beneficial. In addition, the discussion will include how the individual strategies likely overlap with other Divisions and how to benefit from the overlaps.
  - (4) The Deputy Directors and the Assistant Directors will meet each July with the Director to determine which performance measures will be recommended and forwarded to the State Transportation Board of Directors for approval.
- b. As part of the annual report to the State Transportation Board of Directors, the Director will include any recommended changes to the Performance Measures identified by this process.

## 7. REPORTS

a. Performance Measures Report:

The Chief Operations Analysis Engineer will distribute copies of the Performance Measures report to the Department of Transportation Deputy Directors, assistant Directors, District Engineers, and Division Heads. The Director will distribute the Performance Measures report to the State Transportation Board and the Director of the Legislative Counsel Bureau.

END

**APPENDIX C**

**QUARTERLY STATUS REPORT FOR MAJOR PROJECTS**

## **TYPICAL PROJECT DEVELOPMENT PROCESS**

The Department's project development process typically consists of four major phases: planning, environmental clearance, final design and construction. These phases are described in more detail below. The development process is based on federal and state laws and regulations, engineering requirements, and a departmental review and approval process. This appendix provides an overview of the four phase process, identifies major milestones within the phases, and describes the information developed during each phase.

### **Project Planning Phase**

In this phase the project needs are analyzed and conceptual solutions are developed. Project descriptions, costs, and schedules are broadly defined. The planning phase typically addresses such issues as number of lanes, location and length of project, and general interchange and intersection spacing. The intent of this phase is to develop the most viable design alternatives, and to identify the best means to address risks and uncertainties in cost, scope and schedule.

### **Environmental Clearance Phase**

For the environment clearance phase, major projects are subject to the National Environmental Policy Act (NEPA) to address potential social, environmental, economic and political issues. During this phase studies are conducted to define existing conditions, and identify likely impacts and mitigations so the preferred design alternative is selected from among the various alternatives. In this phase the project scope is more fully defined, right-of-way issues are generally identified, project costs and benefits are estimated, and risks are broadly defined. Finally, a preliminary project schedule is determined. At the conclusion of this phase, major projects are divided into smaller construction segments to address project's social, environmental, economic and political issues as well as funding availability and constructability.

### **Final Design Phase**

During this phase, the design of the selected alternative identified during the environmental clearance phase is finalized. In this phase the project scope is finalized, a detailed project design schedule and estimate is developed, and project benefits are fully determined. The right-of-way requirements are also determined and acquisition is initiated. Additionally, utilities relocation is initiated toward the end of the final design phase. At the end of this phase the project design and cost estimate are complete and the project is advertised for construction.

### **Construction phase**

During this phase projects are constructed based on the final design plans. Depending on the nature of the project, utilities relocation might occur during early stages of this phase. Due to the complexity of major projects, a detailed construction schedule, traffic control plans, and environmental mitigation strategies are developed in consultation with the selected contractor.

## PROJECT STATUS SHEET EXPLANATION

The information contained on the project status sheet is centered on the Department's project development process. This process typically consists of the four major phases: planning, environmental clearance, final design and construction. Additional details of these phases are contained in Appendix A, which details the project development process utilized by the Department of Transportation. The project status sheets contain several items of information as follows:

**Project Description:** Contains the preliminary project scope, which generally identifies features of the project i.e. length, structures, widening, and interchanges, and directs the project development process.

**Project Benefits:** Summarizes the primary favorable outcomes expected by delivering the project.

**Project Risks:** Identifies the major risks that might impact project scope, cost, and schedule. Unforeseen environmental mitigation, right-of-way litigation, and inflation of construction materials or land values are only a few items that can adversely effect project development. Appendix B, Dealing with Project Risk, provides more details.

**Schedule:** Provides the time ranges for the four primary phases of project development: planning, environmental clearance, final design, and construction. Generally the schedule, by state fiscal years, reveals the time range for starting or completing a phase. It indicates the starting range early in the development process and completion range latter in the process. Appendix B, Dealing with Project Risks, provides more details concerning the time ranges.

**Project Costs:** Project cost ranges are provided by activity: 1) engineering activities that includes planning, environmental clearance and final design costs, 2) right-of-way acquisition, and 3) construction. Costs are adjusted for inflation to the anticipated mid-point of completing a phase. Appendix B, Dealing with Project Risks, provides more detail on the range of project cost estimates.

**What's changed since last update?** Contains summaries of the project scope, cost, and schedule changes, if any.

**Financial Fine Points:** Includes the total expended project costs and brief summary of financial issues.

**Status Bars at the Bottom of the Form:** Shows the percentage completion for the primary project development activities that are in progress: planning, environmental clearance, final design, right-of-way acquisition, and construction.

## MAJOR PROJECTS

### I-15 Projects

I-15 North Phase 1 – I-15/US-95/I-515 Interchange to Craig Road	C5
I-15 North Phase 2 – Craig Road to Speedway Boulevard	C6
I-15 North Phase 3 – Speedway Boulevard to Apex Interchange	C7
I-15 North Phase 4 – I-15/CC-215 Northern Beltway Interchange	C8
I-15 NEON (Tropicana Avenue to Spaghetti Bowl)	C9
I-15 Urban Resort Corridor Study	C10
I-15 South – Sloan Road to Tropicana Avenue	C11
Phase 1 Blue Diamond to Tropicana	C12
I-15 South – Stateline to Sloan Road	C13

### I-515/US-95/US Projects

I-515 Freeway Improvements – I-15 to Horizon Drive	C14
I-515/US-95/US93: Boulder City Bypass Phase 1 – Foothill Drive to US-95	C15
I-515/US-95/US93: Boulder City Bypass Phase 2 – US-95 to Hoover Dam Bypass	C16
US-93 Hoover Dam Bypass	C17

### US-95 Northwest Projects

US-95 Northwest Phase 1 – Rainbow Boulevard (SR 595) to Ann Road	C18
US-95 Northwest Phase 2 – Ann Road to Kyle Canyon Road (SR 157)	C19
US-95 Northwest Phase 3 – CC 215 Beltway Interchange	C20
US-95 Northwest Phase 4 – Horse Avenue Interchange	C21
US-95 Northwest Phase 5 – Kyle Canyon Road (SR 157) Interchange	C22

### Other Southern Nevada Project

CC-215 Beltway – Summerlin Parkway Interchange	C23
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I-215 Beltway Airport Connector Interchange	C24
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### Northern Nevada Projects

I-80 – Robb to Vista	C25
I-580 Freeway Extension	C26
US-395 North – McCarran Blvd. to Stead Blvd.	C27
US-395 Northbound – Moana Lane to I-80	C28
SR-445 – Pyramid Highway Improvements	C29
US-395 Carson City Freeway Phase 2B – S. Carson St. to Fairview Dr.	C30
I-580 at Meadowood Mall Way	C31

## I 15 North - Phase 1

I-15/US-95/I-515 Interchange to Craig Road

Design Build Project

Project Sponsor: NDOT

Project Manager: Jeff Hale, P. E.

(775) 888-7321



### Project Description:

- This is the first phase of the I-15 north corridor improvements between US 95 and Apex Interchange
- Widen I-15 from six lanes to ten lanes from US-95 to Lake Mead Boulevard, including realignment of on and off ramps for the US-95, Washington and D Street Interchanges.
- Widening of I-15 to eight lanes from Lake Mead Boulevard to Craig Road.
- Reconfigure the Lake Mead Boulevard Interchange.
- A new connection road linking D Street and F Street between I-15 and Bonanza Road.

### Schedule:

**Planning**  
Complete

**Environmental Clearance**  
Complete

**Final Design**  
Complete

**Construction**  
Started March 2008 - complete March 2010



### Project Cost Range:

(Construction phase estimates):  
Engineering: \$5.1 million  
Right-of-Way: \$1.2 to \$5.1 million  
Construction: \$252 million  
Total Project Cost: \$258 - \$263 million

### Project Benefits:

- Increase capacity to accommodate projected local and interstate traffic to year 2030.
- Decrease congestion.
- Reduce travel times.
- Improve access to areas planned for development in North Las Vegas.
- Improve freeway operations with full Freeway-to-Freeway connectivity.
- Improve safety.

### What's Changed Since Last Update?

- Scope - No Change
- Schedule - No Change
- Cost - No change

### Project risks:

- Project is on schedule.

### Financial Fine Points(Key Assumptions):

- Total Expended: \$195 million
- Funding Source Breakdown
- \$64 million State General Funds, \$72 million State Funds
- \$6.5 million STP, Future Bonds and STP to cover rescinded State General Funds
- \$22 million Minimum Guarantee
- \$25 million Federal Earmark
- \$17 million NHS, \$7 million Public Lands Highway Discretionary
- Inflation escalation (4%) is to 2009, approximate midpoint of construction.



Updated:  
July , 2009



## I-15 North – Phase 2 Craig Road to Speedway Boulevard

Project Sponsor: NDOT  
Project Manager: Luis Garay, P.E.  
(775) 888-7321



### Project Description:

- Widen I-15 from 4 lanes to 6 lanes from Craig Road to Speedway Boulevard.
- Improvements will be constructed within the existing I-15 right-of-way
- This is the second of four phases of improvements to the I-15 North Corridor between US 95 and Apex Interchange.
- Project Length: 4.8 miles

### Schedule:

- Planning:**  
Complete
- Environmental Clearance:**  
Complete
- Final Design:**  
Start 2010 - 2014
- Construction:**  
Start: 2013 - 2015



### Project Benefits:

- Increase capacity to accommodate projected local and interstate traffic to year 2030
- Decrease congestion
- Reduce travel times
- Improve access to areas planned for development in North Las Vegas
- Improve freeway operations
- Improve safety

### Project Cost Range (Environmental phase estimates):

Engineering: \$5 – \$15 million  
Right-of-Way: \$1 – \$2 million  
Construction: \$99 - \$123 million  
Total Project Cost: \$105 - \$140 million

### What's Changed Since Last Update?

- Scope – No change
- Schedule – No change
- Cost – No change

### Project Risks:

- Uncertainty of future construction material and labor costs
- Funding uncertainty

### Financial Fine Points (Key Assumptions):

- Total funding expended for phase 2: \$0.0 (design phase not started)
- Total funding expended for I-15 North Environmental phase: \$875,000
- Inflation escalation (4%) is to 2014 approximate midpoint of construction.
- Funding source for this project has not yet been identified

<b>% Design Complete</b>	0	50	100
<b>% ROW Complete</b>	0	50	100

July 2009





**I-15 North – Phase 3  
Speedway Boulevard to Apex Interchange**

Project Sponsor: NDOT (I-15 Widening) and  
City of North Las Vegas (New Interchange)  
Project Manager: Luis Garay, P.E.  
(775) 888-7321



**Project Description:**

- Widen I-15 from four lanes to six lanes from Speedway Boulevard to the Apex Interchange
- Construct a new interchange approximately 1.8 miles north of Speedway Boulevard
- This is the third phase of improvements to the I-15 North Corridor between US 95 and Apex Interchange.
- Project Length: 4.6 miles

**Schedule:**

- Planning:**  
Complete
- Environmental Clearance:**  
Complete
- Final Design:**  
Start 2012 - 2015
- Construction:**  
Start 2015 - 2017



**Project Benefits:**

- Increase capacity to accommodate projected local and interstate traffic to year 2030
- Decrease congestion
- Reduce travel times
- Improve access to areas planned for development in North Las Vegas
- Improve freeway
- Improve safety

**Project Cost Range (Environmental phase estimates):**

Engineering: \$5 - \$15 million  
Right-of-Way: \$5 - \$10 million  
Construction: \$105 - \$115 million  
Total Project Cost: \$115 – \$140 million

**What's Changed Since Last Update?**

- Scope – No change
- Schedule – No change
- Cost – No change

**Project Risks:**

- Uncertainty of future right-of-way and construction costs
- Need for new interchange depends on release of the surrounding lands from BLM jurisdiction
- Uncertainty of proposed Sheep Mountain Parkway terminus

**Financial Fine Points (Key Assumptions):**

- Total funding expended for phase 2: \$0.0 (design phase not started)
- Total funding expended for I-15 North Environmental phase: \$875,000
- Inflation escalation (4%) is to 2016 approximate midpoint of construction.
- Funding source for this project has not yet been identified



July 2009



**I-15 North – Phase 4**  
**I-15 / CC-215 Northern Beltway Interchange**

Project Sponsor: Clark County  
 Project Manager: Cole Mortensen, P.E.  
 (775) 888-7321



**Project Description:**

- Construct new ramps to complete a system-to-system interchange configuration at the I-15/CC-215 Las Vegas Beltway interchange
- Improvements will be constructed within the existing I-15 and CC-215 right-of-way
- This is the last of four phases of improvements to the I-15 North Corridor between US 95 and Apex Interchange (15 miles)

**Schedule:**

- Planning:**  
Complete
- Environmental Clearance:**  
Complete
- Final Design:**  
Start 2013 - 2015
- Construction:**  
Start: 2015 - 2017



**Project Cost Range (Environmental phase estimates):**

- Engineering: \$6 - \$15 million  
 Right-of-Way: \$1 - \$5 million  
 Construction: \$123 - \$140 million  
 Total Project Cost: \$130 - \$160 million

**Project Benefits:**

- Increase capacity to accommodate projected local and interstate traffic to year 2030
- Decrease congestion
- Reduce travel times
- Improve access to areas planned for development in North Las Vegas
- Improve freeway operations with full freeway-to-freeway connectivity
- Improve safety

**What's Changed Since Last Update?**

- Scope – No change
- Schedule – No change
- Cost – No change

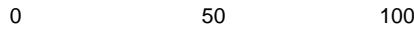
**Project Risks:**

- Project schedule will be determined by project sponsor (Clark County)
- Uncertainty of future construction and labor costs
- Potential funding shortfall

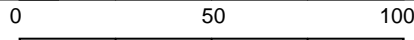
**Financial Fine Points (Key Assumptions):**

- Total funding expended for phase 2: \$0.0 (design phase not started)
- Total funding expended for I-15 North Environmental phase: \$875,000
- Inflation escalation (4%) is to 2016 approximate midpoint of construction.
- Funding source for this project has not yet been identified.

% Design Complete



% ROW Complete



July 2009

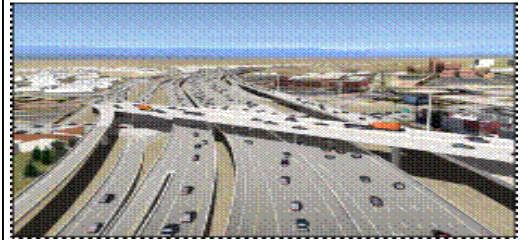


# I 15 NEON

**Project Sponsor: NDOT**

**Senior Project Manager: Glenn Petrenko, P.E.**

**(775) 888-7321**



## Project Description:

- HOV Direct Connector from US 95 to I-15 and I-15 widening improvements from Spaghetti Bowl to south of Sahara; Add/Drop lanes at Oakey/Wyoming
- Local Access Improvements to Las Vegas Downtown Redevelopment
- Connecting Industrial Road and Martin Luther King over I-15
- New access to Alta
- Collector distributor roads
- I-15/Charleston Interchange Reconstruction
- Project Length: 4.83 miles

## Schedule:

**Planning**  
Complete

**Environmental Clearance**  
1st Quarter 2010

**Final Design**  
TBD

**Construction**  
TBD



## Project Cost Range:

(Environmental phase estimates):  
 Engineering: \$79 - \$157 million  
 Right-of-Way: \$490 - \$616 million  
 Construction: \$886 - \$1.127 billion  
 Total Project Cost: \$1.455 - \$1.9 billion

## Project Benefits:

- Will accommodate anticipated traffic increases
- Reduce congestion along local streets and I-15
- New access to Downtown Redevelopment
- Operational Improvements to I-15
- Extends HOV System

## What's Changed Since Last Update?

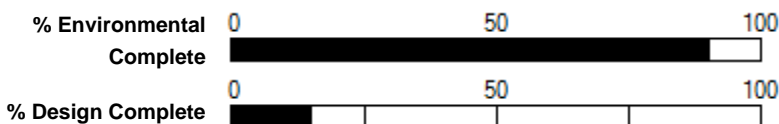
- Scope - No change
- Schedule - Final EIS moved to 1st quarter of 2010 due to Legal Sufficiency Review of Draft EIS
- Cost - No change

## Project risks:

- Complex construction in a high volume dense urban area
- Complexity in maintaining traffic staging, relocating utilities and reducing impacts
- Complex right-of-way issues may impact schedule and cost
- Funding uncertainty

## Financial Fine Points(Key Assumptions):

- Total funding Expended: \$15,526,538
- Inflation escalation (4%) is to 2020 approximate midpoint of construction
- Additional Federal, State, Local and Regional Funding will be required



**Updated:**  
April , 2009



## I-15 Urban Resort Corridor Study

Project Sponsor: Nevada Department of Transportation  
 Project Manager: Tony Letizia  
 (775) 888-7321



### Project Description:

- The I-15 Urban Resort Corridor Study along I-15 from I-215 (Bruce Woodbury Beltway) to the south, to U.S. 95 (Spaghetti Bowl) to the north.
- Enhance access and mobility within the resort corridor; develop a phased implementation strategy for future improvements to I-15 in the resort corridor area in addition to currently planned improvements;
- Prepare an early action plan for near-term improvements to enhance mobility and operations.

### Schedule:

**Planning:**  
2008 - 2009

**Environmental Clearance:** TBD

**Final Design:** TBD

**Construction:** TBD



### Project Cost Range:

Engineering: TBD  
 Right-of-Way: TBD  
 Construction: TBD

Total Project Cost: TBD

### Project Benefits:

- Improve capacity, operations, safety, access and mobility
- Meet stakeholder/public expectations
- Improve quality of life
- Support economic development
- Reduce trip times

### What's Changed Since Last Update?

- Scope – No change
- Schedule – study timeline delayed with no cost impacts
- Cost – Actual spent has been corrected to \$708k due to 10% of total agreement costs to be retained until study completion
- Reviewing draft final report, estimated study completion Aug 2009

### Project Risks:

- Consensus building among the resort owners
- Funding uncertainty
- Economic development along the corridor could require design changes affecting scope, schedule and budget.

### Financial Fine Points (Key Assumptions):

- Total funding Expended: \$708,000.00 (90%)



July 2009







# I 15 SOUTH FREEWAY IMPROVEMENTS

Phase 1, Blue Diamond to Tropicana Ave

Project Sponsor: NDOT

Senior Project Manager: John Terry, P.E.

(775) 888-7321



## Project Description:

- First phase of the I 15 South Sloan Road to Tropicana Avenue Project.
- Add collector-distributor lanes from Blue Diamond Road to Tropicana Avenue.
- Braid collector-distributor roads to eliminate weaves between I 215 and Tropicana Avenue.
- Construct Sunset Road Bridge over I 15 and reconstruct Warm Springs Bridge over I 15.
- To be delivered by Design-Build, Contract 3366DB.

## Schedule:

**Planning**  
Complete

**Environmental Clearance**  
2009

**Final Design**  
2009 - 2010

**Construction**  
2009 - 2012



## Project Cost Range:

(Planning Phase Estimates):  
Engineering: \$10 - \$25 million  
Right-of-Way: \$0  
Construction: \$200 - \$250 million  
Total Project Cost: \$210 - \$275 million

## Project Benefits:

- Provides additional capacity on I 15
- Reduces operational conflicts between Blue Diamond Road, I 215, Harmon Avenue and Tropicana Avenue
- Improves east-west access across I 15
- Reduces collisions
- Improves transportation system performance

## What's Changed Since Last Update?

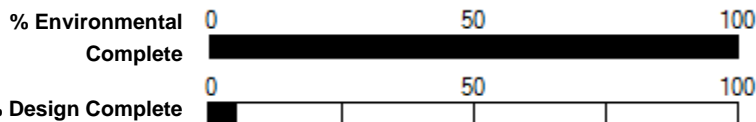
- Scope - No change
- Schedule - FONSI issued April 20, 2009- Final Proposals due April 24, 2009
- Cost - No change

## Project risks:

- Major Project Plan required
- New tunnels/bridges under/over UPRR require close cooperation
- Tight ROW
- Difficult schedule for Design-Build process
- Working within Clark Co ROW
- Working within UPRR ROW

## Financial Fine Points(Key Assumptions):

- Total funding expended: \$2,600,000
- Cost to be maintained by adjusting scope in D-B process
- Project funding source: AB 595 (LVCVA-Bonding & State)



Updated:  
April , 2009



## I-15, South Stateline to Sloan

Project Sponsor: NDOT  
Project Manager: Ed Miranda, P.E.  
(702) 671- 6601



### Project Description:

- Improve operation efficiency, capacity and safety

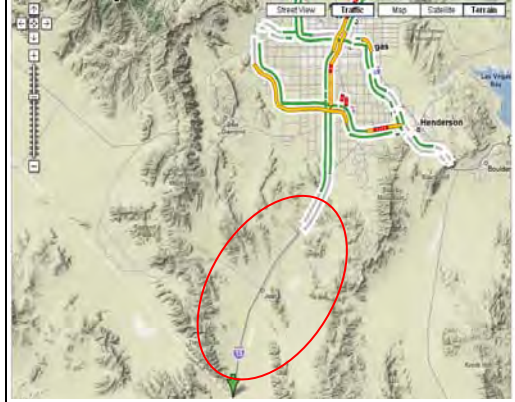
### Schedule:

**Planning:**  
2010-2012

**Environmental Clearance:**  
TBD

**Final Design:**  
TBD

**Construction:**  
TBD



### Project Cost Range (Planning phase estimates):

Engineering: \$10 - \$12 million  
Right-of-Way: TBD  
Construction: \$100 – \$120 million

Total Project Cost: \$110 - \$132 million

### Project Benefits:

- Increase capacity to accommodate projected local and interstate traffic to year 2030
- Decrease congestion
- Reduce travel times
- Widening to 8 lanes will increase capacity
- Widen several bridges and a grade separation at UPRR
- Improve on/off ramps at Primm and Sloan Interchanges

### What's Changed Since Last Update?

- Scope – No change
- Schedule – No change
- Cost – No change

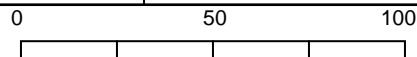
### Project Risks:

- Uncertainty of future construction materials and labor costs.
- Complex construction in a high volume rural area may affect schedule & costs
- Funding uncertainty

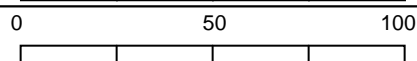
### Financial Fine Points (Key Assumptions):

- Total funding Expended to Date: \$ 0
- No funding has been identified for this project

**% Planning Complete**



**% Design Complete**



July 2009



## I-515 Freeway Improvements I-15 to Horizon Drive

Project Sponsor: NDOT  
Project Manager: Ed Miranda, P.E.  
(775) 888-7321



### Project Description:

- I-515 from I-15 to Horizon Drive – Improve operational efficiency, capacity and safety.
- Reconstruct the Downtown Las Vegas viaduct.
- Construct new interchanges at “F” Street, Pecos Road and Sahara Avenue.
- Construct Bonanza Road Overcrossing of Las Vegas Blvd.
- Realign Stewart Avenue and Sahara Avenue.
- Reconstruct and expand Pedestrian & Bicycle Facilities.

### Schedule:

**Planning:**  
Complete

**Environmental Clearance:**  
2011-2012

**Final Design**  
TBD

**Construction**  
TBD



### Project Cost Range (Planning phase estimate):

Engineering: \$79 - \$115 million  
Right-of-Way: \$356 - \$448 million  
Construction: \$1,046 - \$1,451 million

Total Project Cost: \$1,481 - \$2,014 million

### Project Benefits:

- Increase traffic volumes at acceptable operating speeds.
- Provides additional interchanges on I-515 to reduce traffic at congested interchanges.
- Reduces operational conflicts at ramps
- Reduces collisions.
- Improves transportation system performance.

### What's Changed Since Last Update?

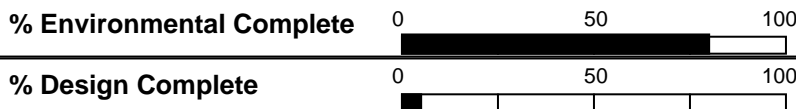
- Scope – No change
- Schedule – Delay in the NEPA process
- Cost – No change

### Project Risks:

- Environmental process under development – project scope, schedule and cost not fully defined.
- Complex right-of-way and utilities issues.
- Time delays in relocating public facilities and public housing.
- Funding uncertainty

### Financial Fine Points (Key Assumptions):


- Total funding Expended: \$7,320,000
- Inflation escalation (4%) is to 2012 in CLV and 2017 for remainder of project, approximate midpoint of construction.
- Funding for project not identified



July 2009






<p style="text-align: center;"><b>I 515 / US 93 / US 95 - Boulder City Bypass Phase 1</b></p> <p style="text-align: center;"><b>Foothill Drive to US 95</b></p> <p style="text-align: center;"><b>Project Sponsor: NDOT</b></p> <p style="text-align: center;"><b>Senior Project Manager : Glenn Petrenko, P. E.</b></p> <p style="text-align: center;"><b>(775) 888-7321</b></p>	
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<p><b>Project Description:</b></p> <ul style="list-style-type: none"> <li>● Realignment of US I 515/US 93/US 95 to create an access controlled facility from Foothill Drive to US 95.</li> <li>● One new diamond interchange and one new half interchange along with Frontage Roads will be constructed.</li> <li>● Direct Connector Ramps from the new facility to from US 93 will be constructed.</li> <li>● Direct Connector Ramps from US 95 to the new facility will be constructed.</li> <li>● Existing access will be perpetuated.</li> <li>● Project length: 3 miles.</li> </ul>	<p><b>Schedule:</b></p> <p><b>Planning</b> Completed</p> <p><b>Environmental Clearance</b> Completed</p> <p><b>Final Design</b> Complete 2014</p> <p><b>Construction</b> Complete 2017</p>	
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<p><b>Project Benefits:</b></p> <ul style="list-style-type: none"> <li>● Improves Safety by eliminating a signal at US 93 and Railroad Pass Casino.</li> <li>● Improves Operations for Trucks from US 95 to I-515.</li> <li>● Improves Operations for Peak trips from Boulder City to Las Vegas.</li> <li>● Improves local circulation.</li> <li>● Completes initial bypass phase.</li> </ul>	<p><b>Project Cost Range:</b> (Final Design Phase Estimates)</p> <p>Engineering: \$4 - \$10 million  Right-of-Way: \$38 - \$60 million  Construction: \$156 - \$195 million  Total Project Cost: \$198 - \$265 million</p>
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<p><b>Project risks:</b></p> <ul style="list-style-type: none"> <li>● Concurrent utility relocations may affect schedule.</li> <li>● Unit price and property escalation may affect project cost.</li> <li>● Full funding may not be available.</li> <li>● Resource conflict with other on-going projects.</li> </ul>	<p><b>What's Changed Since Last Update?</b></p> <ul style="list-style-type: none"> <li>● Scope - Complete project in 4 stages - Right-of-way, Utility Relocation, Construct North half, Construct South Half</li> <li>● Schedule - Construction schedule delayed due to funding shortfall</li> <li>● Cost - No change</li> </ul>
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<p><b>Financial Fine Points(Key Assumptions):</b></p> <ul style="list-style-type: none"> <li>● Total funding Expended: \$2,844,180</li> <li>● Total funding Expended for BC Bypass Environmental studies (all phases): \$4,895,181</li> <li>● Inflation escalation (4%) is to 2016 approximate midpoint of construction</li> <li>● Additional Federal, State, Local, and Regional Funding will be required</li> </ul>
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<p><b>% Design Complete</b> <span style="float: right;">0                      50                      100</span></p> <p><b>% Row Complete</b> <span style="float: right;">0                      50                      100</span></p>	<p><b>Updated:</b> April , 2009</p>	
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# I 515 / US 93 / US 95 - Boulder City Bypass Phase 2

US 95 to Hoover Dam Bypass

Project Sponsor: NDOT

Senior Project Manager: Glenn Petrenko, P. E.

(775) 888-7321

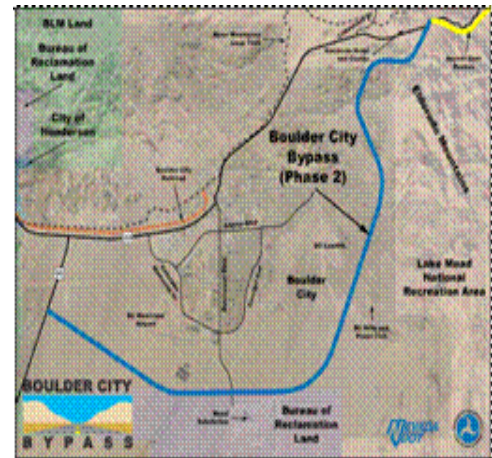


## Project Description:

- Provide extension of Phase I from US 95 to tie into the Hoover Dam Bypass at Nevada Interchange
- Provide limited access bypass to the south of Boulder City for US 93 traffic
- 4 lane divided highway facility
- Require several bridge structures over existing access roads and to provide wildlife access
- Project length: 12 miles

## Schedule:

**Planning**  
Completed  
**Environmental Clearance**  
Completed  
**Final Design**  
TBD  
**Construction**  
TBD



## Project Cost Range:

(Planning phase estimates):  
Engineering: \$15 - \$30 million  
Right-of-Way: \$2 - \$4 million  
Construction: \$335 - \$820 million  
Total Project Cost: \$352 - \$850 million

## Project Benefits:

- Reduce congestion of US 93 through Boulder City
- Provide additional safety to existing US 93 within Boulder City
- Decrease travel time from Las Vegas to Nevada/Arizona border

## What's Changed Since Last Update?

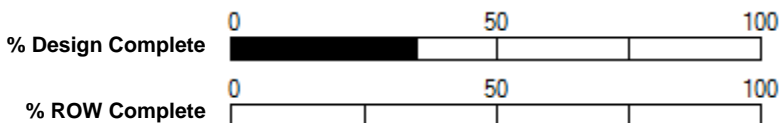
- Scope - No change
- Schedule - No change
- Cost - No change

## Project risks:

- Project unfunded - may delay schedule and increase costs.
- Unit price escalation may affect project cost.
- Difficult design & construction issues in a mountainous terrain may affect cost & schedule.

## Financial Fine Points(Key Assumptions):

- Total funded Expended: \$3,021,651
- Total funding Expended for BC Bypass environmental studies (all phases): \$4,895,181
- Inflation escalation (4%) is to 2027 approximate midpoint of construction.
- Additional Federal, State, Local and Regional Funding will be required.



Updated:  
April , 2009



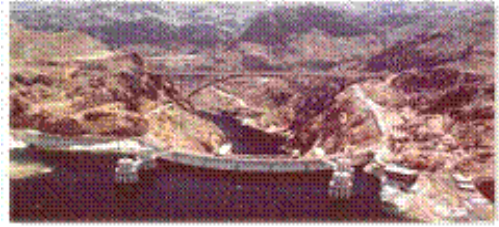
## US 93 Hoover Dam

**Project Sponsor: FHWA / CFLHD**

**CFLHD Project Manager: F. Dave Zanetell, P. E.**

**NDOT Senior Project Manager: Glenn Petrenko, P. E.**

**(775) 888-7321**



### Project Description:

- Realignment of US 93 to create a highway bypass around Hoover Dam tying into existing US 93.
- One new diamond interchange at AZ end of project and one new 3/4 diamond interchange at NV end will be constructed.
- Long-span bridge crossing the Colorado River approximately 1500 feet south of Hoover Dam.
- Pedestrian plaza and parking area constructed with access to the newly named Hoover Dam Access Road.
- Project Length: 2.38 miles.

### Schedule:

- Planning**  
Complete
- Environmental Clearance**  
Complete
- Final design**  
Complete 1st quarter 2010
- construction**  
Complete 4th quarter 2010



### Project Cost Range:

(Final design phase estimates):  
 Engineering: \$23 - \$24 million  
 Right-of-Way: No Cost  
 Construction: \$215 - \$216 million  
 Total Project Cost: \$240 million remains on original budget

### Project Benefits:

- Improves Safety by removing trucks and through-traffic from Dam with tourists.
- Improves Operations for Trucks on US 93, tourists on Hoover Dam.
- Improves Operations for trips from Phoenix to Las Vegas.
- Improves Hoover Dam facility, worker and visitor operations.
- Protects waters of the Colorado River.

### What's Changed Since Last Update?

- Scope - No changes
- Schedule - No change
- Cost - No change

### Project risks:

- Unit price escalation for final surfacing project (mitigated due to interim surfacing).
- Construction delays (cable stay portion of arch most difficult - extensive planning in place).



### Financial Fine Points(Key Assumptions):

- Total NDOT funding Expended: \$46,000,000
- Project remains on original \$240 M program
- Working with NPS and BOR to develop and complete pedestrian trail and parking facility. \$2.1 M external secured for this through application to SNLPA
- Total NDOT Funds - \$50,766,250
- Remaining \$4 M needed in 2009



**Updated:**  
April , 2009



<p><b>US 95 Northwest - Phase 1 Rainbow Boulevard (SR 595) to Ann Road</b></p> <p><b>Project Sponsor: NDOT</b></p> <p><b>Project Manager: Jenica Finnerty, PE</b></p> <p><b>(775) 888-7321</b></p>			
<p><b>Project Description:</b></p> <ul style="list-style-type: none"> <li>This is the first phase of the US 95 Northwest Project that extends from Washington Ave to Kyle Canyon Road.</li> <li>Alleviate congestion within the corridor by increasing capacity.</li> <li>Provide new and improved freeway connections to improve regional connectivity, consistent with land use planning</li> <li>Project length: 6.02 miles</li> </ul>		<p><b>Schedule:</b></p> <p><b>Planning</b> Complete</p> <p><b>Environmental Clearance</b> Complete</p> <p><b>Final Design</b> Complete 2nd quarter 2009</p> <p><b>Advertise</b> 3rd quarter 2009</p> <p><b>Construction</b> TBD</p>	
<p><b>Project Benefits:</b></p> <ul style="list-style-type: none"> <li>Increase capacity</li> <li>Improve safety</li> <li>Improve access</li> <li>Meet stakeholder/public expectations</li> <li>Reduce trip times</li> <li>Reduce vehicle emissions</li> <li>Reduce idling</li> <li>Beautify corridor</li> <li>Improve driver comfort</li> </ul>		<p><b>Project Cost Range:</b> (Final Design Phase Estimates): Engineering: \$2 - \$4 million Right-of-Way: \$2 - \$3 million Construction: \$133 - \$167 million Total Project Cost: \$137 - \$174 million</p>	
<p><b>Project risks:</b></p> <ul style="list-style-type: none"> <li>Unit price escalation may affect project cost</li> <li>Complex design issues may impact schedule and scope</li> <li>Complex right-of-way and utilities issues may impact schedule and cost</li> <li>Potential lawsuit may increase costs</li> <li>Full funding not yet identified</li> </ul>		<p><b>What's Changed Since Last Update?</b></p> <ul style="list-style-type: none"> <li>Scope - No change</li> <li>Schedule - No change</li> <li>Cost - No change</li> </ul>	
<p><b>Financial Fine Points(Key Assumptions):</b></p> <ul style="list-style-type: none"> <li>Total funding Expended for Phase 1: \$1.8 M</li> <li>Total funding Expended for US 95 Northwest Environmental Studies (all phases): \$5 M</li> <li>Inflation escalation (4%) to midpoint of Construction in 2010</li> <li>Funding source: <ul style="list-style-type: none"> <li>*AB 595 - full funding not available until 2011</li> <li>*\$12 M Federal</li> <li>*\$1 M State</li> <li>*\$124 M - \$161 M unidentified</li> </ul> </li> </ul>			
<p><b>% Design Complete</b> 0 50 100</p> <p><b>% ROW Complete</b> 0 50 100</p>		<p><b>Updated:</b> April , 2009</p> 	



**US 95 Northwest - Phase 2 Ann Road to Kyle Canyon Road (SR 157)**

**Project Sponsor: NDOT**

**Project Manager: Jenica Finnerty, P.E.**

**(775) 888-7321**



**Project Description:**

- This is the second phase of the US 95 Northwest Project that extends from Washington Ave to Kyle Canyon Road
- Alleviate congestion within the corridor by increasing capacity
- Provide new and improved freeway connections to improve regional connectivity, consistent with land use planning
- Project length: 5.55 miles

**Schedule:**

**Planning**  
Complete  
**Environmental Clearance**  
Complete  
**Final Design**  
Start 2009-2011  
**Construction**  
TBD



**Project Cost Range:**

(Environmental Phase Estimates):  
Engineering: \$2 - \$3 million  
Right-of-Way: \$7 - \$9 million  
Construction: \$104 - \$119 million  
Total Project Cost: \$113 - \$131 million

**Project Benefits:**

- Increase capacity
- Improve safety
- Improve access
- Meet stakeholder/public expectations
- Reduce trip times
- Reduce vehicle emissions
- Reduce idling
- Beautify corridor
- Improve driver comfort

**What's Changed Since Last Update?**

- Scope - No change
- Schedule - No change
- Cost - No change

**Project risks:**

- Unit price escalation may affect project cost
- Complex design issues may impact schedule and scope
- Complex right-of-way and utilities issues may impact schedule and cost

**Financial Fine Points(Key Assumptions):**

- Total funding Expended for Phase 2: \$0 (Design phase not yet started)
- Total funding Expended for US 95 Northwest Environmental Studies (all phases): \$5 million
- Inflation escalation (4%) to midpoint of construction in 2015
- Funding source:
  - \*AB 595 - full funding not available until 2015
  - \*\$113 - \$131 million unidentified



**Updated:**  
April , 2009



## US 95 Northwest - Phase 3 Clark County 215 Interchange

**Project Sponsor: NDOT and Clark County**

**Senior Project Manager: Cole Mortensen, P. E.**

**(775) 888-7742**



### Project Description:

- This is the third phase of the US 95 Northwest project that extends from Washington Ave to Kyle Canyon Rd
- Alleviate congestion within the corridor by increasing capacity
- Provide new and improved freeway connections to improve regional connectivity, consistent with land use planning
- Construct new interchange at CC 215

### Schedule:

**Planning**  
Complete

**Environmental Clearance**  
Complete

**Final Design**  
2009 - 2011

**Construction**  
TBD



### Project Cost Range:

(Environmental Phase Estimates):  
 Engineering: \$6 - \$9 million  
 Right-of-Way: \$2 - \$5 Million  
 Construction: \$219 - \$276 million  
 Total Project Cost: \$227 - \$290 million

### Project Benefits:

- Increase capacity
- Improve safety
- Improve access
- Meet stakeholder/public expectations
- Reduce trip times
- Reduce vehicle emissions
- Reduce idling
- Beautify corridor
- Improve driver comfort

### What's Changed Since Last Update?

- Scope - No change
- Schedule - No changes
- Cost - No change

### Project risks:

- Unit price escalation may affect project cost
- Complex design issues may impact schedule and scope

### Financial Fine Points(Key Assumptions):

- Total funding Expended for Phase 3: \$0 (Design phase not started)
- Total funding Expended for US 95 Northwest Environmental Studies (all phases): \$5 million
- Inflation escalation (4%) to midpoint of construction in 2012
- Funding source:
  - \*\$26 million State
  - \*\$67 million Local
  - \*\$132 - \$192 million unidentified



**Updated:**  
May , 2009



## US 95 Northwest – Phase 4 Horse Interchange

Project Sponsor: City of Las Vegas and NDOT  
 City Project Manager: Randy McConnell, P.E.  
 NDOT Project Manager: Bill Glaser, P.E.  
 (775) 888-7321



### Project Description:

- This is the fourth phase of the US 95 Northwest Project that extends from Washington Ave to Kyle Canyon Road.
- Construct a new interchange on US 95 at Horse Drive to increase capacity and improve safety in response to recent and planned development

### Schedule:

**Planning:**  
complete

**Environmental Clearance:**  
Complete

**Final Design:**  
Complete

**Construction:**  
2009-2010



### Project Benefits:

- Increase capacity
- Improve safety
- Meet stakeholder/public expectations
- Reduce trip times
- Improve driver comfort
- Improve access

### Project Cost Range (Final Design Phase Estimates):

Engineering: \$1– \$3 million  
 Right-of-Way: \$11.3 million  
 Construction: \$60 - \$65 million

Total Project Cost: \$72 – \$87 million

### What's Changed Since Last Update?

- Scope – No change.
- Schedule – Project awarded to low bidder, Capriati Construction on February 18, 2009. Construction began June 8, 2009.
- Cost – No change.

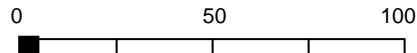
### Project Risks:

- Complex construction in a dense urban residential area

### Financial Fine Points (Key Assumptions):

- Total funding expended by City of Las Vegas for phase 4: \$14 million (11.3 million ROW, .3 million in-house engineering, Consultant Engineering 2.44 million), Contractor \$3,578,819.08
- Total funding Expended for US 95 Northwest environmental studies (all phases): \$5 M
- \$4.1M Federal SAFTEA-LU Funds
- \$21M RTC Clark County STP

**% Construction Complete**



July 2009



## US 95 Northwest – Phase 5 Kyle Canyon Road Interchange

Project Sponsor: City of Las Vegas and NDOT  
Senior Project Manager: Jenica K. Finnerty, P.E.  
(775) 888-7321



### Project Description:

- This is the fifth phase of the US 95 Northwest Project that extends from Washington Ave to Kyle Canyon Road.
- Alleviate congestion within the corridor by increasing capacity
- Provide new and improved freeway connections to improve regional connectivity, consistent with land use planning
- Construct new interchange at Kyle Canyon Road

### Schedule:

- Planning:**  
Complete
- Environmental Clearance:**  
Complete
- Final Design:**  
Start 2011 - 2013
- Construction:**  
TBD



### Project Benefits:

- Increase capacity
- Improve safety
- Improve access
- Meet stakeholder/public expectations
- Reduce trip times
- Reduce vehicle emissions
- Reduce idling
- Beautify corridor
- Improve driver comfort

### Project Cost Range (Environmental Phase Estimates):

Engineering: \$1 – \$2 million  
Right-of-Way: \$1 - \$2 million  
Construction: \$27 - \$38 million

Total Project Cost: \$29 – \$42 million

### What's Changed Since Last Update?

- Scope – No change
- Schedule – No change
- Cost – No change

### Project Risks:

- Unit price escalation may affect project cost
- Complex design issues may impact schedule and scope

### Financial Fine Points (Key Assumptions):

- Total funding Expended for Phase 5: \$0.0 (Design phase not started)
- Total funding Expended for US 95 Northwest Environmental Studies (all phases): \$5 M
- Inflation escalation (4%) to midpoint of Construction in 2013
- Funding source:
  - \$15 million Federal
  - \$7 million Local
  - \$10 million Private



July 2009





**215 BELTWAY - Charleston Boulevard to Summerlin Parkway - Summerlin Parkway Interchange**

Project Sponsor: Clark County Public Works  
 Project Manager: Roy Davis, P.E.  
 NDOT Project Manager: James Ragan, P.E.  
 (702) 671-8854



**Project Description:**

- Construct a portion of a system to system interchange at Summerlin Parkway.
- Construct approximately 1.4 miles of four lane access controlled freeway and widen 1.2 miles of freeway.
- Construct Interchange at Far Hills
- Construct bridge structures at Summerlin Parkway Interchange
- Construct drainage improvements including channel, box culverts and storm drain.
- Construct soundwalls in selected locations.

**Schedule:**

- Planning:**  
Complete
- Environmental Clearance:**  
Complete
- Final Design:**  
Complete
- Construction:**  
April 2008-February 2010



**Project Benefits:**

- Provides through lane connections on the Beltway mainlines north and south of Summerlin Parkway Interchange.
- Reduces traffic congestion at the Beltway/Summerlin Parkway junction.
- Improves efficiency of traffic patterns for interchange movements.
- Improves on-system drainage by increasing efficiency of drainage system.
- Mitigates traffic noise levels in warranted locations.

**Project Cost Range:**

Engineering: \$7 Million  
 Right-of-Way: No cost  
 Construction: \$57 - \$63 Million  
 Total Project Cost: \$64 - \$70 Million

**What's Changed Since Last Update?**

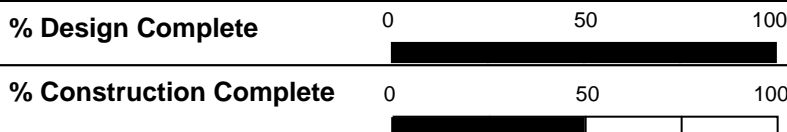
- Scope – No Change
- Schedule – No Change
- Cost – No Change

**Project Risks:**

- Concurrent utility relocation may affect schedule and cost
- Maintaining stormwater during construction
- Maintaining traffic during multiple construction phases.

**Financial Fine Points (Key Assumptions):**

- Total Funding Expended: \$38,100,000
- Bid Awarded April 15<sup>th</sup>, 2008: \$56,978,099.50
- Funding Source is Clark County



July, 2009



**I-215 Beltway Airport Connector Interchange  
Southern LV Beltway from I-15 East to Windmill Ln**

Project Sponsor: Clark County Public Works  
Project Manager: James Ragan  
(702) 671-8854

**Project Description:**

- Widen I-215 from 6 to 8 lanes with auxiliary lanes between interchange ramps.
- Construct flyover directional ramps.

**Schedule:**

**Planning:**  
Complete

**Environmental Clearance:**  
Complete

**Final Design:**  
Complete

**Construction:**  
On hold for funding

**Project Benefits:**

- Eliminate merge and weave conflicts with interchange ramps
- Increase capacity of interchange and I-215 for traffic flow into airport.
- Provide congestion relief and improve operational characteristics of interchange.

**Project Cost Range (Cost estimates are appropriate for anticipated year of completing each phase):**

Engineering: \$5 - \$6 million  
Right-of-Way: No cost  
Construction: \$150 - \$160 million

Total Project Cost: \$160 - \$170 million

**What's Changed Since Last Update?**

- Scope – No change
- Schedule – on hold until construction funding is allocated
- Cost – No change

**Project Risks:**

- 

**Financial Fine Points (Key Assumptions):**

- Total funding Expended:
- Bid Award: To Be Determined
- Funding source is Clark County and NDOT



July 2009



# I-80 Robb to Vista

Project Sponsor: NDOT  
 Project Manager: Dan McMartin  
 (775) 888-7321



## Project Description:

- Make operational and capacity improvements to I-80 from Robb Drive to Vista Blvd.
- Make operational and capacity improvements to the I-80/1-580 interchange (Spaghetti Bowl)
- Early Action and Phase I projects from the Washoe County Freeway Corridor Study currently being scoped
- Project Length: 10.4 Miles

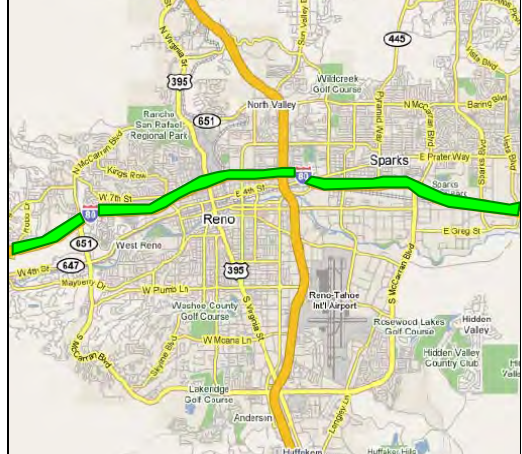
## Schedule:

**Planning:**  
2008-2010

**Environmental Clearance:**  
TBD

**Final Design:**  
TBD

**Construction:**  
TBD



## Project Benefits:

- Improve operations and capacity along I-80
- Improve safety
- Provide better connectivity between I-80 and I-580/US 395
- Accommodate Future Projected Traffic

## Project Cost Range (Planning phase estimates):

Engineering: \$85 - \$105 Million  
 Right-of-Way: \$95 - \$125 Million  
 Construction: \$900 Million - \$1.1 Billion

Total Project Cost: \$1.08 Billion - \$1.33 Billion

## Project Risks:

- Limited Right of Way
- Project unfunded – delay in identifying needed funds will affect schedule and increase costs
- Environmental process not started – Project cost, scope and schedule may be impacted
- Resources may need to be reallocated to higher priority projects - Project cost, scope and schedule may be impacted

## What's Changed Since Last Update?

- Scope – No Change
- Schedule – No Change
- Cost – No Change

## Financial Fine Points (Key Assumptions):

- Total Funding Expended by NDOT: \$80,000
- Inflation escalation (4%) is to 2020 approximate midpoint of construction
- Additional Federal, State, and local funding will/may be required



July 2009



## I 580 Freeway Extension

**Project Sponsor - Nevada Department of Transportation**

**NDOT Project Manager - Todd Montgomery, P.E.**

**Phone: (775) 888-7321**



### Project Description:

- 8.5 Miles of new 6-lane controlled access freeway
- Complete Mt. Rose Interchange (SR431) and construct a new interchange at Bowers Mansion Road (SR 429)
- Construct two grade separations and five bridges
- Construct Kelly Canyon Road (frontage road) and Parker Ranch Road to maintain local access at south end of project
- Ten water quality basins for treating storm water runoff

### Schedule:

**Planning**  
Completed

**Environmental Clearance**  
Completed

**Fianl Design**  
Completed

**Construction**  
Started December 2006 - Complete 2012



### Project Benefits:

- Construction will result in 27 miles of uninterrupted controlled access facility that meets interstate standards
- Will serve as the primary interstate highway for transportation linking Mexico with Canada and a major local arterial
- Will provide only all weather route connection between Carson City and Reno, Sparks & I 80
- Completion will alleviate congestion and explosive growth of over 61,700 vehicles per day predicted to travel in North Carson on I 580/US 395
- Projected to reduce the over 2,570 accidents and 16 fatalities that occurred in a 10 year span within similar limits

### Project Cost Range:

Engineering: \$31 M  
 Right-of-Way: \$51 M  
 Construction: \$500 M to \$575 M  
 Estimated Total Project Costs: \$582 M to \$657 M

### What's Changed Since Last Update?

- Scope - No change.
- Schedule - 416 of 916 working days completed (44.2%).
- Cost - No change.

### Project risks:

- Complex construction in a rural mountainous freeway setting (High)
- Construction in geothermally altered earth (Medium)
- Delays due to weather/temperatures (Low)

### Financial Fine Points(Key Assumptions):

- Total Funding Expended - \$327,054,670
- Engineering - \$33,391,828
- Right-of-Way - \$50,021,603
- Construction - \$243,641,239
- Bond Funds
- Inflation escalation (4%) is to 2009 approximate midpoint of construction



**Updated:**  
April , 2009





**US395 North  
McCarran Blvd. To Stead Blvd.**

Project Sponsor: NDOT  
Senior Project Manager: Jim Gallegos, P.E.  
(775) 888-7321



**Project Description:**

- Widen US395 to increase capacity and improve traffic operations.
- Modify interchange ramps and cross streets as necessary to improve operations.
- Widen bridge structures at Stead, Lemmon Drive, Golden Valley, UPRR, Virginia St., Panther Valley, Parr Blvd. and Clear Acre Lane if necessary.
- Perpetuate drainage features
- Replace and install new signs

**Schedule:**

**Planning:**  
2009 - 2010

**Environmental Clearance:**  
Start:2010 -2011

**Final Design:**  
TBD

**Construction:**  
TBD



**Project Cost Range (Planning phase estimates):**

Engineering: \$7 - \$9 million  
Right-of-Way: \$3 - \$6 million  
Construction: \$ 70 – \$85 million

Total Project Cost: \$80 - \$100 million

**Project Benefits:**

- Relieve heavy peak hour congestion and reduces crashes associated with congestion.
- Reduces travel time
- Improves overall traffic operations

**What's Changed Since Last Update?**

- Scope – No Change
- Schedule – No change
- Cost – No change

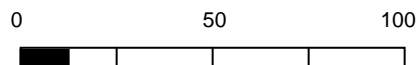
**Project Risks:**

- Environmental requirements.
- UPRR Clearance and requirements.
- Unknown Right-of-Way and utility impacts.
- Impact of new development in the region.
- Concurrent planning associated with the Pyramid Connector.

**Financial Fine Points (Key Assumptions):**

- Total funding Expended: \$50,000
- Inflation escalation (4%) is to 2015, approximate mid-point of construction.
- No funding has been identified for this project.

**% Planning Complete:**



July 2009



## US 395 Northbound - Moana Lane to I-80

**Project Sponsor: NDOT**

**Senior Project Manager: Jim Gallegos, P. E.**

**(775) 888-7320**



### Project Description:

- Widen northbound US 395 to improve traffic operations from the Moana Lane interchange to the I-80 interchange.
- Widen northbound bridges at Vassar, Mill, Glendale, Truckee River, Kietzke, UPRR, and 4th Street.
- Replace overhead sign structures.
- Perpetuate drainage features.
- Reconstruct northbound ramps at Mill, Glendale, Villanova & I-80.
- Project length: 2.87 miles

### Schedule:

**Planning**  
Complete

**Environmental Clearance**  
Complete

**Final Design**  
Summer 2009

**Construction**  
Start 2010 - 2013



### Project Cost Range:

(Final Design Phase Estimates):  
 Engineering: \$7 - \$9 million  
 Right-of-Way: \$3 - \$6 million  
 Construction: \$70 - \$85 million  
 Total Project Cost: \$80 - \$100 million

### Project Benefits:

- Relieves heavy northbound peak hour congestion and reduces crashes associated with congestion.
- Reduces northbound travel time from 16 minutes to 3 minutes in peak hour from Moana to I-80.
- Improves overall northbound traffic operations and reduces multiple weaves and lane changes at the Spaghetti Bowl interchange.

### What's Changed Since Last Update?

- Scope - No change
- Schedule - No Change
- Cost - No change

### Project risks:

- Project delivery will depend on the availability of funding
- Acceptance of Traffic Management Plan by the project stakeholders
- Private Development along the freeway could affect project design and/or construction

### Financial Fine Points(Key Assumptions):

- Total funding Expended: \$5.75 million.
- Inflation escalation (4%) is to 2012, mid-point of construction.
- The AB 595 income stream and additional federal, state and local funding will be utilized to complete the project.



**Updated:**  
April , 2009



## SR 445 Pyramid Highway Improvements

Washoe County Regional Transportation Commission and Nevada Department of Transportation

Washoe RTC Project Manager - Doug Maloy, P.E.

Phone: (775) 335-1865

NDOT Project Manager - Todd Montgomery, P.E.

Phone: (775) 888-7321



### Project Description:

- Nugget Avenue to McCarran Boulevard - Widen to six lanes
- McCarran Boulevard to Lazy Five Parkway - Widen to eight lanes.
- Lazy Five Parkway to Calle De La Plata Drive - Widen to six lanes.
- Pyramid Way - McCarran Boulevard Intersection Improvements
- Pyramid Highway and US 395/I 80 Interchange Connection

### Schedule:

**Planning**  
Completed  
**Environmental Clearance**  
2010 - 2011  
**Final Design**  
TBD  
**Construction**  
TBD



### Project Cost Range:

Engineering: \$40M to \$60M  
Right-of-Way: \$100M to \$150M  
Construction: \$410M to \$660M  
Total Project Costs: \$550M to \$870M

### Project Benefits:

- Address congestion and safety along the Pyramid Highway Corridor
- Provide alternative access to freeway system
- Enhance operational characteristics of the Pyramid Way - McCarran Boulevard Intersection
- Improve safety

### What's Changed Since Last Update?

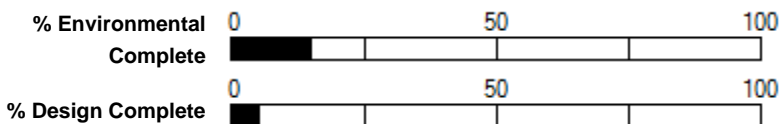
- Scope - No change.
- Schedule - No change.
- Cost - No change.

### Project risks:

- Construction in a dense urban residential area (High)
- Funding resources for all phases not identified (High)

### Financial Fine Points(Key Assumptions):

- Total Funding Expended - \$2,645,492
- Inflation escalation (4%) is to 2017 approximate midpoint of construction



Updated:  
April , 2009



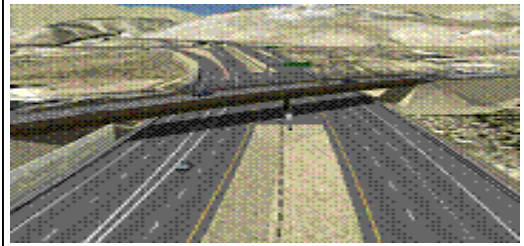
## US 395 Carson City Freeway Phase 2B

South Carson Street to Fairview Drive

Project Sponsor: NDOT

Project Manager: Jim Gallegos, P. E.

(775) 888-7320



### Project Description:

- Construct 3 miles of 4 lane access controlled Freeway which will complete the nine mile system around the state Capitol.
- Complete the interchange at Fairview Drive - providing full traffic movements.
- Construct the Koontz Lane, Clearview Drive & Snyder Avenue grade separated crossings.
- Construct the South Carson Street Interchange.
- Construct over four miles of sound walls to mitigate traffic noise.
- Construct flood control facilities including detention basins, channels, box culverts, and the Freeway drainage system.
- Project length: 3.37 miles

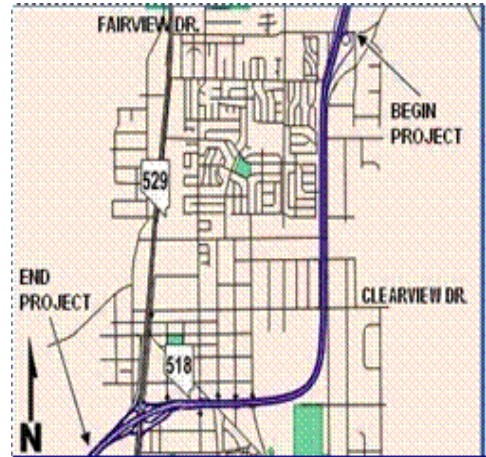
### Schedule:

**Planning**  
Complete

**Environmental Clearance**  
Complete

**Final Design**  
Fall 2009

**Construction**  
2010 to 2016



### Project Cost Range:

(Final design phase estimates):  
 Engineering: \$7 - \$8 million  
 Right-of-Way: \$30 - \$32 million  
 Construction: \$110 - \$160 million  
 Total Project Cost: \$147 - \$200 million

### Project Benefits:

- Relieve traffic congestion on Carson Street through Carson City and local streets along the Freeway Corridor.
- Reduce travel times through the region.
- Provide flood control protection.
- Improve opportunities for economic development along the corridor and downtown.

### What's Changed Since Last Update?

- Scope - No change
- Schedule - Will be ready to advertise a construction package in FY 2010 if stimulus funds are identified.
- Cost - Cost ranges have been modified to reflect the potential use of stimulus funding in FY 2010.

### Project risks:

- Project completion date will depend on the availability of funds.
- Concurrent utility relocation may be required.
- Changes in design standards could affect schedule and budget.
- New development along the corridor.

### Financial Fine Points(Key Assumptions):


- Total funding expended: \$30 million
- Inflation escalation (4%) is to 2013, approximate midpoint of construction.
- Construction funds have not been identified for this project.



Updated:  
April, 2009





<p align="center"><b>I 580 at Meadowood Mall Way</b></p> <p><b>Project Sponsors: Washoe County Regional Transportation Commission and Nevada Department of Transportation</b></p> <p><b>Washoe RTC Project Manager: Michele Dennis, P.E.</b></p> <p align="center"><b>Phone: (775) 335-1861</b></p> <p><b>NDOT Project Manager: Todd Montgomery, P. E.</b></p> <p align="center"><b>(775) 888-7321</b></p>	
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- Project Description:**
- Construct grade separation at I 580 and Meadowood Mall Way.
  - Extend Meadowood Mall Way from S. Virginia Street to Kietzke Lane.
  - Add I 580 southbound off- and northbound on- ramps at Meadowood Mall Way.
  - Add frontage roads between Neil Road and Meadowood Mall Way.

**Schedule:**

**Planning**  
Completed

**Environmental Clearance**  
Completed

**Final Design**  
Second Quarter of 2009

**Advertise**  
TBD

**Construction**  
TBD



**Project Cost Range:**  
(Design phase estimates):

Engineering: \$7 million  
 Right-of-Way: \$5 million  
 Construction: \$37 - \$46 million  
 Total Project Cost: \$49 - \$58 million

- Project Benefits:**
- Accommodate present and future traffic demand entering and exiting I 580.
  - Reduce traffic volumes at the on- and off-ramps in the project area.
  - Improve the levels of service (LOS) at several key intersections in the project area.
  - Provide additional Freeway access to reduce the volume of traffic using the south Virginia Street ramps.
  - Reduce traffic at the intersection of South McCarran Blvd./South Virginia Street.
  - Improve traffic circulation on arterial streets in the area.

**What's Changed Since Last Update?**

- Scope - No Change
- Schedule - No Change
- Cost - No Change

- Project risks:**
- Timely Right-of-Way certification due to conflicting priorities and overload of functional unit (High).
  - No construction funding identified at this time (High).
  - Complex construction in an urban/retail commercial area (Medium).
  - Complexity in maintaining traffic, and reducing impacts to retail businesses (Low).

- Financial Fine Points(Key Assumptions):**
- Inflation escalation is to 2009 approximate bid opening date.
  - No state or Federal Monies have been expended to date.
  - All financial expenditures have been by the project sponsor to date (Washoe RTC)
  - Funding of construction phase yet to be identified.



**Updated:**  
April , 2009



## **COMPLETED MAJOR PROJECTS**

As a part of the reporting requirements in Section 55.5 of AB 595, the Department is to report the number of major projects for which construction was completed during this quarter. For each completed project, the Department is to report on the following:

1. Whether the project was completed early or on time.
2. Whether the project remained within its planned scope.
3. Whether the project was completed for less than or for the amount of its budgeted expenses.
4. Any specific measures of transportation improvement resulting from the project.

For the quarter ending on June 30, 2009, the Department did not complete any major projects.

## PROJECT FUNDING ISSUES

The Project schedules are contingent on the availability of funding. A financial analysis has been completed to produce figure on page C34, cumulative Estimated Highway Needs vs. Revenue. This figure shows a major funding shortfall through 2016. The figure illustrates the accumulation of the various expense categories along with projected revenue. The revenue amounts are based on the Department's planning document entitled, Transportation System Projects for 2008 through 2017. The cumulative Revenue line on the graph is shown in red. The revenues include funds from Federal Highway sources, state fuel taxes, motor vehicle taxes, bond receipts and minor miscellaneous sources.

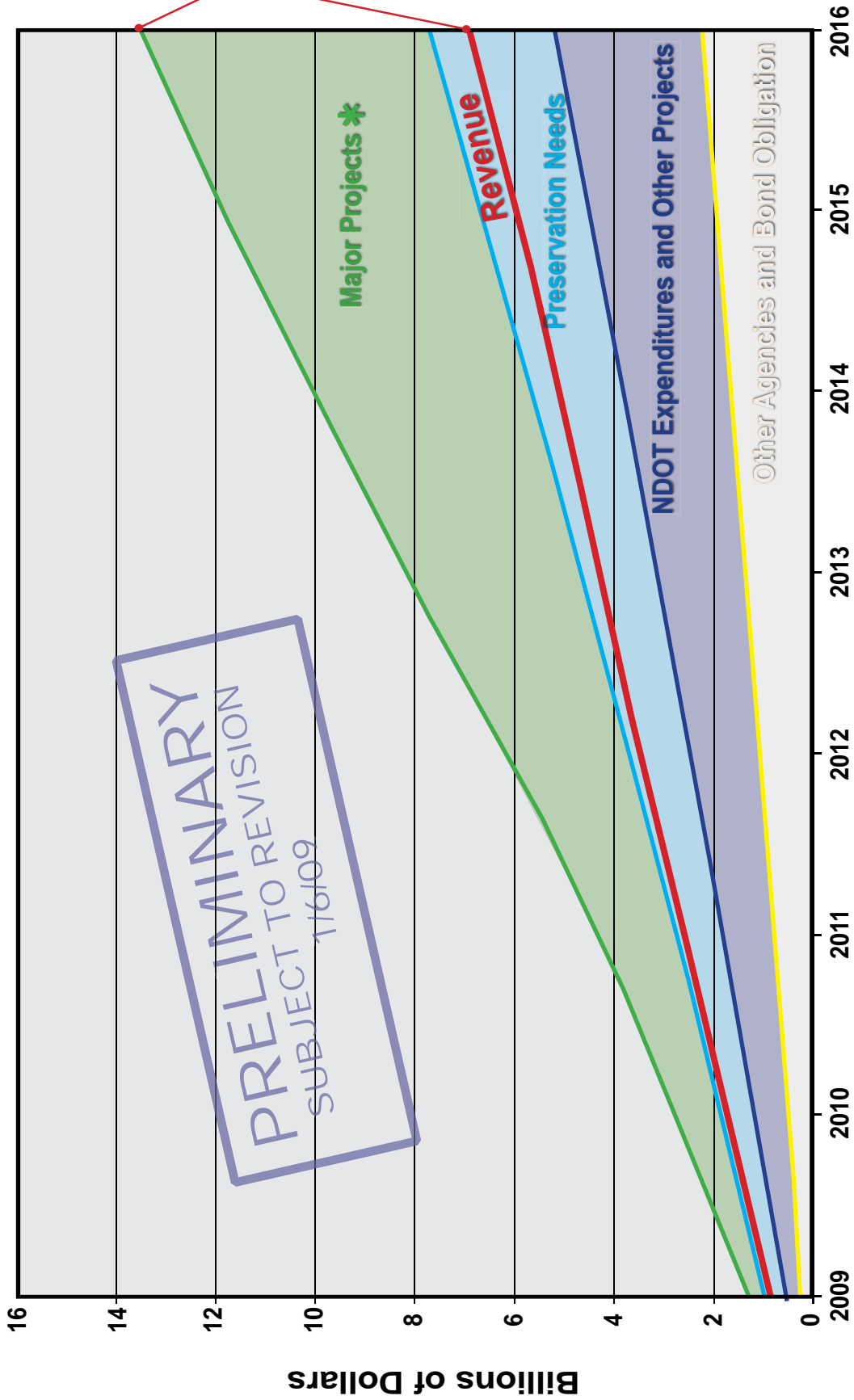
The highway needs are illustrated with several colors. The first white area represents funding used by other agencies, principally Department of Motor Vehicles and Department of Public Safety, and bond obligations. The purple area indicates the expenses for the Department of Transportation administration and projects that do not qualify as either major projects or preservation projects. The blue area is for transportation system preservation projects. These projects are required to maintain the highway system that Nevada already possesses. The final area, green, represents the sum of all major projects in some phase of development. The cost estimation for the major projects is based on the upper 85% of the estimated range of costs for the major projects.

With the current set of assumptions, the Department of Transportation will not be able to fund the needs of major projects. The figure reveals that there will be a revenue shortfall will be on the order of \$6 billion through 2016 to fund the needed major capacity, minor and safety projects. Additionally this amount is needed for preservation projects and maintenance activities for the state highway system in Nevada. Without this level of funding, urban congestion will not be reduced and the existing state highway system will deteriorate.

Changes from 3/12/08 Version  
 • Updated Revenue Projections  
 • Updated Expenditure Projections

# Estimated Highway Fund Needs vs. Revenue (Cumulative)

Fiscal Years 2009-2016



Estimated cumulative shortfall by 2016 \$5.3 to \$6.7 billion

PRELIMINARY  
 SUBJECT TO REVISION  
 1/16/09

\* Based on 85th percentile of estimated cost ranges of scheduled major projects.

**APPENDIX D**

**FINAL DRAFT**

**BENEFIT/COST ANALYSIS POLICY**

# FINAL DRAFT

Approved \_\_\_\_\_ BENEFIT/COST ANALYSIS POLICY

1. PURPOSE

To establish a policy and procedures for applying Benefit/Cost Analysis during the development of highway projects. Benefit/Cost Analysis may be done for corridor studies and alternatives analysis. Additionally, analysis may be done for innovative intelligent transportation system and traffic operational improvements as well as more conventional construction and reconstruction improvements. The policy will assist the Board of Directors of the Department of Transportation (defined as 'Board' by NRS 408.033) in the selection of projects that will best serve the public.

2. POLICY

It is policy of the Department of Transportation to conduct Benefit/Cost Analysis for highway projects expected to increase the capacity of the State highway system and cost at least \$25 million. Additionally, other projects that might benefit will be considered for Benefit/Cost Analysis. The Benefit/Cost Analysis studies will be conducted using the requirements specified in NRS Chapter 408.

3. SCOPE

This Transportation Policy shall apply to all Department of Transportation districts and divisions in addition to any and all consultants performing Benefit/Cost Analysis for the Department of Transportation.

4. RESPONSIBILITY

a. The Chief Operations Analysis Engineer will be responsible for the following:

- (1) Revising this Transportation Policy in accordance with TP I-1-1.
- (2) Providing assistance and cooperation, as necessary, to project managers, consultants, and others to ensure successful application of Benefit/Cost Analysis.
- (3) Managing the Benefit/Cost Analysis Coordinator.

b. The Benefit/Cost Analysis Coordinator will be responsible for the following:

- (1) Recommending changes to the Benefit/Cost Analysis policy and procedures.

- (2) Developing and monitoring the Benefit/Cost Analysis Plan.
  - (3) Assuring adherence to Benefit/Cost Analysis Work Tasks.
  - (4) Assuring Benefit/Cost Analysis is conducted on highway projects expected to increase the capacity of the State highway system and cost at least \$25 million and other projects contained in the Benefit/Cost Analysis Plan.
  - (5) Informing project managers when a project has been selected for Benefit/Cost Analysis.
  - (6) Acquiring information with the cooperation of the Project Manager that will be needed for Benefit/Cost Analysis.
  - (7) Conducting or coordinating Benefit/Cost Analysis per each Benefit/Cost Analysis work tasks.
  - (8) Maintaining an on-call list of consulting Benefit/Cost Analysis specialists with the Administrative Services Division, and managing Benefit/Cost Analysis consultant agreements.
  - (9) Assisting the project managers in estimating the cost to have a consultant conduct Benefit/Cost Analysis studies.
- c. The Assistant Directors of Planning and Engineering will approve the Benefit/Cost Analysis Plan submitted by the Benefit/Cost Analysis Coordinator after approval of the Chief Operations Engineer.
- d. Division heads, district engineers, and consultants involved with project development will be responsible for ensuring employees under their authority are aware of this policy and that they cooperate with the Benefit/Cost Analysis Coordinator, project managers and consultant if applicable.
- e. The Project Manager will be responsible for the following:
- (1) Request the Benefit/Cost Analysis Coordinator to include the Highway Projects in the Benefit/Cost Analysis Plan if those projects increase capacity and the design estimate is at least \$25 million.
  - (2) Request the Benefit/Cost Analysis Coordinator to include other highway projects in the annual Benefit/Cost Analysis Plan which might benefit from a Benefit/Cost Analysis.

- (3) Assuring that project funds are programmed and budgeted to pay for the Benefit/Cost Analysis, including any consultants employed.

5. DEFINITIONS

- a. Benefit/Cost Analysis Work Tasks: An organized protocol for accomplishing a Benefit/Cost Analysis.
- b. Benefit/Cost Analysis Coordinator: A person trained in Benefit/Cost Analysis and located in the Operations Analysis Division.
- c. Project Manager: The person placed in responsible charge of a Highway Project.
- d. Benefit/Cost Analysis Plan: A list of Projects selected and prioritized annually by the Benefit/Cost Analysis Coordinator for Benefit/Cost Analysis, and approved by the Assistant Directors of Planning and Engineering.
- e. Highway Project: A project listed in the Benefit/Cost Analysis Plan.
- f. Benefit/Cost Analysis: A written analysis of Highway Project costs and benefits includes at a minimum the following:
  - (1) The limits of the project.
  - (2) The period of analysis.
  - (3) The discount rate used in the analysis.
  - (4) The initial costs of the Department for the project, including any costs for design, engineering, the acquisition of land and construction.
  - (5) The future costs of the Department to preserve and maintain the project, discounted to present value.



- (6) Other costs of the Department for any other construction or any mitigation associated with the project.
- (7) The cost to highway users for any loss of safety, delays in the time of travel and costs for the operation of vehicles.
- (8) The value of the benefits of the project including the value of any savings in time of travel, improvements to safety, and savings of the cost of operating vehicles.
- (9) A discussion of any additional increases in costs that would result from any delays in the performance of any routine maintenance scheduled under the maintenance program of the Department.
- (10) A format that allows for the comparison of proposed highway projects.

g. Benefit/Cost Analysis:

An analysis of the Highway Project costs and benefits may include:

- (1) The benefits or costs of the project for other persons and governmental agencies.
- (2) The value of any other social, economic or environmental benefits or costs of the project.
- (3) Any costs or benefits that might result from the use of alternative design, construction or financing practices.

6. PROCEDURE

- a. Initiating the Benefit/Cost Analysis Process:
- (1) The Benefit/Cost Analysis Coordinator will review the annual Statewide Transportation Improvement Program and Long Range Element for projects that will need Benefit/Cost Analysis as required or desired under this policy. The projects should be selected prior to January 1 of each year. This will be the primary method of initiating Benefit/Cost Analysis on projects.
  - (2) To assure adherence to this policy when projects are in the design stage, the Project Manager shall notify the Benefit/Cost Analysis Coordinator of any highway projects that are expected to increase the capacity of the State highway system and cost at least \$25 million. The Project Manager may request other highway projects be included in the Benefit/Cost Analysis Plan that could benefit from a Benefit/Cost Analysis. If a significant change in the project scope or budget occurs, the Project Manager may request that the project be included in the Benefit/Cost Analysis Plan, even though a Benefit/Cost Analysis was already conducted.
  - (3) Division heads, district engineers, and the Office of the Director may submit a written request to the Benefit/Cost Analysis Coordinator for a project to be included in the Benefit/Cost Analysis Plan.
- b. The Benefit/Cost Analysis Coordinator will prioritize and schedule the projects for Benefit/Cost Analysis and prepare the Benefit/Cost Analysis Plan, and then submit it to the Assistant Directors of Planning and Engineering for approval.
- c. A revision to the annual Benefit/Cost Analysis Plan can be initiated by any district, division head or project manager with a written request and justification to the Benefit/Cost Analysis Coordinator. The Benefit/Cost Analysis Coordinator will forward the written request and justification to the Assistant Directors of Planning and Engineering who will consider approving a revision if the analysis cannot wait for the next cycle.
- d. For each project identified in the Benefit/Cost Analysis Plan the Benefit/Cost Analysis Coordinator will notify the responsible project managers and cooperatively identify the Benefit/Cost Analysis Work Tasks.
- e. The Benefit/Cost Analysis Coordinator will manage the consultant, if a consultant is employed, throughout the execution of the work tasks. The consultant will submit a report describing the Benefit/Cost Analysis, showing all data utilized, documenting assumptions and summarizing the results.
- f. The Benefit/Cost Analysis Coordinator with the assistance of the Project Manager will review and critique the consultant's report, and identify any limitations. The limitations will include significant parameters that could not be reasonably converted to monetary values.

- g. The Benefit/Cost Analysis Coordinator will submit a memorandum to the Assistant Directors of Planning and Engineering that summarizes the review of Benefit/Cost Analysis and specifies any significant concerns. Additionally, the memorandum will recommend resolution of the concerns.
- h. The Benefit/Cost Analysis Coordinator will prepare an annual report of any finding for the Director and the Board, and arrange for its posting on the Department of Transportation Website.

END



## **APPENDIX E**

### **DISCUSSION OF THE COST AND BENEFIT CALCULATIONS**

# DISCUSSION OF THE CALCULATIONS OF COSTS AND BENEFITS

## Introduction

The determination of the benefit and costs has received considerable use for many decades. The process was first proposed by a French engineer by the name of Dupuit in 1844. The method provides an analysis framework whereby many benefits and costs are quantified. It has become a widely used tool and enables the decision-making process of ranking projects to become more transparent. For the private sector it is a tool to guide private investment and has been certainly helpful to assist assessing the cost effectiveness of public projects. For the private sector, normally economic efficiency is the primary objective, but the public sector needs to consider economic equity as well. As the social and environmental factor became important, the economic analysis of projects came more complex and, therefore, more difficult.

The application of the B/C ratio calculations for this Annual Report compares each proposed project with a set of factors that are converted to monetary values. This appendix discusses the input data needed to conduct a B/C ratio calculation, which includes; travel time benefits, crash benefits, motor vehicle emissions and cost benefits, vehicle operating cost benefits, capital cost. In addition, the results of the analyses are presented as well as limitation with the B/C analysis.

## Input

### Travel Time Benefits

Highway speeds and volumes came from the Regional Transportation Commissions and Metropolitan Planning Organizations regional travel demand models. For the value of travel time, the personal travel was 50% of local median wage while business travel by truck/bus drivers was 100% of the mean wage for these occupations plus fringe benefits. The wage value in Clark County came from the Nevada Department of Employment, Training, and Rehabilitation, which was \$16.60 in 2005. The state reported a wage of \$18.61 for heavy equipment and large truck operators. A 50% fringe was used because it was an average of several labor groups. The same data were obtained for Carson City/Douglass County and Washoe County, and identical calculations were performed. Vehicle occupancy was based in household surveys, census data and travel demand output.

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**Table E-1 Travel Cost and Vehicle Occupancy**

<b>Location</b>	<b>Personal Travel</b>	<b>Business Travel</b>	<b>Vehicle Occupancy</b>
Clark County	\$8.30	\$27.92	1.45
Carson City/Douglass County	\$7.55	\$24.78	1.43
Washoe County	\$8.83	\$29.25	1.28

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### Crash Benefits

The freeway and expressway, with controlled access, crash rates are normally lower than local streets and roads that had little or no access control. Consequently, by increasing freeway

capacity more travelers will benefit from lower accident rates. The rates are illustrated in Table E-2 which contained 2002 data from the Department.

**Table E-2 Nevada Crash Rates by Highway Functional Classification (2002)**

<b>Functional Class</b>	<b>PDO<sup>1,2</sup></b>	<b>Injury<sup>2</sup></b>	<b>Fatal<sup>2</sup></b>
Interstate urban	220	85.5	0.66
Other urban freeways/expressways	160	63.0	0.62
Urban principal arterials	420	225	2.18
Urban minor arterials	354	201	2.27
Urban collector streets	229	124	1.16
Urban local streets	262	93.4	0.83

<sup>1</sup> Property Damage Only

<sup>2</sup> Number of crashes in 100 million vehicle miles of travel

The total cost of accident types is contained in Table E-3. These costs were derived from National Safety Council data and a study by the Urban Institute and FHWA, adjusted to 2005 dollars.

**Table E-3 Accident Cost Assumptions (2005 dollars)**

<b>Accident Type</b>	<b>Cost</b>
Fatality	\$4,251,000
Injury	\$95,800
Property Damage Only	\$7,950

Motor Vehicle Emissions and Cost

The rate of motor vehicle emissions and associated health cost was based on data from California and are contained in Table E-4.

**Table E-4 Vehicle Emission Health Cost Assumptions (Dollars/Ton)**

<b>Emission Type</b>	<b>Cost</b>
Carbon monoxide	\$127
Fine Particulates	\$423,000
Nitrogen oxides	\$51,600
Hydrocarbons	\$7,410

Vehicle Operating Costs

The consumption of fuel was determined by the average speed and the zone to zone distances. The fuel consumption rates were based on data from 2000 California Air Resources Board and

expressed as gallons per mile and is a function of speed. For the gasoline costs, 2006 data was used. In Clark County, \$2.53 per gallon was used, while \$2.81 was used in Carson City/Douglas County and Washoe County. The vehicle maintenance and tire expenses were based on 2004 US Department of Energy cost data. For passenger cars, \$0.061 per mile was used while \$0.121 was used for trucks.

Capital Cost

The capital cost included all implementation costs, but not any maintenance and repair costs. Likewise transit service costs were not included.

**Results**

The results of the analysis of benefits and cost are shown below in Table E-5. The discount rate of 7% was used because of OMB (Office of Management and Budget) Circular A-94. The 7% rate “approximates the marginal pretax rate of return on an average investment in the private sector in recent years.”

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**Table E-5 RESULTS OF THE COST-BENEFIT ANALYSES**

<b>Blue Ribbon Task Force Projects (FY 2008)</b>	NPV B/C*
I-15 South Corridor – Tropicana Avenue to Sloan Road	4.11
US 95 Northwest Corridor – Rainbow Blvd to Kyle Canyon Road	3.63
I-15 North Corridor – Spaghetti Bowl to Apex	3.39
I-15 – NEON (Sahara Avenue to Spaghetti Bowl)	1.97
I-515 – Spaghetti Bowl to Foothills Road	1.94
<b>Other Major Projects (FY 2009)</b>	
US 395 – Moanna to I-80 Northbound Add Lane	2.34
US 395 – Carson City Freeway (1996 updated in 2009)	4.44

\*Note:

NPV B/C – net present value of benefits and costs that determine the B/C ratio at 7% discount rate

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**Limitations**

As stated earlier, there are some costs that were not included, namely, transit and highway maintenance, which will need consideration at times. Future B/C ratios calculations by the Department will include these items when appropriate. However, there are also other limitations to the B/C ratio calculations that deserve consideration on many projects. In general, it is difficult to convert all diverse costs and benefits into monetary values. At times funding limitations might require the selection of an alternative that does not have the highest B/C ratio,



simply because there is not sufficient funding. While the B/C ratio calculation reported herein is an excellent parameter to help select projects or alternatives, it does have limitations.

One limitation deals with the project cost impact on humans; therefore, a factor, i.e. community impact, will need to be addressed. Another limitation is the management of roadway assets, which includes but also transcends the maintenance activities. This factor may be called 'roadway preservation' in which the financial impact construction has on roadway preservation is determined.

The third limitation deals with the system impact of large highway capacity projects. Correcting a significant urban freeway congestion problem at a particular site moves the primary 'bottleneck' (site of congestion) to another location. Such a project will probably have considerable benefit within the project limits, but might not provide much, if any, overall system improvement. Consequently, at least one areawide factor is needed to address the system wide impacts. One of the Department's new performance measures is: percent of daily vehicle miles of travel at Level of Service E or worse. This measure is called the 'system congestion index'.

Another limitation with a benefit-cost analysis is that many times a project will have an economic development benefit component. This economic development component is very difficult to quantify monetarily. Different items that can be considered when trying to estimate the economic development component include the number of marginal jobs that a project will enable to be created, the increase in property values along a project, the amount of new tax revenues generated for all levels of government because of the project, and the marginal increase in total Nevada gross product. Each of these items is problematic to estimate by themselves, then to try to estimate the change in these items induced because of transportation projects becomes extremely difficult. For these reasons, the economic development component is not normally considered in a typical NDOT benefit-cost analysis.

The selection of discount rates is a limitation because they are the subject of debate. Nationally, discount rates vary from zero to 7% and sometimes higher. Modeled national inflation rates fluctuate considerably as well; however, NDOT staff believes that the spread between inflation and the discount rate is the important factor. NDOT staff has modeled the discount rate from 0% to 4% higher than inflation and performed sensitivity analyses on a wider range. In most cases, the discount rate and the inflation rate have very little impact on the results of the benefit/cost analysis. The discount rate of 7% is use because of OMB (Office of Management and Budget) Circular A-94 and is applied to all benefit/cost analyses.

The final limitation is the level of favorable public opinion toward a project. If there is a negative public perception toward a particular project, even if the perception is not justified, a high priority score might not suffice for a project to proceed toward implementation. In summary, even a good project needs public support; consequently, the level of public acceptance will be documented, most likely during the NEPA process.

Once the projects have been prioritized, they must be distributed among the various funding categories, meaning that a lower priority project might be funded before a higher priority because it is in a category with much more funding. Additionally, a lower priority project might be simple and

easy to design and build compared with a large scale project might have major mitigation issues. In this case, the lower priority would likely be constructed first.

**APPENDIX F**

**BENEFIT/COST RATIO ANALYSIS FOR  
PROJECTS ANTICIPATED TO ADVANCE TO CONSTRUCTION  
IN FY2010**

## **Appendix F Reports**

US 95 between Rainbow and Kyle Canyon	F3
Northbound US 395 between Moana and I-80	F8
US 395 Carson City Freeway between Fairview to US 50	F20

# U.S. 95 Corridor STEAM Analysis Report

## OVERVIEW

This corridor improvement addresses proposed capacity expansion on the US 95 freeway between the Rainbow Boulevard/Summerlin Parkway interchange and the Kyle Canyon Road (SR157 and future Mountain Edge Parkway) intersection in Clark County, Nevada. The US 95 Corridor, from Washington Avenue to Kyle Canyon Road, is one of the fastest growing areas in Southern Nevada. The US 95 freeway facility links urbanized Las Vegas on the south to rural Clark County and the Paiute Indian Reservation on the north. This highway also serves as the only major transportation link between Las Vegas and the Toiyabe National Forest.

Future traffic forecasts, reflecting the results of this rapid growth, were produced using the Regional Transportation Commission (RTC) 2004 Regional Travel Demand Model (Update Package 1). Land use assumptions were based on a set of planning variables adopted by the RTC on December 8, 2005. These forecasts were controlled to population forecasts produced by the Center for Business and Economic Research in July 2005. The 2030 Regional Transportation Plan (RTP) highway network was assumed, and tested with Year 2030 land use.

Construction and improvement elements are proposed in an effort to establish sufficient roadway capacity to accommodate future traffic demand as follows:

- **Northbound US 95.** Three general purpose lanes, plus an HOV lane and either one or two auxiliary lanes between the Rainbow Boulevard/Summerlin Parkway interchange and Durango Drive; three general purpose lanes and an auxiliary lane between Durango Drive and Kyle Canyon Road; and two general purpose lanes north of Kyle Canyon Road.
- **Southbound US 95.** Three general purpose lanes and auxiliary lanes between Kyle Canyon Road and Durango Drive; three general purpose lanes, plus an HOV lane and auxiliary lanes between Durango Drive and the Rainbow Boulevard/Summerlin Parkway interchange. North of Kyle Canyon Road the mainline will consist of two general purpose lanes.
- A new interchange at Horse Drive
- A new interchange at Kyle Canyon Road
- Improvements at the CC-215 Beltway/US 95 interchange
- Other interchange modifications at Rancho Road, Ann Road, and Durango Drive

Total US 95 Corridor Project improvement costs, including freeway mainline widening and new and modified interchanges are estimated at \$326 million, expressed in 2006 dollars. This investment will produce net savings in travel time, emissions and vehicle operating expense. Collectively, these will amount to \$235 million annually based on Year 2030 traffic volumes.

Benefits and costs for the Build Alternative versus the No-Build Alternative are as follows:

- Total benefits will exceed total costs by \$2.268 billion (Year 2006 dollars).
- The net present value of these benefits, assuming a discount rate of seven percent, will be \$776 million. The net present value of implementation costs, excluding maintenance and repair, is \$214 million. This Benefit-Cost Ratio (B/C) is 3.63.
- The payback period, at a discount rate of seven percent, is 8 years.



## U.S. 95 Corridor Project Study Area



## U.S. 95 Corridor STEAM Analysis Report

**Table 1. U.S. 95 Corridor Measures of Effectiveness**

	November 2006		
	No-Build	Build	Change
<b>Travel Demand</b>			
VMT (million VMT/year)	20,843.3	20,849.2	5.9
Travel time (million person hours/year)	972.7	953.6	-19.1
<b>Tons of Emissions (tons/year)</b>			
VMT Related Emissions			
HC	14,517.9	14,356.1	-161.8
CO	45,364.6	44,711.6	-653.0
NO <sub>x</sub>	6,935.5	6,952.4	16.9
PM <sub>10</sub>	564.8	565.0	0.1
Cold start emissions		No change	
<b>Greenhouse Gas Emissions</b>			
Btu energy consumption (100 billion Btu/year)	1,195.7	1,176.2	-19.5
CO <sub>2</sub> emissions (1,000 tons/year)	9,326.2	9,174.0	-152.3
<b>Accidents</b>			
Fatalities	303.4	300.9	-2.5
Injuries	31,018.6	30,797.7	-220.9
Property damage only	61,995.8	61,688.0	-307.8
<b>Fuel Consumption</b>			
Gallons (1,000 gallons/year)	951,223.5	935,553.5	-15,670.0
<i>Source: Parsons (using STEAM 2.0)</i>			



## U.S. 95 Corridor STEAM Analysis Report

**Table 2. Summary of U.S. 95 Corridor Build Alternative Benefits**

Benefit Type	\$/Year In Year 2030
	November 2006
<b>User Benefits</b>	
In-vehicle travel time	\$164,766,600
Fuel costs	\$ 31,336,500
Non-fuel operating costs	\$ (358,400)
Internal accident costs	\$ 41,406,000
<b>Revenue Transfers</b>	<b>(\$ 8,136,900)</b>
<b>Reduction in External Costs</b>	
Emissions	\$ 350,200
Global warming	\$ 542,100
Noise	\$ 62,000
Accident	\$ 5,106,700
Other mileage based	\$ (357,200)
<b>Total Benefits</b>	<b>\$234,717,600</b>

**Table 3. U.S. 95 Life-Cycle Benefits and Costs**

Year	Total Benefits	Total Costs	Net Present Value	Net Present Value Benefits	Net Present Value Costs
2006	-	-	1.000	-	-
2007	-	-	0.935	-	-
2008	-	\$ 11,325,000	0.873	-	\$ 9,986,700
2009	-	11,325,000	0.816	-	9,241,200
2010	-	38,070,000	0.763	-	29,047,400
2011	-	44,230,000	0.713	-	31,356,000
2012	\$ 12,353,600	93,527,000	0.666	\$8,227,500	62,288,000
2013	24,707,100	45,223,000	0.623	15,392,500	28,173,900
2014	37,060,700	4,134,000	0.582	21,569,300	2,406,000
2015	49,414,200	52,633,000	0.544	26,881,300	28,632,400
2016	61,767,800	25,283,000	0.508	31,378,000	12,843,800
2017	74,121,300	-	0.475	35,207,600	-
2018	86,474,900	-	0.444	38,394,900	-
2019	98,828,500	-	0.415	41,013,800	-
2020	111,182,000	-	0.388	43,138,600	-
2021	123,535,600	-	0.362	44,719,900	-
2022	135,889,100	-	0.339	46,066,400	-
2023	148,242,700	-	0.317	46,992,900	-
2024	160,596,200	-	0.296	47,536,500	-
2025	172,949,800	-	0.277	47,907,100	-
2026	185,303,300	-	0.258	47,808,300	-
2027	197,656,900	-	0.242	47,833,000	-
2028	210,010,400	-	0.226	47,462,400	-
2029	222,364,000	-	0.211	46,918,800	-
2030	234,717,600	-	0.197	46,239,400	-
2031	247,071,100	-	0.184	45,461,100	-
	<b>\$2,594,246,800</b>	<b>\$325,750,000</b>		<b>\$776,149,300</b>	<b>\$214,056,400</b>



## U.S. 95 Corridor STEAM Analysis Report

**Table 4. U.S. 95 Corridor Project Phasing Assumptions**

PHASE	TIMEFRAME AND COST	PROJECT ELEMENTS
1	2008-2011 \$98.78	<ul style="list-style-type: none"> <li>• U.S. 95 widening – Washington to Craig Road</li> <li>• Widen Gowan Road bridges</li> <li>• Horse Drive interchange</li> </ul>
2	2011-2013 \$144.90M	<ul style="list-style-type: none"> <li>• U.S. 95 widening – Craig Road to Centennial Parkway</li> <li>• Rancho Drive/Ann Road interchange improvements</li> <li>• Centennial Parkway/215 Beltway interchange improvements</li> </ul>
3	2014 – 2016 \$82.04M	<ul style="list-style-type: none"> <li>• U.S. 95 widening from Centennial Parkway to Kyle Canyon Road</li> <li>• Durango Drive interchange improvements</li> <li>• Kyle Canyon Road Interchange</li> </ul>

**Table 5. Summary of U.S. 95 Corridor Benefit-Cost Analysis Results**

**Life Cycle Benefits/Total Costs Ratio (Excludes Transit and O&M)**

\$2,594M/\$326M = 7.96

**Net Present Value of Benefits Costs at 7% Discount Rate (Excludes Transit and O&M)**

\$776M/\$214M = 3.63

**Payback Period at 7% Discount Rate**

8 years

Source: Parsons

## **1.0 COST-BENEFIT ANALYSIS**

The Northbound US 395 Improvement project is located on northbound US 395 from Moana Lane to I-80 (approximately 3.2 miles). The project is located entirely within Washoe County, Nevada and includes jurisdictions administered by the City of Reno, the Regional Transportation Commission of Washoe County, the Federal Highway Administration, and the Nevada Department of Transportation (NDOT).

The build alternative addressed by this analysis consists of creating two separate US 395 northbound off-ramps, a two-lane I-80 eastbound on-ramp, and a two-lane I-80 westbound on-ramp. Other major project elements include the modification of weaving sections to allow for enhanced ramp operations, widening existing roadway and embankment elements to accommodate safety- and capacity-increasing auxiliary lanes, widening of several structures over crossroads, the Truckee River, and the Union Pacific Railroad (UPRR), and modification of retaining walls, drainage, signage, and pavement markings/lightings to accommodate all improvements.

Improved operations at local intersection during both the morning (AM) and the afternoon (PM) peak periods, decreased travel times, and improved safety accommodations are expected to occur as a result of the proposed construction on US 395 between Moana Lane to I-80. This chapter quantifies the value of these benefits relative to the costs of implementation.

### **1.1 BACKGROUND**

Cost-benefit analysis has been used widely in governmental planning and budgeting for many years. In its basic application, an attempt is made to measure the social and financial benefits of a proposed project in monetary terms and then compare those benefits with their corresponding costs. The procedure, first proposed in 1844 by the French engineer Jules Dupuit, has been refined to incorporate the particular characteristics of specific applications.

Basically, cost-benefit analysis establishes an accounting framework that delineates classes of benefits and costs to consider, the means to quantify them, and approaches for aggregating them. Crucial parameters, such as the rate at which to discount, are openly featured and methods for recognizing and dealing with inherent uncertainties are addressed. In spite of the fact that this analytical approach began as a tool to guide private investment, and thus to determine a "go-no-go" decision, the technique is adaptable such that it can be used to select from among a range of often disparate alternatives, or to assess comparable projects of differing lengths or with different phasing characteristics, and to identify circumstances in which either costs or benefits place specific groups at certain advantage or disadvantage.

Like any analysis tool, cost-benefit analysis does not provide decision making answers, and the cost-benefit analysis does contain some drawbacks. These drawbacks largely stem from the technique of measuring diverse benefits and costs in dollar terms, with equity concerns potentially left unrecognized in the present dollar value calculations. Too, the idea to some that environmental concerns fall properly under the realm of ethics, rather than economics, can be brought to issue.

These limitations notwithstanding, the cost-benefit analysis procedure addresses very effectively the desired goal of financial efficiency associated with transportation investment decision making. When considered as either a method for organizing the decision making process or as a means for optimizing the ultimate decision, the cost-benefit analysis process establishes a strong economic framework on which to base decision making and results in the often overlooked considerations of tradeoffs, alternatives, and other foregone opportunities.

## **1.2 SURFACE TRANSPORTATION EFFICIENCY ANALYSIS MODEL**

As part of the overall study process, traffic forecasts of No-Build and Build Alternatives that reflect potential improvements to the US 395 travel corridor were used. These forecasts were then post-processed, along with other specific input data parameters for use in a cost-benefit analysis software package titled Surface Transportation Efficiency Analysis Model, Version 2 (STEAM 2.0).

STEAM was developed for the FHWA as a framework for state and regional agencies to assess investments in multi-modal urban transportation infrastructure, as well as policy alternatives such as pricing and demand management measures. STEAM can be used to analyze investments at the regional and corridor levels. The application of STEAM can be considered on the basis of project type and/or scope.

### **Project Types Evaluated**

Multi-modal transportation systems incorporating up to seven modes (default data given for auto, carpool, truck, local bus, express bus, light rail, and heavy rail). Consequences are accounted for at the corridor or regional levels.

### **Scope of Application**

Analysis is done for total average weekday traffic or for peak and off-peak periods separately. Multiple trip purposes may be considered. The study area is partitioned into traffic analysis zones and aggregated to districts where separate benefit and cost factors may be specified and results reported. The model is closely linked to outputs from the four-step urban transportation planning process. Some of the general characteristics of the useful output generated by the application of STEAM software are as follows.

### **Benefit Categories Considered**

- Travel times and vehicle operating costs
- Accidents
- Emissions (CO, NO<sub>x</sub>, PM<sub>10</sub>, VOC, with cold-start component)
- Energy consumption
- Noise

### **Cost Categories Considered**

- Infrastructure investments and operating costs

### **Economic Performance Measures Provided**

- Net present worth for each alternative in question
- Benefit-cost ratio for each alternative in question



Inputs obtained for each alternative from the regional four-step models include person-trip matrices by mode and purpose and vehicle-trip matrices for personal vehicles and internal truck travel; trip time and cost matrices skimmed from the highway and transit networks; and loaded highway network link volumes. The personal travel modes include auto, carpool, bus, walk-accessed light rail and drive-accessed light rail (if available) for trip purposes such as home based (HB) work, HB college, HB other, and non-home based, as well as for external-internal and external-external (through) auto trips. To simplify the STEAM analysis, all trips are combined into one aggregate person-trip matrix for each of the five modes, and one truck trip matrix. Vehicle occupancies and estimates of the proportions of zone-to-zone trips paying tolls are obtained from manipulation of the available trip matrices.

Selected results categories produced through STEAM analysis include the following:

- Weekday vehicle-miles (millions)
- Average highway speed (miles per hour)
- Annual fuel use (million gallons)
- Annual user benefits
- Total agency revenues
- Emission benefits
- Other external benefits
- Total annual benefits
- Annualized capital costs
- Annual operating costs
- Total annualized costs
- Net annual worth
- Simple benefit-cost ratio
- Incremental benefit-cost ratio

As noted, STEAM accepts input data (highway networks with link flows and trip matrices) from the standard four-step urban demand modeling process or from other similar sources. Data are provided for both the base case and an improvement alternative; multiple improvement alternatives require multiple runs. Zone-to-zone highway travel times and distances may be input from regional models or calculated within STEAM. Vehicle costs are calculated based on zone-to-zone distances, supplemented by "out-of-pocket costs" reflecting fuel taxes and any tolls and user-paid parking charges. (Non-highway zone-to-zone times and out-of-pocket costs, such as fares paid, must be developed and input from outside STEAM.) Such "out-of-pocket" costs are transfers, not costs to society, and are accounted for by corresponding reductions in user benefits and increases in public agency benefits, with total societal benefits remaining unchanged. Emissions, noise impacts, energy consumption, accident costs, and other impacts are also estimated from these zone-to-zone and network data.

STEAM incorporates a sophisticated network speed and delay estimation technique based on off-line simulations which incorporate the dynamic effects of queuing and peak-spreading, day-to-day variations in traffic levels, as well as the impacts of incident delays based on their expected occurrence. Accident costs are based on zone-to-zone vehicle-miles and link types, and divided into "perceived" costs, included in user benefit estimation, and "non-perceived" costs, which are included as external costs. Emissions are estimated using a trip-based approach that incorporates both en route and cold start components. Fuel consumption and greenhouse (CO<sub>2</sub>) emissions are estimated using zone-to-zone average speeds and fuel consumption rates for autos and trucks.

Benefits are estimated based on weekday travel estimates, annualized, and expanded through the lifetime of the investment. User benefits for new users attracted by time or cost savings to an alternative, relative to the base case, are evaluated at 50% the rate applied to former users, as suggested by consumer surplus theory. Negative benefits of patronage lost due to poorer travel conditions are estimated similarly. The analysis year is chosen to be representative of benefits over the entire analysis time period. Alternatively, the program may be applied for several different analysis years, from which it determines the total stream of benefits that are then annualized. Investment costs are also annualized and combined with representative annual public agency operating costs. The program includes a large library of default unit costs and parameter values that can be modified as desired.

### **1.3 STEAM INPUT PARAMETERS**

The Surface Transportation Efficiency Analysis Model, Version 2 (STEAM 2.0) was used to post-process the vehicle trip matrices and traffic assignment volumes generated from the Regional Transportation Commission of Washoe County's conventional four-step travel forecasting model. And, while the software supplies default analysis parameters, it is also highly flexible in terms of allowing the user to modify input parameters, such as transportation modes, trip purposes, and time periods analyzed based on local conditions. Analysis assumptions and rates used specific to the State of Nevada and Washoe County are described in the following section.

#### **Travel Time Savings**

Vehicle hours of travel were computed for each link in the highway system. The Washoe County RTC Regional Traffic Demand Model was used for the purposes of this study. A custom-designed interface between the EMME/2 traffic model and STEAM 2.0 software was written to directly capture highway link speed and volume information.

Subsequent to the initial STEAM 2.0 computations of travel time savings, a cross-comparison with traffic microsimulation model findings indicated that the RTC Regional Traffic Demand Model was not fully capable of reflecting severe traffic operational bottlenecks on the freeway system, particularly those resulting from high volume merge and weave maneuvers. For that reason, travel time savings computed from the CORSIM software microsimulation model were substituted for the STEAM 2.0 calculations.

Consistent with U.S. Department of Transportation guidance for the valuation of travel time in economic analysis, Parsons assumed local personal travel to be valued at 50 percent of the local median wage rate. Business travel by truck and bus drivers was valued at 100 percent of the mean wage for these occupations, plus fringe benefits. In Washoe County, mean wage for all occupations was reported by the Nevada Department of Employment, Training and Rehabilitation (DTER) to be \$19.20 per hour in May 2008; hence a value of time equal to \$9.60 per hour was used for local personal travel. The state reported that heavy and tractor trailer truck drivers residing in Washoe County earned \$20.49 per hour on average in May, 2008. A fringe benefit rate of 50 percent of the mean wage was assumed by Parsons for bus and truck drivers, based on an equal mix of employees covered by teamsters (55.5 percent) and other (44.5 percent) labor agreements. The corresponding value of time for these business travelers was thus estimated to be \$30.74 per hour.



Computation of benefits also took vehicle occupancy into account for local personal travel. For Washoe County, the average daily vehicle occupancies were derived from Washoe County RTC's 1990 Household Survey: 1.10 for home-based work trips, 1.43 for home-based other trips, 1.48 for home-based social/recreational trips, 1.21 for home-based school trips, 1.43 for home-based shop trips, and 1.29 for non-home-based trips. Year 2000 census data indicates that vehicle occupancies for work trips have declined to 1.09 persons per vehicle. Taking this lower rate into account, the average daily vehicle occupancy for all trip purposes in Washoe County was estimated to be 1.28 persons per vehicle.

**Crash Benefits**

The frequency of accident occurrence is typically lower on freeways and expressways when compared to other types of regional roads and city streets. To compute benefits associated with the Build Alternatives versus the No-build Alternative, the number of vehicle miles traveled over the highway system was computed for each alternative, using the RTC travel forecast model and STEAM 2.0.

Rates of crash occurrences resulting in fatalities, personal injuries, and property damage only (PDO) were obtained from NDOT for Year 2002. Statewide rates listed for urban roadways were used in the calculation of benefits. These rates are listed in Table 1-1.

**Table 1-1: Nevada Crashes by Functional Roadway Classification (2002)<sup>1</sup>**

FUNCTIONAL CLASSIFICATION	PDO CRASH RATE	INJURY CRASH RATE	FATAL CRASH RATE
Interstate urban	220.34	85.51	0.66
Other urban freeways and expressways	159.61	63.00	0.62
Urban principal arterials	420.15	224.73	2.18
Urban minor arterials	354.48	200.83	2.27
Urban collector streets	228.71	123.64	1.16
Urban local streets	261.85	93.37	0.83

<sup>1</sup>Crash rates per 100 million vehicle miles.

Source: Nevada Department of Transportation

The values of loss associated with accidents were obtained from the National Safety Council and a 1991 Urban Institute/FHWA study. Periodically, the National Safety Council estimates the average cost of fatal and non-fatal injuries due to motor vehicle crashes. These estimates are made using a comprehensive or willingness to pay method. Costs include economic costs such as wage and productivity losses, medical expenses, motor vehicle damage, etc.; and a value reflecting lost quality of life.

In 2001, the National Safety Council estimated the following average comprehensive costs on a per injured person basis:

Death	\$3,340,000
Incapacitating injury	\$ 165,000
Non-incapacitating evident injury	\$ 42,500
Possible injury	\$ 20,200

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These per injured person costs were converted to per vehicle crash costs using formulas published in FHWA Technical Advisory T 7570 (June 30, 1988). The resulting costs (direct and indirect) per vehicle crash were computed to be the following, expressed in Year 2008 dollars:

Fatal accident	\$4,473,949
Injury accident	\$ 100,830

Property damage only (PDO) accident costs were computed using a cost value obtained from the California Life-Cycle Benefit/Cost Analysis Model. This model uses a value for PDO accidents estimated by the 1991 Urban Institute/FHWA study. The Urban Institute/FHWA calculated its estimate taking two primary factors into account:

1. Unreported accidents—Automobile accident surveys indicate that roughly 40 to 50 percent of all PDO accidents are not reported.
2. Combined property value—PDO accidents frequently involve more than one vehicle.

The value of an average non-fatal, non-injury accident was calculated primarily using records of vehicle and property damage payments made by insurance companies. Some additional cost categories, such as travel delay and lost wages, were included to make minor contributions to the final estimate.

After adjusting the Urban Institute/FHWA estimate to Year 2008 dollars using the gross domestic product deflator, a value of \$8,365 per reported PDO accident was derived.

Taking inflation into account, these estimates of accident costs compare favorably with values used in four computerized benefit-cost models, as reported in Table 1-2.

**Table 1-2: Accident Cost Estimates**

ACCIDENT TYPE	CSI <sup>1</sup> (\$ 1993)	STRATBENCOST <sup>2</sup> (\$ 1996)	STEAM <sup>3</sup> (\$ 1997)	RAILDEC <sup>4</sup> (\$ 1997)	NDOT <sup>5</sup> (\$ 2008)
Fatality	\$3,325,095	\$3,521,359	\$2,726,350	\$3,613,137	\$4,473,949
Injury	\$ 7,890	\$ 83,848	\$ 59,718	\$ 86,033	\$ 100,830
Property damage only	\$ 5,651	\$ 5,806	\$ 3,322	\$ 5,957	\$ 8,365

<sup>1</sup>Cambridge Systematics, Inc. (CSI), Approaches for Developing Nationwide Estimates of Congestion Delay, Accidents, Emissions, and Noise Impacts: Interim Report, 1995.

<sup>2</sup>NCHRP Project 2-18(3), Development of an Innovative Highway User Cost Estimation Procedure. Midrange of costs reported.

<sup>3</sup>FHWA, Surface Transportation Efficiency Analysis Model, 1997. Total of internal and external costs.

<sup>4</sup>Companion to StratBENCOST which estimates the reduction in accident costs as the change in highway accidents between the base and alternative (rail) case. StratBENCOST values inflated by 2.6 percent for all accident types.

<sup>5</sup>Parsons, based on California Life-Cycle Benefit/Cost Analysis Model, Technical Supplement to User's Guide.

STEAM 2.0 calculates separate internal and external accident costs. Internal accident costs are defined as costs inflicted upon and perceived by transportation facility users. External costs are defined as costs inflicted on users, but not perceived by users. Table 1-3 identifies the breakdown of these accident cost assumptions.



**Table 1-3: Accident Cost Assumptions for STEAM (2008 dollars)**

ACCIDENT TYPE	INTERNAL COST	EXTERNAL COST	TOTAL COST
Fatality	\$3,802,857	\$671,092	\$4,473,949
Injury	\$ 85,706	\$ 15,124	\$ 100,830
Property damage only	\$ 7,110	\$ 1,255	\$ 8,365

Source: Parsons

### Motor Vehicle Emissions and Costs

Motor vehicle emissions were calculated for the emissions listed in Table 1-4. Rates of motor vehicle emissions were obtained from the California Life-Cycle Benefit/Cost Analysis Model for carbon monoxide, nitrogen oxides, and fine particulates assuming a vehicle model year of 2020—the midpoint of the benefit/cost comparison for typical 20-year life cycles. The source of these emission rates is the California Air Resources Board model, EMF 2002 version 2.2. STEAM 2.0's default values for hydrocarbon emissions were also used in the analysis. These hydrocarbon rates assume a Year 2010 vehicle model year and are based on the EPA's Mobil 5a model results.

**Table 1-4: Vehicle Pollution Emissions**

EMISSION	DESCRIPTION	SOURCE	HARMFUL EFFECTS	SCALE
Carbon monoxide (CO)	A toxic gas that undermines blood's ability to carry oxygen	Engine	Human health, climate change	Very local
Nitrogen oxides (NO <sub>x</sub> )	Various compounds; some are toxic, all contribute to ozone	Engine	Human health, ozone precursor	Regional
Fine particulates (PM <sub>10</sub> )	Inhalable particles consisting of bits of fuel and carbon	Diesel engines and other sources	Human health, aesthetics	Local and regional
Hydrocarbons (HC)	Unburned fuel; forms ozone	Fuel production and engines	Human health, ozone precursor	Regional

Monetary values for CO, PM<sub>10</sub> and NO<sub>x</sub> emissions were obtained from research by Donald McCubbin and Mark Delucchi in "The Social Cost of Health Effects of Motor-Vehicle Use in the United States," and updated for use in the California Life-Cycle Benefit/Cost Analysis Model. Values reported for the Los Angeles/South Coast air basin (Table 1-5) were used for evaluating benefits and costs. The health cost of HC emissions was taken from a second source that also valued NO<sub>x</sub>.<sup>1</sup> These values were indexed to the Cal B/C values to estimate HC costs/ton.

**Table 1-5: Health Cost of Motor Vehicle Emissions (\$/ton)**

EMISSION		VALUE
Carbon monoxide	CO	\$ 130
Fine particulates	PM <sub>10</sub>	\$445,179
Nitrogen oxides	NO <sub>x</sub>	\$ 54,344
Hydrocarbons	HC	\$ 7,796

Source: Parsons, the based on California Life-Cycle Benefit/Cost Analysis Model, Technical Supplement to User's Guide.

<sup>1</sup> Gunnar Linberg, Benefit-Cost Analysis in a Multimodal Planning Process, "Exploring the Application of Benefit-Cost Methodologies to Transportation Decision Making," May 1995, Tampa, Florida.



**Vehicle Operating Costs**

Vehicle operating costs were calculated for the No-Build Alternative and Build Alternatives using estimates of vehicle miles traveled produced by the RTC travel demand model and STEAM 2.0. STEAM 2.0 calculates fuel consumption per gallon based on average link speeds and vehicle miles traveled per link

Default values for the fuel consumption rates used in STEAM come from the ITE “Transportation Planning Handbook,” 1992. However, these rates were derived from a study published by Caltrans in 1983. Non-fuel volatile organic compounds (VOC) are taken from a USDOT publication, “Characteristics of Urban Transportation Supply,” 1992, and are converted to 1997 dollars. These costs originated in the American Automobile Association publication, “Your Driving Costs.”

For the evaluation of project benefits and costs, fuel consumption was based on estimates of average fuel consumption for the Year 2000 obtained from the California Air Resources Board’s Motor Vehicle Emission Inventory models. These rates, used in the California Life-Cycle Benefit/Cost Analysis Model, are reported in Table 1-6.

The price-per-gallon of regular grade gasoline for Washoe County was assumed to be \$4.18 per gallon based on prices prevailing in Reno, Nevada in late June 2008. STEAM 2.0 separates fuel costs into tax and non-tax components, using the tax portion to compute “revenue transfers.” The tax rate per gallon of gasoline was assumed to be 18.4 cents Federal, 23.0 cents State, and 9.0 cents County optional for Washoe County; including inspection fees and cleanup fees, with county taxes indexed to inflation as of 2008. These taxes total 54.8 cents per gallon of gasoline. Truck fuel costs were assumed to be \$4.152 per gallon for the non-tax portion and \$0.648 for the tax component.

These fuel costs were later revised downward to reflect the price of gasoline and diesel fuel as of mid-November 2008. As of that date, the price of gasoline had fallen to \$2.438 per gallon in the Reno market according to the AAA Daily Fuel Gauge Report. Diesel fuel was selling for \$3.028 on that same date (November 12, 2008). STEAM 2.0 fuel costs were thus factored to reflect these price reductions.

Non-fuel costs for vehicle maintenance and tire expense in all cases were assumed to be \$0.064 per mile for automobiles and \$0.127 for trucks, based on CY 2004 Center for Transportation Analysis, Department of Energy Statistics, indexed to 2008 dollars. The STEAM 2.0 model does not include mileage-based depreciation.

**Table 1-6: Fuel Consumption Rates (gallons/mile)**

SPEED	AUTO	TRUCK
5	0.182	0.310
10	0.123	0.181
15	0.089	0.135
20	0.068	0.118
25	0.054	0.120
30	0.044	0.133
35	0.037	0.156
40	0.034	0.185
45	0.033	0.223
50	0.033	0.264
55	0.034	0.316
60	0.037	0.374
65	0.043	0.439
70	0.052	0.511

Source: Cal-B/C, California Air Resources Board

## 1.4 STEAM PERFORMANCE RESULTS

Table 1-7 reports measures of effectiveness computed with STEAM 2.0, based on travel demand forecasts input from the Washoe County RTC Regional Travel Demand Model for the 2030 Build and No-build alternatives. Travel time for the Build Alternative has been computed based on CORSIM microsimulation model findings.

**Table 1-7: US 395 Northbound Measures of Effectiveness**

	2030		
	No-Build	Build	Change
<b>Travel Demand</b>			
VMT (million VMT/year)	4,577.1	4592.9	15.8
Travel time (million person hours/year)	126.03	125.16	-0.87
<b>VMT Related Emissions</b>			
HC	2,806.1	2,805.4	-2.5
CO	8,185.9	8,203.6	17.7
NO <sub>x</sub>	1,192.8	1,206.0	13.2
PM <sub>10</sub>	100.9	101.3	0.4
Cold start emissions	No Change		
<b>Greenhouse Gas Emissions</b>			
Btu energy consumption (100 billion Btu/year)	218.6	218.5	-0.1
CO <sub>2</sub> emissions (1,000 tons/year)	1705.1	1704.2	-0.9
<b>Accidents</b>			
Fatalities	53.2	52.8	-0.4
Injuries	5,763.1	5,735.6	-27.5
Property damage only	12,350.2	12,338.0	-17.2
<b>Fuel Consumption</b>			
Gallons (1,000 gallons/year)	174,882.4	174,788.5	-93.9

Source: Parsons

The data reported in Table 1-7 indicate that vehicle miles traveled (VMT) increase slightly in the Build scenario as trips are attracted to US 395 due to decreased congestion and higher speeds on the freeway.

Figure 1-1 illustrates the daily shifts in traffic volumes forecast for the 2030 Build versus No-build condition. Red band widths indicate increased average daily traffic (ADT), while green band widths indicate decreases in ADT. A relatively large decrease in ADT is forecast for North Kietzke Lane resulting from improvements proposed in the Build scenario.





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As a result of shifting traffic patterns, overall travel times (VHT) would slightly decrease, even as total miles travelled increases, since more vehicles are served in a more time-efficient manner. Region-wide tons of hydrocarbon (HC) and carbon monoxide (CO<sub>2</sub>) emissions are expected to decrease slightly. Nitrogen oxides (NO<sub>x</sub>) increase moderately in the Build scenario.

Accidents are forecast to decrease across the board as US 395 traffic is served more safely and efficiently due to proposed Build scenario project elements. Fuel consumption is expected to decrease as a function of higher speeds and less delay on congested roadways, more than offsetting increased VMT.

The performance indicators reported in Table 1-7 were monetized using the input parameters itemized in Section 1.3, above. These findings are summarized in Table 1-8 under both the Build and No-build scenarios for Year 2030.

**Table 1-8: Summary of US 395 Northbound Build Alternative Benefits**

<b>Benefit Type</b>	<b>Year 2030 (\$1000's)</b>
	<b>November 2008</b>
<b>User Benefits</b>	
In-vehicle travel time	8226.6
Fuel costs	206.9
Non-fuel operating costs	-1,008.0
Internal accident costs	4,234.2
<b>Revenue Transfers</b>	<b>-49.0</b>
<b>Reduction in External Costs</b>	
Emissions	-868.7
Global warming	3.4
Noise	-15.7
Accident	747.2
Other mileage based	-1,071.0
<b>Total Benefits</b>	<b>\$10,405.9</b>

*Source: Parsons*

Table 1-9 reports benefits expected to accrue over an assumed 20-year project lifespan. Total project benefits are estimated to exceed total costs by about \$96.8 million.



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**Table 1-9 US 395 Northbound Life-Cycle Benefits and Costs**

<b>Year</b>	<b>Total Benefits</b>	<b>Total Costs</b>
2008	-	4,645,000
2009	-	7,830,000
2010	-	19,309,000
2011	-	31,510,000
2012	-	9,005,000
2013	5,983,393	-
2014	6,243,540	-
2015	6,503,688	-
2016	6,763,835	-
2017	7,023,983	-
2018	7,284,130	-
2019	7,544,278	-
2020	7,804,425	-
2021	8,064,573	-
2022	8,324,720	-
2023	8,584,868	-
2024	8,845,015	-
2025	9,105,163	-
2026	9,365,310	-
2027	9,625,458	-
2028	9,885,605	-
2029	10,145,752	-
2030	10,405,900	-
2031	10,666,046	-
2032	10,926,193	-
<b>TOTALS</b>	<b>169,095,875</b>	<b>72,299,000</b>

*Source: Parsons*

Table 1-10 provides the project life cycle benefit-cost ratio. Ratios greater than 1.0 reflect projects where total benefits exceed total costs. By dividing total projects costs (excluding transit or O&M) into the total project benefits, a benefit/cost ratio of 2.34 is estimated for the Northbound US 395 Improvement project.

**Table 1-10: Summary of US 395 Northbound Benefit-Cost Analysis Results**

<b>Life Cycle Benefits/Total Costs Ratio (Excludes Transit and O&amp;M)</b>
<b>\$169.1/\$72.3M = 2.34</b>

*Source: Parsons*

## US 395 Carson City Freeway

### OVERVIEW

The U.S. 395 Carson City Freeway extends from Lakeview Hill to U.S. 50 south of Carson City, Nevada, a distance of 9.1 miles. The primary purpose is to remove through traffic, especially the interstate trucks from Carson Street and the center of the Carson City commercial activities. The new freeway plans include five interchanges at the existing U.S. 395 on the north, College Parkway, East Williams Street (U.S. 50), Fairview Drive, and the intersection of existing U.S. 396/U.S 50 at the southern termini. The base lane requirement was four through lanes, two in each direction in order to accommodate expected 24,000 ADT in 2013. This was a 50% increase over the 1993 base year traffic volume of 16,000 ADT.

In 1996 when the initial benefit/cost analysis was conducted, the total project cost was estimated at \$230,000,000. This benefit/cost analysis made use of MicroBENCOST computer program that was developed by Texas Transportation Institute for NCHRP 7-12 and computed a B/C equal to 6.09. The analysis used a discount rate of 5%. Since NDOT current policy is to use 7%, NDOT staff redid the benefit/cost analysis with the 7% discount rate.

By using the higher discount rate, activities in the future will have a lower effect of their respective current values. The benefits of the Carson City Freeway deal with user benefits such as time savings, fuel savings, and increased safety. With these benefits occurring in the future and discounted at a higher rate, the net present value of the benefits decline.

The construction costs mostly occur at present or very early in the life cycle analysis of the project. Consequently, the cost side of the benefit-cost ratio changes little with a higher discount rate. By replicating the exact series of calculations performed in 1996 with the 7% discount rate and not the original 5% discount rate, the new benefit-cost ratio is 4.44. While this change in calculation procedure decreases the benefit-cost ratio, the Carson City Freeway still has a very favorable benefit/cost ratio.

The accepted method of modeling and quantifying of the environmental benefits in 1996 for benefit-cost calculations has changed in recent years. More pollutants and secondary effects have monetary values assigned to them. The positive change of those items are then included in the benefits. If the 1996 Carson City Freeway benefit-cost ratio were changed to the current calculation methodology, then the benefit-cost ratio would be higher than the updated 4.44.