

# CHAPTER 12—ALTERNATIVE ANALYSES

## Introduction

Alternative analyses are one of the most important elements of the Regional Transportation Plan (RTP) development process. These analyses are conducted at a system-wide planning level with the objective of finding potential transportation solutions that could provide significant benefits to the community in a reasonably cost-effective manner. Evaluation of alternatives should present the proposed action and all the alternatives in comparative form to define the issues and provide a clear basis for choice among the options. An alternative analysis typically includes the following:

- Extensively explore and objectively evaluate all reasonable alternatives
- Dedicate enough time to consider each alternative at an appropriate level of detail
- Evaluate the comparative merits of each alternative
- Include the alternative of no-action
- Include appropriate funding sources for implementing the preferred alternatives

With the continued growth planned in the Truckee Meadows, there are a large number of sizeable planned developments located on the periphery of the region and in neighboring counties. These large developments have been shown to generate tens of thousands of new trips that, over time, overwhelm the carrying capacity of the region's current freeway system and many of the key major arterials. The result will be large areas of significant congestion, longer travel times and negative impacts to air quality. The level of service on the freeways is critical; the region relies heavily on them as nearly 40% of the vehicle miles traveled (VMT) are on the freeways. The core area freeways will be at their maximum capacity even with the first round of needed improvements. The maximum practical limit for freeways is 10 through-lanes and future volumes will require more capacity than practically achievable. Improving the freeways also means rebuilding virtually every interchange and improving most arterials that are approaches to freeways.

To alleviate the future traffic problems on the regions freeway system, several strategies will be implemented. These include TDM, TSM, ITS and increased transit service where feasible. However, there is also the need for an expansion of the current freeway system to serve the needs of current residents as well as future development throughout the region. Defining a future freeway system now will assist in the protection of necessary right-of-way as development occurs. To identify the most beneficial corridors for future freeway locations, an alternative analysis process was conducted.

## Alternatives Analyzed

### Alternative Freeway Corridors

The alternative analyses process during development of the RTP focused primarily on identifying alternative connecting corridors that would have the highest potential for relieving congestion and delay on the freeways and the Regional Road System (RRS). A traffic modeling exercise was undertaken to quantify the travel demand between the four quadrants of the region—using US 395 and I-80 as dividing lines. Within the four quadrants, five new freeway corridors (labeled as Corridors A-E) were analyzed (**Figure 12-1**).

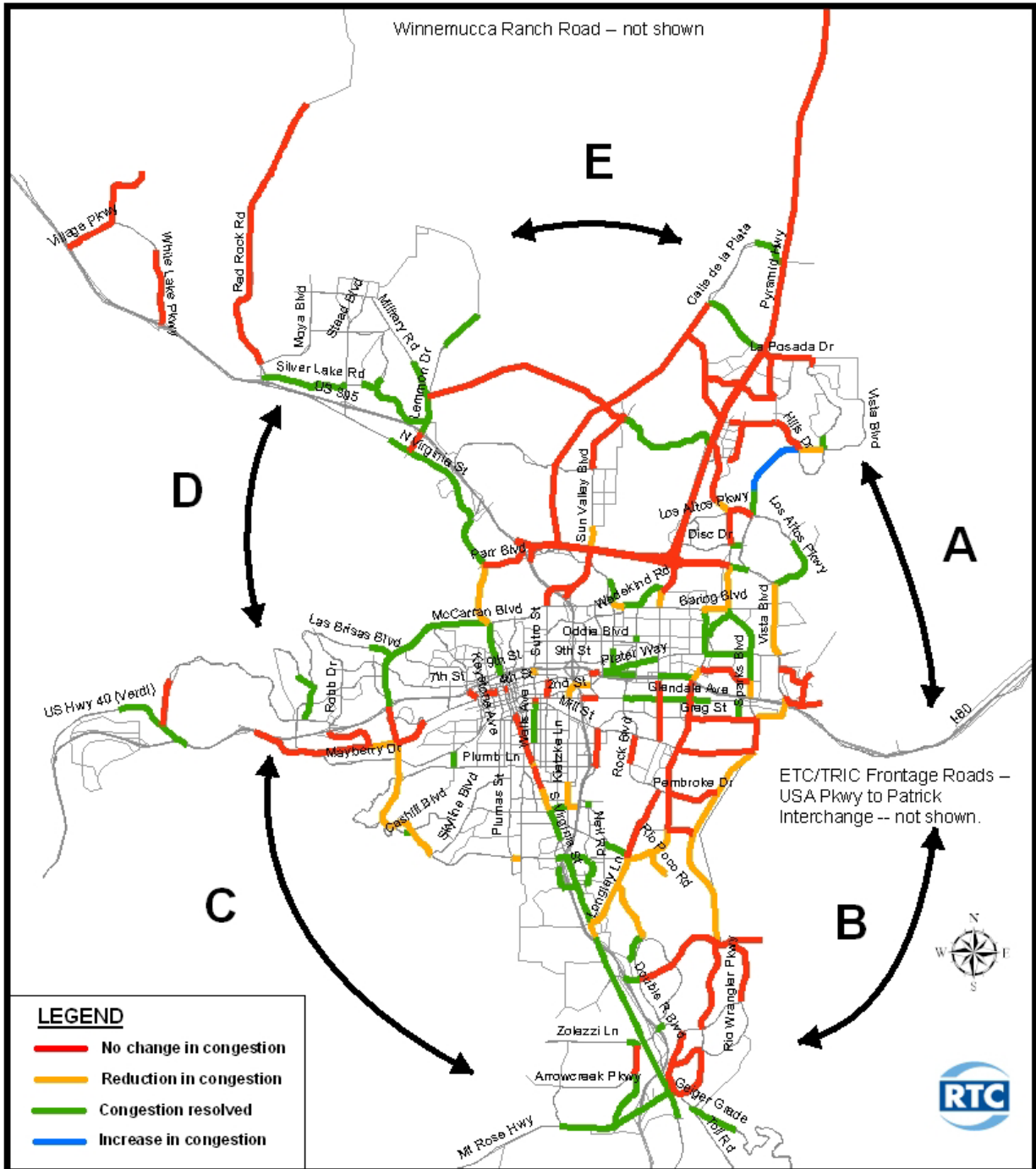
The RTP Steering Committee was provided with preliminary information on each freeway connector including future traffic forecasts, potential benefits in congestion reduction and facility cost estimates. The committee reviewed each of the five alternatives and developed combinations of the connector corridors for further analysis.

Initial analyses of the alternative connector corridors showed that individually or in combination, the alternative corridors would have varying ability to relieve the most congested portions of the freeways and the Regional Road System. In some cases, traffic volumes dropped significantly on major arterials including Vista Boulevard, McCarran Boulevard, North Virginia Street, Longley Lane and the Southeast Connector (SEC). The preliminary analyses also showed significant drops in delay time and travel time. With certain connector corridor combinations, travel time and travel delay dropped significantly.

The RTC analyzed all 32 possible combinations of the five alternative corridors and presented the summary results to the RTP Steering Committee. Following discussions on this initial round of analysis with the RTP Steering Committee, the 32 possible combinations of alternative corridors were reduced to a manageable number of 6. The RTC then performed a second round of analysis on the six most beneficial alternatives and the no-build scenario listed below.

Beneficial Alternatives
1. A
2. B
3. AB
4. ABD
5. ABDE
6. ABCDE
7. No-Build

**Figure 12-1  
 IMPACTS TO CONGESTED SEGMENTS WITH  
 FREEWAY SYSTEM-TO-SYSTEM CONNECTIONS**



**Table 12-1** summarizes the comparison of the six alternatives that were the subject of this next level of review.

**Table 12-1  
Comparative Analysis of Alternative Corridors  
(Changes in Travel Time from Base in Hours per Year)**

<b>Scenario</b>	<b>Annual Travel Time Reduction at 2040</b>	<b>Reduction from Base</b>	<b>Costs of Alternative Corridors</b>
Alternative A	7,406,945	3.8%	\$570 million
Alternative B	8,035,475	4.1%	\$998 million
Alternative AB	11,519,765	5.9%	\$1.57 billion
Alternative ABD	12,374,960	6.3%	\$1.97 billion
Alternative ABDE	11,761,030	6.0%	\$2.49 billion
Alternative ABCDE	13,892.995	7.1%	\$3.41 billion

Based upon discussions with the RTP Steering Committee, these six alternatives were reduced to a final four and a third round of more detailed analysis was conducted. The results of this third analysis effort are summarized in table 12-2.

**Table 12-2  
Alternative Scenario Comparison**

	<b>Base</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative AB</b>	<b>Alternative ABD</b>
<b>Travel Time Reduction Thru 2040</b>	N/A	181,013,268	196,373.484	281.523.667	302,423,193
<b>Value of Delay Savings</b>	N/A	\$1.721 billion	\$1.868 billion	\$2.677 billion	\$2.876 billion
<b>Cost of Alternative Corridors</b>	N/A	\$570 million	\$998 million	\$1.57 billion	\$1.97 billion
<b>Nominal Improvements Cost (RRS)</b>	\$2.712 billion	\$2.478 billion	\$2.549 billion	\$2.438 billion	\$2.343 billion
<b>Nominal Improvements Cost (Freeways)</b>	\$3.435 billion	\$3.412 billion	\$3.416 billion	\$3.359 billion	\$3.324 billion
<b>Hard \$ Cost Increases</b>	N/A	\$313 million	\$815 million	\$1.217 billion	\$1.493 billion
<b>Total Value Benefits</b>	N/A	\$1.408 billion	\$1.051 billion	\$1.460 billion	\$1.383 billion

Based upon the final round of analysis it was concluded that at this time, Alternatives A and B were the best individual corridors in providing relief to the freeway system and serving

future development. However, since Alternative B is nearly twice the cost as Alternative A, the RTP Steering Committee recommended that only Alternative A be included in the Street and Highway element of the RTP. The other combinations, while adding significant additional costs, did not provide large amounts of additional benefit and were eliminated for now. Alternative B, C, D, and E individually or in combination will again be the subject of review in future Regional Transportation Plans and be warranted for inclusion in these plans as conditions and land-use changes over time.

### **Other Alternative Corridors**

In addition to alternative freeway connections, the RTC analyzed the following three additional arterial corridors suggested by members of the RTP Steering Committee:

- North Virginia Street extension
- Cold Springs to Verdi connection
- South Virginia Street parallel facility

#### North Virginia Street Extension

The results of the analysis for this corridor are summarized as follows:

- Extension is between Red Rock Road and White Lake Parkway.
- 2040 travel forecasts show only 1,500 trips per day on this facility.
- Proximity to US 395 limits demand for travel on this facility.

This facility was not recommended for further consideration due to its non-regional characteristics. Development of this facility may be warranted at some point in the future as frontage road to US-395 providing local access to businesses and residential developments.

#### Cold Springs to Verdi Connection

The results of the analysis for this corridor are summarized as follows:

- A high-speed arterial connection was analyzed between the White Lake Parkway interchange on US 395 and the West Verdi interchange on I-80.
- 2040 travel forecasts show approximately 12,000 trips per day on this facility.

Current projected traffic volumes do not warrant inclusion of this facility as a regional roadway in the RTP. This facility is recommended for consideration in future RTP updates due to its regional characteristics and the potential for capturing additional traffic as land-use patterns evolve.

### South Virginia Street Parallel Facility

The results of the analysis for this corridor are summarized as follows:

- A connection was analyzed between California Avenue and Plumb Lane at Lakeside Drive parallel to and west of the South Virginia Street corridor.
- 2040 travel forecasts show only from 1,000 to 8,000 trips per day on this facility.

This facility was not recommended for further consideration due to its limited capacity, low traffic volumes and its minimum relief to the South Virginia Street corridor.

### **Summary**

The use of the alternative analyses process was one of the key elements in the development of the RTP. With future planned growth in the region, it became apparent early in the process that an expanded freeway system would be needed to serve current and future residents while meeting the community's transportation goals and objectives. Critical issues such as congestion, long travel times/commutes and impacts to air quality were all important factors in the need to define future transportation infrastructure. As a result of this process, the most beneficial corridors could be compared, identified, and, where warranted, incorporated into the RTP. Identification of these new corridors now will help in acquiring and protecting critical right-of-way as future development occurs.