SHRP 2 Capacity Project C03

Interactions Among Transportation, Capacity, Economic Systems, and Land Use: Economic Impact Performance Metrics

SHRP 2
STRATEGIC HIGHWAY RESEARCH PROGRAM
Accelerating solutions for highway safety, renewal, reliability, and capacity

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

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Interactions Among Transportation Capacity, Economic Systems, and Land Use: Economic Impact Performance Metrics

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with

Cambridge Systematics, Inc.
Texas A&M Transportation Insitute

TRANSPORTATION RESEARCH BOARD
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www.TRB.org

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Materials contained in this report were developed by Economic Development Research Group, Inc., and intended for use as an expansion of the Transportation Performance Measures website that was originally developed by Cambridge Systematics, Inc., for SHRP 2 Project C02.

NOTICE

The project that is the subject of this document was a part of the second Strategic Highway Research Program, conducted by the Transportation Research Board with the approval of the Governing Board of the National Research Council.

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Contents

Executive Summary

This document is one of a series of technical products from the second Strategic Highway Research Program (SHRP 2) Project C03, Interactions Between Transportation Capacity, Economic Systems, and Land Use.

Transportation Project Impact Case Studies (TPICS) Web Tool. One of the products is a web-based database tool that contains 100 case studies of the economic and development impacts of highway projects, along with analysis tools for screening, viewing, and analyzing them. That website can be accessed in two ways:

- Via the SHRP 2–sponsored website, Transportation for Communities—Advancing Projects through Partnerships (TCAPP), which can be found at www.transportationforcommunities.com (click on the TPICS link at the bottom of the TCAPP website),
- Or directly from the project website, Transportation Project Impact Case Studies, which can be found at www.tpics.us.

Technical Documents. The project also produced a series of technical reports, which can all be viewed and downloaded from the Internet. They also can be accessed from the TPICS web page by selecting the tab on top labeled "About TPICS." These reports include the following:

Case Study Analysis

- TPICS Web Tool: User Guide (Instructions for Use)
- Description and Interpretation of Case Studies: Handbook for Practitioners
- Case Study Design and Development
- Case Study Data Set Documentation

Research Methods and Findings

- Economic Impact Data Analysis Findings
- Economic Impact Performance Metrics
- Working Paper: Stakeholder Needs, Limitations of Available Tools, and Future Research

CHAPTER 1
Types of Economic Metrics

1.1 Project Background

The second Strategic Highway Research Program (SHRP 2) Capacity Project C03 is entitled Interactions Between Transportation Capacity, Economic Systems, and Land Use. This project produced a series of reports on methods, models, and case studies that examined the economic and development impacts of highway capacity investments projects. This report is one volume in that series.

The intent of this project and its research products and web tool is to further public and transportation agency understanding of the range of economic impacts that occur from various types of highway projects. This information can aid both technical research and public discussion of the topic. It can also help define the broad range of impacts and factors affecting them to assist transportation agencies in their planning processes. And it can help refine public debate about highway projects by establishing the boundaries of the likely positive and negative impacts that typically occur from such projects.

This report is designed to complement other products of this project by providing metrics commonly used for measuring the economic benefits and impacts of transportation projects. Consistent with objectives of the SHRP 2, it focuses on metrics relevant to highway projects, although most of these factors also relate to other transportation modes.

1.2 Differentiating Types of Benefits and Impacts

Transportation investments can have significant benefits and impacts that are often considered in analyses of potential capacity expansion projects. They can be grouped into two major categories:

- **Economic Value of User Benefits.** These impacts include the money value of user benefits such as travel time savings, fuel and nonfuel cost savings, improvements in reliability, and safety benefits. User benefits can lead to broader economic development impacts, though they do not necessarily represent all of the locational access, connectivity, and productivity factors that create economic development impacts. While the SHRP 2 C03 project focused on economic development impacts rather than user benefits, it is important to lay out the metrics for both so that their differences can be appreciated.
- **Economic Development Impacts.** This encompasses long-term macroeconomic impacts such as changes in employment, income, business output, and associated changes in land values and land development. These factors typically reflect changes in productivity resulting from improvements in market accessibility, intermodal connectivity, scheduling, logistics, and international competitiveness. They can also

reflect short-term construction spending and dislocation effects. The SHRP 2 C03 project focused exclusively on this category of impacts.

1.3 Objective and Organization of This Document

Report Content and Use. The remainder of this document lays out alternative measures of the economic value of transportation project benefits to users (Chapter 2) and the level of impact a transportation project can have on a surrounding area economy (Chapter 3). This information, particularly the metrics discussed in Chapter 3, draws heavily from findings of the case study data collection efforts of SHRP 2 Project C03, from which lessons were learned concerning the challenges of measuring various elements of economic impact. However, the information was also designed to expand material for SHRP 2 Project C02, which has developed a transportation performance measures website.

Presentation Organization. For each of the two main categories of economic metrics (user benefit and economic development impact), there is a general discussion of the purpose and use of that category and then a presentation of alternative measures available. In general, these various measures are overlapping in their responsiveness to transportation enhancement but also different in their coverage of effects.

For each individual metric (measures), the following information is provided:

- Name/class of measure
- Data requirements for calculation
- Applicable geographic scale
- Ability to be forecasted
- Case studies (transportation projects where it was used)
- Examples of use (measurements developed)
- How to use this measure in transportation planning

CHAPTER 2
Economic Value of User Benefits

2.1 Definition

The **economic value of user benefits** is defined as the dollar valuation of benefits in saving travel time, saving travel cost, and enhancing safety. These benefits reflect the effects of transportation mobility performance indicators and user economic impact performance indicators. They are valued in monetary (dollar) terms to establish a uniform basis for calculating the total user benefits of projects and to enable benefit–cost comparison. That involves the application of unit values for travel time, fuel used, vehicle use, and incidents (including collisions and breakdowns). The standard practice in monetizing long-term user benefits is to identify *all* travelers impacted by a corridor improvement, including (1) travelers on directly affected highways, (2) travelers using other highways in the regional network, and (3) pass-through travelers whose trips originate and terminate outside of the state. Estimated values of time and other unit costs are applied to arrive at monetized user benefits. In each case, the unit valuation may be determined on the basis of either actual costs incurred (as in the case of saving driver wages or fuel costs) or a commonly accepted willingness-to-pay valuation (as in the case of saving personal time).

This analysis typically evaluates the values of travel time savings, fuel operating cost changes, nonfuel operating cost changes, and crashes by type (fatalities, injuries, property damage). Typically, these impacts are estimated and added to create total traveler benefit performance measures. Sometimes the value of reliability improvements (reducing the need for buffer time scheduling) and reduced noncrash incidents (such as breakdowns) may also be counted as additional forms of time savings and vehicle operating cost savings. In some cases, there may also be activity dislocation or traffic rerouting during the construction period, leading to temporary “dis-benefits” in travel times and costs.

In addition, there is growing recognition that the true “user” of freight transportation systems may include shippers, operators, and consignees rather than just truck drivers. And with that has come a recognition that enhancement in supply chain logistics (due to increased speed, enhanced reliability, and intermodal connectivity) can also be counted as a user benefit. In some cases, enhanced access to labor markets and truck delivery markets can also lead to scale economies that are counted as broader economic benefits; these effects are addressed in the separate section on economic development impacts.

As transportation agencies increasingly consider environmental and community factors in the planning and project selection processes, all of these factors may also be valued in economic terms and included directly in a benefit–cost analysis.

2.2 Objectives and Performance Measures

2.2a Value of Traveler Time Savings

This measure most commonly represents the aggregate dollar value of long-term savings in travel time for vehicle drivers and passengers. It is usually defined as the value of time savings for people (reflecting wage rates or willingness-to-pay surveys) and is distinguished from savings in vehicle operating cost that can also occur if travel speeds change (reducing vehicle congestion delays and engine idling). In addition, improvement in reliability may also be counted as an added element of time savings (insofar as it reduces the need for travelers to leave extra "buffer time" in their travel schedules).

Data Requirements: Change in average travel time and affected volume (vehicles or passengers), which together represent VHT (vehicle-hours of travel) or PHT (passenger-hours of travel), optional adjustment for change in reliability, plus unit valuation factor (per vehicle-hour or passenger-hour of travel)

Relevant Analysis Scales: Project, Corridor, Regional Plan

Forecastable: Yes (using travel model or sketch planning calculations)

Case Studies:

- Kansas T-LINK Highway Prioritization
- Virginia Six-Year Highway Plan
- Portland Congestion Reduction Alternatives
- Appalachian Highway System Completion
- Northeast CanAm Connections
- Colorado I-70 Corridor Environmental Impact Study (EIS)

Examples of Use:

- Value of VHT reduction (for drivers and passengers)
- Value of reduced peak congestion (savings in hours of queuing or peak period VHT)

How to Use This Measure:

- Long-Range Planning—Used to identify the extent of travel time benefit
- Programming—Used to identify projects or segments with the greatest travel time benefit

2.2b Value of Vehicle Cost Savings

This measure represents the aggregate dollar value of long-term vehicle operating cost savings that results from reduced travel distances and enhanced travel conditions. Such savings typically occur when construction of new routes reduce average travel distances for some trips and hence lead to savings in fuel use and other aspects of vehicle operating cost. It is also possible, though, for vehicle operating cost savings to occur when there is improvement in road conditions (which can reduce swerving and cycles of acceleration and deceleration) or reduction in congestion

bottlenecks (reducing need for engine idling in place). Changes in average speed can also increase or reduce vehicle fuel efficiency, depending on the specific speeds that are occurring.

Data Requirements: Change in average travel distance and affected traffic volume (which together represent VMT, or vehicle-miles of travel), plus unit valuation factor (per vehicle-mile)

Relevant Analysis Scales: Project, Corridor, Regional Plan

Forecastable: Yes (using travel model or sketch planning calculations)

Case Studies:

- Kansas T-LINK Highway Prioritization
- Virginia Six-Year Highway Plan
- Appalachian Highway System Completion Plan
- Northeast CanAm Connections

Examples of Use:

- Value of reduced average VMT (annual vehicle-miles of travel) or VKT (annual vehicle-kilometers of travel)

How to Use This Measure:

- Long-Range Planning—Used to identify the extent of travel time benefit
- Programming—Used to identify projects or segments with the greatest travel time benefit

2.2c Value of Safety Improvement.

This represents the dollar value of long-term enhancement in road safety, as represented by a reduction in rates of collision occurrence and application of typical unit costs for collision, injury, and death occurrences.

Data Requirements: Change in incidence of vehicle collisions with damage only, with personal injury, and with death, plus unit valuation factors (average cost per type of occurrence)

Relevant Analysis Scales: Project, Corridor, Regional Plan

Forecastable: Yes

Case Studies:

- Kansas Department of Transportation (DOT) T-LINK Highway Prioritization
- Portland Congestion Reduction Alternatives

Examples of Use:

- Value of reduced average collision occurrences

How to Use This Measure:

- Long-Range Planning—Used to identify the extent of safety improvement

- Programming—Used to identify projects or segments with the greatest safety improvement benefit

2.2d Value of Construction Disruption

This represents the "dis-benefit" value of land takings, activity dislocations, and traffic rerouting costs that may be realized by households and/or businesses as a consequence of transportation facility construction.

Data Requirements: Sum of compensated and noncompensated costs of relocating property and traveling more roundabout routes to access destinations during construction

Relevant Analysis Scales: Project, Corridor

Forecastable: Yes

Case Study: I-70 Mountain Corridor EIS

Examples of Use:

- Value of local business loss (due to land takings)
- Added travel time cost (due to rerouting traffic around construction)

How to Use This Measure:

- Environmental Impact Assessment—Used to identify localized and temporary net income losses incurred by residents and business

2.3 Case Studies

The following case studies describe completed projects and analysis tools that illustrate the measurement of economic development impacts. Many of the case studies address multiple measures and factors, and some of them provide specific tools that might be helpful in calculating a measure. Within each of the measures identified above, you can also find links to the relevant case studies.

2.3a Florida Strategic Intermodal System Plan

Agency: Florida DOT

Location: Florida

Scale: State

Description: Florida's Strategic Intermodal System (SIS) Plan was established in 2003 and updated in 2010 to enhance Florida's economic competitiveness by focusing state resources on those transportation facilities that are critical to Florida's economy and quality of life. The need for a strategic intermodal transportation system was established through the Economic Competitiveness Goal in the 2020 Florida Transportation Plan. A comprehensive set of 25 performance measures was established by the Florida DOT to assist in evaluating highway capacity-adding projects eligible for SIS funding in a manner consistent with SIS goals. The

performance measure evaluation is supported by the Florida Strategic Investment Tool (SIT), a methodology for determining project priorities. The SIT is driven by policies included in the Florida Transportation Plan and the SIS Plan. The SIT includes five categories of prioritization criteria, each corresponding to the five SIS goals.

Website: http://www.dot.state.fl.us/planning/sis/

2.3b Kansas T-LINK Highway Prioritization

Agency: Kansas DOT
Location: Kansas
Scale: State

Description: The T-LINK (Transportation-Leveraging Investments in Kansas) Task Force developed a new set of criteria that was implemented in 2010 to prioritize and select highway corridor capacity expansion projects. It was based on three core dimensions of performance indicators: (1) engineering ratings, which account for congestion (volume to capacity ratio), traffic volume flow, truck volume, and accident rates; (2) local consultation ratings, which cover both local road system connectivity and social/community needs; and (3) economic impact ratings, which account for accessibility and intermodal connectivity and their impacts on economic competitiveness, jobs, and income generation.

Website: http://www.kansastlink.com/

2.3c Virginia Six-Year Highway Plan

Agency: Virginia DOT
Location: Virginia
Scale: State

Description: VTran2035 is Virginia's Long-Range Multimodal Transportation Plan. It set forth a series of seven performance goals: (1) safety and security; (2) system maintenance and preservation; (3) mobility, connectivity, and accessibility; (4) environmental stewardship; (5) economic vitality; (6) coordination of transportation and land use; and (7) program delivery. The identification of strategic corridors, key projects, and policy directions was guided by those criteria. The economic development analysis was explicitly based on consideration of mobility, connectivity, and accessibility impacts, and their ability to support job and income generation by enhancing productivity and competitiveness.

Website: http://www.vtrans.org/vtrans2035_final_report.asp

2.3d Appalachian Highway System Completion Plan

Agency: Appalachian Regional Commission
Location: Appalachia
Scale: 13-state region

Description: The Appalachian Development Highway System was authorized by Congress to "generate economic development in previously isolated areas, supplement the interstate system, connect Appalachia to the interstate system, and provide access to areas within the Region as well as to markets in the rest of the nation." As of 2007, the system was around 85% complete but still carrying a significant cost for full completion. The Appalachian Regional Commission initiated a process to assess the transportation and economic consequences of completing the remaining network links. The assessment process was defined to include four key performance elements: (1) travel time and cost-efficiency, (2) access to labor and freight delivery markets, (3) connectivity to intermodal facilities, and (4) macroeconomic impacts on suppliers, consumer spending, and the economies of the 13 affected states.

Website: http://www.arc.gov/adhs

2.3e Portland Congestion Reduction Study

Agency: Portland Metro
Location: Portland, Oregon
Scale: Regional

Description: Portland's Metro collaborated with the Portland Business Alliance to assess the economic development consequences of alternative scenarios for multimodal (bus, light rail, and highway) transportation investment in the Portland region. The assessment process included metrics reflecting change in modal investments and resulting changes in travel time and travel cost for commuters, freight deliveries, international import/export industries, local health care industries, office-based industries and retail activity. Overall economic development impacts on employment, income, and business output were assessed based on consideration of mobility, accessibility, and safety changes.

Website: http://www.metro-region.org/index.cfm/go/by.web/id=16673

2.3f Northeast CanAm Connections

Agency: Maine DOT, lead for state/province consortium
Location: Northern New England and Eastern Canada
Scale: 5 Canadian provinces and 4 U.S. states

Description: Northeast CanAm Connections was initiated as a process for eastern Canadian provinces and northern New England states to collaborate on shared needs to improve economic conditions by enabling improved cross-border and east-west connectivity. The process focused on four key elements of regional need: (1) access to jobs, (2) access to markets, (3) intermodal distribution networks, and (4) port feeder and distribution network connectivity, and their relationship to economic growth (defined in terms of jobs, population, and wage levels in the region). These criteria provided a basis for identifying and assessing alternative strategic directions for transportation investment in the region.

Website: http://www.canamconnections.com/

CHAPTER 3
Economic Development Impacts

3.1 Definition

Economic development impact captures broader effects on the economy that can occur as a result of changes in transportation system investment and performance. Long-term effects occur as a result of changes in transportation system performance, which may affect (a) the cost of travel, (b) labor market and delivery market access, (b) reliability and supply chain activity, and/or (c) network connectivity. Changes in any (or all) of these short-term or long-term factors can lead to (d) macroeconomic impacts—shifts in the growth of directly affected businesses and industries, suppliers to those businesses and industries, worker respending of income on consumer purchases, and other induced shifts in the economy. Measures of economic development impact include income growth, productivity enhancement, and job creation.

Long-term economic development impact differs from the economic value of user benefits performance measure in three key ways. First, economic development impact counts changes in the flow of money and associated jobs, so it excludes nonmoney benefits (such as the valuation of personal time) that are included in user benefits. Second, economic development impact covers the economy of a given area, so effects on pass-through travel are not counted as they are included in user benefits. Third, economic development impact covers changes in the structure of the economy (including indirect effects on suppliers and induced effects on consumer spending and international trade) that are not recognized in the value of user benefits. Elements of economic development impact (particularly the income and productivity factors) form the core of "wider economic benefits" that are sometimes used in expanded definitions of economic benefit–cost.

There can also be a short-term effect on local jobs and income through two mechanisms. One is the impact of direct spending on facility construction, operations, and maintenance, which also leads to broader indirect and induced macroeconomic impacts. These impacts are typically reported separately because they are a consequence of transportation costs rather than a reflection of transportation performance benefits. In addition, they seldom help to distinguish among projects, since spending on alternative projects would likely lead to similar spending impacts. The second type of short-term effect is the impact of land takings and activity dislocation caused by the construction process. These impacts on jobs and income tend to be highly localized and are particularly important to note in environmental impact reports.

The updated performance measures provided here reflect findings from SHRP 2 Project C03, Interactions Between Transportation Capacity, Economic Systems, and Land Use.

3.2 Objectives and Performance Measures

Corridor expansion and traffic management can cause long-term impacts on transportation system performance that also lead to direct and indirect impacts on freight flows, labor markets, industry

growth, and the generation of income across the economy. As a result, the associated performance measures reflect a sequence of impacts encompassing (1) direct travel cost savings, (2) productivity outcomes affecting nontravelers, and (3) changes in private investment leading to broader macroeconomic outcomes for jobs and income generation in the economy.

3.2a Traveler Cost Savings to Households and Business

This element of long-term economic development impact encompasses all cost savings due to changes in travel time (speed or delay) and travel cost (affected vehicle occupancy, fuel use, and operating cost). These cost savings reflect effects of *transportation mobility* performance indicators and their monetary valuation in *user economic impact* performance indicators. For economic development impact assessment, though, only money cost savings are counted (not the willingness-to-pay value of personal time). Those money savings are allocated to affected economic sectors (households and industries) based on trip purpose—e.g., the extent to which commuter, freight, tourism, or personal travel is being affected. Cost savings to households are treated as enlarging disposable income available for spending on other desired purchases. Cost savings to industries are treated as enhancing productivity (the ratio of business output to cost).

Data Requirements: Change in travel time, traffic volume throughput, reliability, and/or safety; plus money cost unit factors (for any of the preceding time, volume, reliability, or safety factors)

Relevant Analysis Scales: Project, Corridor, Regional Plan

Forecastable: Yes (using forecast of change in travel conditions, multiplied by applicable unit $ valuation factors)

Case Studies:

- Florida Strategic Intermodal System Plan
- Kansas T-LINK Highway Prioritization
- Virginia Six-Year Highway Plan
- Portland Congestion Reduction Alternatives
- Appalachian Highway System Completion Plan

Examples of Use:

- Household transportation cost savings (from reduced vehicle-miles of car travel)
- Business transportation cost savings (from reduced hours of worker delay or reduced vehicle-miles of commercial vehicle operation)

How to Use This Measure:

- Long-Range Planning—Used to identify the extent of cost savings benefit for households and businesses
- Programming—Used to identify projects or segments with the greatest cost savings to area residents and businesses

3.2b Productivity Enhancement Affecting Nontravelers

This element of long-term economic development impact encompasses improvement in business productivity (defined as the ratio of business output to cost of inputs). That can result as a consequence of either greater business output or savings in business cost made possible by (a) access to expanded freight delivery markets, which enable scale economies in business operations; (b) access to wider labor markets and supplier markets, which enable more specialized worker skills, input parts, and product offerings; or (c) reliability and connectivity enhancement, which enable more efficient business scheduling and logistics processes. Together, these productivity benefits occur as a consequence of changes in accessibility, reliability, and land use performance indicators.

Data Requirements: Change in labor force accessibility, reliability (commute and freight delivery trips); destination accessibility (freight delivery area or access time to airport, intermodal rail, marine terminal, or border gateway); plus unit valuation factor (for any of the accessibility measures) may be incorporated into transport economic impact models)

Relevant Analysis Scales: Project, Corridor, Regional Plan

Forecastable: Yes (using forecast of change in accessibility or reliability scale, multiplied by applicable unit $ valuation factors)

Case Studies:

- Florida Strategic Intermodal System Plan
- Portland Congestion Reduction Alternatives
- Appalachian Highway System Completion
- Kansas T-LINK Highway Prioritization
- Virginia Six-Year Highway Plan
- Northeast CanAm Connections

Examples of Use:

Benefit value

- Intermodal Connectivity (aggregate cost savings for truck travel to/from air, rail, or marine ports)
- Freight Delivery Expansion (aggregate cost savings from greater deliveries per truck trip or scale economies serving larger markets)
- Freight Delivery Reliability Value (aggregate logistics savings due to reduced buffer time)
- Labor Market Expansion Value (aggregate cost savings from access to greater base of specialized workers; or savings in wage premium for higher cost work locations)

Proxy measures (reflecting relative benefits)

- Truck percentage of traffic (reflects likelihood of freight delivery or connectivity benefit)

- Planned or actual private investment (reflects likelihood of income or productivity benefits; net of business relocations within study area)

How to Use This Measure:

- Long-Range Planning—Used to identify the extent of cost savings or productivity revenue benefit for businesses
- Programming—Used to identify projects or segments with the greatest cost savings or productivity expansion value for businesses

3.2c Macroeconomic Outcomes (Job and Income Generation)

This element of economic development impact encompasses (a) long-term income growth for directly affected travelers and nontraveler businesses due to enhanced productivity and competitiveness (which enable further business investment and expansion), (b) construction-related income losses for directly affected businesses due to land takings and access route dislocations, (c) indirect effects on growth of materials and service suppliers resulting from net growth of directly affected businesses, and (c) induced growth of other sectors of the economy as workers with added net income respend it on consumer purchases. These "multiplier effects" occur as household and industry buying and selling patterns shift and additional income is generated throughout the economy.

Data Requirements: Net sum of travel cost savings, productivity enhancement, and dislocation losses (expressed as income and cost changes); plus Economic Impact Model (incorporating input-output relationships and competitiveness ratings) to calculate indirect, induced, and total effects on the study area economy

Relevant Analysis Scales: Project, Corridor, Regional Plan

Forecastable: Yes (using Economic Impact Model)

Case Studies:

- Northeast CanAm Connections
- Appalachian Highway System
- Kansas T-LINK Highway Prioritization
- Virginia Six-Year Highway Plan
- Portland Congestion Reduction Study
- Colorado I-70 Mountain Corridor EIS

Examples of Use:

(neighborhood, community, regional, or national scale of measurement)

- Employment growth impact (jobs)
- Wage or Household Income growth impact*
- Gross Domestic Product (or Value Added) growth impact*
- Business Output growth impact*

- Private Investment impact*

*Note: $ impacts cannot be combined since gross domestic product (GDP) is a subset of output, wages are a subset of GDP, and private investment is usually necessary to enable output expansion.

How to Use This Measure:

- Long-Range Planning—Used to identify the extent of job and income growth benefit for households and businesses
- Programming—Used to identify projects or segments with the greatest regional economic growth impact
- Environmental Impact Reports—Used to identify both losses and gains (in terms of jobs and income) at both local and regional scales.

3.3 Case Studies

The following case studies describe completed projects and analysis tools that illustrate the measurement of economic development impacts. Many of the case studies address multiple measures and factors, and some of them provide specific tools that might be helpful in calculating a measure. Within each of the measures identified above, you can also find links to the relevant case studies.

3.3a Florida Strategic Intermodal System Plan

Agency: Florida DOT
Location: Florida
Scale: State

Description: Florida's Strategic Intermodal System (SIS) Plan was established in 2003 and updated in 2010 to enhance Florida's economic competitiveness by focusing state resources on those transportation facilities that are most critical to Florida's economy and quality of life. The need for a strategic intermodal transportation system was established through the Economic Competitiveness Goal in Florida's 2020 Transportation Plan. A set of 25 performance measures was established by the Florida DOT to assist in evaluating highway capacity projects eligible for SIS funding in a manner consistent with SIS goals. The performance measure evaluation is supported by the Florida Strategic Investment Tool (SIT), a methodology for determining project priorities. The SIT is driven by policies included in the Florida Transportation Plan and the SIS Plan.

Website: http://www.dot.state.fl.us/planning/sis/

3.3b Kansas T-LINK Highway Prioritization

Agency: Kansas DOT
Location: Kansas

Scale: State

Description: The T-LINK (Transportation-Leveraging Investments in Kansas) Task Force developed a new set of criteria that was implemented in 2010 to prioritize and select highway corridor capacity expansion projects. It was based on three core dimensions of performance indicators: (1) engineering ratings, which account for congestion (volume to capacity ratio), traffic volume flow, truck volume, and accident rates; (2) local consultation ratings, which cover both local road system connectivity and social/community needs; and (3) economic impact ratings, which account for accessibility and intermodal connectivity, and their impacts on economic competitiveness, jobs, and income generation.

Website: http://www.kansastlink.com/

3.3c Virginia Six-Year Highway Plan

Agency: Virginia DOT
Location: Virginia
Scale: State

Description: VTran2035 is Virginia's Long-Range Multimodal Transportation Plan. It set forth a series of seven performance goals: (1) safety and security; (2) system maintenance and preservation; (3) mobility, connectivity, and accessibility; (4) environmental stewardship; (5) economic vitality; (6) coordination of transportation and land use; and (7) program delivery. The identification of strategic corridors, key projects, and policy directions was guided by those criteria. The economic development analysis was explicitly based on consideration of mobility, connectivity, and accessibility impacts and their ability to support job and income generation by enhancing productivity and competitiveness.

Website: http://www.vtrans.org/vtrans2035_final_report.asp

3.3d Appalachian Highway System Completion Plan

Agency: Appalachian Regional Commission
Location: Appalachia
Scale: 13-state region

Description: The Appalachian Development Highway System was authorized by Congress to "generate economic development in previously isolated areas, supplement the interstate system, connect Appalachia to the interstate system, and provide access to areas within the Region as well as to markets in the rest of the nation." As of 2007, the system was around 85% complete but still carrying a significant cost for full completion. The Appalachian Regional Commission initiated a process to assess the transportation and economic consequences of completing the remaining

network links. The assessment process was defined to include four key performance elements: (1) travel time and cost-efficiency, (2) access to labor and freight delivery markets, (3) connectivity to intermodal facilities, and (4) macroeconomic impacts on suppliers, consumer spending, and the economies of the 13 affected states.

Website: http://www.arc.gov/adhs

3.3e Portland Congestion Reduction Study

Agency: Portland Metro
Location: Portland, Oregon
Scale: Regional

Description: Portland's Metro collaborated with the Portland Business Alliance to assess the economic development consequences of alternative scenarios for multimodal (bus, light rail, and highway) transportation investment in the Portland region. The assessment process included metrics reflecting changes in modal investments and resulting changes in travel time and travel cost for commuters, freight deliveries, international import/export industries, local health care industries, office-based industries, and retail activity. Overall economic development impacts on employment, income, and business output were assessed based on consideration of mobility, accessibility, and safety changes.

Website: http://www.metro-region.org/index.cfm/go/by.web/id=16673

3.3f Northeast CanAm Connections

Agency: Maine DOT, lead for state/province consortium
Location: Northern New England and Eastern Canada
Scale: 5 Canadian provinces and 4 U.S. states

Description: Northeast CanAm Connections was initiated as a process for eastern Canadian provinces and northern New England states to collaborate on shared needs to improve economic conditions by enabling improved cross-border and east-west connectivity. The process focused on four key elements of regional need: (1) access to jobs, (2) access to markets, (3) intermodal distribution networks, and (4) port feeder and distribution network connectivity, and their relationship to economic growth (defined in terms of jobs, population, and wage levels in the region). These criteria provided a basis for identifying and assessing alternative strategic directions for transportation investment in the region.

Website: http://www.canamconnections.com/