
Truckee Area AB 1600 Traffic Impact Fee Study



Prepared for the
Town of Truckee

Prepared by



LSC Transportation Consultants, Inc.

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Impact fee programs are a common public sector funding mechanism for capital improvements associated with development, and have become particularly common with regards to traffic improvements. A Traffic Impact Fee (TIF) program can both help a community ensure that roadway improvements can be funded, and that individual projects are handled in an equitable and efficient manner. Truckee's original Truckee TIF fee program began in 1999, and was last fully updated in 2007. Prior to 1999, a traffic impact fee program was in place that was implemented by Nevada County before the Town's incorporation in 1993. The TIF fee has been updated annually since 2007 to reflect inflation in construction costs.

This report documents a full update of the TIF program. This update differs from the previous version in that nearby areas of unincorporated Nevada County are included in the program area, including the Truckee Tahoe Airport and the Hirschdale area.

The first step was to update the Truckee area TransCAD model as described in the *Truckee TransCAD 2014 Traffic Model Report*, (LSC October 21, 2015). The reader is encouraged to refer to this other document for additional information on the land use inventory, land use forecasting and modeling process.

Next the list of intersection and roadway projects included in the TIF program was updated based on a Level of Service analysis and other measures of adequacy. As the largest potential project in the area, the Pioneer Trail and Bridge Street extensions project was analyzed in depth. Next, the percent of each projects cost that can be allocated to the TIF program was calculated. Finally, the Dwelling Unit Equivalent (DUE) conversion table was updated and the resulting fee per DUE was calculated.

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The Truckee area sits at a busy crossroads of the Sierra roadway network. In addition to the I-80 trans-Sierra corridor, the Town sits at the junction of State Route (SR) 89 South and SR 267 providing regional access south to the Lake Tahoe Basin, and SR 89 North providing access to Sierra County, Plumas County and beyond. Development in Truckee and the surrounding region, as well as growth in traffic passing through the region, results in increased traffic levels.

Land Use Forecasts

Table 1 presents a summary of existing and forecast future land use and travel characteristics, as detailed in the *Truckee TransCAD 2014 Traffic Model Report*. These future land uses reflect build-out of the Town of Truckee *General Plan*, as well as zoning of the unincorporated Nevada County areas included in the fee program area. As shown, the number of dwelling units is forecast to increase by 55 percent, the number of lodging rooms by 98 percent and the total floor area of commercial, office and industrial land uses by 79 percent. As a result, the Truckee TransCAD computer transportation model indicates that total Vehicle-Miles of Travel (VMT) within the Town will increase by 53 percent by buildout. Comparing the current PM Peak-Hour Vehicle Miles of Travel to that estimated at build out indicates that the Town is approximately 65% built out in terms of PM peak-hour vehicle miles of travel.

TABLE 1: Land Use and Travel Conditions Summary for Existing and Future Conditions					
	Units	Existing ¹	Build Out	Growth	
				#	%
Land Use					
Housing Units	DU	12,858	19,990	7,132	55%
Lodging Units	Rooms	561	1,113	552	98%
Non-Residential Floor Area ²	Square Ft	2,559,000	4,593,000	2,034,000	79%
PM Pk Hr Vehicle Miles of Travel in Truckee		36,985	56,670	19,685	53%
Note 1: Reflects 2014 conditions.					
Note 2: Excludes golf courses, schools, parks, RV parks, and churches.				2014 Truckee TIF.xlsx	

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Traffic Impact Fee Projects

To be defensible, projects to be included in a TIF program must be justified through a traffic study. All intersection and roadways with the potential of having a deficiency were evaluated. Existing and future traffic volumes were generated based on intersection counts in the summer of 2014 and traffic growth from the Truckee TransCAD Traffic Model. The resulting volumes are shown in Appendix A. The projects that are included in the draft fee program can be divided into two categories described below: traffic capacity improvement and safety improvement projects:

- **Traffic Capacity Improvement Projects** -- The need for traffic capacity improvement was primarily evaluated using Level of Service (LOS) analysis. The LOS was determined for each intersection and compared to the Town of Truckee standards (as detailed in the Circulation Element of the General Plan). Table A-2 in Appendix A presents all LOS results. All intersections that exceeded the LOS standard were included in the TIF project list, as shown in Table 2. Detailed mitigations for these intersections are shown in Table A-3 in Appendix A.
- **Safety Improvement Projects** -- Two types of safety improvement projects were analyzed: additional turn lanes at intersections and the addition of shoulders on roadway segments. The need for additional turn lanes as an intersection improvement is a function of the main street “advancing” volume (the through volume approaching in the same direction as the turning volume), the “opposing volume” (the through volume approaching in the opposite direction as the turning volume), and the proportion of turning volumes. The need for shoulder widening is triggered when the daily traffic volume on a major roadway exceeds a traffic volume of 2,000 vehicles per day, thereby warranting 4-foot paved shoulders.

As the largest project in the area, the Pioneer Trail and Bridge Street extensions project was analyzed in depth, as reported in Appendix B. In summary, without these projects the LOS on Donner Pass Road between SR 89 South/Frates Lane and Northwoods Boulevard would fail to achieve standards. Therefore, these projects were found to be warranted for inclusion in the TIF program, as the only means of addressing LOS deficiencies along Donner Pass Road that is consistent with the *General Plan*. These roadway extensions also avoid the need for a left turn lane on SR 89 North at Alder Creek Road, and ensure that Alder Creek Road traffic levels will stay within Town standards.

The resulting list of projects is presented in Table 2, and their locations are indicated in Figure 1. Note that all of these projects are expected to be required in order to achieve Town and Nevada County standards by buildout, with one exception. The widening to four lanes of SR 267

FIGURE 1
TRUCKEE TRAFFIC IMPACT FEE PROJECT LOCATIONS

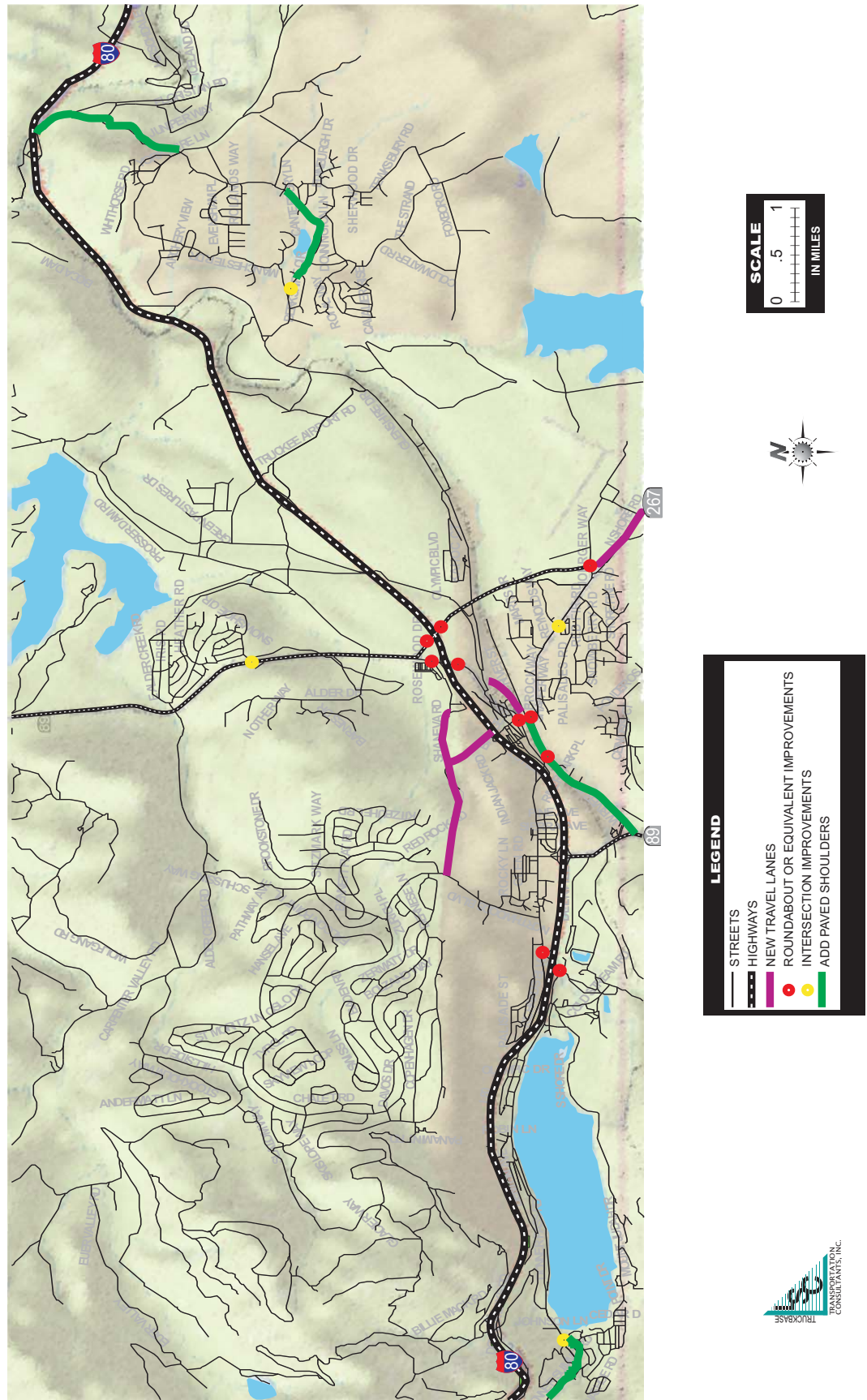


TABLE 2: TIF Projects, Cost Estimates and Percent Funding Responsibility														
General Plan Build-out Roadway Improvement Needs														
Street / Intersection	Segment	Description of Improvement	Level of Service (Bold Indicates Exceedance of Standards)				Estimated Total Cost (\$)	Capacity Measure	% of Total Funding That is The Responsibility of Future Development in TIF Area(3)	% of Project Cost Associated with Road Maintenance (Not AB 1600 Eligible)	Traffic Impact Fee Funding	% of Project Costs Eligible for AB 1600 Funding	Year Project Entered TIF Program(2)	Document, Source of Requirement
			Relevant Standard: Existing Conditions	Existing Unmitigated	Build-out Unmitigated	Build-out Mitigated								
Truckee Intersections														
Donner Pass Road / Cold Stream Road / I-80 EB Ramps		Construct 1-Lane Roundabout	D	F	F	D	\$3,500,000	PM Pk-Hr	71%	-	\$2,485,000	100%	2007	2015 TIF Update Study
Donner Pass Road / I-80 WB Ramps (West Interchange)		Construct 1-Lane Roundabout	F + 4 hrs delay	F with 3.1 hrs delay	F	B	\$3,500,000	PM Pk-Hr	79%	-	\$2,765,000	100%	2007	2015 TIF Update Study
West River Street / Mclver Crossing		Construct 1-Lane Roundabout	F + 4 hrs delay	F with 3.1 hrs delay	F	C	\$2,500,000	PM Pk-Hr	96%	-	\$2,400,000	96%	2007	2015 TIF Update Study
Donner Pass Road / Bridge Street		Construct 1-Lane Roundabout or Equivalent Improvements	E	F	F	C	\$2,500,000	PM Pk-Hr	83%	-	\$2,075,000	100%	2007	2015 TIF Update Study
Bridge Street / West River Street		Construct 1-Lane Roundabout or Equivalent Improvements	E	F	F	E	\$2,500,000	PM Pk-Hr	83%	-	\$2,075,000	100%	1999 or earlier	2015 TIF Update Study
Donner Pass Road / I-80 EB Off Ramp (East Interchange)		Construct 1-Lane Roundabout	D	D	F	C	\$3,500,000	PM Pk-Hr	99%	-	\$3,465,000	99%	2007	2015 TIF Update Study
Donner Pass Road / Pioneer Trail		Convert to 2-Lane Roundabout	D	A	F	D	\$750,000	PM Pk-Hr	99%	-	\$742,500	99%	2007	2015 TIF Update Study
SR 267 / I-80 WB Ramps		Construct 2-Lane Roundabout	D	C	F	E	\$4,000,000	PM Pk-Hr	93%	-	\$3,720,000	100%	1999 or earlier	2015 TIF Update Study
SR 267 / I-80 EB Ramps		Construct 2-Lane Roundabout	D	B	E	E	\$4,000,000	PM Pk-Hr	89%	-	\$3,560,000	100%	1999 or earlier	2015 TIF Update Study
SR 267 / Brockway Road		Construct 3-Lane Roundabout	D	B	F	F	\$4,000,000	PM Pk-Hr	91%	-	\$3,640,000	91%	2007	2015 TIF Update Study
Glenshire Drive / Dorchester Road (West)		Eastbound Left Turn Lane	-	-	-	-	\$500,000	PM Pk-Hr Advancing Volume	52%	-	\$260,000	52%	2007	2015 TIF Update Study
SR 89 North / Rainbow Road		Southbound Left Turn Lane	-	-	-	-	\$500,000	PM Pk-Hr Advancing Volume	91%	-	\$455,000	91%	2007	2015 TIF Update Study
Brockway Road / Reynolds Way		Eastbound Left Turn Lane	-	-	-	-	\$500,000	PM Pk-Hr Advancing Volume	97%	-	\$485,000	97%	1999 or earlier	2015 TIF Update Study
Donner Pass Road / South Shore Drive		Westbound Left Turn Lane	-	-	-	-	\$500,000	PM Pk-Hr Advancing Volume	84%	-	\$420,000	100%	2016	2015 TIF Update Study
Truckee Roadways														
Pioneer Trail & Bridge Street Extensions		2 Travel Lanes from Pioneer Commerce Center to Northwoods Blvd. and from Jibboom St. to Pioneer Trail (1)	D	D	E	D	\$20,000,000	PM Pk-Hr on Donner Pass Road: SR 89S to Northwoods	100%	-	\$20,000,000	100%	1999 or earlier	2015 TIF Update Study
Church Street Extension	Donner Pass Road to Glenshire Drive	Extend from DPR to Glenshire Drive to Address Glenshire/DPR Deficiency	E + 4 hrs delay	E	F	E	\$5,500,000	PM Pk-Hr at Glenshire Dr./ DPR	100%	-	\$5,500,000	100%	1999 or earlier	2015 TIF Update Study
SR 267	Brockway to Placer County Line	Widen to 4 Lanes	E	E	F	D	\$4,100,000	Average Daily Traffic	80%	-	\$3,280,000	80%	2007	Truckee General Plan Traffic Study
Glenshire Drive	Berkshire Circle to Wiltshire Lane	Add Shoulders	-	-	-	-	\$2,650,000	-	66%	40%	\$1,049,400	40%	1999 or earlier	Truckee Public Improvement & Engineering Standards, 2003
Donner Pass Road	South Shore Drive to Town Limits	Add Shoulders	-	-	-	-	\$1,300,000	Average Daily Traffic	54%	40%	\$421,200	32%	2016	Truckee Public Improvement & Engineering Standards, 2003
West River Street	All	Add Shoulders	-	-	-	-	\$3,250,000	-	64%	40%	\$1,248,000	38%	2007	Truckee Public Improvement & Engineering Standards, 2003
Nevada County Roadway														
Glenshire Drive/ Hirshchdale Rd. Improvements	Truckee Town Limits to I-80 WB Ramps	Add Shoulders	-	-	-	-	\$3,000,000	-	83%	-	\$2,490,000	72%	2016	
SUBTOTAL: Truckee and Eastern Nevada County (Current Fee Program)							\$72,550,000				\$62,536,100			
Estimated Expenditures on Mousehole Project Subsequent to June 30, 2015											\$800,000			
Truckee Area Fair Share Contributions to Eastern Placer Improvements											\$9,595,291			
Total: Truckee + Eastern Placer Projects											\$72,931,391			
Credit for Placer County Traffic Impacts Already Included in Truckee TIF Program											-\$6,096,491			
Cumulative AB 1600 Funds in Account as of July 1, 2015											-\$6,283,640			
Additional Funds Not Yet Collected											\$60,551,260			
Projects Removed From 2007 TIF Project List -- No Longer Required to Provide Adequate LOS at Buildout														
SR 89 North / Alder Creek Road		Intersection Improvements	-	-	-	-	\$812,684	-	-	-	-			
Donner Pass Road / SR 89 South		Construct 2-Lane Roundabout	D	C	C	-	\$4,876,106	-	-	-	-			
Downtown Rail Crossing Improvements		Provide Improvement to Bridge Street Crossing or Eastern Underpass	-	-	-	-	\$6,000,000	-	-	-	-			
Total							\$11,688,790							
Projects Removed From 2007 TIF Project List -- Completed														
SR 89 / UPRR Undercrossing (Mousehole)		Construct bike and pedestrian tunnel	-	-	-	-	\$13,925,000	-	-	-	-			
Comstock Drive and Portion of Pioneer Trail Extension		Roadway Construction & Construction of Single Lane Roundabout at DPR/Pioneer Trail	-	-	-	-	\$6,500,000	-	-	-	-			
Glenshire Drive / Olympic Boulevard		Intersection Improvements	-	-	-	-	\$500,000	-	-	-	-			
Glenshire Drive	Donner Pass Road to Somerset	Add Shoulders	-	-	-	-	\$7,440,000	-	-	-	-			
Donner Pass Road	South Shore to Moraine	Add Shoulders	-	-	-	-	\$4,719,942	-	-	-	-			
Total							\$33,084,942							
Note 1: A portion of this project including Comstock Dr and part of Pioneer Trail have been completed. Source: LSC Transportation Consultants, Inc.							Note 2: Prior to 1999, impact fees were collected through a program implemented by Nevada County prior to Town incorporation.				Note 3: See Table 3.			
											1/29/2016 2014 Truckee TIF.xlsx			

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between Brockway Road and the Truckee/Placer line is warranted by the Placer County daily traffic threshold of 25,000 vehicles per day, but not warranted by Truckee volume thresholds. However, tapering from four lanes to two lanes along the relatively short segment of SR 267 between the county line and the beginning of widening for turn lanes at the Brockway Road intersection is not feasible. Therefore, widening of SR 267 between the county line and Brockway Road is included in this program (consistent with the 2007 Truckee TIF program).

Estimated construction costs for each improvement were developed by Town of Truckee Engineer Division staff. These estimates include project development (engineering, environmental clearance, and construction management). The resulting costs are “planning level” estimates for purposes of this impact fee program – a more detailed engineering analysis would undoubtedly result in differing estimates. As shown in Table 2, preliminary intersection and roadway improvements are estimated to total \$72,550,000 in capital costs.

Allocation of Project Funding Requirements

The cost of these improvements can only be funded through a TIF program to the degree that the need for the improvements are generated by future development within the jurisdiction instituting the TIF. This “rational nexus” test ensures that future developers are not required to pay traffic impact fees that are not specifically required to address the impacts generated by development within the jurisdiction. There are two parts to defining the proportion of improvement costs that can be assigned to future growth in the impact fee area: defining the proportion associated with Truckee/Eastern Nevada County development (versus development in other jurisdictions), and defining the proportion of responsibility for an improvement that is due to future growth (versus existing development).

Assigning Funding Responsibility to Truckee Area Development versus Development in Other Jurisdictions

The “rational nexus” requirements of a traffic impact fee program require that funding responsibilities reflect the proportion of total future need generated by development within the impact fee district. The TransCAD model was used to identify the proportion of traffic volume through each roadway element, requiring improvement that is generated by future development in the TIF area. As is standard practice in traffic impact fee programs, these proportions represent those trips with one or both trip-ends within the TIF Area. As shown in Table 3 under the column “% of Total Traffic Growth Generated by TIF Area,” these proportions vary from a low of 79 percent at the Donner Pass Road/I-80 Westbound Ramps (West Interchange) to a high of 100 percent at Donner Pass Road/Bridge Street.

Assigning Funding Responsibility to Existing versus Future Development

Defining the proportion of development impacts associated with future growth is straightforward for those projects that currently attain LOS standards but which will fail by

TABLE 3: Percent Funding Responsibility										
General Plan Build-out Roadway Improvement Needs										
Street / Intersection	Segment	Truckee Traffic Model PM Peak-Hour Generated Traffic Volumes					% of Total Traffic Growth Generated by Study Area	% of Capacity Exceeded by Generated by Future Development		% of Total Funding That is The Responsibility of Future Development in TIF Area
		2014		Build-Out				Average Daily Traffic Volumes		
		Total Traffic Volumes	Study Area-Generated Traffic Volumes (At Least One Trip End in Study Area)	Total PM Traffic Volumes	Study Area-Generated Traffic Volumes (At Least One Trip End in Study Area)	Existing Volume		Future Capacity		
Truckee Intersections										
Donner Pass Road / Cold Stream Road / I-80 EB Ramps		1,090	1,034	1,460	1,365	89%		Note 1	80%	71%
Donner Pass Road / I-80 WB Ramps (West Interchange)		1,010	970	1,129	1,064	79%		Note 2	100%	79%
West River Street / Mcker Crossing		990	970	2,100	2,035	96%		Note 2	100%	96%
Donner Pass Road / Bridge Street		1,411	1,389	2,091	2,091	100%		Note 1	83%	83%
Bridge Street / West River Street		1,686	1,644	2,952	2,887	98%		Note 1	85%	83%
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)		1,096	1,068	1,981	1,946	99%		Note 2	100%	99%
Donner Pass Road / Pioneer Trail		1,301	1,273	2,491	2,456	99%		Note 2	100%	99%
SR 267 /I-80 WB Ramps		1,431	1,118	2,962	2,546	93%		Note 2	100%	93%
SR 267 /I-80 EB Ramps		1,661	1,189	3,357	2,692	89%		Note 2	100%	89%
SR 267 /Brockway Road		2,169	1,676	4,517	3,817	91%		Note 2	100%	91%
Glenshire Drive /Dorchester Road (West)		810	810	1,348	1,348	100%		Note 1	52%	52%
SR 89 North / Rainbow Road		661	541	814	680	91%		Note 2	100%	91%
Brockway Road / Reynolds Way		806	799	1,422	1,399	97%		Note 2	100%	97%
Donner Pass Road / South Shore Drive		478	423	720	626	84%		Note 2	100%	84%
Truckee Roadways										
Pioneer Trail & Bridge Street Extensions		-	-	-	-	100%		Note 3	100%	100%
Church Street Extension	Donner Pass Road to Glenshire Drive	1,334	1,334	1,789	1,789	100%		Note 4	100%	100%
SR 267	Brockway to Placer County Line	1,797	1,336	2,809	2,143	80%	21,234	34,036	25,000	80%
Glenshire Drive	Berkshire Circle to Wilshire Lane	369	369	716	716	100%	3,889	7,547	2,000	66%
Donner Pass Road	South Shore Drive to Town Limits	295	239	515	421	83%	3,378	5,885	2,000	54%
West River Street	All	715	695	1,834	1,769	96%	8,187	20,999	2,000	64%
Nevada County Roadway										
Glenshire Drive Improvements	Truckee Town Limits to Hirschdale Rd	255	255	476	476	100%	2,475	4,760	2,000	83%
Note 1: Based on incremental LOS analysis rather than total intersection volume. Note 2: As existing conditions achieve LOS standards, all future exceedance is the responsibility of future development. Note 3: As existing conditions along Donner Pass Road between Northwoods Drive and 89 South meet LOS standards, all future exceedance is the responsibility of future development. Note 4: As existing conditions at Donner Pass Road / Glenshire Drive achieve LOS standards, all future exceedance is the responsibility of future development.										
Source: LSC Transportation Consultants, Inc.										
2014 Truckee TIF.xlsx										

2014 Truckee TIF Area

buildout: all of these costs are assigned to future development (though not only to Truckee area development, as discussed above). For instance, the Donner Pass Road/Pioneer Trail intersection currently attain LOS standards but will fail at buildout, and therefore all costs needed to attain LOS standards at buildout are the responsibility of future development. Similarly, conditions along Donner Pass Road between SR 89 South and Northwoods Boulevard currently meet LOS standards, indicating that the Pioneer Trail extension (identified as the means to mitigate future LOS deficiencies along this section of Donner Pass Road) are the responsibility of future growth.

For those projects that do not attain LOS or design standards at present, the following methodology was used to identify that proportion of improvement costs that are the responsibility of future development:

$$\begin{array}{lcl} \% \text{ Responsibility of} & = & \frac{(\text{Future Volume} - \text{Existing Volume})}{(\text{Future Volume} - \text{Existing Capacity})} \\ \text{Future Development} & & \end{array}$$

For example, if the capacity of a roadway element is 1,000 vehicles per hour, the existing volume is 1,100 vehicles per hour and the future volume is 2,000 vehicles per hour, the proportion of improvement costs that are the responsibility of future development would be $(2,000 - 1,100)/(2,000 - 1,000)$, or 90 percent.

The measure of traffic capacity differs between various roadway elements:

- The need for additional turn lanes as an intersection improvement is a function of the main street “advancing” volume (the through volume approaching in the same direction as the turning volume), the opposing volume (the through volume approaching in the opposite direction as the turning volume), and the proportion of turning volumes. As regional growth in traffic would largely impact the advancing and opposing volume, the growth in those volumes was evaluated. Existing capacity at each location was determined by identifying the advancing volume that initially meets warrants (the lowest volume that triggers the need for the roadway improvement), at existing opposing volume and proportion of turning volumes.
- The need for shoulder widening is triggered when the daily traffic volume exceeds the capacity of a collector street (2,000 Average Daily Traffic volume, per Town standards), as this is the largest roadway classification in the Truckee Public Improvement and Engineering Standards that does not require a shoulder. ADT volumes were estimated from the peak hour volume forecasts generated by the Town TransCAD model using ADT/peak hour factors identified in the General Plan Traffic Study.

The calculation of these proportions (for those elements not wholly the responsibility of future development) are shown in Table 3, under the column “% of Capacity Exceedance Generated by Future Development”. In addition, a portion of the costs for shoulder widening improvements are associated with repaving of the existing roadway. As this is an ongoing maintenance

responsibility (and thus not eligible for AB 1600 funding), these costs are factored down by 40 percent.

Overall Future Truckee Area Funding Development Responsibilities

Multiplying the proportion of funding responsibility assigned to future development for each project by the proportion of funding responsibility assigned to Truckee area development yields the overall proportion of funding assignable to future Truckee area development. The “% of Total Project Funding That is the Responsibility of Future Development in TIF Area” represents the percentage of project cost that can be collected (% Eligible for Collection) from new development through the AB 1600 TIF Program going forward. As the AB 1600 program is updated, this percentage will generally be equal to or less than what it was in previous AB 1600 programs. This is due to traffic growth that occurs between AB1600 program updates which causes existing intersection or roadway operations to deteriorate from acceptable levels in earlier AB1600 studies to unacceptable levels in later AB1600 studies. When an intersection or roadway reaches an unacceptable LOS, only a portion of the improvement costs of that intersection or roadway can be collected from the AB1600 program going forward. Multiplying the result by the estimated cost of each improvement yields the maximum potential funding responsibility of the Truckee Area TIF program. Summing over all projects yields a total of \$62,536,100, as shown in Table 2.

Frontage Improvements for New Development

In some instances, roadway connections (or portions of roadway connections) that are in the TIF project list are also required to serve new development (e.g. Pioneer Trail and Bridge Street Extensions). If the roadway has not been built prior to the development which requires it for access, the private development would be responsible for funding and constructing the portion of the roadway that serves the undeveloped land within the project. In addition, the roadway construction would not be eligible for credit or reimbursement under the TIF program. However, once the improvement is built, the Traffic Impact Fee Program would be adjusted accordingly (reduced to account for the portion of the roadway that was built by private development).

Annual TIF Project Adjustments

Adjustments to the TIF project costs will occur annually during the AB 1600 Traffic Impact Fee annual report and public hearing. This hearing is held to comply with the provisions of Government Code Section 66006, which requires each public entity that collects AB 1600 fees to provide an annual report and to hold an annual public hearing that discloses the amount of fees collected during the previous fiscal year, as well as the amount of interest earned on those fees. The statute also requires that the public entity disclose the amount of funds which have been spent on given projects over the previous fiscal year.

Proportion of Project Costs Eligible for AB 1600 Funding

Independent of the discussion of total funding that is the responsibility of future traffic growth in the study area is the question of the proportion of each project's costs that can be currently charged to new development through the AB 1600 TIF Program. The figures presented in the column entitled "% of Project Costs Eligible for AB 1600 Funding (% Eligible for Implementation)" in Table 2 presents this latter figure for each project, representing the percentage of AB 1600 TIF funds that can be used to fund a project at the time that it is constructed.

As an example, the Bridge Street/West River Street intersection has been included in the TIF Program since 1999. The intersection operated at an adequate LOS at that time. Therefore, the "% of Total Funding That is the Responsibility of Future Development in the TIF Area" was 100% in the 1999 TIF Program. Under 2015 conditions, it has been determined that the "% Eligible for Collection" is only 83% of the project costs going forward because traffic growth that has occurred between 1999 and 2015 caused the intersection to deteriorate from an acceptable LOS in 1999 to a substandard LOS in 2015. As the Town has been collecting fees for this intersection since 1999, and the "% Eligible for Collection" from that time to now has been 100%, it is appropriate that the "% Eligible for Implementation" continue to remain at 100% even though the "% Eligible for Collection" going forward will be reduced to 83%.

However, in some instances, the % Eligible for Collection in the current fee program is higher now than it was in previous fee programs. This is due to the fact that 1) the fee program includes additional areas outside the Town of Truckee limits that were not included in previous programs (thereby increasing the traffic volume associated with development in the fee area) and 2) changes in future traffic volume forecasts resulting from the updated traffic model. In these locations, the % Eligible for Collection is the same as the % Eligible for Implementation for individual projects.

Truckee - Eastern Placer Fee Sharing

From a circulation perspective, the Truckee area is part of a larger region that also contains the eastern portion of Placer County (east of the Sierra Crest) and unincorporated areas of Nevada County. As a result, there are traffic impacts in one jurisdiction associated with development in others. Recognizing this fact, in 2005 the Town of Truckee and Placer County funded the Placer County/Truckee Joint Impact Fee Study which was prepared by LSC. The key outcome of that work is that the study concluded that traffic impacts to the Town of Truckee associated with growth in Eastern Placer County are equal to the traffic impacts to Eastern Placer County associated with growth in the Town of Truckee in terms of monetary value. As a result, in 2007, the Town of Truckee and Placer County entered into a fee sharing agreement. The agreement authorizes Truckee to collect fees to mitigate Truckee's impact to Placer County roadways and authorizes Truckee to keep those fees. The agreement also authorizes each jurisdiction to establish the appropriate fee to charge developers for cross-jurisdictional impacts.

The Truckee Area Traffic Impact Fee Program accounts for these Placer County-Truckee cross-jurisdictional impacts as follows:

1. The 2007 Truckee Traffic Impact Fee Program identified the value of Truckee development's traffic impact on Placer County projects to be equal to \$7,477,900, which the Town is authorized to collect and retain per the Placer County/Town of Truckee fee sharing agreement. The 2015 Traffic Impact Fee Program adjusted the 2007 value for inflation (based upon the Construction Cost Index that is published by Engineering News Report). The resultant value of Truckee development's traffic impact on Placer County roadways when adjusted to represent inflation between 2007 and 2015 dollars is \$9,595,291, as presented in Table 2.
2. Consistent with the conclusions of the Placer County/Truckee Joint Impact Fee Study, it was assumed that the value of Placer County development's traffic impact on Truckee roadways in 2015 is equivalent to Truckee's impact on Placer County, or \$9,595,291.
3. Since the Town would be collecting the \$9,595,291 and retaining it per the fee sharing agreement, it is appropriate to evaluate the methodologies in the 2005 Joint Impact Fee study and the 2015 fee study to eliminate any areas where the methodologies overlap in ways that could result in over or under collection of fees.
4. An analysis was performed to identify any areas where the Town's collection and retention of fees for Truckee development impacts on Placer County per the Joint Impact Fee Study (which are being retained by the Town per the fee sharing agreement) overlap with the Town's collection of fees to mitigate impacts of Truckee development within the 2015 Truckee Impact Fee Program methodology.
5. Because the "% of Total Funding That is the Responsibility of Future Development in the TIF Area" column in Table 2 of the 2015 fee study includes new trips resulting from growth in Truckee that are travelling to new destinations associated with growth in Placer County, and because those same trips were assigned partially as the responsibility of Placer County, and partially as the responsibility of Truckee in the Joint Fee Study, this was identified as an area of overlap that warranted an adjustment to avoid over collection of fees.
6. To identify the appropriate adjustment amount, an analysis was performed to identify the monetary value of Placer's traffic impact on Truckee infrastructure identified in the Joint Fee Study that does not overlap with the "% of Total Funding That is the Responsibility of Future Development in the TIF Area" column in Table 2 of the 2015 fee study. This value can then be subtracted from the \$9,595,291 total Placer traffic impact on Truckee Infrastructure to produce the appropriate adjustment amount.
7. New vehicle trips associated with new development in Placer County that start or end in Placer County and travel through Truckee without stopping were assigned as being 100% of the responsibility of Placer County in the Joint Fee Study. The percentages of total funding

that is the responsibility of future development in the TIF Area in Table 2 of the 2015 fee study do not include those trips as being the responsibility of Truckee Area Development. Therefore, this is an area that the analysis methodology does not overlap between the Joint Fee Study and the 2015 Fee Study.

8. To assess the monetary value of these through trips, the percentages of total funding that is the responsibility of future development in the TIF Area in Table 2 of the 2015 fee study was adjusted to include the above referenced through trips. This resulted in a new total project cost attributable to new development of \$66,034,900 as compared to a total cost of \$62,536,100 when the through trips are not included in the Table 2 percentages. The difference in these values is \$3,498,800, which represents the monetary value of Placer's impact on Truckee which is not otherwise accounted for in the 2015 fee program.
9. Of the estimated \$9,595,291 value of Placer's traffic impact on Truckee infrastructure, \$3,498,800 is associated with through trips originating or ending in Placer County that are not included in the percentages of total funding that is the responsibility of future development in the TIF Area in Table 2 of the 2015 fee study. The remaining \$6,096,491 is accounted for in the "% of Total Funding that is the Responsibility of Future Development in the TIF Area" in Table 2 of the 2015 study.
10. Since the \$6,096,491 is already accounted for in the Truckee Impact Fee Program methodology, it is identified as a credit in Table 2.

Truckee - Eastern Nevada County Fee Sharing

There is an existing fee agreement between Nevada County and the Town of Truckee that states that Nevada County will collect traffic impact fees from new development in Eastern Nevada County and provide those fees to the Town of Truckee to implement roadway projects within the Town of Truckee. The current agreement results in the assessment of a traffic impact fee for Truckee impacts to all parcels located in eastern Nevada County (parcels east of Kingvale) and the basis of the fee is separate and different from the Town of Truckee's Traffic Impact Fee Program. The fees collected from Nevada County to date are included in the "Cumulative AB 1600 Funds in Account as of July 1, 2015" reported in Table 2.

As discussed above, this fee program encompasses portions of unincorporated Nevada County adjacent to the eastern town boundary, specifically the Truckee Tahoe Airport, the Hirschdale area (including the Raley Property), the old Boca town site, and the area west of Tahoe Donner and north of Interstate 80. The parcels that are included in the fee program are shown in Appendix C. The project list also includes one improvement project in this area, consisting of improvements to Glenshire Drive and Hirschdale Road between the Truckee town limits and Interstate 80. In order to complete the effort to incorporate a portion of Nevada County into the fee program, it will be necessary for the Town to modify the existing agreement with Nevada County regarding the traffic impact mitigation fees collected in the unincorporated portion of eastern Nevada County. Under this agreement Nevada County would agree to (1)

adopt the traffic impact fees and nexus study approved by the Town and apply these fees to the aforementioned areas of unincorporated Nevada County and (2) transfer traffic impact fees collected for development in these areas to the Town of Truckee. Also under this agreement, the Town of Truckee would agree to take the lead on funding and construction of the widening of Glenshire Drive and Hirschdale Road between the Truckee town limits and Interstate 80.

It is also worth noting that a portion of the costs for shoulder widening improvements for projects within the Town of Truckee (as shown in Table 2) are assumed to be funded with maintenance funds, with the roadway widening project being timed to coincide with major maintenance activity. Because the Town has the ability to allocate other local funds (such as Measure V) to this maintenance, the widening project costs are factored down by 40 percent to reflect the funding that would be provided with maintenance funds. However, in Nevada County, where there is not another local funding source (such as a road maintenance sales tax), it is not certain that 40 percent of the project cost will come from elsewhere. Therefore, this reduction is not applied to the road widening project in Nevada County.

Total Truckee Area TIF Program Funding

As shown in the bottom portion of Table 2, the total cost associated with Truckee and Eastern Nevada County's development impacts per the Fee Program methodology is \$62,536,100. Additional adjustments are made to this total to calculate the Traffic Impact Fee as follows:

1. \$800,000 was added to reflect anticipated expenditures for the SR 89/UPRR Mousehole project, which has been removed from the project list but still results in expenditures against the TIF Program subsequent to June 30, 2015.
2. \$9,595,291 was added to reflect Truckee's fair share contributions to Placer improvements as discussed in more detail above.
3. Also discussed in more detail above, a credit in the amount of \$6,096,491 is applied (or subtracted) to account for the cross-jurisdictional impacts between Placer County and Truckee that are already accounted for in the Truckee Impact Fee Program methodology.
4. Finally, the existing Traffic Impact Fee fund balance (\$6,283,640) is subtracted from the program costs.

With these adjustments, the total net future funding requirements of the program is \$60,551,260.

While there are other funding sources that could potentially fund a portion of the various improvement projects, none of these other sources are certain. Therefore, no reductions in TIF funding responsibilities are made to reflect other funding sources.

Calculation of Dwelling Unit Equivalents

For a TIF program, future development is considered in terms of the number of “Dwelling Unit Equivalents” (DUEs) expected to occur in the jurisdiction. DUEs are the standard measure of development used in traffic impact fee programs, and represent the level of traffic generated by one permanently occupied Single-Family Dwelling Unit (SFDU). As mentioned above, it is necessary to estimate total growth in DUEs for all forecast future land uses in Town of Truckee through buildout. For each land use type, the following steps were applied:

- As shown in Table 4, trip generation rates are identified, based upon the Institute of Transportation Engineers *Trip Generation Manual* (9th Edition), which is used for consistency across the various land use types.
- The percentage of new trips is identified. This factor reflects the fact that some trips to many land use types are already on the area’s roadways, and simply “stop by” as part of longer trips. For instance, a relatively high proportion of trips to and from gas stations are made as part of longer trips, and a correspondingly small proportion are new trips. Values are drawn from the ITE *Trip Generation Handbook* where available as well as “Impact Fees – Issues, Concepts and Approaches,” Steven A. Tindale, *ITE Journal*, May 1991.
- Multiplying the trip rate times the percentage of new trips’ yields the new vehicle-trips per unit of development for each development type. Dividing by the new vehicle-trips associated with a SFDU yields the DUE per unit of development for each land use category
- As shown in Table 5, multiplying by the quantity of future development for each land use category and summing over all categories yields an estimated future growth in DUEs of 10,715.

Of the total growth in DUE, 891 DUE are associated with future development in the Eastern Nevada County parcels that are adjacent to the Town boundaries (including the Truckee Tahoe Airport, the Hirschdale area, the old Boca town site, and the area west of Tahoe Donner and north of Interstate 80).

Calculation of TIF Fee per DUE

The total funding responsibility of future Truckee area growth (\$60,551,260) can then be divided by the future growth in DUEs (10,715) to define the fee per DUE of \$5,651, as shown in the bottom portion of Table 5. This fee should be applied to all new development (both private and public) occurring in the Town of Truckee and adjacent portions of unincorporated Nevada County within the fee area that results in an increase in traffic volume. The fee level should be adjusted (on an annual basis) based upon construction cost inflation factors (typically those prepared by *Engineering News Record*). The fee level could also be adjusted in the future as future traffic analyses identify the need for changes in the roadway improvement project list. Fees for all development projects which require building permits would be paid prior to the

issuance of building permits. Fees for new development projects which do not require building permits would be paid before any other applicable county approval is made final.

Calculating DUE Figures for Specific Projects

The calculation of equivalent DUEs for specific development projects will be conducted based upon the rates shown in Table 4.

TABLE 4: Dwelling Unit Equivalent and Fee Calculation				
Land Use Category	Unit	DUE per Unit	Growth in Land Use	DUE
Single-family	DU	1.00	4,705	4,705
Multi-family	DU	0.62	2,264	1,404
Mobile Home	DU	0.59	37	22
Retirement	DU	0.25	126	32
Hotel/Motel	Room	0.70	562	393
Office	1,000 s.f.	1.49	557	830
Medical Office	1,000 s.f.	3.57	9	32
General Retail	1,000 s.f.	2.64	692	1,827
Multiplex Movie Theater	1,000 s.f.	2.94	24	71
Restaurant - Quality or High-Turnover	1,000 s.f.	3.23	30	97
Fast Food Restaurant / Coffee Shop	1,000 s.f.	8.78	17	147
Supermarket	1,000 s.f.	3.24	40	130
Convenience Market	1,000 s.f.	12.53	17	210
Bank	1,000 s.f.	6.56	5	33
Gas Station	Fueling Position	1.79	12	21
Health Fitness Club	1,000 s.f.	2.65	25	66
Light Industrial	1,000 s.f.	0.97	658	639
Warehouse	1,000 s.f.	0.32	7	2
Hospital	1,000 s.f.	0.72	3	2
Public Park	Acres	0.20	261	52
Total DUE				10,715
Calculation of Traffic Impact Fee per DUE				
Total Funding Responsibility of Future Truckee Growth				\$60,551,260
Fee per DUE				\$5,651

TABLE 5: Dwelling Unit Equivalent Factors and Fee Calculations

Fee Formula:

$$\$5,651 \times \text{DUE per Unit} \times \text{Units (from Project)} = \text{fee}$$

Land Use Category	Unit	ITE Land Use Code	PM Peak Hour Trip Rate Per Unit ³	% New Trips	New Trips per Unit	DUE per Unit
Residential						
Single-family ¹	DU	210	1.00	100%	1.00	1.00
Multi-family ²	DU	220	0.62	100%	0.62	0.62
Mobile Home	DU	240	0.59	100%	0.59	0.59
Retirement	DU	252	0.25	100%	0.25	0.25
Hotel/Motel	Room	310	0.7	100%	0.70	0.70
Office						
General Office	1,000 s.f.	710	1.49	100%	1.49	1.49
Medical Office	1,000 s.f.	720	3.57	100%	3.57	3.57
Commercial						
General Retail	1,000 s.f.	Note 4	6.08	43%	2.64	2.64
Multiplex Movie Theater	1,000 s.f.	445	2.94	100%	2.94	2.94
Restaurant - Quality or High-Turnover	1,000 s.f.	931, 932	8.67	37%	3.23	3.23
Fast Food Restaurant / Coffee Shop	1,000 s.f.	933, 934	29.4	30%	8.78	8.78
Supermarket	1,000 s.f.	850	9.48	34%	3.24	3.24
Convenience Market	1,000 s.f.	851	52.4	24%	12.5	12.5
Bank	1,000 s.f.	912	24.3	27%	6.56	6.56
Gas Station	Fueling Position	944	13.87	13%	1.79	1.79
Health Fitness Club	1,000 s.f.	492	3.53	75%	2.65	2.65
Industrial						
Light Industrial	1,000 s.f.	110	0.97	100%	0.97	0.97
Warehouse	1,000 s.f.	150	0.32	100%	0.32	0.32
Hospital	1,000 s.f.	610	0.93	77%	0.72	0.72
Public Park	Acre	417	0.2	100%	0.2	0.20
School						
Elementary School	1,000 s.f.	520	1.21	80%	0.97	0.97
Middle School	1,000 s.f.	522	1.19	80%	0.95	0.95
High School	1,000 s.f.	530	0.97	80%	0.78	0.78
Community College	1,000 s.f.	540	2.54	80%	2.03	2.03

Note 1: A secondary dwelling with a floor area greater than 850 square feet shall be considered a single-family residence for the purpose of this Ordinance. Any single-family residence in excess of three bedrooms will be assessed an additional 0.33 DUE per bedroom in excess of three bedrooms.

Note 2: Multifamily units are any attached units (including duplex). In addition, a secondary dwelling with a floor area of 850 square feet or less shall be considered a multifamily residence for the purpose of this Ordinance.

Note 3: PM peak-hour of adjacent street traffic.

Note 4: Trip generation rate based on calibrated Town of Truckee Model.

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Intersection Volumes and Level of Service

TABLE A-1: Intersection Design Volumes

Intersection	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Existing													
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)	0	454	0	0	289	0	182	0	122	0	0	0	1,047
Donner Pass Road / Pioneer Trail	136	407	24	13	273	136	120	3	216	18	4	21	1,371
Donner Pass Road / SR 89 N	160	238	30	0	126	241	264	29	255	28	25	0	1,396
SR 89 North / Alder Drive / Prosser Dam Road	52	383	67	11	269	15	17	0	55	43	6	10	928
SR 89 North / Rainbow Road	0	278	132	22	207	0	0	0	0	88	0	12	739
SR 267/I-80 Eastbound	0	587	319	201	334	0	99	0	241	0	0	0	1,781
SR 267/I-80 Westbound	376	310	0	0	364	45	0	0	0	171	1	118	1,385
Donner Pass Road / Cold Stream Road / I-80 EB Ramps	48	92	88	132	70	28	166	235	75	99	418	131	1,582
Donner Pass Road / I-80 WB Ramps (West Interchange)	199	0	119	0	0	0	0	423	32	1	449	0	1,223
Donner Pass Road / Northwoods	0	0	2	285	0	158	194	292	0	2	280	307	1,520
Donner Pass Road / SR 89 South / Frates	295	121	134	53	150	54	72	300	324	199	397	66	2,165
West River Street / McIver Crossing	5	7	0	171	0	72	124	348	11	0	208	138	1,084
Donner Pass Road / McIver Crossing	160	0	109	0	0	0	0	637	203	40	347	0	1,496
Donner Pass Road / Bridge Street	176	111	237	11	78	30	38	185	210	191	99	14	1,380
Bridge Street / West River Street	286	406	8	24	366	89	93	9	393	19	6	25	1,724
SR 267 / Brockway Road	298	690	9	83	366	126	111	45	200	8	82	105	2,123
Donner Pass Road / Glenshire Drive	155	0	144	0	0	0	0	320	252	198	198	0	1,267
Glenshire Road / Dorchester Road (West)	0	0	0	28	0	97	195	227	0	0	102	35	684
Brockway Road / Reynolds Way	0	0	0	20	0	16	16	359	0	0	486	20	917
SR 89 South / I-80 Westbound	164	407	0	0	560	113	0	0	0	208	2	143	1,597
SR 89 South / I-80 Eastbound	22	519	387	263	505	0	52	6	294	0	0	0	2,048
SR 89 South / Deerfield Drive	132	588	0	35	538	257	308	0	33	0	0	0	1,891
Brockway / Palisades	212	0	129	0	0	0	0	505	273	79	488	0	1,686
SR 89 North / Alder Creek Road	76	174	40	4	108	9	8	9	91	30	7	6	562
Glenshire Drive / Dorchester Drive (East)	21	85	0	0	127	69	78	0	21	0	0	0	401
Donner Pass Road / South Shore Dr	13	0	93	0	0	0	0	74	12	112	217	0	521
Future with Extensions													
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)	0	805	0	0	590	0	303	0	225	0	0	0	1,923
Donner Pass Road / Pioneer Trail	146	801	31	19	515	329	357	6	283	17	6	23	2,533
Donner Pass Road / SR 89 N	480	321	134	28	229	263	334	229	618	221	124	27	3,008
SR 89 North / Alder Drive / Prosser Dam Road	98	472	112	11	359	15	22	2	84	77	7	11	1,270
SR 89 North / Rainbow Road	0	274	229	22	226	0	0	0	0	159	0	13	923
SR 267/I-80 Eastbound	0	1188	478	439	785	0	99	0	458	0	0	0	3,447
SR 267/I-80 Westbound	577	710	0	0	918	149	0	0	0	307	1	225	2,887
Donner Pass Road / Cold Stream Road / I-80 EB Ramps	96	116	117	169	77	21	238	268	102	152	529	62	1,947
Donner Pass Road / I-80 WB Ramps (West Interchange)	295	0	96	0	0	0	0	519	36	1	447	0	1,394
Donner Pass Road / Northwoods	0	0	2	270	0	149	217	322	0	2	286	266	1,514
Donner Pass Road / SR 89 South / Frates	252	183	122	80	222	52	84	235	343	259	334	121	2,287
West River Street / McIver Crossing	5	7	0	0	404	0	76	129	648	11	0	182	1,932
Donner Pass Road / McIver Crossing	219	0	100	0	0	0	0	487	456	25	331	0	1,618
Donner Pass Road / Bridge Street	78	340	466	33	159	30	38	306	107	378	207	72	2,214
Bridge Street / West River Street	526	617	11	18	406	216	237	25	812	22	13	31	2,934
SR 267 / Brockway Road	440	950	146	344	669	231	249	239	323	127	298	468	4,484
Donner Pass Road / Glenshire Drive	-46	0	265	0	0	0	0	464	295	404	315	0	1,697
Glenshire Road / Dorchester Road (West)	0	0	0	28	0	145	255	430	0	0	223	35	1,116
Brockway Road / Reynolds Way	0	0	0	58	0	16	16	628	0	0	750	86	1,554
SR 89 South / I-80 Westbound	218	413	0	0	706	118	0	0	0	339	2	143	1,939
SR 89 South / I-80 Eastbound	22	567	589	373	670	0	61	6	354	0	0	0	2,642
SR 89 South / Deerfield Drive	174	776	5	45	723	287	347	1	58	9	1	27	2,453
SR 89 North / Alder Creek Road	35	199	53	7	129	8	6	13	78	67	8	10	613
Glenshire Drive / Dorchester Drive (East)	17	150	0	0	195	86	88	0	18	0	0	0	554
Donner Pass Road / South Shore Dr	23	0	101	0	0	0	0	155	20	126	337	0	762

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Table A-2: Intersection Level Of Service

Intersection	Control Type ^{1,2}	Existing Conditions			Future With Bridge Street and Pioneer Trail Extensions		
		Delay (sec/veh)	Delay (veh-hrs)	LOS	Delay (sec/veh)	Delay (veh-hrs)	LOS
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)	Stop-Controlled	26.9	--	D	OVF	OVF	F
Donner Pass Road / Pioneer Trail	Roundabout	9.2	--	A	89.6	24.3	F
Donner Pass Road / SR 89 N	Roundabout	6.0	--	A	28.7	--	D
SR 89 North / Alder Drive / Prosser Dam Road	Roundabout	7.6	--	A	9.9	--	A
SR 267/I-80 Eastbound	Signal	14.3	--	B	92.9	--	F
SR 267/I-80 Westbound	Signal	27.2	--	C	132.4	--	F
Donner Pass Road / Cold Stream Road / I-80 EB Ramps	All-Way Stop-Controlled	69.7	8.1	F	75.0	11.0	F
Donner Pass Road / I-80 WB Ramps (West Interchange)	Stop-Controlled	56.3	3.1	F	166.8	13.7	F
Donner Pass Road / Northwoods	Signal	17.2	--	B	14.0	--	B
Donner Pass Road / SR 89 South / Frates	Signal	31.8	--	C	31.3	--	C
West River Street / McIver Crossing	Stop-Controlled	65.7	3.1	F	OVF	OVF	F
Donner Pass Road / McIver Crossing	Roundabout	15.8	--	C	17.6	--	C
Donner Pass Road / Bridge Street	Unconventional ³	OVF	OVF	F	OVF	OVF	F
Bridge Street / West River Street	Stop-Controlled	OVF	OVF	F	OVF	OVF	F
SR 267 / Brockway Road	Signal	17.7	--	B	OVF	--	F
Donner Pass Road / Glenshire Drive	Stop-Controlled	41.1	--	E	53.7	0.03	F
SR 89 South / I-80 Westbound	Roundabout	8.4	--	A	12.7	--	B
SR 89 South / I-80 Eastbound	Roundabout	10.4	--	B	17.8	--	C
SR 89 South / Deerfield Drive	Signal	8.6	--	A	9.8	--	A
Brockway / Palisades	Signal	10.3	--	B	14.7	--	B
SR 89 North / Alder Creek Road	Stop-Controlled	15.4	--	C	15.3	--	C

BOLD text indicates that LOS standard has been exceeded.

OVF = Overflow. Overflow indicates an excessive delay, which cannot be accurately calculated using HCM methodology.

NOTE 1: Level of service for signalized intersections is reported for the total intersection.

NOTE 2: Level of service for roundabout and stop-controlled intersections is reported for the worst movement.

NOTE 3: The Donner Pass Road / Bridge Street intersection is controlled with stop signs on three approaches, with the northbound Bridge Street approach uncontrolled.

TABLE A-3: Intersection LOS Mitigation

Intersection	Control Change	Mitigation Lane Configuration			Mitigated Conditions		NOTES	
		NB	SB	EB	WB	Delay (sec/veh)		LOS
EXISTING	Donner Pass Road / Cold Stream Road / I-80 EB Ramps	1	1	1	1	18.3	C	
	Donner Pass Road / Bridge Street	1	1	1	1	10.2	B	
	Bridge Street / West River Street	1	1	1	1	12.9	B	
FUTURE								
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)	Single-Lane Roundabout	1	1	Shared	n/a	26.1	D	
Donner Pass Road / Pioneer Trail	Dual-Lane Roundabout	2	2	Shared	Shared	29.1	D	
SR 267/I-80 Eastbound	Dual-Lane Roundabout	2+RT slip	2 shared	T-L + RT Slip	--	43.4	E	NBRT yield lane required; EBRT yield lane required
SR 267/I-80 Westbound	Dual-Lane Roundabout	2 shared	2 shared	--	2	47.0	E	
Donner Pass Road / Cold Stream Road / I-80 EB Ramps	Single-Lane Roundabout	Shared	Shared	Shared	Shared	33.1	D	Works with single lane roundabout and no additional slip lanes
Donner Pass Road / I-80 WB Ramps (West Interchange)	Single-Lane Roundabout	Shared	--	Shared	Shared	11.3	B	
West River Street / McIver Crossing	Single-Lane Roundabout	1	1	1	1	35.5	E	Works with single lane roundabout and no additional slip lanes
Donner Pass Road / Bridge Street	Single-Lane Roundabout	L-T; R slip	Shared	Shared	Shared	22.9	C	Needs NBR slip lane in order to avoid excessive queues between roundabouts
Bridge Street / West River Street	Dual-Lane Roundabout	L; T-R	L-T; R	L-T; R	Shared	42.1	E	Can improve LOS to B with EBR free and accel lane. Would require bridge widening on South leg.
SR 267 / Brockway Road	3-Lane Roundabout	L-T;T;T-R	L-T;T;T-R	L;L-T;R Slip	L-T;T;R Slip	54.8	F	1.9 vehicle-hours delay on worst movement (WBL)

Evaluation of the Pioneer Trail and Bridge Street Extensions

The need for an additional connection to the Tahoe Donner area (beyond the existing connections via Northwoods Boulevard and Alder Creek Road) has long been a consideration. The connection would be made by extending Pioneer Trail to meet Northwoods Boulevard and extending Bridge Street north to meet the extended Pioneer Trail. Previous analyses have concluded that these new roadways would be necessary to avoid the need to expand Donner Pass Road west of SR 89 South beyond the size allowed under the General Plan Circulation Element policies. The new future model provides the opportunity to update this analysis to currently planned conditions. Existing traffic counts and the model of future conditions were then used to assess intersection and roadway traffic conditions both with and without the extensions of Donner Pass Road and Bridge Street.

Existing Traffic Volumes

The existing traffic volumes developed for this analysis are based on the recent intersection turning movement counts conducted at various intersections in the Town of Truckee by LSC as part of this project during the summer of 2014. These counts were adjusted by a day factor to estimate the tenth highest summer peak hour, per Town of Truckee standard. Two of the study intersections for this analysis were not counted in 2014: SR 89 North /Alder Drive / Prosser Dam Road and Donner Pass Road / Interstate 80 (I-80) Eastbound Off-Ramp (eastern interchange). The most recent count data from 2009 were used as the basis for these intersection volumes. A growth factor was applied to the 2009 counts to estimate 2014 traffic volumes.

Intersections in the vicinity of the SR 267/I-80 interchange and Pioneer Trail are spaced with no mid-block driveways or other access points; therefore, these intersections' volumes must be balanced, such that the traffic volume departing on one intersection departure leg must equal the traffic volume on approach leg of the adjacent intersection. Traffic volumes at the following intersections were adjusted to balance with adjacent intersections:

- SR 89 North / Alder Drive / Prosser Dam Road
- SR 89 North / Donner Pass Road / Henness Road
- SR 267 / SR 89 North / Interstate 80 Westbound Ramps
- SR 267 / Interstate 80 Eastbound Ramps
- SR 267 / Brockway Road / Soaring Way
- Donner Pass Road / Pioneer trail
- Donner Pass Road / Interstate 80 Westbound On-ramp (eastern interchange)
- Donner Pass Road / Interstate 80 Eastbound Off-ramp (eastern interchange)
- Donner Pass Road / Glenshire Drive

Generally, the conservative approach to balancing intersection traffic volumes is applied, such that all adjustments are positive, resulting in a net increase in traffic volumes. In this case,

however, the new traffic count at the intersection of SR 89 North / Donner Pass Road / Henness Road was determined to be unreasonably high when compared with previous counts and estimations. Additionally, the new traffic count at the Donner Pass Road / Glenshire Drive intersection indicated a decrease in traffic volumes. As there are few access points between the intersections along Donner Pass Road between Glenshire Drive and SR 89 North, the traffic volumes through this corridor must balance. The intersection volumes were generally decreased in order to balance with the volumes derived from the summer 2014 count at Donner Pass Road / Glenshire Drive.

The intersection layout of Truckee also necessitates that the traffic volumes along SR 267 be balanced with the traffic volumes at the Donner Pass Road / SR 89 North intersection. New traffic counts conducted during the summer of 2014 at the SR 267 / Interstate 80 interchange were consistent with the previous patterns and growth trends in the area. Therefore, only small adjustments were made to balance the interchange intersection volumes with the Donner Pass Road / SR 89 North intersection to the north. Some of the turning movement counts at the SR 267 / I-80 ramps showed a decrease in traffic from the existing design volumes used in the PC-3 traffic analysis. The volume at these movements was adjusted to match the volume used in the PC-3 analysis where doing so would solve the imbalance. Lastly, traffic volumes on the southbound approach to the SR 267 / Brockway Road intersection were increased to balance with the traffic volume arriving from the north. The existing balanced 2014 design volumes are provided at the top of Table B-1.

Future Volumes

Using the Future Buildout Model, volumes were forecast for the following study intersections:

- Donner Pass Road/Northwoods Boulevard
- Donner Pass Road/SR 89 South/Frates Lane
- Donner Pass Road/Pioneer Trail
- Donner Pass Road/I-80 Eastbound Off-Ramps (eastern interchange)
- Donner Pass Road/Bridge Street
- Bridge Street/West River Street
- Donner Pass Road/SR 89 North
- SR 89 North/Alder Drive/Prosser Dam Road
- SR 89 North/Alder Creek Road
- SR 89 South/I-80 Westbound Ramps
- SR 89 South/I-80 Eastbound Ramps

Two sets of volumes were generated: one with the roadway extensions and one without. Consistent with previous use of the Truckee Model, existing model volumes were subtracted from the future model volumes to obtain the growth in traffic. This growth was then added to the most recent counts from the summer of 2014 to obtain future buildout volumes, as shown in Table B-1.

Town of Truckee Level of Service Standards

The existing Town of Truckee policy on Level Of Service (LOS) is applied in this Traffic Impact Analysis. As stated in the Truckee 2025 General Plan, the Town's LOS standards are as follows:

"Policy P2.1 – Establish and maintain a Level of Service D or better on road segments and for total intersection movements in portions of the Town outside of the Downtown Study Area. Establish and maintain a Level of Service E or better on arterial and collector road segments and for total intersection movements within the Downtown Specific Plan Area. Throughout the Town, individual turning movements at unsignalized intersections shall not be allowed to reach LOS F and to exceed a cumulative vehicle delay of four vehicle hours. Both of these conditions shall be met for traffic operations to be considered unacceptable."

Intersection Level of Service Analysis

Intersection LOS for the study intersections was evaluated using the methodologies documented in the 2010 Highway Capacity Manual (HCM), as applied in the Synchro 8.0 software package developed by Trafficware, LLC. LOS for signalized intersections is primarily measured in terms of average delay per vehicle entering the intersection. Signalized intersection LOS is based upon the assessment of volume-to-capacity ratios and control delay.

Individual LOS outputs are provided, attached. The results of the analysis for the following three scenarios are provided in the Table B-2:

- Existing conditions, based on summer 2014 traffic counts
- Future General Plan buildout conditions without the proposed Pioneer Trail and Bridge Street Extensions
- Future General Plan buildout conditions with the proposed Pioneer Trail and Bridge Street Extensions

The level of service analysis was performed assuming no changes to existing intersection geometric configuration or traffic signal phasing; however, signal timings were optimized using the Synchro optimization feature.

Gateway Area Study Intersections LOS

As presented in Table B-2, both of the Gateway Area study intersections (Donner Pass Road/Northwoods Boulevard and Donner Pass Road / SR 89 South / Frates Lane) are calculated to operate at an acceptable LOS under existing and both future scenarios. As expected, LOS at both of the study intersections would degrade under future traffic volumes without the Bridge

Street and Pioneer Trail extensions. However, both are still shown to operate within the Town standard. Therefore, it can be concluded that these extensions are not required to attain General Plan standards for intersection LOS, through buildout of the General Plan land uses. LOS at both of these intersections would be improved in the future scenario with the roadway extensions versus existing conditions due to the diversion of current traffic onto the new roadway proposed under this scenario.

Bridge Street and Pioneer Trail Area Study Intersections LOS

The existing and projected future intersection LOS for these intersections is provided in Table B-2. As shown, the three roundabout intersections in northeast Truckee are shown to operate at LOS A under existing conditions. The I-80 Eastbound Off-Ramp at Donner Pass Road is also shown to operate at an acceptable LOS D. Consistent with the conclusion of previous studies, the two stop-controlled intersections along Bridge Street are shown to operate at LOS F.

In the future, with buildout of the general plan, with or without the Bridge Street and Pioneer Trail extensions, the roundabouts at SR 89 North / Donner Pass Road and SR 89 North / Alder Drive / Prosser Dam Road would still operate at acceptable LOS. The roundabout at Donner Pass Road / Pioneer Trail would degrade to unacceptable LOS F under both future scenarios. The intersection LOS of Donner Pass Road / I-80 Eastbound Off-Ramp would also degrade to LOS F under both future scenarios.

In general, intersection delays are lower under the future scenario with the Bridge Street and Pioneer Trail extensions versus without the extensions.

SR 89 North / Alder Creek Road Intersection

Without the roadway extensions, northbound left turning traffic volumes at the SR 89 North / Alder Creek Road intersection would warrant a separate left-turn lane. The impact of the roadway extensions would be to reduce this volume below the minimum warrant level, avoiding the need for this roadway improvement.

Roadway Level Of Service

Donner Pass Road Gateway Area Roadway LOS

This section discusses the roadway capacity and LOS analysis for Donner Pass Road from the intersection of Northwoods Boulevard to SR 89 South/Frates Lane. The length of this segment is 0.58-mile. This section of roadway has one travel lane in each direction with a center two-way left-turn lane. The posted speed limit is 35 mph. There are 34 access points (driveways and unsignalized intersections) along this segment, resulting in an access point density of 59 access points per mile.

Overview of Available Analysis Procedures

Highway Capacity Manual

The Highway Capacity Manual (Federal Highways Administration, 2010) is the standard reference for roadway and intersection capacity analysis in the US. The analysis procedures have been used to create the Highway Capacity Software package. Roadway facility analysis procedures have been developed for various classifications of facilities. These procedures, and potential application to Donner Pass Road, are discussed below for each facility type.

- The Two Lane Roadway methodology was developed to assess the Level Of Service (LOS) of rural roadways. Key input parameters are traffic volume, lane and shoulder width, percent trucks and recreational vehicles, percent no-passing zones, and access point density. The quantitative measure on which LOS is based is the “percent time following” – the proportion of total travel time that an individual motorist can be expected to be following another vehicle. Importantly for this particular application, the methodology does not allow consideration of a Two-Way Left Turn Lane (TWLTL) as is present along Donner Pass Road. Given this lack, and that Donner Pass Road is in an urban developed setting without passing, this is not an appropriate methodology.
- The Urban Street methodology focuses on the operation of the signalized intersections along a corridor. While it includes the ability to enter the presence of a TWLTL (and associated volumes), this information is only used to identify how traffic queues would arrive at the signalized intersections – it does not assess the impact of the unsignalized intersections and driveways on the flow along the roadway between the signalized intersections. As a result, LOS is only a measure of delays associated with the signalized intersections, which is not the key roadway-related issue on Donner Pass Road away from the signalized intersections. It is therefore not a valid tool to consider roadway LOS.
- The Multilane methodology is designed to evaluate 4 or 6 lane urban arterials. As Donner Pass Road has only a single lane in each travel direction, this procedure does not apply.

In short, none of the available Highway Capacity Manual methodologies apply to the question of Donner Pass Road roadway capacity or level of service.

Florida Department of Transportation HIGHPLAN Methodology

Based on the conclusion that the Highway Capacity Manual (HCM) rural roadway methodology is not appropriate for more developed rural areas, the Florida DOT developed the LOSPLAN software. Reflecting its acceptance by the traffic engineering profession as a whole, this software is included in the 2010 Highway Capacity Software package. HIGHPLAN, a module of the LOSPLAN software, uses the HCM 2010 analysis technique and new capacity values but is

based on the premise that the most relevant service measure for motorists on two-lane highways in developed areas is to maintain a “reasonable” speed, instead of the HCM 2000's primary service measure of “percent time spent following” (the percent of a driver’s trip spent following another car). Drivers in developed areas primarily base their LOS on how close they are going relative to their free flow speeds and not so much based on the ability to set their own travel speed or to pass. In other words, as it is not the typical driver's expectation to be able to make a passing maneuver while driving through developed areas, it is not appropriate to consider LOS based upon the ability to pass. This methodology also specifically includes a factor reflecting the presence of a TWLTL. Applied carefully, it can provide a reasonable planning evaluation of LOS.

HIGHPLAN Analysis

As the only methodology that can be applied with current data, an analysis of LOS was conducted using the HIGHPLAN methodology. One consideration is that the HIGHPLAN method does not directly account for the main factor that contributes to capacity reduction on this segment of Donner Pass Road, specifically access point density. However, as discussed below, it does allow a “Local Adjustment Factor” that can reflect the impact of the high density of access points.

The HIGHPLAN analysis begins with selecting the “Area Type”. “Transitioning/Urban” was selected for Truckee. This land use type is applicable to “an area over 5,000 in population.” The analysis parameters include the following roadway variables:

- Terrain (level or rolling)
- Free-Flow Speed (40 – 70 mph)
- Left-Turn/Blockage Impact (yes or no)
- Median (yes or no)
- Passing Lanes (yes or no), and
- Percent No Passing Zones

The analysis is also based on the following traffic data variables:

- Peak Direction Hourly Volumes
- Off-Peak Direction Hourly Volumes
- Peak Hour Factor
- Percent Heavy Vehicles, and
- Local Adjustment Factor

Of these, the Local Adjustment Factor is the only subjective variable. FDOT staff indicates that this factor is intended to reflect local driver behavior. The software allows for a range of values from 0.80 to 1.00, which is applied directly to the base capacity (0.80 would be most conservative, resulting in a 20 percent decrease in the base capacity). The software provides a

default value 0.91 and otherwise no guidance on how to set this factor. Given that some of the drivers along Donner Pass Road are visitors not familiar with the roadway, a factor of 0.90 is applied.

Results

Table B-3 displays the HIGHPLAN LOS thresholds for Donner Pass Road after applying all of the analysis factors discussed above. As shown, the maximum peak hour, peak direction traffic volumes to achieve LOS D is 800. (HIGHPLAN outputs are provided, attached.) This table also displays the LOS results for all scenarios. As shown, under existing conditions, Donner Pass Road operates at LOS D, achieving the Town of Truckee's LOS D standard. In the future without the roadway extensions, Donner Pass Road would operate at LOS E, exceeding the Town standard. If the roadways are extended, Donner Pass Road would operate at an acceptable LOS. Based on this methodology, future growth in traffic will cause Donner Pass Road to "fail" in peak summer periods.

Alder Creek Road Roadway LOS

The Town of Truckee's *General Plan* defines a maximum Average Daily Traffic (ADT) volume on collector streets of 2,000. Without the extension of Pioneer Trail and Bridge Street, the ADT on Alder Creek Road would be 2,724, while with the extensions the ADT would be 1,295. This indicates that the roadway extensions would allow Alder Creek Road to conform to Town standards.

Conclusions

The results of this analysis can be summarized as following:

- At present, the key intersections along Donner Pass Road in the Gateway area achieve LOS standards and the roadway segment between 89 South/Frates and Northwoods Boulevard attains LOS standards.
- Absent the roadway extensions, traffic volumes on Donner Pass Road between 89 South/Frates Lane and Northwoods Boulevard will increase by 16 percent. While the signalized intersections along this stretch would remain within LOS standards, this traffic growth would cause an LOS deficiency on the roadway segment.
- Extending Pioneer Trail and Bridge Street would reduce future traffic volumes by 23 percent, to a level 11 percent below current volumes. This would allow the key roadway segment along Donner Pass Road to attain LOS standards.
- The roadway extensions would avoid the need to construct a northbound left turn lane on SR 89 North at Alder Creek Road, and would also allow traffic levels on Alder Creek Road to stay within adopted Town of Truckee standards.

TABLE B-1: Intersection Design Volumes

	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Existing												
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)	0	454	0	0	289	0	182	0	122	0	0	0
DPR/Pioneer Trail	136	407	24	13	273	136	120	3	216	18	4	21
DPR/SR 89 N	160	238	30	0	126	241	264	29	255	28	25	0
SR 89 North / Alder Drive / Prosser Dam Road	52	383	67	11	269	15	17	0	55	43	6	10
Donner Pass Road / Northwoods	0	0	2	285	0	158	194	292	0	2	280	307
Donner Pass Road / SR 89 South / Frates	295	121	134	53	150	54	72	300	324	199	397	66
Future Design Volumes W/Out Extensions												
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)	0	884	0	0	651	0	408	0	230	0	0	0
DPR/Pioneer Trail	329	794	33	19	514	275	274	4	436	18	5	24
DPR/SR 89 N	370	318	129	32	251	323	378	233	481	222	121	32
SR 89 North / Alder Drive / Prosser Dam Road	98	522	109	11	400	20	36	3	130	75	7	11
Donner Pass Road / Northwoods	0	0	2	454	0	101	238	321	0	2	286	362
Donner Pass Road / SR 89 South / Frates	273	184	126	80	233	53	85	310	471	264	429	126
Donner Pass Road / Bridge Street	105	231	499	19	62	30	38	332	111	407	227	53
Bridge Street / West River Street	508	588	11	17	374	194	217	27	796	22	14	30
Future Design Volumes WITH Extensions												
Donner Pass Road / I-80 EB Off Ramp (Eastern Interchange)	0	795	0	0	557	0	313	0	240	0	0	0
DPR/Pioneer Trail	153	786	33	18	474	313	345	6	294	17	6	23
DPR/SR 89 N	413	288	129	29	206	268	345	237	574	218	128	28
SR 89 North / Alder Drive / Prosser Dam Road	93	458	109	11	346	16	22	2	81	75	7	11
Donner Pass Road / Northwoods	0	0	2	269	0	150	217	323	0	2	288	267
Donner Pass Road / SR 89 South / Frates	254	184	128	80	232	53	85	236	344	264	338	121
Donner Pass Road / Bridge Street	85	330	471	33	151	30	38	304	102	380	211	72
Bridge Street / West River Street	506	609	11	19	393	220	245	25	785	21	13	31

Source: LSC

Truckee TIF Intx and Roadway Vols.xlsx

TABLE B-2: Intersection Level Of Service

Intersection	Control Type	Existing Conditions		Future Without Bridge Street and Pioneer Trail Extensions		Future With Bridge Street and Pioneer Trail Extensions	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Existing							
Donner Pass Road / Northwoods Boulevard	Signal ¹	17.2	B	30.3	C	17.0	B
Donner Pass Road / SR 89 South / Frates Lane	Signal ¹	31.4	C	37.6	D	32.2	C
Donner Pass Road / Pioneer Trail	Roundabout ²	9.2	A	119.0	F	72.1	F
Donner Pass Road / I-80 Eastbound Off-Ramp (east)	Stop-Controlled ²	26.9	D	OVF	F	OVF	F
Donner Pass Road / Bridge Street	Unconventional ³	>100	F	OVF	F	OVF	F
Bridge Street / West River Street	Stop-Controlled ²	OVF	F	OVF	F	OVF	F
SR 89 North / Donner Pass Road	Roundabout ²	6.0	A	25.1	D	23.8	C
SR 89 North / Alder Drive / Prosser Dam Road	Roundabout ²	7.6	A	12.4	B	10.4	B

BOLD text indicates that LOS standard has been exceeded.

OVF = Overflow. Overflow indicates an excessive delay, which cannot be accurately calculated using HCM methodology.

NOTE 1: Level of service for signalized intersections is reported for the total intersection.

NOTE 2: Level of service for roundabout and stop-controlled intersections is reported for the worst movement.

NOTE 3: The Donner Pass Road / Bridge Street intersection is controlled with stop signs on three approaches, with the northbound Bridge Street approach uncontrolled.

TABLE B-3: Donner Pass Road, West of SR 89 South - HIGHPLAN Roadway LOS

HIGHPLAN LOS Thresholds for Donner Pass Road	
LOS	Maximum Peak Direction Volume to Achieve LOS
A	60
B	210
C	500
D	800
E	1,600

Scenario	Classification	LOS Threshold	Maximum Allowable Peak-Hour Volume per Lane to Obtain LOS Threshold	Peak-Hour		LOS Threshold Exceeded?
				Peak-Direction Volume	% Change From Existing	
Existing	Minor Arterial	D	800	746	--	No
Future Without Pioneer Trail/Bridge St. Extensions	Minor Arterial	D	800	866	16%	Yes
Future WITH Pioneer Trail/Bridge St. Extensions	Minor Arterial	D	800	665	-11%	No

HIGHPLAN 2012 Conceptual Planning Analysis

Project Information

Analyst	JHB	Highway Name	Donner Pass Road	Study Period	Dir Hr Demand Vol
Date Prepared	3/16/2015 4:05:36 PM	From	Northwoods	Analysis Type	Two-Lane Segment
Agency	LSC	To	SR 89 S	Program	HIGHPLAN 2012
Area Type	Transitioning/Urban	Peak Direction	Eastbound	Version Date	12/12/2012
File Name	P:\Projects\Truckee Impact Fee Update Study 2014\Synchro\HCS\DPR Highplan Existing min LAF.xhp				
User Notes	Existing Conditions				

Highway Data

Roadway Variables				Traffic Variables			
Segment Length	0.600	Median	Yes	AADT	14500	PHF	1.000
# Thru Lanes	2	Left Turn Impact	No	K	0.090	% Heavy Vehicles	2.0
Terrain	Level	Pass Lane Length	N/A	D	0.570	Base Capacity	1700
Posted Speed	35	% NPZ	100	Peak Dir. Hrly. Vol.	746	Local Adj. Factor	0.90
Free Flow Speed	40	Class	3	Off Peak Dir. Hrly. Vol.	696	Adjusted Capacity	0

LOS Results

v/c Ratio	0.47	Density	N/A	PTSF	81.7	ATS	26.7	% FFS	66.9
FFS Delay	26.8	LOS Thresh. Delay	37.6	Service Measure	PctFFS	LOS	D		

Service Volumes

Note: The maximum normally acceptable directional service volume for LOS E in Florida for this facility type and area type is 1650 veh/h/ln.

	A	B	C	D	E
Lanes	Hourly Volume In Peak Direction				
1	60	210	500	800	1600
2					
3					
4					
Lanes	Hourly Volume In Both Directions				
2	110	370	880	1410	2810
4					
6					
8					
Lanes	Annual Average Daily Traffic				
2	N/A	N/A	N/A	N/A	N/A
4					
6					
8					

* Cannot be achieved based on input data provided.

Performance measure results are no longer applicable with the presence of passing lanes. Refer to the service volume tables to obtain the LOS.

Appendix C

**Unincorporated Eastern Nevada County
Parcels Included in Fee Program**

NEVADA COUNTY FEE SHARING

