



# Data Dictionary

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# TABLE OF CONTENTS

<b>PREFACE</b> .....	<b>ii</b>
P1. Project Products and Reports.....	ii
P2. Acknowledgements.....	iii
<b>1 . INTRODUCTION</b> .....	<b>1</b>
1.1 Project Background and Overview .....	1
1.2 Objective of the EconWorks Web Tool.....	2
1.3 Guide to this Document .....	3
<b>2.DATASET CONTENT AND PROPERTIES</b> .....	<b>4</b>
2.1 Dataset Overview .....	4
2.2 Data Field Characteristics .....	4
<b>3DATA FIELD DOCUMENTATION</b> .....	<b>10</b>
3.1: Data Field Elements.....	10
3.2 Table of Data Fields and Definitions .....	11
<b>4. warning on compatibility and interpretation of data</b> .....	<b>26</b>
4.1 Data Compatibility for Analysis .....	26
4.2 Calculation and Interpretation of Economic Impact Data Measures .....	26
<b>APPENDIX: LIST OF CASE STUDY RECORDS</b> .....	<b>28</b>

# LIST OF TABLES

Table 1. Characteristic Fields .....	5
Table 2. Characteristic Fields (cont.).....	6
Table 3. Settings Fields.....	6
Table 4. Pre-Construction Year Conditions.....	7
Table 5. Post-Construction Study Year Conditions.....	8
Table 6: Economic Impacts .....	9
Table 7. Explanation of Data Fields .....	12
Table 8: List of Case Records by Project Name, Type, Mode, & Location.....	28

# PREFACE

## P1. Project Products and Reports

This document is one of a series of technical products from SHRP2 Project C03, *Interactions between Transportation Capacity, Economic Systems, and Land Use*.

*As of June 2015, the original web tool Transportation Project Impact Case Studies (TPICS) was rebranded into the web tool EconWorks. To provide guidance on the new web tool format, this document has been updated to reflect the new changes, although other resources documents may still refer to the original TPICS web tool.*

**EconWorks Web Tool.** One of the products is a web-based database tool that contains 132 case studies: 100 original case studies, 5 added in 2014, 7 added in 2016, and 20 added in 2017. These cases include the economic and development impacts of highway and transit projects, along with analysis tools for screening, viewing and analyzing them. The web site can be accessed via the EconWorks web site sponsored by the:

- American Association of State Highway and Transportation Officials (AASHTO) found at: <https://planningtools.transportation.org/13/econworks.html>

**Technical Documents.** The project also produced a series of technical reports, which can all be viewed and downloaded from the EconWorks web page by selecting the Research Reports button under the Project Tools category within the green banner on top. These reports include:

### Case Study Analysis

- EconWorks User Guide (Instructions for Use)
- Description and Interpretation of Case Studies: Handbook for Practitioners
- Case Study Design and Development
- Data Dictionary (current document)

### Research Methods and Findings

- Economic Impact Data Analysis Findings
- Highway Economic Impact Case Study Database and Analysis Findings
- SHRP2 C03 Final Report (TRB format)

## P2. Acknowledgements

**Contract.** This project was conducted under a contract from the National Academy of Sciences and Engineering, through the Strategic Highway Research Program II (Capacity Program, Project C03), to Economic Development Research Group, Inc.

**Supervision.** The project was undertaken with oversight from staff of the Strategic Highway Research Program, with direction from Stephen Andrie and David Plazak. The project benefitted from review provided by Oversight Panel of the SHRP2 Capacity Program.

**Contractors.** The case studies and technical reviews were conducted by a team comprised of Economic Development Research Group and subcontractors: Cambridge Systematics, Wilbur Smith Associates, Texas Transportation Institute and Susan Moses & Associates.

The original TPICS (Transportation Project Impact Case Studies) data base and web tool were designed and developed by Economic Development Research Group and implemented by ICF Consulting.

The EconWorks data base and web tool were designed and developed by CH2MHill.

## 1

# INTRODUCTION

## 1.1 Project Background and Overview

The Strategic Highway Research Program II (SHRP2), Capacity Project C03 was 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.

**Project Objective.** 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 boundaries of the likely positive and negative impacts that typically occur from such projects.

The products of this study were designed to help the collaborative decision-making process for transportation planning, by providing a background context on the range of observed results from past highway projects. Such information can potentially be of substantial use in early stages of the planning process, in which alternative project concepts are being suggested and screened.

Of course, one cannot assume that every proposed project will have the same results as the average observed from past projects of a similar type that were previously implemented elsewhere. That is precisely why local data is collected and models are applied developed in later stages of the planning process, to identify expected changes in local traffic characteristics and subsequent economic development. Thus, this project should be viewed as a complement and not a replacement for local-specific transportation and economic impact analysis that may be necessary in later phases of the planning process.

**Case Study Database.** The most notable accomplishment of this project was the development of 100 original highway, freight, and transit-oriented case studies, with 32 additional cases added which (a) compared pre-project and post-project changes in economic and land development conditions, (b) contrasted them with corresponding conditions for a base of comparison, and (c) included both quantitative impact measures and qualitative assessments based on local interviews.

This collection of case studies, completed in 2010, 2014, 2016, and 2017 was compiled with the goal of including all known pre-post highway impact studies in the US, plus available English language studies from Canada and abroad. Members

of the project team then conducted additional quantitative and qualitative data collection and analysis to bring all the cases up to a similar standard of comparability. (For further information on the case study development process, readers are referred to technical documents on “Case Study Design” and “Case Study Development,” as described in the Preface.)

**EconWorks Web Tool.** The case studies were put into a web-based viewing and analysis system called “EconWorks.” This system includes: (a) a *case study search function* that allows for user-defined screening and selection of relevant cases, (b) a *case study viewer* that provides user access to impact measures, discussion text, maps and related documents, and (c) an *impact estimation calculator* that shows the average and expected range of impact associated with any user-defined project profile. In addition, the web tool provides access to d) *Wider Economic Benefit (W.E.B.) Analysis tools (SHRP2 C11)* for evaluating Accessibility, Connectivity, and Reliability. For further information on this system, readers are referred to a separate document, EconWorks User Guide, which can be accessed as described in the Preface.

The EconWorks system was designed to assist transportation agencies in project planning and evaluation, by providing agency staff and interested stakeholders with a means for establishing the range of job, income and development impacts typically associated with various types of transportation projects in different settings.

## 1.2 Objective of the EconWorks Web Tool

The EconWorks web tool was designed for the user to do the following:

- Review, select, and analyze case studies based on criteria selection
- Understand the relationship between project characteristics and impacts
- Compare and evaluate projects by specified criteria
- Develop a range of anticipated impacts for your customized project

The tool’s user interface is structured around two different approaches to analyzing projects, which are outlined on the next page:

- **Case Study Search** – which accesses the database of case studies of highway projects, allowing the user to:
  - 1) Filter the cases they want to see based on many factors (type, region, cost, etc).
  - 2) Select cases to view separately or compare based on the user’s criteria.
  - 3) View pre and post conditions, project area settings, project characteristics, AADT, average weekday ridership (if applicable) and economic impacts for each case.
  - 4) Read a short narrative on the case that provides background on how the project came to be built, its influence on the local area, and other non-transportation factors that enhanced or mitigated the economic impacts of the project.

- 5) View a Google map image of where the project is located.
- **Assess My Project** – which provides an estimate of economic impacts for a hypothetical project based on:
  - 1) The type, length, and setting of the project chosen by the user.
  - 2) The magnitude of AADT (Average Annual Daily Traffic), miles, and project cost—which are all estimated based on the type, length, and setting but can be changed by the user.
  - 3) The extent to which there is supporting business climate, infrastructure, and land-use policies to encourage economic development.

## 1.3 Guide to this Document

This technical documentation provides an overview of the data gathered for the SHRP II case studies (presented on the EconWorks website). This document outlines sources of data, range of values, hierarchical classifications, and overall definitions to assist the user to properly understand and use the data.

It is composed of three further sections:

- Section 2 provides a summary of dataset content and properties
- Section 3 provides a more in-depth explanation of data fields including the field type, source, missing values and definition.
- Section 4 provides guidance on using impact estimates, explains how economic impact estimates were derived and how to appropriately use this information.
- The Appendix provides a “data dictionary” summary of data fields, measurement units and sources

Further discussion on interpreting and using economic impacts in decision making are found in the separate *Users Guide* and *Practitioners Handbook*.

## 2

# DATASET CONTENT AND PROPERTIES

This section provides a summary of the dataset content and properties; a more in-depth explanation of individual data fields is provided in a later section.

## 2.1 Dataset Overview

### *Number of records*

There are 113 different data categories for 132 case studies, totaling 14,916 records.

### *Content of records*

The data fields fall within five category groups that provide a specific type of description. They are: **Characteristics, Settings, Pre-Project Conditions, Post Project Conditions, and Economic Impacts**. Each data field is identified by a unique ID number, contains a column location identifier (alpha field) where the data is in the exported Comma Delimited File, and whether the field is considered to be qualitative or quantitative in nature.

## 2.2 Data Field Characteristics

### *Characteristics*

There are 47 fields, listed in Table 1 that provide a general description of the project's location, motivation for construction, cost, time-period, and other categories that define the nature, scope, and scale of the project.



**Table 1. Characteristic Fields**

<b>ID</b>	<b>Field Name</b>	<b>Type of Data</b>
1	Case study name	Quantitative
2	ID	Quantitative
3	State	Quantitative
4	City	Quantitative
5	Impact Area	Quantitative
6	Description	Qualitative
7	Classification/Type	Quantitative
8	Transportation Mode	Quantitative
9	Project Motivation - Air Access	Qualitative
10	Project Motivation - Rail Access	Qualitative
11	Project Motivation - Int'l Border Access	Qualitative
12	Project Motivation -Marine Port Access	Qualitative
13	Project Motivation -Site Development	Qualitative
14	Project Motivation -Labor Market	Qualitative
15	Project Motivation -Delivery Market	Qualitative
16	Project Motivation -Tourism	Qualitative
17	Project Motivation -Congestion Mitigation	Qualitative
18	Planned Cost (YOE\$'s)	Quantitative
19	Actual Cost (YOE\$'s)	Quantitative
20	Actual Cost (Current Dollars)	Quantitative
21	Length (miles)	Quantitative
22	Initial Study Date	Quantitative
23	Construction Start Date	Quantitative
24	Construction End Date	Quantitative
25	Post-Construction Study Date	Quantitative
26	GIS Latitude Coordinates	Quantitative
27	GIS Longitude Coordinates	Quantitative
28	AADT	Quantitative
31	BEA Region	Quantitative

**Table 2. Characteristic Fields (cont.)**

<b>ID</b>	<b>Field Name</b>	<b>Type of Data</b>
96	General & Bulk Cargo Volume (Metric Tons) (IM only)	Quantitative
97	Container Volume (Metric Tons) (IM only)	Quantitative
98	Container Volume (TEUS) (IM only)	Quantitative
99	Average Weekday Passengers (Transit Only)	Quantitative
100	Parking Spaces	Quantitative
101	Intermodal Project Actual Cost (YOE\$'s)	Quantitative
102	Highway/road access improvement costs (YOE\$'s)	Quantitative
103	Intermodal Project Actual Cost (Current Dollars)	Quantitative
104	Highway/road access improvement costs (Current Dollars)	Quantitative
105	Project Year of Expenditure (YOE \$'s)	Quantitative
106	Lanes	Quantitative
107	Lane Miles	Quantitative
108	Infrastructure Positive	Qualitative
109	Infrastructure Negative	Qualitative
110	Land Use Positive	Qualitative
111	Land Use Negative	Qualitative
112	Financial Incentives/ Business Climate - Positive	Qualitative
113	Financial Incentives/ Business Climate - Negative	Qualitative

### *Settings*

There are 9 fields classified as “Settings” in Table 3 that provide descriptive information regarding the nature of the geographic area in which the project is located. This includes information in areas of socio-economic (e.g. unemployment, population, income growth, market size), topographical, (terrain type), and transportation access (distance to airport, interstate, and major market).

**Table 3. Settings Fields**

<b>ID</b>	<b>Field Name</b>	<b>Type of Data</b>
29	Class Level	Quantitative
30	Economically Distressed	Quantitative
32	Population Density	Quantitative
33	Population Growth Rates	Quantitative
34	Employment Growth Rate	Quantitative
35	Income Growth Rate	Quantitative
36	Market Size (LMA or Pop. 40 min.)	Quantitative
37	Airport Travel Distance	Quantitative
38	Extent of mountain terrain	Quantitative

### ***Pre-Construction Year Conditions***

Eight fields describe the economic conditions at the local, county, or state levels. Data was collected for the year before the construction start year to prevent any influence construction might have on the local, county or state economy. These fields represent the “Pre-Construction Year Conditions” and provide context to understand the economic conditions of the surrounding economy and are listed in Table 4.

**Table 4. Pre-Construction Year Conditions**

<b>ID</b>	<b>Field Name</b>	<b>Type of Data</b>
39	Pre - Personal Income Per Capita - Local	Quantitative
40	Pre - Personal Income Per Capita - County	Quantitative
41	Pre - Personal Income Per Capita - State	Quantitative
42	Pre- Economic Distress - Local	Quantitative
43	Pre - Economic Distress - County	Quantitative
44	Pre - Economic Distress - State	Quantitative
45	Pre - Number of Jobs - Local	Quantitative
46	Pre - Number of Jobs - County	Quantitative
47	Pre - Number of Jobs - State	Quantitative
48	Pre - Business Sales - Local	Quantitative
49	Pre - Business Sales - County	Quantitative
50	Pre - Business Sales - State	Quantitative
51	Pre- Tax Revenue- Local	Quantitative
52	Pre- Tax Revenue-County	Quantitative
53	Pre- Tax Revenue-State	Quantitative
54	Pre - Population- Local	Quantitative
55	Pre - Population - County	Quantitative
56	Pre - Population - State	Quantitative
57	Pre - Property Value - Local	Quantitative
58	Pre - Property Value - County	Quantitative
59	Pre - Property Value - State	Quantitative
60	Pre - Density - Local	Quantitative
61	Pre - Density - County	Quantitative
62	Pre - Density - State	Quantitative

### ***Post-Construction Study Year Conditions***

The same 8 fields describing the economic conditions at the local, county, or state levels are repeated for the Post-Construction Study Year Conditions (Table 5). The Post-Construction Study Year should be at least 5 years after the project is

completed and preferably longer to allow time for economic development impacts to occur. Economic development impacts typically take between 5 to 10 years to develop and the goal is to choose a post-year that will capture as much of the project economic impacts as possible.

**Table 5. Post-Construction Study Year Conditions**

<b>ID</b>	<b>Field Name</b>	<b>Type of Data</b>
63	Post - Personal Income Per Capita - Local	Quantitative
64	Post - Personal Income Per Capita - County	Quantitative
65	Post - Personal Income Per Capita - State	Quantitative
66	Post - Economic Distress - Local	Quantitative
67	Post - Economic Distress - County	Quantitative
68	Post - Economic Distress - State	Quantitative
69	Post - Number of Jobs- Local	Quantitative
70	Post - Number of Jobs - County	Quantitative
71	Post - Number of Jobs - State	Quantitative
72	Post - Business Sales - Local	Quantitative
73	Post - Business Sales - County	Quantitative
74	Post - Business Sales - State	Quantitative
75	Post - Tax Revenue - Local	Quantitative
76	Post - Tax Revenue - County	Quantitative
77	Post - Tax Revenue - State	Quantitative
78	Post - Population- Local	Quantitative
79	Post - Population - County	Quantitative
80	Post - Population - State	Quantitative
81	Post -Property Value- Local	Quantitative
82	Post - Property Value - County	Quantitative
83	Post - Property Value - State	Quantitative
84	Post - Density - Local	Quantitative
85	Post - Density - County	Quantitative
86	Post - Density - State	Quantitative

### *Economic Impacts*

The economic impact measures (Table 6) estimated for each case study include direct jobs, income, and output. Indirect and total impacts for these same measures were also estimated using county and state multipliers for each case study geography.

**Table 6: Economic Impacts**

<b>ID</b>	<b>Field Name</b>	<b>Type of Data</b>
87	Direct Jobs	Quantitative
88	Indirect Jobs	Quantitative
89	Total Jobs	Quantitative
90	Direct Income	Quantitative
91	Indirect Income	Quantitative
92	Total Income	Quantitative
93	Direct Output	Quantitative
94	Indirect Output	Quantitative
95	Total Output	Quantitative

## 3

# DATA FIELD DOCUMENTATION

## 3.1: Data Field Elements

This chapter provides a dictionary of the data fields, in terms of their key elements: name, field type, unit of measurement, source, description, missing values, and dollar value adjustments.

**Field Name:** Name of data field category

**Field Type:** The type of information contained in the data field (e.g. text, number, and currency)

**Units of Measurement:** Units included in the data include dollars, miles, years, latitude/longitude, daily trips, and percentages to name a few. Several data fields do not have a unit measurement but instead are descriptive in nature of the data field, such as State, City, impact area, classification type among others.

**Source of Data:** Information was collected from a variety of federal, state, and local government organizations as well as private industry sources which are identified in this category. A significant amount of information describing the project characteristics and economic impacts of the project were gathered from interviews with Metropolitan Planning Organizations, Regional Planning Commissions, State Departments of Transportation, Economic Development Corporations, Chambers of Commerce, local developers, and Planning Commissions. In some cases, the case researcher may have used information gathered from these interviews to estimate certain values based on their professional judgment and assimilation of data. All the data fields that contain data determined by the case researcher are listed under the “Interviews” category.

**Description:** An expanded explanation of the data field content.

**Missing Values (where applicable):** Data is not available for each field due to a variety of reasons. In many cases projects are at a county or multi-county level and therefore by nature will not have local information. However other data fields may have missing values for a variety of reasons. For example, county-level unemployment information is only available after 1990, and per capita income is derived from the US Census. For more details on the methodology on estimating in missing data for the EconWorks web tool, see the separate *Practitioners Handbook* section called “Interview Guide.”

**Dollar Adjustment:** In order to compare projects that span different time periods, all currency fields were converted into 2013 dollars using the Consumer Price Index (CPI-U) from the Bureau of Labor Statistics. The equation used to

convert Year of Expenditure Dollars (YOES's) into 2013 dollars (2013\$'s) is the following:  $YOES's * (CPI\ 2013)/(CPI\ in\ YOE) = 2013\$'s$ . Maintenance of the EconWorks data will require dollar values to be updated to the most current year of expenditure dollar values.

## 3.2 Table of Data Fields and Definitions

Table 7, on the pages which follow, shows documentation details for each specific data field.

**Table 7. Explanation of Data Fields**

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Case study name	Text	Description	Interviews	Name of Case study		
ID	Number	1-100	Interviews	Project ID#		
State	Text	Description	Project Location	State where the project was located		
City	Text	Description	Project Location	City where the project was located		
Impact Area	Text	Description	Project Location	Relevant Counties		
Description	Text	Description	Interviews	Text description of the project to give the reader a quick understanding of the project and results		
Classification/Type	Text	Description	Interviews	Description of the type of transportation project		
Transportation Mode	Text	Description	Interviews	Highway or Type of Transit Project		
Project Motivation - Air Access	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Project Motivation - Rail Access	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Project Motivation - Int'l Border Access	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		





Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Project Motivation -Marine Port Access	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Project Motivation -Site Development	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Project Motivation -Labor Market	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Project Motivation -Delivery Market	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Project Motivation -Tourism	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Project Motivation -Congestion Mitigation	Number	1 - Motivation, 0-Not a Motivation	Interviews, DOT, MPO, & web search.	Purpose for project investment		
Planned Cost (YOE\$'s)	Number	1 - Motivation, 0-Not a Motivation	Interviews, studies, & reports	Initial planned cost of the project	Cost estimates not located	
Actual Cost (YOE\$'s)	Number	1 - Motivation, 0-Not a Motivation	Interviews, studies, & reports	Final actual cost of the project (YOE\$'s)		Year of Expenditure
Actual Cost (Current Dollars)	Currency	Dollars	Interviews, studies, & reports	Final actual cost of the project (2008\$'s)		2013\$'s
Length (miles)	Number	Miles	Interviews, web search, & local officials	Length of the construction in miles	Length not included for Interchanges	
Initial Study Date	Date	Year	Interviews, web search, & local officials	Year before Construction (or year of initial study of project)		

## Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Construction Start Date	Date	Year	Interviews & research	Date construction began - Year		
Construction End Date	Date	Year	Interviews & research	Date construction ended - Year		
Post-Construction Study Date	Date	Year	Interviews & research	Year of highest observable impacts (or year of post-project impact study)	Some post construction study dates were not captured	
GIS Latitude Coordinates	Number	Latitude Coordinates	Google Earth	Set of GIS coordinates defining the geospatial center of the project		
GIS Longitude Coordinates	Number	Latitude Coordinates	Google Earth	Set of GIS coordinates defining the geospatial center of the project		
AADT	Number	Average Annual Daily Trips	State DOT websites, aaroads.com, & interviews	Average Annual Daily Traffic	Some Freight and Transit cases did not have AADT	
Class Level	Text	Description	CBSA as defined by OMB-classification developed by Interviews (see Practitioners Guide Chapter 5 for further explanation)	Whether or not one or more counties within the project study area are part of a Core Based Statistical Area (CBSA).		
Economically Distressed	Number	Ratio of local to national unemployment rate	BLS	Local unemployment rate relative to national rate (same as Pre - Economic Distress - County)	Econ Distress not available for some international cases	
BEA Region	Text	Description	Bureau of Economic Analysis	Aggregated BEA regions		
Population Density	Number	Population per square mile	Census?	Population per square mile		

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Population Growth Rates	Number	Percentage	U.S. Census	Population growth rate 5 years before construction		
Employment Growth Rate	Number	Percentage	Economic Census	Employment growth rate 5 years before construction		
Income Growth Rate	Number	Percentage	IMPLAN assembled data from US Bureau of Economic Analysis Regional Economic Information Service and the US Dept of Labor.	Income growth rate 5 years before construction		
Market Size (LMA or Pop. 40 min.)	Number	Population	www.bls.gov/lau/lmadir2015.xlsx (counties within a LMA). Population data - Census.	Pop. within a Labor Market Area (LMA) (or within a 40-min drive time).	Market size not available for some international cases	
Airport Travel Distance	Number	Miles	ESRI ARC-View GIS, FAA, and Google Maps	Distance to major airports	Airport travel distance not available for some international cases	
Extent of mountain terrain	Number	Category Classification 1-21	National Atlas of the United States of America. U.S. Department of Interior, U.S. Geological Survey, Washington, DC.	Land Surface rating (1 through 21)	Mountain terrain not available for international cases	
Pre - Personal Income Per Capita - Local	Currency	Dollars	www.city-data.com, State dept. of revenue, & local sources	Per Capita Income at the local level (pre-project)	Some data not available at the local level or for cases that are county or multi-county in scope	2013\$'s
Pre - Personal Income Per Capita - County	Currency	Dollars	Bureau of Economic Analysis (BEA)	Per Capita Income at the county level (pre-project)	Per Capita income not available for some international cases	2013\$'s
Pre - Personal Income Per Capita - State	Currency	Dollars	Bureau of Economic Analysis (BEA)	Per Capita Income at the state level (pre-project)	Per Capita income not available for some international cases	2013\$'s

Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Pre - Economic Distress - Local	Number	Ratio of local to national unemployment rate	Bureau of Labor Statistics & U.S. Census	Local unemployment rate relative to national rate (pre-project)	Some data not available at the local level or for cases that are county or multi-county in scope	
Pre - Economic Distress - County	Number	Ratio of local to national unemployment rate	Bureau of Labor Statistics	County unemployment rate relative to national rate (pre-project)	County level unemployment data not available prior to 1990 & international data not available	
Pre - Economic Distress - State	Number	Ratio of local to national unemployment rate	Bureau of Labor Statistics	State unemployment rate relative to national rate (pre-project)	State level unemployment data not available prior to 1976 & international data not available	
Pre - Number of Jobs - Local	Number	Jobs	Zip Code & County Business Patterns (CBP) & U.S. Economic Census	Total number of jobs at the local level (by place of employment: pre-project)	Some data not available at the local level or for cases that are county or multi-county in scope	
Pre - Number of Jobs - County	Number	Jobs	Bureau of Labor Statistics & Bureau of Economic Analysis (BEA)	Total number of jobs at the county level (by place of employment: pre-project)	Employment data not available for some international cases	
Pre - Number of Jobs - State	Number	Jobs	Bureau of Labor Statistics & Bureau of Economic Analysis (BEA)	Total number of jobs at the state level (by place of employment: pre-project)	Employment data not available for some international cases	
Pre - Business Sales - Local	Currency	Dollars	County Business Patterns, U.S. Economic Census, & local comptroller	Total revenue of businesses at the local level (pre-project)	Some data not available at the local level or for cases that are county or multi-county in scope	2013\$'s

Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Pre - Business Sales - County	Currency	Dollars	County Business Patterns & U.S. Economic Census	Total revenue of businesses at the county level (pre-project)	Business sales data difficult to locate - only select cases have information	2013\$'s
Pre - Business Sales - State	Currency	Dollars	County Business Patterns & U.S. Economic Census	Total revenue of businesses at the state level (pre-project)	Business sales data difficult to locate - only select cases have information	2013\$'s
Pre- Tax Revenue-Local	Currency	Dollars	Auditors, tax reports, & department of revenues	Total annual local tax revenue (pre-project)	Some data not available at the local level or for cases that are county or multi-county in scope	2013\$'s
Pre- Tax Revenue-County	Currency	Dollars	State Comptroller, Dept. Revenue, or Finance	Total annual county tax revenue (pre-project)	Tax Revenue data difficult to locate - only select cases have information	2013\$'s
Pre- Tax Revenue-State	Currency	Dollars	State Comptroller, Dept. Revenue, or Finance	Total annual state tax revenue (pre-project)	Tax Revenue data difficult to locate - only select cases have information	2013\$'s
Pre - Population-Local	Number	Population	U.S. Census & local data	Population of the local area (pre-project)	Some data not available at the local level (pre-1990) or for cases that are county or multi-county in scope	
Pre - Population - County	Number	Population	U.S. Census	Population of the county area (pre-project)		
Pre - Population - State	Number	Population	U.S. Census	Population of the state area (pre-project)		

Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Pre - Property Value - Local	Currency	Dollars	U.S. Census & County Appraiser	Median SF House Price at the local level (pre-project)	Some data not available at the local level (pre-1990) or for cases that are county or multi-county in scope	2013\$'s
Pre - Property Value - County	Currency	Dollars	U.S Census American Community Survey (ACS) and National Association of Retailors	Median SF House Price at the county level (pre-project)	Property Value only available for select years (e.g. Decentennial Census and American Community Survey)	2013\$'s
Pre - Property Value - State	Currency	Dollars	U.S Census American Community Survey (ACS) and National Association of Retailors	Median SF House Price at the state level (pre-project)	Property Value only available for select years (e.g. Decentennial Census and American Community Survey)	2013\$'s
Pre - Density - Local	Number	Population per square mile	Local data & U.S. Census	Density of the local area (pre-project)	Some data not available at the local level (pre-1990) or for cases that are county or multi-county in scope	
Pre - Density - County	Number	Population per square mile	U.S Census	Density of the county area (pre-project)	Pre-Density not available for international cases	
Pre - Density - State	Number	Population per square mile	U.S Census	Density of the state area (pre-project)	Pre-Density not available for international cases	
Post - Personal Income Per Capita - Local	Currency	Dollars	www.city-data.com	Per Capita Income at the local level (post-project)	Some data not available at the local level or for cases that are county or multi-county in scope	2013\$'s

Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Post - Personal Income Per Capita - County	Currency	Dollars	Bureau of Economic Analysis (BEA)	Per Capita Income at the county level (post-project)	Per Capita income not available for some international cases	2013\$'s
Post - Personal Income Per Capita - State	Currency	Dollars	Bureau of Economic Analysis (BEA)	Per Capita Income at the state level (post-project)	Per Capita income not available for some international cases	2013\$'s
Post - Economic Distress - Local	Number	Ratio of local to national unemployment rate	Bureau of Labor Statistics & U.S. Census	Local unemployment rate relative to national rate (post-project)	Some data not available at the local level or for cases that are county or multi-county in scope	
Post - Economic Distress - County	Number	Ratio of local to national unemployment rate	Bureau of Labor Statistics	County unemployment rate relative to national rate (post-project)	County level unemployment data not available prior to 1990 & international data not available	
Post - Economic Distress - State	Number	Ratio of local to national unemployment rate	Bureau of Labor Statistics	State unemployment rate relative to national rate (post-project)	State level unemployment data not available prior to 1976 & international data not available	
Post - Number of Jobs- Local	Number	Jobs	www.city-data.com, State dept. of revenue, & local sources	Total number of jobs at the local level (by place of employment: post-project)	Some data not available at the local level or for cases that are county or multi-county in scope	
Post - Number of Jobs - County	Number	Jobs	Bureau of Labor Statistics & Bureau of Economic Analysis (BEA)	Total number of jobs at the county level (by place of employment: post-project)	Employment data not available for some international cases	
Post - Number of Jobs - State	Number	Jobs	Bureau of Labor Statistics & Bureau of Economic Analysis (BEA)	Total number of jobs at the state level (by place of employment: post-project)	Employment data not available for some international cases	

Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Post - Business Sales - Local	Currency	Dollars	County Business Patterns, U.S. Economic Census, & local comptroller	Total revenue of businesses at the local level (post-project)	Some data not available at the local level or for cases that are county or multi-county in scope	2013\$'s
Post - Business Sales - County	Currency	Dollars	County Business Patterns & U.S. Economic Census	Total revenue of businesses at the county level (post-project)	Business sales data difficult to locate - only select cases have information	2013\$'s
Post - Business Sales - State	Currency	Dollars	County Business Patterns & U.S. Economic Census	Total revenue of businesses at the state level (post-project)	Business sales data difficult to locate - only select cases have information	2013\$'s
Post - Tax Revenue - Local	Currency	Dollars	Auditors, tax reports, & department of revenues	Total annual local tax revenue (post-project)	Some data not available at the local level or for cases that are county or multi-county in scope	2013\$'s
Post - Tax Revenue - County	Currency	Dollars	State Comptroller, Dept. Revenue, or Finance	Total annual county tax revenue (post-project)	Tax Revenue data difficult to locate - only select cases have information	2013\$'s
Post - Tax Revenue - State	Currency	Dollars	State Comptroller, Dept. Revenue, or Finance	Total annual state tax revenue (post-project)	Tax Revenue data difficult to locate - only select cases have information	2013\$'s
Post - Population-Local	Number	Population	U.S. Census & local data	Population of the local area (post-project)	Some data not available at the local level (pre-1990) or for cases that are county or multi-county in scope	
Post - Population - County	Number	Population	U.S. Census	Population of the county area (post-project)		



Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Post - Population - State	Number	Population	U.S. Census	Population of the state area (post-project)		
Post -Property Value- Local	Currency	Dollars	U.S. Census & County Appraiser	Median SF House Price at the local level (post-project)	Some data not available at the local level (pre-1990) or for cases that are county or multi-county in scope	2013\$'s
Post - Property Value - County	Currency	Dollars	U.S Census American Community Survey (ACS) and National Association of Retailors	Median SF House Price at the county level (post-project)	Property Value only available for select years (e.g. Decentennial Census and American Community Survey)	2013\$'s
Post - Property Value - State	Currency	Dollars	U.S Census American Community Survey (ACS) and National Association of Retailors	Median SF House Price at the state level (post-project)	Property Value only available for select years (e.g. Decentennial Census and American Community Survey)	2013\$'s
Post - Density - Local	Number	Population per square mile	Local data & U.S. Census	Density of the local area (post-project)	Some data not available at the local level (pre-1990) or for cases that are county or multi-county in scope	
Post - Density - County	Number	Population per square mile	U.S Census	Density of the county area (post-project)	Pre-Density not available for international cases	
Post - Density - State	Number	Population per square mile	U.S Census	Density of the state area (post-project)	Pre-Density not available for international cases	
Direct Jobs	Number	Jobs	Interviews	Number of Direct Jobs attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	



Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Indirect Jobs	Number	Jobs	IMPLAN multipliers	Number of Indirect/Induced Jobs attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	
Total Jobs	Number	Jobs	Summation of Direct, Indirect, and Induced jobs.	Number of Total Jobs attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	
Direct Income	Currency	Dollars	IMPLAN job to income ratios	Amount of Direct Income attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	2013\$'s
Indirect Income	Currency	Dollars	IMPLAN multipliers	Amount of Indirect/Induced Income attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	2013\$'s
Total Income	Currency	Dollars	Summation of Direct, Indirect, and Induced income.	Amount of Total Income attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	2013\$'s
Direct Output	Currency	Dollars	IMPLAN job to output ratios	Amount of Direct Output attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	2013\$'s
Indirect Output	Currency	Dollars	IMPLAN multipliers	Amount of Indirect/Induced Output attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	2013\$'s
Total Output	Currency	Dollars	Summation of Direct, Indirect, and Induced output.	Amount of Total Output attributed to the project investment	Some cases were deemed to have no economic impact on the surround area	2013\$'s

## Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
General & Bulk Cargo Volume (Metric Tons) (IM only)	Number	Metric Tons	Interviews (facility operators), websites, and reports (e.g. annual)	Metric Tons of General and Bulk Cargo transported through intermodal location	For Freight Intermodal cases only	
Container Volume (Metric Tons) (IM only)	Number	Metric Tons	Interviews (facility operators), websites, and reports (e.g. annual)	Metric Tons of Container Cargo transported through intermodal location	For Freight Intermodal cases only	
Container Volume (TEUs) (IM only)	Number	Twenty-foot equivalent unit (TEU)	Interviews (facility operators), websites, and reports (e.g. annual)	Twenty-foot equivalent units (TEUs) of Container Cargo transported through intermodal location	For Freight Intermodal cases only	
Average Weekday Passengers (Transit Only)	Number	Passengers	Transit agency ridership reports, interviews, websites, and reports (e.g. annual)	Average weekday passengers on transit systems	For Passenger Transit cases only	
Parking Spaces	Number	Parking Spaces	Interviews, websites, and reports (e.g. annual)	Parking Spaces at passenger intermodal station	For Passenger Transit cases only	
Intermodal Project Actual Cost (YOE\$'s)	Currency	Dollars	Interviews and reports	Intermodal Project Actual Cost (YOE\$'s)		Year of Expenditure
Highway/road access improvement costs (YOE\$'s)	Currency	Dollars	Interviews and reports	Highway/road access improvement costs (YOE\$'s)		Year of Expenditure
Intermodal Project Actual Cost (Current Dollars)	Currency	Dollars	Interviews and reports	Intermodal Project Actual Cost (Current Dollars)		2013\$'s

Explanation of Data Fields

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Highway/road access improvement costs (Current Dollars)	Currency	Dollars	Interviews and reports	Highway/road access improvement costs (Current Dollars)		2013\$'s
Project Year of Expenditure (YOE \$'s)	Currency	Dollars	Interviews and reports	Project Year of Expenditure (YOE \$'s)		Year of Expenditure
Lanes	Number	Lanes	Interviews	Number of lanes in project	Lanes not included for interchanges	
Lane Miles	Number	Lane Miles	Interviews	Number of lane miles in project	Lane miles not included for interchanges	
Infrastructure Positive	Number	1 if a positive influence, 0 if not	Interviews & Researcher findings	A qualitative measurement of investment made in non-transportation infrastructure such as water, sewer, & utilities	Interview respondents may not have indicated infrastructure as having a positive or negative influence on the project	
Infrastructure Negative	Number	1 if a positive influence, 0 if not	Interviews & Researcher findings	A qualitative measurement of investment made in non-transportation infrastructure such as water, sewer, & utilities	Interview respondents may not have indicated infrastructure as having a positive or negative influence on the project	
Land Use Positive	Number	1 if a positive influence, 0 if not	Interviews & Researcher findings	A qualitative measurement of supportive zoning policies that encourage development	Interview respondents may not have indicated land use as having a positive or negative influence on the project	

Field Name	Field Type	Units of Measurement	Source of Data	Description	Missing Values	Dollar Adjustment
Land Use Negative	Number	1 if a positive influence, 0 if not	Interviews & Researcher findings	A qualitative measurement of supportive zoning policies that encourage development	Interview respondents may not have indicated land use as having a positive or negative influence on the project	
Financial Incentives/ Business Climate - positive	Number	1 if a positive influence, 0 if not	Interviews & Researcher findings	A qualitative measurement of the supportive business environment and financial incentives to attract and retain businesses	Interview respondents may not have indicated financial incentives/business climate as having a positive or negative influence on the project	
Financial Incentives/ Business Climate - negative	Number	1 if a positive influence, 0 if not	Interviews analyst	A qualitative measurement of the supportive business environment and financial incentives to attract and retain businesses	Interview respondents may not have indicated financial incentives/business climate as having a positive or negative influence on the project	



# 4 WARNING ON COMPATIBILITY AND INTERPRETATION OF DATA

## 4.1 Data Compatibility for Analysis

Case studies, by their very nature, span a wide range of different time periods and geographic areas. Data availability also varies with time and geography. The specific database developed for this project, and used in the EconWorks web tool, incorporates a set of controls intended to help users allow or adjust for such differences. This includes indicators of time and geographic differences, as well as adjustment of dollar fields from their original reported values into constant dollars. However, users must be aware of these indicators and adjustments, and use them accordingly. Key elements are noted below.

1. **Year of Expenditure Dollars versus Constant Dollars:** Because some of the data expressed in dollars can vary across time periods, we have adjusted all currency data to 2013 dollars using the Consumer Price Index (CPI-U) published by the Bureau of Labor Statistics (BLS).
2. **Local, County, or Multi-County Level Geographies:** Cases vary in their geographic scope. Some are at a municipal, county, or multi-county level. In making comparisons between cases, it is important to consider the relative geographic scale of each, to make an accurate assessment. Two projects equal in cost and other characteristics can vary in scale of economic impacts if one is confined to a local municipal area versus another that covers multiple counties.
3. **Sources of information:** Data was gathered from a variety of published sources and reports. However, different published sources are available for state, county, metro, municipal and tract or zip code data. This is a source of some potential noise; as not all the data sources adopt identical definitions of the same concept, and they do not all use exactly the same data collection methods. In addition, some information on observed impacts is derived from local interviews and locally-available data sources, which may also vary in their data collection methods and inclusiveness. More detailed information on published data sources is found in the Appendix to this document. More information on interview data collection is provided in the separate *Practitioners Handbook*.
4. **Post Year Conditions:** Users should note that each case has a different construction period and post analysis year. More information on pre- and post-construction conditions can be found in the *Practitioners Guide* section on “Pre and Post-Project Data.”

## 4.2 Calculation and Interpretation of Economic Impact

## Data Measures

One of the key objectives of the case study database and EconWorks web tool is provide information enabling better improve estimates of the job economic impact of highway investment projects. Yet to use that information properly, it is important for the user to understand the source and derivation of the impact data fields, and thus appreciate their uses and limitations.

For each case study project, pre- and post-project information was collected for a variety of available economic indicators. The actual impact estimates, however, also drew considerable input from local interviews. For each case study project, local public and private sector organizations were contacted and interviewed to gather perspectives and insight regarding the degree to which each project attracted development and new businesses resulting in new jobs to the area. Efforts were made to net out any external economic trends or conditions that did not have anything to do with the project to isolate job creation impacts. This was accomplished by combining locally collected data, trends, interview insights, and economic development patterns to synthesize and derive an estimate of net job creation impacts.

Some impact data fields were calculated from other data fields. The output and wage impacts were based off employment impact numbers, using average output/job and wage/job ratios for a composite of manufacturing and business service industries in each county. The data used to calculate these ratios was provided by IMPLAN and was based on BEA (Bureau of Economic Analysis) data. To calculate total job impacts (direct job impacts plus estimated of indirect and induced effects), multipliers were applied to the direct impact numbers obtained from the case study data collection process. The ratios and multipliers represented the time-period of 2004-2015.

It is also important to note that the economic impact estimates provided in the database were developed for specific project characteristics and settings. Each case study is unique regarding its impacts and should only be used as a reference to the type of impacts than can be expected. A good rule of thumb is to combine several cases of the same project type to gain a spectrum of values, characteristics, settings, and economic impacts to help users understand the range of potential results for projects in order to align economic development goals and outcomes. Nonetheless, these cases should only be used as preliminary guide and not as a substitute for an in-depth economic impact analysis that is usually required for project funding.

A more in-depth discussion of the scope, range, and limitations of using these impact results can be found in the chapter on “Lessons Learned for Interpretation of Case Study Findings” in the separate *Practitioner’s Handbook*.

# APPENDIX: LIST OF CASE STUDY RECORDS

**Table 8: List of Case Records by Project Name, Type, Mode, & Location**

Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
Hammondsport	Access Road	Highway	Hammondsport	Steuben	NY	New England/Mid-Atlantic
Clermont County Industrial Park in Miami	Access Road	Highway	Milford	Clermont	OH	Great Lakes/Plains
Cattaraugus Economic Development Zone Infrastructure	Access Road	Highway	Allegany	Cattaraugus	NY	New England/Mid-Atlantic
Carolina Factory Shops Infrastructure	Access Road	Highway	Gaffney	Cherokee	SC	Southeast
Columbus - Lowndes County Riverside	Access Road	Highway	Columbus	Lowndes	MS	Southeast
New Phalen Boulevard Corridor	Access Road	Highway	St. Paul	Ramsey	MN	Great Lakes/Plains
State Route 126, Fenton Lake Bridge	Access Road	Highway	Jemez Springs	Sandoval	NM	Southwest
Pendleton Industrial Park Access Road (Airport Road Extension)	Access Road	Highway	Pendleton	Umatilla	OR	Rocky Mountain/Far West
Richmond, Virginia, I-295 Beltway	Beltway	Highway	Richmond	Henrico, Hanover, Chesterfield, Prince George	VA	Southeast
Appleton, Wisconsin, Route 441 Beltway	Beltway	Highway	Appleton	Winnebago, Outagamie, Calumet	WI	Great Lakes/Plains
Fort Wayne, Indiana, I-469 Beltway	Beltway	Highway	Fort Wayne	Allen	IN	Great Lakes/Plains
Danville, Virginia, I-785 Beltway	Beltway	Highway	Danville	Danville	VA	Southeast
Beltway 8 Houston segments	Beltway	Highway	Houston	Harris	TX	Southwest
E470 Denver	Beltway	Highway	Denver	Boulder, Adams, Denver, Douglas, Arapahoe	CO	Rocky Mountain/Far West
Arizona Route 101	Beltway	Highway	Phoenix	Maricopa	AZ	Southwest
I-476 Blue Route	Beltway	Highway	Philadelphia	Delaware	PA	New England/Mid-Atlantic
Des Moines US 65/IA 5 Bypass	Beltway	Highway		Polk	IA	Great Lakes/Plains
World Trade Bridge	Bridge	Highway	Laredo	Webb County, TX	TX	Southwest



Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
Oresund Bridge	Bridge	Highway	Copenhagen, Denmark, Malmö, Sweden		Denmark, Sweden	International
The Gene Hartzell Memorial Bridge, Third Bridge (Route 3)	Bridge	Highway	Bethlehem	Northampton	PA	New England/Mid-Atlantic
Mo. Route 370 Bridge	Bridge	Highway	Augusta	Kennebec	ME	New England/Mid-Atlantic
Isle of Palms Connector (SC 517)	Bridge	Highway	St. Charles	St. Charles and St. Louis	MO	Great Lakes/Plains
The Neuse River Bridge,	Bridge	Highway	Mt Pleasant, Isle of Palms	Charleston	SC	Southeast
Lexington Bridge between I-5 and SR 411	Bridge	Highway	New Bern	Craven	NC	Southeast
Potato Hill Bridge	Bridge	Highway	Kelso-Lakeview	Cowlitz	WA	Rocky Mountain/Far West
Lake Natoma Crossing Bridge	Bridge	Highway	Moses Lake	Grant	WA	Rocky Mountain/Far West
Yass Bypass	Bypass	Highway	City of Folsom	Sacramento	CA	Rocky Mountain/Far West
Karuah Bypass	Bypass	Highway	Yass	Yass Shire	N.S.W.	International
Eastern Washington - SR 195 Bypass	Bypass	Highway	Karuah		Australia	International
Fort Atkinson Bypass	Bypass	Highway	Rosalia	Whitman county	WA	Rocky Mountain/Far West
Verona Bypass	Bypass	Highway	Fort Atkinson	Washburn	WI	Great Lakes/Plains
Stonewall Bypass	Bypass	Highway	Verona	Dane	WI	Great Lakes/Plains
Wichita Northeast Bypass	Bypass	Highway	Stonewall	Pontotoc	OK	Southwest
Hollister SR156	Bypass	Highway	Wichita	Grady & Kiowa	KS	Great Lakes/Plains
Sonora & East Sonora SR49 & SR108	Bypass	Highway	Hollister	San Benito	CA	Rocky Mountain/Far West
US-400 Parsons Bypass	Bypass	Highway	Sonora	Tuolumne	CA	Rocky Mountain/Far West
Georgetown Bypass	Bypass	Highway	Parsons	Labette	KS	Great Lakes/Plains
Mercer Co. KY, US-127 Bypass	Bypass	Highway	Georgetown	Scott	KY	Southeast
Bennington Bypass, VT 279	Bypass	Highway	Harrodsburg	Mercer	KY	Southeast
US Highway 281, San Antonio (Extension)	Connector	Highway	Bennington	Bennington	VT	New England/Mid-Atlantic
I-705 Connector in Washington	Connector	Highway	San Antonio	Bexar	TX	Southwest
			Tacoma	Pierce	WA	Rocky Mountain/Far West

Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
Branson W (Ozark Mt. Highroad)	Connector	Highway	Branson	Stone & Teney	MO	Great Lakes/Plains
Southern Connector	Connector	Highway	Greenville	Greenville	SC	Southeast
Ted Williams Freeway	Connector	Highway	San Diego	San Diego	CA	Rocky Mountain/Far West
Topsham Bypass/Connector	Connector	Highway	Topsham	Sagadahoc & Cumberland	ME	New England/Mid-Atlantic
US 460	Connector	Highway	Blacksburg and Christiansburg	Montgomery	VA	Southeast
US 25 Kentucky	Connector	Highway	Dry Ridge	Grant	KY	Southeast
Pioneer Crossing	Connector	Highway	Lehi, Saratoga Springs, American Fork, Eagle Mountain	Utah County, Salt Lake County	UT	Rocky Mountain/Far West
Highway 141: Page-Olive Connector	Connector	Highway	Chesterfield, Maryland Heights	St. Louis County	MO	Great Lakes/Plains
Prescott Arizona Airport Connector	Connector	Highway	Prescott	Yavapai County	AZ	Southwest
DFW Connector	Connector	Highway	Grapevine, Southlake and Irving	Tarrant and Dallas County	TX	Southwest
I-70 and 110th Street Interchange	Interchange	Highway	Kansas City	Wyandotte County, KS	KS	Great Lakes/Plains
Blue Route and Schuylkill interchange	Interchange	Highway	Conshohocken	Montgomery County, PA	PA	New England/Mid-Atlantic
Commerce Parkway Interchange	Interchange	Highway	Hays, KS	Kern, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin	KS	Great Lakes/Plains
I-95 and Route 128 Peabody	Interchange	Highway	Peabody	Essex	MA	New England/Mid-Atlantic
Interchanges in Major Urban Areas - Bloomington, MN	Interchange	Highway	Bloomington, MN	Hennepin	MN	Great Lakes/Plains
Big I Albuquerque	Interchange	Highway	Albuquerque	Bernalillo	NM	Southwest
Dallas High Five Interchange	Interchange	Highway	Dallas, TX	Dallas	TX	Southwest
I-435 & Nall/Roe Ave. Interchange	Interchange	Highway	Overland Park	Johnson	KS	Great Lakes/Plains
Central Freeway, San Francisco	Interchange	Highway	San Francisco	San Francisco	CA	Rocky Mountain/Far West

Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
I-20 Interchange	Interchange	Highway	Jackson	Hinds	MS	Southeast
I-35 and US 290, Texas	Interchange	Highway	Austin	Travis	TX	Southwest
Veteran's Parkway Georgia	Interchange	Highway	Savannah	Chatham	GA	Southeast
I-94 / Opportunity Drive Interchange	Interchange	Highway	St. Cloud	Stearns	MN	Great Lakes/Plains
Grandview Interchange	Interchange	Highway	Durango	La Plata County	CO	Rocky Mountain/Far West
Veterans Memorial Drive Interchange	Interchange	Highway	Mt. Vernon	Jefferson	IL	Great Lakes/Plains
Auburn Intermodal Center	Intermodal Freight	Highway	Auburn	Androscoggin	ME	New England/Mid-Atlantic
Devens Intermodal Rail Terminal	Intermodal Freight	Highway	Ayer	Middlesex	MA	New England/Mid-Atlantic
Global III Intermodal Terminal - Rochelle, IL	Intermodal Freight	Highway	Rochelle	Ogle & Lee	IL	Great Lakes/Plains
Fairburn CSX Industry Yard, Fairburn, GA	Intermodal Freight	Highway	Fairburn	Fulton	GA	Southeast
Huntsville Alabama	Intermodal Freight	Highway	Huntsville	Madison	AL	Southeast
Tchoupitoulas Corridor	Intermodal Freight	Highway	New Orleans	Orleans parish	LA	Southeast
Logistics Park – Alliance TX	Intermodal Freight	Highway	Fort Worth	Denton, Tarrant	TX	Southwest
Bayport TX	Intermodal Freight	Highway	Pasadena	Harris	TX	Southwest
WorldPort at DIA	Intermodal Freight	Highway	Denver	Denver	CO	Rocky Mountain/Far West
Elwood, IL – CenterPoint Intermodal Center – BNSF Logistics Park	Intermodal Freight	Highway	Elwood	Will	IL	Great Lakes/Plains
Interstate 68	Limited Access Road	Highway		Garret & Allegany	MD	New England/Mid-Atlantic
Interstate 29	Limited Access Road	Highway		Fremont, Mills, Pottawattamie, Harrison, Monona, & Woodbury	IA	Great Lakes/Plains

Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
Interstate 43	Limited Access Road	Highway	From Milwaukee to Green Bay	Brown, Manitowoc, Sheboygan, Ozaukee and Milwaukee	WI	Great Lakes/Plains
SR 29	Limited Access Road	Highway	Chippewa Falls to Green Bay	Chippewa, Clark, Marathon, Shawano, Brown	WI	Great Lakes/Plains
Interstate 81 (PA)	Limited Access Road	Highway	Connects Harrisburg to Wilkes-Barre/Scranton	Franklin, Cumberland, Dauphin, Lebanon, Schuylkill, Luzerne, Lackawanna, and Susquehanna	PA	New England/Mid-Atlantic
Interstate 81 (VA)	Limited Access Road	Highway	Bristol, Roanoke, Harrisonburg, and Winchester.	Bristol CITY, Washington, Smyth, Wythe, Pulaski, Montgomery, Botetourt, Roanoke, Rockbridge, Augusta, Staunton, Rockingham, Shenandoah, Warren, & Frederick	VA	Southeast
Interstate 16	Limited Access Road	Highway	Savannah to Macon	Chatham Effingham, Bryan, Twiggs, Bibb, Bulloch, Bleckley, Candler, Laurens, Treutlen, Wilkinson, Emanuel	GA	Southeast
Interstate 26	Limited Access Road	Highway	Connects Spartanburg to Charleston	Spartanburg, Laurens, Newberry, Richland, Lexington, Calhoun, Orangeburg, Dorchester, Berkeley	SC	Southeast
Interstate 27	Limited Access Road	Highway	Amarillo to Lubbock	Lubbock, Swisher, Randall, Potter	TX	Southwest
Corridor B	Limited Access Road	Highway		Buncombe, NC; Madison, NC; Unicoi, TN; Washington, TN; Sullivan, TN	TN	Southeast
I-515 Henderson	Limited Access Road	Highway	Henderson	Burleson	NV	Southwest
Central Artery Tunnel	Limited Access Road	Highway	Boston	Suffolk	MA	New England/Mid-Atlantic
Casey Highway in Pennsylvania (US Route 6)	Limited Access Road	Highway	Scranton	Lackawanna	PA	New England/Mid-Atlantic

Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
Interstate 105/Interstate 110 Interchange	Limited Access Road	Highway	Los Angeles	Los Angeles	CA	Rocky Mountain/Far West
Legacy Parkway	Limited Access Road	Highway	Kaysville, Wood Cross, Centerville, Farmington and Salt Lake City	Salt Lake County, Davis County	UT	Rocky Mountain/Far West
95 Express Lanes Phase 1A & 1B	Limited Access Road	Highway	Miami, North Miami, North Miami Beach	Miami-Dade, Broward, Palm Beach	FL	Southeast
South Bay Expressway	Limited Access Road	Highway	San Diego, Chula Vista	San Diego County	CA	Rocky Mountain/Far West
MARTA North Line Extension	Line Extension	Heavy Rail	Sandy Springs	3/4 mile around transit station(s)	GA	Southeast
BART to San Francisco Airport	Line Extension	Heavy Rail	San Bruno	3/4 mile around transit station(s)	CA	Rocky Mountain/Far West
Green Line Extension South of Anacostia River	Line extension	Heavy Rail	Temple Hills CDP, Suitland CDP	Prince George's County	MD & D.C.	New England/Mid-Atlantic
Airport Max Red Line Extension	Line Extension	Light Rail	Portland	Multnomah	OR	Rocky Mountain/Far West
Healthline/Euclid Corridor	New Line	Bus Rapid Transit	Cleveland	3/4 mile around transit station(s)	OH	Great Lakes/Plains
Orange Line BRT	New Line	Bus Rapid Transit	Los Angeles	3/4 mile around transit station(s)	CA	Rocky Mountain/Far West
Silver Line Waterfront BRT	New Line	Bus Rapid Transit	Boston	3/4 mile around transit station(s)	MA	New England/Mid-Atlantic
West Valley Light Rail Line	New Line	Light Rail	West Valley City	Salt Lake County	UT	Rocky Mountain/Far West
River Line	New Line	Light Rail	Trenton, Camden, Bordentown, Burlington, Beverly	Mercer, Burlington and Camden county	NJ	New England/Mid-Atlantic
Hiawatha Light Rail Line	New Line	Light Rail	Minneapolis, Bloomington City	Hennepin	MN	Great Lakes/Plains
South Lake Union Streetcar	New Line	Light Rail	Seattle	King County	WA	Rocky Mountain/Far West
Valley Metro Rail (Phase 1)	New Line	Light Rail	Phoenix, Tempe, Mesa	Maricopa	AZ	Southwest
New Mexico Rail Runner Express	New Line	Light Rail	Albuquerque, Santa Fe, Belen, Bernalillo	Valencia, Bernalillo, Sandoval, Santa Fe	NM	Southwest

Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
Bellevue Transit Center, Bellevue, WA	Station	Bus Rapid Transit	Bellevue	King	WA	Rocky Mountain/Far West
Anderson Regional Transportation Center, Woburn, MA	Station	Commuter Rail	Woburn	Middlesex	MA	New England/Mid-Atlantic
Tri-Rail Boca Raton Intermodal Transit Center	Station	Commuter Rail	Boca Raton	Palm Beach	FL	Southeast
Arlington Heights METRA	Station	Commuter Rail	Village of Arlington Heights	Cook & Lake	IL	Great Lakes/Plains
Interlink Station	Station	Commuter Rail	Warwick	Kent	RI	New England/Mid-Atlantic
Lindberg Station, MARTA (Atlanta)	Station	Heavy Rail	Lindberg / Morosgo	Fulton	GA	Southeast
BART (Colma Station)	Station	Heavy Rail	Daly City and Colma	San Mateo	CA	Rocky Mountain/Far West
NoMA-Gallaudet Red Line Station	Station	Heavy Rail	Washington	3/4 mile around transit station(s)	DC	New England/Mid-Atlantic
Sunset Transit Center, Portland, OR	Station	Light Rail	Beaverton	Washington	OR	Rocky Mountain/Far West
DART	Station	Light Rail	Dallas	Dallas	TX	Southwest
Emerson Park MetroLink	Station	Light Rail	East St. Louis	St. Clair	IL	Great Lakes/Plains
Arapahoe at Village Center Transit Station	Station	Light Rail	Greenwood Village	3/4 mile around transit station(s)	CO	Rocky Mountain/Far West
Corridor D	Widening	Highway		Doddridge, Harrison Wood, & Ritchie	WV	Southeast
I-86 NY Southern Tier	Widening	Highway	Allegany, Cattaraugus, Chautauqua and Steuben Counties	Chautauqua, Cattaraugus, Allegany & Steuben, Chemung	NY	New England/Mid-Atlantic
I-15 Reconstruction - Salt Lake City	Widening	Highway	SLC	Salt Lake	UT	Rocky Mountain/Far West
I-70 Glenwood Canyon	Widening	Highway	Glenwood Springs	Garfield	CO	Rocky Mountain/Far West
Santan Freeway: part of Maricopa RTP, AZ	Widening	Highway	Mesa, Gilbert, and Chandler	Maricopa	AZ	Southwest

Project Name	Classification / Type	Transportation Mode	City or County	Impact Area: County(ies)	State	BEA Region
Corridor J, Appalachia	Widening	Highway		Laurel, Pulaski, Wayne, Clinton, Cumberland	KY	Southeast
Corridor Q, Appalachia	Widening	Highway		Montgomery, Giles, Tazewell, Buchanan (VA), & Mercer (WV)	VA	Southeast
US 75 North Central Expressway, Dallas	Widening	Highway	Dallas	Dallas	TX	Southwest
I-394 Minnesota	Widening	Highway	Golden Valley	Hennepin	MN	Great Lakes/Plains
Iowa Highway 60	Widening	Highway		Plymouth, Sioux, O'Brien, and Osceola	IA	Great Lakes/Plains
Minnesota Highway 60	Widening	Highway		Cottonwood and Jackson	MN	Great Lakes/Plains
US 54 Alamogordo, NM	Widening	Highway	Alamogordo	Otero	NM	Southwest
I-75 EXPANSION (IROX)	Widening	Highway	Fort Myers, Naples, Bonita Springs	Collier, Lee	FL	Southeast