



# Economic Benefits of Transit



## in the Grand Valley

*Prepared for*

Mesa County, CO



# Economic Benefits of Transit in the Grand Valley

## Final Report

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# CHAPTER I

## Introduction

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The Mesa County Regional Transportation Planning Office, (RTPO) contracted with LSC Transportation Consultants, Inc., to complete an evaluation of the economic benefits of transit in the Grand Valley area. This study was conceived to both provide a mechanism to evaluate investment strategies as well as an educational tool for local elected officials and key decision makers in the Grand Valley area. This report presents the economic benefits that transit brings to a community both in general anecdotal means and in terms of actual financial benefit to the overall community.

### **ORGANIZATION OF REPORT**

Chapter II of this report presents general benefits of transit from mobility and access benefit to financial benefits. This briefly reviews some of the underlying benefits that transit services offer to communities. Chapter III reviews the methodology that was used to estimate the actual economic benefit to the Grand Valley area. This method was based on a process developed for the Colorado Department of Transportation (CDOT) in 1997. The economic benefits were based on the IMPLAN input/output model. The IMPLAN model is a social accounting matrix and multiplier model used to estimate regional economic affects and for use in impact analyses. Finally, Chapter IV presents an analysis and results using the IMPLAN model outputs. This relies on the existing Grand Valley Transit (GVT) financial information to develop the gross and net economic benefits of the transit service and capital purchases. This chapter also includes scenarios for the economic impact of increased transit services and/or the construction of major capital facilities.



# Overall Benefits of Transit

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## INTRODUCTION

There are a variety of approaches to measure the benefits of transit. These include: economic, environmental, and social benefits. A recent report from the Transit Cooperative Research Program (TCRP), entitled “*Measuring and Valuing Transit Benefits and Disbenefits*,” lists six major categories of transit benefits and disbenefits:<sup>1</sup>

- Mobility and access benefits
- Economic and financial benefits
- Environmental and energy benefits
- Safety and security benefits
- Social equity benefits
- Intangible benefits

As the TCRP Report notes, current practice traditionally has been focused on the three areas of operating characteristics of systems: mobility and access impacts of those systems, cost effectiveness of mobility, and access improvements from a federal grant-making standpoint. They suggest that new and better ways are needed to assess the impacts of transit investment and services on more fundamental concerns such as long-term economic growth, environmental quality, and personal security.<sup>2</sup>

## BENEFITS OF TRANSIT

Benefits exist because people believe there are attributes that have value and are important, whether or not they can be calculated. Some communities place a high value on public transit even though it may be difficult to find significant benefits by methods used for other modes of transportation. Perceived benefits can be just as important as traditionally measured quantitative benefits. For example, there

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<sup>1</sup> Cambridge Systematics, Inc., and Apogee Research, Inc., “Measuring and Valuing Transit Benefits and Disbenefits: Summary”, TCRP Report 20 (1996).

<sup>2</sup> Cambridge Systematics, Inc., and Apogee Research, Inc., “Measuring and Valuing Transit Benefits and Disbenefits: Draft Final Report (November, 1995), Sponsored by Transit Cooperative Research Program Project H-2

may be a strong perception in the community that transit substantially reduces lung disease from air pollution. However, calculations of air quality impacts may show very little actual change in community health.

Transit systems have many impacts for a community ranging from the basic need for bus stops and fuel, to direct affects such as trips made by transit or employment of transit workers. The indirect affects of transit may be changes in land use or changes in people's independent life styles. The impacts must be sorted to determine how they relate to one another, whether positive or negative, and their relative importance. While this study will only examine the economic and financial benefits, the six TCRP major categories of benefits are discussed in more detail in the following sections.

### **Mobility and Access Benefits**

The concepts of mobility and accessibility are fundamentally different. Mobility generally refers to the ease with which one moves, measured in terms of alternatives available and travel time. Accessibility generally refers to the extent to which desired destinations are served, measured in terms of the availability of and proximity of primary destinations to transportation. These benefits are the ability of an individual transit user to move about the community and get to a destination that allows the individual to participate in the community on an independent basis.

### **Economic and Financial Benefits**

Economic and financial benefits and disbenefits are important factors in transit benefit analysis. A financial viewpoint includes benefits that can be recovered as income or that contribute to the rate of return for transit investment. An economic viewpoint assumes benefits can be measured or converted to a monetary unit. This means the creation of jobs and the increase in personal income, business activity (sales), and tax revenue for the community. As expenditures for transit increase, the effect on the local economy (in terms of business sales, employment, and income) can be measured and contributed to the improvement of transit.

## **Energy and Environmental Benefits**

The Clean Air Act of 1970 began focusing on air quality standards around the country. Since that time, measurement of the impacts of transit on energy consumption has become a routine element in the evaluation of proposed transit improvements. Unfortunately, the true energy and environmental quality benefits of a transit alternative cannot be easily quantified and expressed in financial terms. To do so, the analysis must include health benefits, reductions in the loss of life, impacts on the natural environment and aesthetics, and many more factors.

Many metropolitan areas are using the reduction of emissions to develop standards for their particular area. Reductions in overall travel will lead to lower air pollutant emissions, reduced noise levels, and other affects. It is assumed that the overall benefit of transit on the local environment and the use of energy are decreased level of energy need (fuel consumption), lower level of air pollution, reduced noise level, improved protection of the ecology, and decreased need to consume more land for development.

## **Safety and Security Benefits**

Personal safety and security affect both user and nonuser behavior and attitudes about transit, particularly in major metropolitan areas. Safety characteristics of public transit are widely measured by tracking the type and frequency of accidents that result in bodily harm or property loss. In these terms, transit is one of the safest of all modes of travel. Using transit reduces the possibility of being in a vehicle accident.

This category does have a disbenefit for transit. There are public concerns regarding personal security on the bus and that transit allows criminals to access neighborhoods that would otherwise have a lower crime rate. However, this is more of a perception than reality.

## **Social Equity Benefits**

Social equity refers to the distribution of benefits and disbenefits among segments of the population. Transit benefit analysis pertains to two concepts. The first con-

## *Overall Benefits of Transit*

cept refers to achieving fairness or the distribution of costs and benefits so that no segment of the population is unfairly burdened or aided. The second concept refers to the benefit of transit on preexisting social and economic inequities outside the scope of transportation. This may include achieving fairness by overcoming barriers to education, economic opportunity, or health care. This also concerns Environmental Justice, in that all segments of the population have the same opportunity to use transit.

Social equity benefits are based on evaluation measures applied to population subgroups and then compared to each other. A normative standard is applied to determine whether or not equity objectives are being met. These numerical measures typically focus on income levels, auto ownership, ability to use traditionally configured modes of transportation, and other factors.

### **Intangible Benefits**

Transit impacts and the perception of transit benefits and disbenefits are not always well defined. Generalized characterizations of transit system impacts tend to be substituted for immediate and detailed analysis of system performance and financial or budgetary impacts that preoccupy managers and policy makers in the short term. In recent years, greater systematic quantification has been attempted to assess characteristics such as quality of life, livability, and sustainability. These attempts identify linkages between economic, environmental, and social characteristics. The perceived benefits must be considered and may or may not be measurable or quantifiable.



# Methodology of Economic Benefits

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## OVERVIEW

The focus of this study is to identify the present economic benefits of Grand Valley Transit (GVT) service in Mesa County, Colorado. Chapter III reviews the method used to develop the economic benefits. The method was based on the processes used in the *1997 Transit Needs and Benefits Study (TNBS)* that LSC developed for the Colorado Department of Transportation (CDOT). In that document, LSC developed a method for estimating the economic benefits of the transit services in each Transportation Planning Region (TPR) of Colorado. The Colorado transit economic benefits were based on the IMPLAN input/output model.

For the purposes of this study, LSC reviewed the methodology of the IMPLAN model detailed in the following section. The model creates multipliers for each industry within a region. These multipliers can then be used to estimate the impact or benefit of economic activity in the region. For this study, LSC did not update the IMPLAN model, but used the output of the 1997 model run.

## IMPLAN MODEL FOR PUBLIC TRANSIT

The IMPLAN model used to analyze public transportation spending effects relies on economic impact multipliers generated through the IMPLAN regional input-output modeling system. IMPLAN was originally developed in the early 1980s by the U.S. Forest Service for use in their land management impact planning and analysis. IMPLAN has since become a commercially available product (Minnesota IMPLAN Group, Stillwater, MN), and is likely the most widely used tool for conducting the type of regional impact analysis presented in this study. Details on IMPLAN, including a list of users and examples of IMPLAN applications, can be found at website <http://implan.com>.

## **Input/Output Multipliers**

Input/output multipliers distinguish economic effects according to three categories: direct, indirect, and induced. Direct effects are those in the immediate industry (e.g., jobs and incomes in public transit itself). Indirect effects are those in supporting industries (e.g., jobs and incomes in industries that supply inputs to public transit). Induced effects result from the household spending stimulated by the direct and indirect effects.

Multipliers are based on the interconnection of the regional economy whereby dollars spent on inputs by one firm are received as revenues by other firms and then spent on inputs and received by still other firms. A change in the sales of one firm [the initial (direct) effect] sets in motion a sequence of other effects (the indirect and induced). The analogy of tossing a stone into a pond is often made. The first ripple is the initial (direct) effect, succeeding ripples are the multiples of that effect. The total effect, indicated by the input/output multiplier, is the sum of the direct, indirect, and induced effects.

LSC constructed an IMPLAN model for the region, and used multipliers for IMPLAN Sector #434 “Local Interurban Passenger Transportation” to assess the impact of public transit. A variety of Sector #434 input/output multipliers are used to estimate the role of public transit for each regional economy. All multipliers are so-called IMPLAN “Type II.”<sup>1</sup>

## **Operational Transit Service Benefit**

Using the total operational budget of the transit service, and the multipliers generated for the IMPLAN model, LSC generated the gross economic benefit of transit on the region for operations. The following section details the factors or multipliers that the model generates multiplied by the operational dollars that determined the benefits. These same factors were used in several analyses to determine the net value of the transit benefit.

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<sup>1</sup> For additional detail on IMPLAN multiplier definitions see Minnesota IMPLAN Group, Inc. 1996. *IMPLAN Pro: User's Guide, Analysis Guide, Data Guide*. Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota.

### Total Output Multipliers

The IMPLAN total output multipliers for Sector #434 show sales in all industries (direct, indirect, and induced) per dollar of public transit expenditures in each region. These factors were then multiplied by the total operational and capital expenditures of the transit service. This generates the *total sales benefit* of transit.

### Personal Income Multipliers

The IMPLAN personal income multipliers for Sector #434 show total personal income (direct, indirect, and induced) per dollar of public transit expenditures. Personal income includes wages, salaries and proprietor's income. These factors were then multiplied by the total operational and capital expenditures of the transit service. This generates the *income benefit* of transit service.

### Other Property Income Multipliers

The other property income multiplier for Sector #434 captures the change (direct, indirect, and induced) in other property income per dollar of public transit expenditures. Other property income consists of payments of interest, rents, royalties, dividends, and profits. These factors are then multiplied by the total operational and capital expenditures of the transit service. This generates the *property income benefit* of transit.

### Total Income Multipliers

What might be termed a total income multiplier is formed as the sum of the IMPLAN personal and other property income multipliers. The total income multiplier calculates the effect on *total income* (employee compensation, proprietary income, and other property income) generated from transit expenditures.

### Employment Multipliers

Employment multipliers estimate the effects of transit expenditures on employment. The IMPLAN employment multipliers for Sector #434 show the *total jobs* (direct, indirect, and induced) per million dollars of public transit expenditures.

### **Facilities Construction Impacts**

This analysis includes capital facility construction projects. These are dollars that the transit service spends on the construction of transit facilities. The model generates multipliers for the same five multipliers detailed previously: total sales, employment, wages and salaries, proprietors' income, and property income. The value of the gross economic benefit is computed as the product of facility construction expenditures and IMPLAN multipliers. The amount of expenditure is multiplied by the IMPLAN factors to generate the *gross benefit* of facility construction.

### **Durable Goods Expenditure Impacts**

The second element to the benefit impact of capital expenditures is durable goods, which are items that can be used over a long period of time (such as tires, tools, and office equipment). In order to determine the benefit to the local economy from the transit agency purchasing durable goods, the following analysis is conducted. First, the durable good expenditures by transit service are multiplied by an assumed 20 percent trade margin. It is assumed that all durable equipment is manufactured outside Colorado. The durable goods expenditures are then multiplied by the IMPLAN multipliers for Sector #447 "Wholesale Trade." The same five multiplier categories as in the above section (total sales, employment, wages and salaries, proprietors' income, and property income) are used to determine the *total impact or benefit from the durable goods* expenditure by transit service.

### **Dampening Effect**

In the previous section, LSC estimated the economic activity stimulated by the various expenditures of public transportation providers. These occurred through additions to regional expenditure streams. In funding operations, public transportation providers also have the effect of withdrawing from the expenditure stream. Withdrawals generally occur in two ways: through fare box collections and through a variety of local government grants, taxes, and levies. The input is an estimate of local funding devoted to funding local public transportation, which reduces the gross benefit of transit service.

An element in determining the damping effect is the average propensity to consume locally. Residents spend only a portion of their incomes regionally. The rest goes to savings, taxes, and the purchase of imported goods. Economists dub the portion devoted to local goods as the average propensity to consume locally. LSC obtained the measures of average propensity to consume locally from an IMPLAN “social accounting matrix” model.

The third element is the consumption spending multipliers. These show the change in regional activity, sales, employment, income, and such per dollar of expenditure of local goods. LSC obtained these multipliers from the input/output tables of the IMPLAN model. The usual five multipliers are shown: total sales, employment, wages and salaries, proprietors’ income, and property income.

The result of the above calculations is the gross dampening impact of local funding. The gross dampening impact is computed as the total funding withdrawal times the average propensity to consume locally, times the consumption spending multipliers. This amount will then be subtracted from the gross benefits of transit.

### **Property Value Impacts**

In this section, the impact of public transit expenditures on regional property values is computed. The IMPLAN model provides the property income multiplier. This multiplier tracks interest, rents, royalties, dividends, and profits. These are described collectively as *return on investment income*.

The IMPLAN model reports annual income flows. An income stream measuring a return to property is said to be capitalized by computing its present discounted value. Capital value is property value. Property value created by public transit is estimated by capitalizing the income stream indicated by the IMPLAN other property income multiplier.<sup>2</sup> The discount rate in the capitalizing formula should be indicative of the general safe return on business investments. The prime rate

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<sup>2</sup> If  $r\%$  is the return on capital investments, the capital value of an annual income stream  $F$  is computed as follows:  $C = F/r\%$  where  $C$  equals the present capital value of the annual income stream  $F$ .

of interest is commonly used for this purpose. The prime rate over the decade from 1997 to 2007 averaged 8.5 percent per year.<sup>3</sup>

## **Tax Impacts**

In this section, the impact of public transit expenditures on taxes generated in the region is determined. Income, sales, and property taxes are examined.

### **State Income Taxes**

To estimate state income tax payments from income generated by public transit, a figure on total income tax collections in Colorado was obtained and was divided by total income (i.e., total personal income) in Colorado for that year. This ratio was then applied to income generated by GVT.

### **Sales and Use Taxes**

Grand Valley Transit generates income and a portion of this is spent on items subject to sales and use taxes. LSC estimated public transit-linked sales and use taxes by computing the statewide ratio of sales and use taxes to personal income, and applying this ratio to GVT's generated income.

### **Property Taxes**

The impact of public transit in generating property income was discussed earlier. LSC estimated property tax receipts that result from public transit expenditures in much the same way that income and sales/use tax receipts were estimated. The statewide ratio of property tax collections to personal income is computed, and then applied to GVT's generated income.

## **Efficiency Effect**

Public transportation has a positive impact on economic growth. By facilitating the movement of labor between home and workplace, public transportation has the effect of enlarging the labor pool and lowering labor costs. Greater access to labor enhances the competitiveness of local industry and ultimately leads to larger

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<sup>3</sup> U.S. Federal Reserve, Board of Governors' web site: [www.bog.frb.fed.us/releases/h15/data/a/prime.txt](http://www.bog.frb.fed.us/releases/h15/data/a/prime.txt).

output. In addition, public transportation eases peak-load burdens on highways and streets in general, thereby contributing to an efficiency in the transportation network as a whole.

There is a body of research aimed at quantifying the effect of transportation efficiencies on economic growth. The most recent and most respected of this is by Nadiri and Mamuneas.<sup>4</sup> The authors built an econometric model using data from 1947 to 1989 that examined the effect of highway capital on industry productivity and performance. A key finding of their research is that an efficient transportation system has positive effects on both the demand and supply side of the economy, and that these increase the increment of economic growth by roughly four percent per year. For example, if growth is five percent in a given year, then transportation efficiencies account for 0.2 percent of all growth, based on four percent multiplied by five percent.

Public transportation in this region contributes to transportation efficiencies by moving consumers to goods and services, and workers to places of employment. It also reduces the investment in streets and highways needed to maintain peak-load transportation efficiency, and adds to the efficiency of the transportation system as a whole. For this analysis, LSC used the output from the 1997 TNBS study to calculate the efficiency effect of transit on the local economy.

## **NET ECONOMIC BENEFIT**

The total result of this analysis is the net economic benefit of the transit operations and capital purchases in the region. In order to obtain the net impact, the gross benefits of operations, facilities construction, and durable goods are added together by each of the five multiplier categories (total sales, employment, wages and salaries, proprietors' income, and property income). The total of these benefits is then subtracted by the damping impacts of the same five multiplier categories. The benefit of tax revenue and the efficiency effect are added to the gross benefit total. The formula is as follows:

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<sup>4</sup> Nadiri, M.I. and T.P. Mamuneas. 1996. "Highway Capital and Productivity Growth," in *Economic Returns from Transportation Investment*, Eno Transportation Foundation, Inc., Lansdowne, VA.

*Methodology of Economic Benefits*

$$\text{Net Transit Benefit} = \text{Gross Benefits} - \text{Damping Impact} + \text{Tax Benefit} + \text{Efficiency Effect}$$



## Findings - Benefits of Transit

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### INTRODUCTION

Chapter IV presents results using the IMPLAN model outputs and the existing Grand Valley Transit (GVT) financial information to develop the gross and net economic benefits of transit service operations and capital purchases. This chapter also includes scenarios for the economic impact of increased transit services and/or the construction of capital facilities.

### IMPACT OF EXISTING GVT ANNUAL OPERATIONS AND CAPITAL

The following sections review the economic benefits of the existing operational and capital expenditures for GVT based on the IMPLAN model multipliers. This includes the gross benefits for operations, facilities, durable goods and the damping affect.

#### Gross Operational Expenditures

Using the multipliers from the IMPLAN model, LSC generated gross sales, personal income, wage proprietors' income, property income, and number of jobs. Table IV-1 provides the results of this analysis. With \$2.1 million in operational expenditures:

- Gross sales benefit = \$3.8 million
- Gross number of jobs created = 99.2
- Total gross value of all income and wages = \$8.1 million.

<b>Table IV-1</b>			
<b>Gross Impact Of Operating Expenditures</b>			
	<b>Operating Expenditures (\$1,000)</b>	<b>Multiplier Factor</b>	<b>Total Impact (\$1,000)</b>
Total Sales	\$ 2,185	1.763857	\$ 3,854
Jobs	\$ 2,185	1.389693	99.2
Total Personal Income			\$ 2,138
Wage and Salary Income	\$ 2,185	0.559766	\$ 1,223
Proprietors' Income	\$ 2,185	0.16588	\$ 362
Property Income	\$ 2,185	0.252956	\$ 553
<b>Total Gross Benefit</b>			<b>\$ 8,131</b>
<i>Source: LSC, 2008.</i>			

### Gross Facilities Construction Impact

Using the existing GVT capital budget and IMPLAN multipliers, LSC generated the gross sales, personal income, wage proprietors' income, property income, and number of jobs, shown in Table IV-2. With \$500,000 in facility expenditures:

- Gross sales benefit = \$799,000
- Gross number of jobs created = 12.8
- Total gross values of all income and wages = \$1.8 million.

<b>Table IV-2</b>			
<b>Gross Impact of Facilities Construction</b>			
	<b>Facility Expenditures (\$1,000)</b>	<b>Multiplier Factor</b>	<b>Total Impact (\$1,000)</b>
Total Sales	\$ 500	1.597661	\$ 799
Jobs	\$ 500	1.722883	12.8
Total Personal Income			\$ 526
Wage and Salary Income	\$ 500	0.581013	\$ 291
Proprietors' Income	\$ 500	0.098694	\$ 49
Property Income	\$ 500	0.370172	\$ 185
<b>Total Gross Benefit</b>			<b>\$ 1,849</b>
<i>Source: LSC, 2008.</i>			

### Gross Durable Goods Impact

Using the existing GVT budget for durable goods expenditures and the IMPLAN multipliers, LSC generated the gross sales, personal income, wage proprietors'

income, property income, and number of jobs. With \$250,000 in durable goods expenditures estimated:

- Gross sales benefit = \$88,450
- The gross number of jobs created = 0.15
- Total gross values of all income and wages = \$172,000.

While the total value of all income and wages is less than the investment of \$250,000, this is due to the assumption that most of the durable goods purchased in Colorado are manufactured outside the state. Therefore, the dollars spent on durable goods do not stay in the local economy and cannot be added to the overall local benefit.

<b>Table IV-3</b>				
<b>Gross Impact of Durable Expenditures</b>				
	<b>Durable Goods Expenditures (\$1,000)</b>	<b>Trade Margin</b>	<b>Multiplier Factor</b>	<b>Total Impact (\$1,000)</b>
Total Sales	\$ 250	20%	1.769057	\$ 88
Jobs	\$ 250	20%	2.003008	0.15
Total Personal Income				\$ 42
Wage and Salary Income	\$ 250	20%	0.557914	\$ 28
Proprietors' Income	\$ 250	20%	0.063285	\$ 3
Property Income	\$ 250	20%	0.212844	\$ 11
<b>Total Gross Benefit</b>				<b>\$ 172</b>
<i>Source: LSC, 2008.</i>				

### Damping Effect Impact

Using the methodology for the damping effect from Chapter III and the multipliers from the IMPLAN model, LSC generated the damping effect for gross sales, personal income, wage proprietors' income, property income, and number of jobs using local funding and fares generated by GVT. With \$1.6 million in local contributions:

- Gross sales impact = \$1.4 million
- Gross number of jobs reduced is 22.7
- Total gross damping of all income, wages, and tax revenue = \$2.8 million.

This amount will be used as a negative impact on the benefits of operations and capital.

<b>Table IV-4 Gross Damping Effect of Local Transit Funding on Local Consumption Spending and Economic Impact</b>					
	<b>Local Funds (\$1,000)</b>	<b>Avg Propensity to Locally Consume</b>	<b>Net Income Consumption Spending (\$1,000)</b>	<b>Consumption Spending Multipliers</b>	<b>Total Impact (\$1,000)</b>
Total Sales	\$ 1,626	60.8%	\$ 989	1.41898	\$ 1,404
Jobs	\$ 1,626	60.8%	\$ 989	22.972571	22.7
Total Personal Income					\$ 717
Wage and Salary Income	\$ 1,626	60.8%	\$ 989	0.40575	\$ 401
Proprietors' Income	\$ 1,626	60.8%	\$ 989	0.073123	\$ 72
Property Income	\$ 1,626	60.8%	\$ 989	0.245318	\$ 243
<b>Total Gross Effect</b>					<b>\$ 2,837</b>
<i>Source: LSC, 2008.</i>					

The important measure from the standpoint of public policy is the net impact of expenditures. To arrive at net impacts, the financial sources withdrawn from the local economy through public transportation fare box collections, transit taxes, levies, grants, and others must be deducted. If these sources were not going to pay for public transportation, they would have been available for other private and public spending (resulting in sales, jobs, and income effects of their own). Research in other parts of the country has generally found that public transportation engages the local economy more than other expenditures and that public transportation is typically funded in part from federal grants (i.e., funding from outside the local economy). For these reasons, public transportation injects more funding than it withdraws, which results in a net positive regional gain.

### Net Impacts

In order to determine the net impact or benefit of GVT, one must first add up the values of the benefits from Tables IV-1 through IV-3 and then subtract the damping effect from the totals for each of the income, sales, and jobs categories from Table IV-4. The first column of Table IV-5 presents the total gross benefit of

transit less the damping impact, and includes the benefits of tax revenue gained from the operations and purchasing activities of GVT.

- The total sales, income, and tax revenue at this point in the analysis is \$7.4 million.
- When property value is included, the total gross benefit increases to \$13.3 million.
- The total employment generated is 90 jobs.

<b>Table IV-5</b>			
<b>Impact of Public Transportation Operations and Expenditures</b>			
	<b>Net Benefits (\$1,000)</b>	<b>Efficiency Effect (\$1,000)</b>	<b>Total Annual Impact (\$1,000)</b>
Total Sales	\$ 3,338	\$ 377	\$ 3,714
Jobs	90	5	96
Total Personal Income	\$ 1,989	\$ 204	\$ 2,193
Wage and Salary Income	\$ 1,140	\$ 129	\$ 1,269
Proprietors' Income	\$ 343	\$ 16	\$ 358
Property Income	\$ 506	\$ 62	\$ 568
Property Value	\$ 5,950	\$ 681	\$ 6,631
Sales Tax Collection	29.84	\$ 3	\$ 33
Income Tax Collection	56.46	\$ 6	\$ 62
Property Tax Collection	\$ 16	\$ 2	\$ 18
<i>Source: LSC, 2008.</i>			

The next step is to include the growth factor benefits generated from the operations and purchasing of the transit service. These values are presented in the Table IV-5 column titled “Efficiency Effect.” The values in this column are based on the methodologies detailed in Chapter III and the 1997 TNBS study. The efficiency effect values or benefits are then added to the benefits in column two. The result is the total net economic benefit of transit to the regional economy, as presented in the last column of Table IV-5.

- The total net benefit is estimated at \$8.2 million.
- With property value included, the total net benefit increases to \$14.8 million.
- The net total employment benefit is estimated at 96 jobs.

Table IV-6 presents the summary of the net results of the investment in transit for the region. The total benefits are \$8.2 million, 96 jobs, and a return of \$2.80 for every dollar invested in operations and/or capital for the GVT service. When property value is included, the value of the benefit increases to \$14.8 million. This results in a return of \$5.06 for every dollar invested in the GVT transit operations and/or capital. The results of this analysis are comparable to other studies conducted by TCRP Report 35 and the American Public Transportation Association (APTA).

<b>Table IV-6 Summary of Transit Benefits</b>	
<b>Benefit</b>	<b>Net Benefits (\$1,000)</b>
Total Sales	\$ 3,714
Total Income	\$ 4,388
Sales Tax Collection	\$ 33
Income Tax Collection	\$ 62
Property Tax Collection	\$ 18
<b>Total Net Benefit</b>	<b>\$ 8,216</b>
Property Value	\$ 6,631
<b>Total Benefit</b>	<b>\$ 14,847</b>
<b>Jobs Created</b>	<b>96</b>
<b>Return on Investment per \$1</b>	<b>\$ 2.80</b>
<b>Return w/ Property Value (per \$1)</b>	<b>\$ 5.06</b>
<i>Source: LSC, 2008.</i>	

## ECONOMIC BENEFIT SCENARIOS

Using the results from the above sections, LSC estimated the increased economic benefit of transit on the local economy for different scenarios—an increase in operational expenditures (level of service) and the construction of a new transit facility (capital investment). Additional scenarios will be analyzed using the IMPLAN model based upon local project priorities for the community.

## Increase in Operational Expenditures

For this scenario, LSC assumed an increase in GVT operations (service) from the existing budget of \$2.18 million to \$4.3 million a year. LSC also assumed for this scenario that GVT would need to increase durable goods expenditures in order to match the operation expansion. The benefit to the local economy from improved transit service is the increase in economic value generated through the activity of the transit service expenditures. Table IV-7 presents the results of this increase in level of service.

- The result is \$15.7 million in economic activity, which is an increase of \$7.5 million (from \$8.2 million).
- The benefit for every dollar of investment is \$2.93.
- When property value is included, the total benefit increases to \$27.9 million.
- This results in a **\$5.21 return** on every dollar invested.
- When the transit service is doubled in terms of level of service, the number of jobs increases from 96 to 225.
- With an increase in operations, the benefits continue as long as the new level of service is maintained.

<b>Table IV-7 Increased Operations Scenario</b>	
<b>Summary of Benefits</b>	<b>Net Benefits (\$1,000)</b>
Total Sales	\$ 7,230
Total Income	\$ 8,314
Sales Tax Collection	\$ 61
Income Tax Collection	\$ 115
Property Tax Collection	\$ 18
<b>Total Net Benefit</b>	<b>\$ 15,737</b>
Property Value	\$ 12,240
<b>Total Benefit</b>	<b>\$ 27,977</b>
<b>Jobs Created</b>	<b>225</b>
Return on Investment per \$1	\$ 2.93
Return w/ Property Value (per \$1)	\$ 5.21
<i>Source: LSC, 2008.</i>	

### Construction of New Transit Facility

In this scenario, GVT constructs a new transit facility. LSC assumed facility projects will cost approximately \$9 million to construct in coming years. Table IV-8 summarizes the net results of the investment.

- The net benefit is estimated at \$40 million.
- The total employment benefit is 300 jobs, which is an increase of 204 jobs.
- The result is a return of **\$3.51** in economic activity for every dollar of investment.
- When property value is included, the net benefit to the local economy increases to \$84.5 million.
- The return increases to **\$7.39** for every dollar of investment.

*Note that these returns and benefits only occur during the years of the new facility construction.*

<b>Table IV-8 Scenario 2 - Capital Projects</b>	
Summary of Benefits	Net Benefits (\$1,000)
Total Sales	\$ 17,099
Total Income	\$ 22,396
Sales Tax Collection	\$ 221
Income Tax Collection	\$ 416
Property Tax Collection	\$ 18
<b>Total Net Benefit</b>	<b>\$ 40,149</b>
Property Value	\$ 44,362
<b>Total Benefit</b>	<b>\$ 84,511</b>
<b>Job Creation</b>	<b>300</b>
Return on Investment per \$1	\$ 3.51
Return w/ Property Value (per \$1)	\$ 7.39
<i>Source: LSC, 2008.</i>	

### Summary

When reviewing the results from the scenarios, the investment in facilities has the greatest *initial return* on investment, while an increase in operations has the second greatest *initial return* on investment. When one looks at these investments

over the long term however, the investment in facilities is only an economic benefit during the years of construction. The operational benefits continue over the long term. Therefore, the long-term benefits of continued investment in transit operations outweighs the large, but short-term, gain of the facility investment. The operational investment generates \$15.7 million in local economy activity every year and supports 129 new jobs over the long term. The facility investment creates 204 jobs in the short term. The benefit of facility investment becomes more important when the local economy is in a slowdown or recession, since facility investment allows for a jumpstart of the regional economy and reduces the impact of a slowdown or recession.