

Introduction

The Colorado Department of Transportation (CDOT) retained BBC Research and Consulting (BBC) and Felsburg Holt and Ullevig (FHU) to:

- Estimate the statewide economic benefits of future transportation investment using available data and benefits studies from other states;
- Provide Colorado stakeholders with statewide study results consistent with their guidance in the CDOT Economic Benefits of Transportation Research Scoping Study (May 2006); and
- Identify data needs and other information necessary to perform a future in-depth analysis of benefits by region within Colorado.

Summary of Results

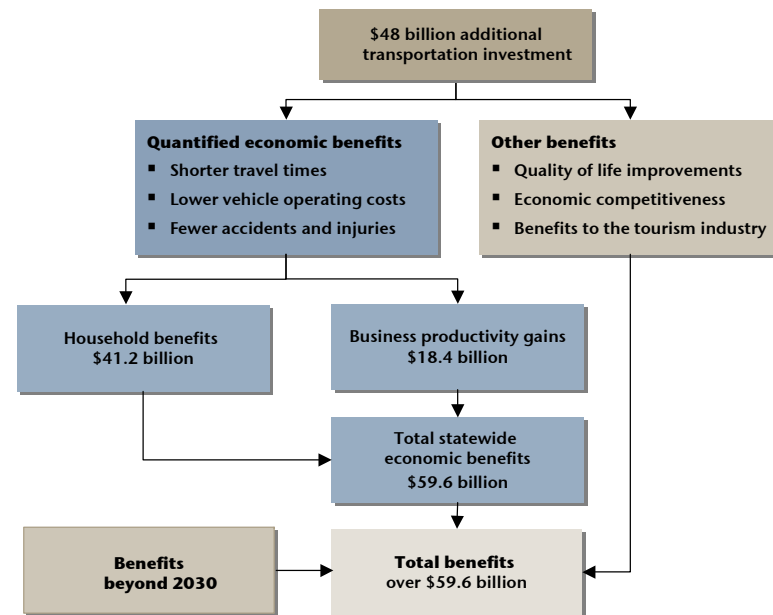
The 2030 Statewide Transportation Plan indicates that between now and 2030, Colorado will need an additional investment of \$48 billion beyond current revenue projections to sustain current transportation system performance. Over the 26-year investment timeframe, the economic benefits of this additional investment amount to more than \$59.6 billion.

By 2030, this additional investment would reduce the time Colorado residents spend in congestion-related delays by 72 percent compared to current revenue projections. Better pavement quality would lower annual per vehicle operating costs by 6 percent and safety improvements would reduce the number of fatalities on public roadways by 14 percent.

The economic benefits quantified here represent only a portion of the total benefits of additional investment. Quality of life improvements, new jobs, better access to recreation and other improvements are difficult to quantify but also have positive implications for Colorado.

Additionally, the benefits of increased investment will continue well beyond 2030; the end date for our analysis does not quantify these additional benefits. Exhibit 1 presents the results of this research.

Exhibit 1. Statewide benefits of increased transportation investment



Source: BBC Research and Consulting, 2007

Of the economic benefits the study team was able to quantify, the benefits exceed the required investment by \$11.6 billion. To account for the difference in the timing of costs and benefits, the study team also compared the total value of future investments and benefits through 2030 in “present value” form. This analysis shows that even with the most conservative of estimates, total benefits still exceed the additional investment costs.

Approach

The study team’s general approach included several steps.

Establish a project steering committee. The study team established a project steering committee to serve as an advisory council throughout the course of this research. Steering committee members represented a variety of backgrounds and regions throughout the state.

Select baseline and alternative investment scenarios. This research focuses on the benefits of additional transportation spending above a baseline investment scenario. The scenarios chosen for evaluation represent the different levels of investment identified in CDOT’s 2030 Statewide Transportation Plan (2030 Plan). The baseline, or Forecast Revenue, scenario represents investments that can be made with current revenue projections. The alternative, or Sustain Current Performance scenario assumes that Colorado can raise additional funds to keep transportation system performance at current levels.

Exhibit 2. Baseline and alternative investment scenarios

Forecast Revenue	Sustain Current Performance
<ul style="list-style-type: none"> ■ \$75 billion ■ CDOT’s current revenue projections through 2030 ■ System deterioration ■ Does not meet CDOT’s 2030 Vision 	<ul style="list-style-type: none"> ■ \$123 billion ■ Sustains existing system performance ■ Addresses backlog of maintenance issues ■ Does not meet CDOT’s 2030 Vision

Source: CDOT 2030 Transportation Plan, 2005.

Evaluate benefits of additional investment. The study team evaluated the economic benefits associated with the \$48 billion additional transportation investment under the Sustain Current Performance scenario. The study team used available CDOT data, findings from other states and other secondary sources to estimate these effects. Many of the benefits could not be quantified in this preliminary study. Such benefits are qualitatively addressed.

Incorporate a vision for the future. Throughout the previous Research Scoping Study for CDOT, Colorado residents communicated their desires for a future with improved transportation. Therefore, the study team examined a third investment scenario: the \$178 billion investment identified in the 2030 Plan as the amount necessary to implement the 2030 Transportation Vision of the citizens of Colorado.

To incorporate the 2030 Vision into this research, the study team qualitatively evaluated specific improvements within several corridors to demonstrate the magnitude of potential benefits.

Quantifiable Benefits of Transportation Investment

By the year 2030, additional transportation investment would have an average annual benefit to Colorado households of \$1,578, or \$624 per Colorado resident. Colorado residents and business owners are interested in the types of benefits that affect them on a daily basis. These benefits include safer roads, less time wasted in traffic, more money in their pockets and more jobs. Exhibit 3 presents specific benefits of increased transportation spending for the year 2030 under the Sustain Current Performance scenario.

Exhibit 3.
2030 benefits of increased transportation spending

Benefit	Annual Benefit to Colorado in 2030
Safety improvements	<ul style="list-style-type: none"> • 12,100 fewer accidents • 4,300 fewer accidents involving injuries • 140 lives saved • \$0.5 billion in reduced economic losses
Reduced congestion	<ul style="list-style-type: none"> • 26 hours of time saved (per resident) • 30 gallons of fuel saved (per resident) • \$1.7 billion in travel time savings for households • \$240 in travel time savings (per resident) • \$0.6 billion in savings for Colorado businesses
Better pavement quality	<ul style="list-style-type: none"> • \$0.9 billion in reduced vehicle operating costs for households • \$205 in savings per vehicle • \$0.2 billion in savings for Colorado businesses
General system improvements	<ul style="list-style-type: none"> • 10,900 new long-term jobs (\$0.7 billion in increased personal incomes) • 28,000 construction-related jobs • Increased economic competitiveness • Improved access to health and human services • Increased visitation to tourist destinations

Source: BBC Research and Consulting, 2007

Fewer accidents and injuries. Additional investments that improve the safety of Colorado’s roads could result in 12,100 fewer accidents in 2030. This includes 4,300 fewer accidents involving injuries. There could be 140 fewer fatalities in that year. In turn, Colorado residents and businesses would save \$0.5 billion in medical care and insurance expenses, lost workplace productivity and personal property damage in 2030.

Shorter travel times. Under the Sustain Current Performance scenario, Colorado residents would save 26 hours per year from reduced congestion-related delays and improved pavement quality. Less time spent in stop-and-go traffic would reduce annual fuel consumption by 30 gallons per resident. The value of these savings total more than \$1.7 billion for Colorado households and \$0.6 billion for Colorado businesses in 2030.

Reduced vehicle operating costs. Sustaining the current transportation system would significantly improve roadway conditions compared with the baseline scenario. This would reduce general wear and tear on vehicles and lower vehicle repair, maintenance, insurance and depreciation costs. In 2030, the better pavement under the Sustain Current Performance investment scenario would save Colorado residents \$0.9 billion in vehicle operating costs (\$205 per vehicle per year). Colorado businesses would save \$0.2 billion from reduced vehicle operating costs.

Business expansion and attraction. The benefits described above reduce the cost of doing business in Colorado and improve business productivity. Local businesses would expand and new businesses would locate to the state, which would create more jobs, higher incomes and greater overall economic production. On an average annual basis, these benefits would create 10,900 new long-term jobs for Colorado residents and increase personal incomes by \$0.7 billion. This does not include construction – related jobs generated from additional transportation spending.

Additional Transportation Benefits

Additional benefits of transportation investment include improved quality of life for Colorado residents and a healthier state economy. It is difficult to place a dollar value on many of these types of benefits; however, recent studies can demonstrate the importance of these benefits for Colorado.

Economic competitiveness. The quantified benefits of business expansion and attraction include the direct and indirect effects of the reduced cost of doing business in the Colorado. The study team did not capture benefits for businesses associated with increased access to inputs or expanded market areas. These factors are difficult to determine because states throughout the U.S. are facing similar transportation funding challenges. These states will choose to invest in their transportation system to varying degrees, which will impact the relative economic position of Colorado.

Benefits to the tourism industry. Transportation improvements can encourage Colorado residents and out-of-state visitors to make more frequent and longer trips to Colorado's tourist attractions and recreation areas. This is particularly important in Colorado, where tourism is an \$8.3 billion industry that constitutes over 12 percent of the state's economy.

Findings from the I-70 Programmatic Environmental Impact Statement (PEIS) demonstrate the importance of transportation investment for Colorado's tourism industry. The PEIS indicates that accommodating for tourism growth along the I-70 corridor would increase visitation to surrounding recreation areas by up to 8 percent in the summer and 5 percent in the winter in 2030.

Quality of life. Under the Sustain Current Performance scenario, system reliability and mobility improvements would provide Colorado residents with greater freedom of travel including choice of route, time of day, destination and mode. Public transportation improvements in metropolitan areas of the state would also serve a broader population of seniors, disabled citizens and economically disadvantaged residents.

Short-term construction benefits. Additional transportation investment creates immediate demand for construction services, raw materials and other goods and services. This demand ripples through the economy creating secondary effects. Conservative estimates from studies in other states indicate that transportation expenditures under the Sustain Current Performance investment scenario could support more than 28,000 new jobs per year through 2030, increasing personal incomes in Colorado by more than \$1.0 billion. (Consistent with economic impact literature, these impacts are not included in the measure of total economic benefits.)

Efficient transportation investment. Under current revenue projections, CDOT and local authorities will not be able keep pace with the maintenance requirements of the state's transportation system. This would result in the costly rebuilding of roads and other infrastructure that deteriorate beyond the point of repair. With additional transportation investment under the Sustain Current Performance investment scenario, preventative maintenance replaces costly reconstruction, saving Coloradans money. The cost savings from keeping up with required maintenance accrue beyond 2030, but are not quantified here.

Benefits of the 2030 Vision

The 2030 Statewide Transportation Vision balances local, regional and statewide transportation needs through an integrated system of statewide corridor investments. The 2030 Vision would require an additional \$55 billion investment.

Transportation improvements identified under the Vision scenario provide a means to achieving broader economic goals throughout the state. The 2030 Vision would improve the state's economic competitiveness and enhance the quality of life of Colorado residents to levels well beyond those achieved under the Sustain Current Performance scenario.

Improved safety. Additional transportation investment under the Vision scenario would further reduce the number of accidents, injuries and fatalities on public roadways throughout the state. Compared to the Sustain Current Performance scenario, safety improvements under the Vision would save 55 more lives in 2030. Safety improvements are primarily focused in the more rural and mountainous areas of the state.

Rural economic development. Improved pavement quality and increased capacity on heavily traveled freight corridors would promote economic development and improve farm-to-market commercial activity in rural areas of the state. Examples of potentially affected corridors include U.S. 385 and portions of U.S. 50 and I-70.

Freight movement. Investments in the Ports-to-Plains Corridor and the Heartland Expressway would increase Colorado's importance in north-south movement of goods and would generate additional economic activity.

Public transportation demand. Under the 2030 Vision, improved public transit systems would meet a far greater portion of residents' demand for public transportation. Public transportation improvements benefit

Colorado residents throughout the state by providing access to higher paying jobs, health and human services and competitively priced consumer goods. In urban and rural areas of the state, public transportation systems also provide a vital community link for seniors, the disabled and other residents.

Public transportation investments can also serve to increase the economic competitiveness of metropolitan areas. For example, investments in public transportation along the I-25 corridor would allow employers in Metro Denver and Colorado Springs to attract larger and more reliable workforces. A well-developed public transportation system also improves air quality.

Access to recreation destinations. Additional capacity and improved public transit services on I-70 west, S.H. 82 and U.S. 160 would provide access to many of Colorado's key recreation sites. This would not only improve quality of life for Colorado residents but would encourage out-of-state visitors to make longer and more frequent trips to Colorado's tourist destinations. For example, highway and transit improvements under the Vision would increase trips to recreation areas by 10 to 14 percent above the Sustain Current Performance scenario. This could increase out-of-state visitor spending by more than \$0.6 billion in 2030.

Next Steps

A series of transportation benefit studies by region within the state would explore the economic benefits and communicate the importance of transportation investment to each region. These regional studies could be tied to specific funding initiatives.

Local businesses, transportation authorities, Transportation Planning Regions and Metropolitan Planning Organizations could lead this effort. CDOT and other state agencies could help coordinate traffic and economic modeling analyses. Specific projects, associated performance levels and local road data would need to be a part of any regional study.