

EXECUTIVE SUMMARY

ES.1 - STUDY GOALS AND OBJECTIVES

Growth and development pressures continue not only within the Cottonwood area of Shasta County but also within the City of Anderson. Planning an efficient and affordable transportation system to alleviate existing traffic congestion and support future development within the Shasta County Southern Region is the primary focus of this area-wide transportation planning analysis. This study focuses on the need for future north/south and east/west arterials within the Southern Region, along with specific analysis of Rhonda Road, Gas Point Road, First Street, and Main Street.

Without this comprehensive study, future transportation improvements within the Shasta County Southern Region would remain unorganized and without a framework for interconnection. Over time, increased development within the Shasta County Southern Region would create more auto, truck, and pedestrian traffic, all using the existing limited transportation infrastructure. This study helps provide a planning framework for the necessary transportation improvements that enables the Southern Region to grow and develop in a logical and efficient manner, with infrastructure that emphasizes safety and multi-modal transportation opportunities.

ES.2 – SOUTHERN REGION DEVELOPMENT PROJECTIONS

Traffic conditions within the Shasta County Southern Region will change dramatically over the next 20-years, primarily due to development within the southern portion of the City of Anderson and the Cottonwood community. Population growth projections for this area was estimated based on historical growth rates, the Shasta County General Plan, the Cottonwood Area Plan, and professional interpretation of existing opportunity and land use constraints within the Southern Region. These projections assume that the existing City and County General Plan land use designations will remain unchanged.

Consistent with the Shasta County General Plan Circulation Element, a new north/south arterial between Gas Point Road and West Anderson Drive and a new east/west arterial between West Anderson Drive and Rhonda Road was analyzed as the arterial/collector transportation system backbone for the Shasta County Southern Region. This study has analyzed five different transportation improvement plans for the north/south arterial facility and four different transportation improvement plans for the east/west arterial facility.

ES.3 – MATRIX ANALYSIS

To facilitate the determination of a preferred roadway system and roadway alignments, an *Alternative Selection Decision Matrix* (ASDM) analysis was completed. The ASDM provides a means to identify and either quantitatively or qualitatively evaluate the advantages and disadvantages of each of the five north/south and four east/west alternatives. The ASDM provides a means to "weigh" the importance of each criterion, so that the advantages and disadvantages of each alternative can be compared and ranked in relation to each other. These rankings allow the identification of preferred alternative(s), taking into consideration the technical and social concerns of the community.

Each transportation alternative likely meets or exceeds the threshold for some criterion, and fall short on others. In the end, this ASDM procedure, based upon the criterion importance weighting and scoring, determines the relative merits of each alternative.

The overall ASDM procedure involves a six-step process:

- 1) Develop Need and Purpose criteria
- 2) Prepare Need and Purpose initial screening check
- 3) Develop a list of "evaluation criteria".
- 4) Determine "relative weighing" for each evaluation criteria
- 5) Score each evaluation criteria for each alternative passing initial Need and Purpose screen check
- 6) Calculate the final weighted scores for each alternative

The north/south and east/west alternative roadway alignments were analyzed separately within the matrix analysis. A preferred alignment for both the north/south and east/west alternative alignments were first determined, then both of these alignments were combined to form the overall preferred facility alignments. Five different alignment options for the north/south corridor and four different alignment options for the east/west corridor have been developed for analysis in this study. Based on the results of the matrix evaluation, Alternative 5 of the five north/south alignments and Alternative 2 of the four east/west alignments scored the highest. The final preferred north/south and east/west arterial alignments are illustrated on **Figure ES1**.

ES.4 – REFINED ROADWAY ALIGNMENTS

The matrix evaluation procedure provides a tool to select approximate alignments for the new Southern Region transportation facilities. These approximate alignments (or alignment corridors) provide a guideline for preliminary roadway designs. To the extent possible, the roadway alignments selected have been identified with knowledge of development proposals within the Southern Region. Specifically these developments include:

- Cottonwood Hills Subdivision
- Oak Ranch Estates
- Manor Crest Commercial Project
- Kicker Properties Parkway Development (*Development of approximately 6.25 acres of vacant land bounded by Interstate 5 and Main Street, north of Gas Point Road to accommodate 5,000 square feet of fast-food restaurant, 7,000 square feet of sit-down restaurant, 3 story 72 room hotel and 19,000 square feet office building*)
- The Vineyards Specific Plan

Selection of the preferred alignments has been shaped by many factors, including the development interests of the above mentioned projects along with both the local transportation needs within the Southern Region of Shasta County and regional transportation needs of both Shasta and its neighbors. **Figure ES2** illustrates the refined north/south and east/west roadway alignments along with boundaries of the various proposed projects that have influenced the alignment selection.

Various segments of the east/west roadway alignments have been eliminated from the refined alignments for various reasons. Travel demand between W. Anderson Drive and easterly destinations is relatively low. When combined with the significant construction costs, topographic constraints, and proposed east/west facilities within the Vineyard Specific Plan the decision was made to eliminate these alignments. However, future development within the areas surrounding these corridors may choose to construct these facilities.

It is noted that the City of Anderson is considering the potential for constructing a new interchange referred to as the High-Country Lane interchange, north of the Main Street interchange. This interchange would be built in concurrent to the development of the Vineyards Specific Plan if approved. However, because of lack of planning complete to date, this interchange has not been assumed in the traffic analysis presented in this working paper.

ES.5 – SUMMARY OF ROADWAY IMPROVEMENT NEEDS AND PHASING OPTIONS

The needed transportation improvements identified by this study within the Southern Region are required to both alleviate existing congestion and support future development. In order to provide basic circulation needs full construction of some north/south and east/west roadways would be required, while construction of the larger interchange improvements could be phased in over time. The following summary of the transportation improvement needs and potential interchange phasing options:

New North/South Roadway – A new north/south collector/arterial roadway is required north of First Street continuing north of Gas Point Road through the proposed Cottonwood Hills project, continuing northeasterly adjacent to the Vineyards Specific Plan eastern boundary and finally connecting to Rhonda Road. This new facility should be designed to County Four Lane Rural Arterial standards with a 84-foot minimum right-of-way. Only two travel lanes plus a center left-turn lane and eight-foot shoulders (with bike lanes) are required to satisfy Year 2027 peak hour travel demands. The additional right-of-way should be reserved for future widening to a five-lane arterial.

New East/West Roadway – A new east/west collector roadway is required between the Interstate 5 (I-5)/Main Street interchange (with the modification described below). This new facility should be designed to County Two Lane Urban Arterial standards with a 76-foot right-of-way. Only two travel lanes plus a center left-turn lane and eight-foot shoulders (with bike lanes) are required to satisfy Year 2027 peak hour travel demands. The additional right-of-way should be reserved for future widening to a five-lane arterial.

Gas Point Road – The section of Gas Point Road from Happy Valley Road to Rustic Ridge Drive would need four foot paved shoulders with an additional four feet of graded gravel shoulders to provide added vehicular safety. From Rustic Ridge Drive to the new north/south collector roadway Gas Point Road would require a center twelve-foot left-turn lane and four foot paved plus four-foot gravel shoulders to provide added vehicular safety.

First Street – The section from Greengate Road to the I-5 overcrossing would require four feet of paved shoulders to provide added vehicular safety.

Rhonda Road – Rhonda Road will require realignment north of Gas Point Road in a northeast direction to provide a continuous 45 mph alignment matching the existing portion of Rhonda Road at Robinson Glenn Drive. Two twelve foot travel lanes and a twelve-foot center left-turn lane along with eight-foot shoulders.

I-5 Interchange Improvements – Improvements to the existing Gas Point Road and Main Street interchanges have been identified within this study as necessary to support future development projections. Development plans for the Vineyards Specific Plan may necessitate other transportation improvements in addition to those identified in this report. Those improvements, however, will be subject to separate analysis and review as part of that plan.

I-5/Gas Point Road Interchange Improvement Phasing Options - Considerable analysis has been completed regarding the closely spaced intersection of Rhonda Road in relationship to the interchange southbound ramp intersection. Relocation of Rhonda Road further west was analyzed and determined infeasible due to existing residential development along the north side of Gas Point Road. Signalization of the Gas Point Road/Rhonda Road intersection along with the interchange southbound ramps may significantly improve existing congestion but may not provide the necessary twenty years of design life peak hour capacity.

The first phase of interchange improvements may include installation of traffic signals at the interchange ramps and at Rhonda Road. Intersection and roadway widening may be required at both the northbound and southbound ramp intersections along with widening on Gas Point Road to provide additional peak hour capacity. No bridge widening is contemplated as part of this first phase. These first phase improvements are anticipated to last approximately 10 years. **Figure ES3** illustrates the interim improvements at Gas Point Road interchange.

The second phase of interchange modifications may include both bridge widening to four-lanes along with on/off ramps relocation and widening. To provide the necessary intersection spacing the interchange southbound ramp intersection may be relocated approximately 150 feet to the east. This may provide approximately 390 feet of spacing to the Rhonda Road signalized intersection. The second phase of improvements will be required based upon the pace of development within the Southern Region and the timing of Main Street interchange improvements. **Figure ES4** illustrates the ultimate improvements at Gas Point Road interchange.

I-5/Main Street Interchange - Improvements at the Main Street interchange would be required to support development related traffic in the vicinity of the existing interchange. The interchange would be modified to provide southbound off and northbound on access to I-5 from areas both east and west of the interchange. This design provides for the ability to directly connect Rhonda Road to the southbound off-ramp intersection. **Figure ES5** illustrated the improvements at Main Street interchange.

ES.6 – DETERMINATION OF PROGRAM YEAR

The total cost of improvements associated with a 20-year development in the southern region was calculated to be approximately \$52,000,000. The amount of fee that can be justified for each development type is calculated by dividing the total cost of transportation improvements by the equivalent number of dwelling units (EDUs). The equivalent number of dwelling units is calculated based on the PM peak hour trip generation for the single family-dwelling units. One PM peak hour trip is equivalent to one EDU. The number of equivalent dwelling units for the commercial and industrial land use types is calculated by dividing the PM peak hour trips of each land use type by the single-family dwelling unit PM peak hour trip generation rate. The equivalent number of dwelling units for each of the land uses and by each of the 5-year bands is shown in **Table ES1**.

**TABLE ES1
5-YEAR BAND EQUIVALENT NUMBER OF DWELLING UNITS**

	Residential		Commercial		Industrial		Total EDU
	PM Peak Total Trips	EDU	PM Peak Total Trips	EDU	PM Peak Total Trips	EDU	
Year 2010	2,066	2,066	1,685	1,831	95	103	4,000
Year 2015	3,291	3,291	2,329	2,531	190	206	6,028
Year 2020	4,609	4,609	2,562	2,784	285	309	7,702
Year 2027	6,318	6,318	2,745	2,984	379	412	9,714

Transportation fee programs should be adopted with a clear nexus between the improvements being funded and the development paying fees. Fee programs can fund improvements for various time frames, either short-term or long-term. However, since development occurs over a period of years the cost per development unit will range based upon when transportation improvements need to be constructed. This study has reviewed the four different development year scenarios (as identified in Table ES1) for setting the fee program costs.

As this development occurs within the Southern Region area, transportation improvements will be required to accommodate increase traffic volumes. Constructing these improvements requires a greater “up front” investment to avoid traffic congestion. This fact results in higher short-term fee program costs as compared with longer term programs. **Table ES2** summarizes the average cost per EDU for each of the 5-year band development scenarios analyzed in this study. *{Note: This table represents average cost per EDU for the entire Southern Region Area including the Vineyards Specific Plan. These average costs were used to determine an appropriate development year for the fee program. The final fee program is divided into three zones of benefit (ZOB) as explained later in this executive summary.}*

**TABLE ES2
5-YEAR BAND COST PER DWELLING UNIT**

	EDU	Cost	Cost/EDU	Program Duration
Year 2010	4,000	\$13,576,680	\$3,394	5 Years
Year 2015	6,028	\$28,987,880	\$4,809	10 Years
Year 2020	7,702	\$36,222,880	\$4,703	15 Years
Year 2027	9,714	\$36,222,880	\$3,729	20 Years

As shown above in Table ES2, the cost per EDU decreases with the increase in the number of years. This results from higher initial transportation investments being spread over greater longer term development totals. It is recommended that the Shasta County RTPA adopt a 20 year (Year 2027) fee program at an average cost per EDU of \$3,729. **Table ES3** provides a breakdown of the total cost of improvements associated with a 20-year period spread over the three major future land uses within the Southern Region.

**TABLE ES3
20-YEAR RECOMMENDED TRANSPORTATION FEE**

	EDU	Cost
Residential	6,318	\$23,558,983
Commercial	2,984	\$11,126,214
Industrial	412	\$1,537,683
Total	9,714	\$36,222,880

As shown above in Table ES3, of the \$36,222,880 total cost of improvements, the residential development that is proposed to occur over a 20-year period would be required to collectively pay \$23,558,983, the commercial \$11,126,214, and the industrial \$1,537,683.

ES.7 – DETERMINATION OF ZONE OF BENEFIT STRUCTURES

Transportation mitigation fees summarized in sections ES.6 were calculated treating the entire southern region as one large ZOB. Two additional fee program zone of benefit structures were analyzed in this report. The first of these calculated the fee based upon four zones of benefit. **Figure ES6** is a map illustrating the four zones of benefit.

- **ZOB 1** - This region consist of the entire southern region west of the Main Street/I-5 dividing line not including the Vineyards Specific Plan development.
- **ZOB 2** - This region consists of the Vineyards Specific Plan development only.
- **ZOB 3** - This region consists of the entire southern region east of the Main Street/I-5 dividing line.
- **ZOB 4** – This regions lies to the west of ZOB 1 as shown on Figure ES 5

Table ES4, Table ES5, Table ES6 and Table ES7 show the costs and transportation mitigation fee per dwelling unit for each of the ZOB 1, 2, 3 and 4.

**TABLE ES4
ZOB 1 TRANSPORTATION MITIGATION FEE**

	EDU	Cost
Residential	1,225	\$6,408,375
Commercial	2,488	\$13,010,452
Industrial	0	\$0
Total	3,713	\$19,418,827
Cost/EDU	\$5,229	

**TABLE ES5
ZOB 2 TRANSPORTATION MITIGATION FEE**

	EDU	Cost
Residential	4,562	\$12,626,946
Commercial	172	\$475,812
Industrial	0	\$0
Total	4,734	\$13,102,757
Cost/EDU	\$2,768	

**TABLE ES6
ZOB 3 TRANSPORTATION MITIGATION FEE**

	EDU	Cost
Residential	365	\$1,065,078
Commercial	324	\$945,536
Industrial	412	\$1,204,149
Total	1,101	\$3,214,763
Cost/EDU	\$2,920	

**TABLE ES7
ZOB 4 TRANSPORTATION MITIGATION FEE**

	EDU	Cost
Residential	165	\$486,532
Commercial	0	\$0
Industrial	0	\$0
Total	165	\$486,532
Cost/EDU	\$2,942	

As shown above in Tables ES4, ES5, ES6 and ES7, the total number of EDUs for each of the land uses residential, commercial and industrial were calculated for the three zones of benefit. Nexus Table 1 attached in the appendix was used to determine fair share cost of improvements for each of the four zones of benefit. Fair share cost calculations for the four zones of benefit were determined based upon PM peak hour volume contribution from each of the regions. As shown above in the tables, the fair share cost of improvements for ZOB1 was estimated at \$19,418,827, for ZOB 2 at \$13,102,757, for ZOB 3 at \$3,214,763 and for ZOB 4 at

\$486,532. The transportation mitigation fee for each of the ZOBs was calculated by dividing the fair share cost of improvements for each of the ZOB by the total number of EDUs in that ZOB. The cost per dwelling unit in ZOB 1 was calculated at \$5,229, in ZOB 2 at \$2,768, ZOB 3 at \$2,920 and ZOB 4 at \$2,942.

The second transportation mitigation fee was calculated disaggregating the entire southern region into just two zone of benefit regions as shown on **Figure ES7**. **Table ES8** and **Table ES9** shows the costs and transportation mitigation fee per dwelling unit for each of the ZOB 1 and 2.

**TABLE ES8
ZOB 1 TRANSPORTATION MITIGATION FEE**

	EDU	Cost
Residential	1,225	\$6,408,375
Commercial	2,488	\$13,010,452
Industrial	0	\$0
Total	3,713	\$19,418,827
Cost/EDU		\$5,229

**TABLE ES9
ZOB 2 TRANSPORTATION MITIGATION FEE**

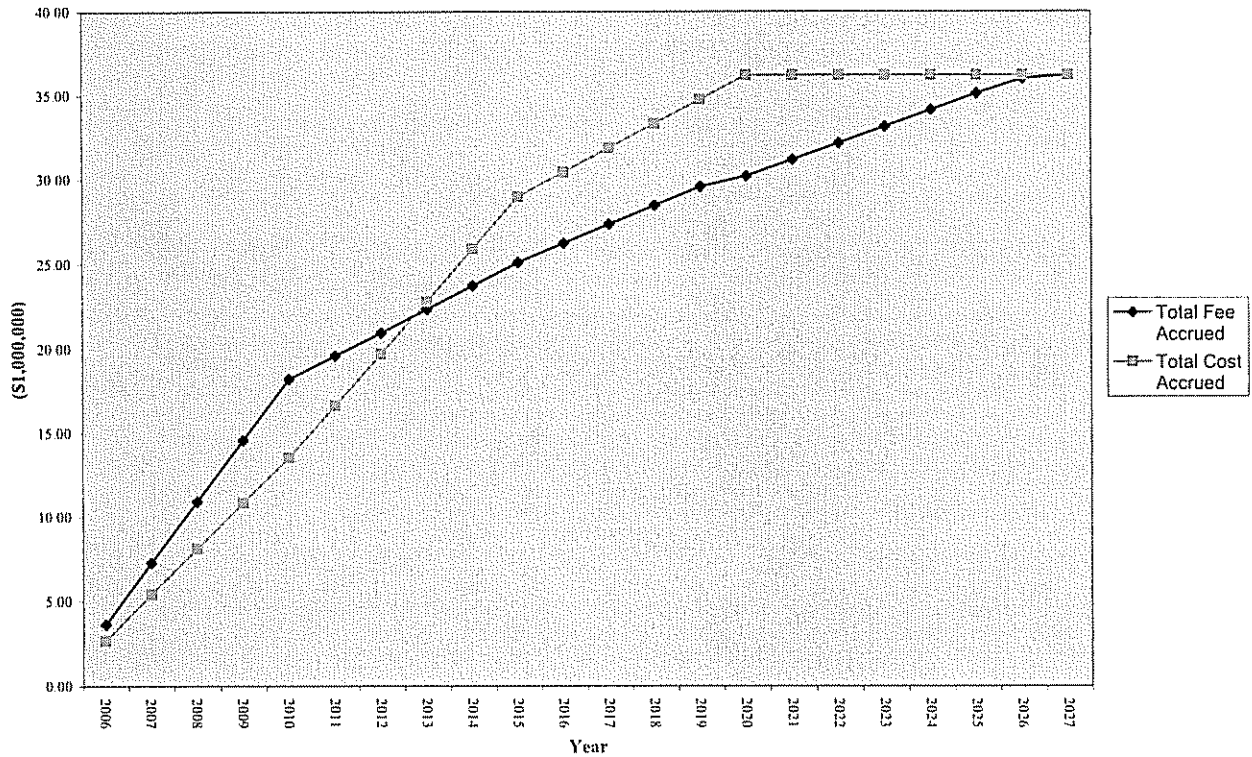
	EDU	Cost
Residential	5,092	\$14,178,557
Commercial	496	\$1,421,348
Industrial	412	\$1,204,149
Total	6,000	\$16,804,053
Cost/EDU		\$2,801

Based upon the fee amounts identified above along with yearly development assumptions, a yearly fee accrual to cost expenditure chart has been created. As indicated in **Chart ES-1**, the fee program is anticipated to collect sufficient yearly fees to cover improvements costs. *{Note: This fee represents a smoothed average pace for both development and transportation cost expenditures. Actually development levels and transportation expenditures will occur at various rates.}*

The chart below shows revenue and cost tracking over a 20 year period.

**CHART ES-1
REVENUE AND COST TRACKING CHART**

Comparison of Accrued Fee VS Cost



An example fee calculation for various land use types and sizes is presented in **Table ES8**.

**TABLE ES8
FEE CALCULATION EXAMPLE**

Landuse	Quantity	Unit	EDU/unit	Total EDU	Cost
ZOB 1 - Cost/EDU				\$5,229	
Low Density Residential	213	d.u.	0.92	196	\$1,024,747
Medium Density Residential	245	d.u.	0.80	196	\$1,024,956
High Density Residential	363	d.u.	0.54	196	\$1,025,061
Shopping Center 1	71	ksf	2.78	198	\$1,032,833
General Office	76	ksf	2.60	198	\$1,033,323
Light Industrial (General Park w/o Commercial)	204	ksf	0.96	196	\$1,024,120
Shopping Center 2	100	ksf	3.77	377	\$1,970,174
Shopping Center 3	200	ksf	3.22	645	\$3,372,458

ES.8 – ADDITIONAL REVENUE SOURCES

Additional transportation funding is expected from State and federal funding programs. These funds would be directed towards the Main Street and Gas Point Road I-5 interchange improvements.

ES.9 – DIRECT CONSTRUCTION OF IMPROVEMENTS

As appropriate, the County may choose to provide fee credits to developers who either dedicate land or construct transportation facilities included in the fee program. However, the determination of providing fee credits must be based upon the priority of when certain transportation improvements are required. Lower priority improvements may not be eligible for fee credits.

ES.10 – FEE ORDINANCE

The fee ordinance should be updated whenever significant changes to the proposed development patterns occur. In addition, it is recommended that the fee ordinance be reviewed every two years. By law, it is required that the fee ordinance be reviewed and revised accordingly every five years. The life of the fee presented in this study is anticipated to be 20 years and will terminate when all specific improvements identified to be funded by the fee program have been fully constructed. For simplification of the administration of the fee program, the four zones of benefit identified in the prior sections of this report have been simplified to two zones of benefit as shown on **Figure ES7**. However the fees are based on the nexus analysis of the four zones of benefit modeled.