



PREPARED FOR

Northern Virginia Transportation Authority



12/5/2024

Economic Impact of Northern Virginia Transportation Authority Capital Investment

1. Executive Summary

Since Fiscal Year 2015,¹ the Northern Virginia Transportation Authority (NVTa or the Authority) has implemented seven funding programs, with a total planned investment of \$3.8 billion using Regional Revenue Fund (70%) proceeds from FY2014 through FY2029, with project implementation from FY2015 through FY2034. In addition, total funding allocated through the Local Distribution Fund (30%) reached \$1.8 billion.² Adding NVTa Regional Revenue Fund programs and Local Distribution Fund projects, the total actual and planned capital investment of NVTa reaches \$5.7 billion from FY2015 through FY2034.

NVTa capital investment generates a significant economic impact in Northern Virginia³ and Virginia. Chmura estimates that capital spending from NVTa's total investment (Regional Revenue Fund and Local Distribution Fund projects) can generate a total economic impact (direct, indirect, and induced) of \$7.8 billion (see Table 3.3) in Northern Virginia from FY2015 through FY2034 and can support 43,728 cumulative jobs in the region. The estimated economic impact of NVTa total investment in Virginia (statewide) can reach \$8.7 billion (direct, indirect, and induced) which can support 50,707 jobs in the state. For every dollar of NVTa total investment, there is a total economic return of \$1.61 to Northern Virginia and \$1.75 to the state of Virginia.⁴

If only the local funding allocated to projects to date (\$0.9 billion) is included with the regional revenue fund (\$3.8 billion), that total capital spending of \$4.7 billion can generate a total cumulative economic impact of \$6.4 billion and support 35,029 cumulative jobs in Northern Virginia while the cumulative statewide impact can reach \$7.1 billion that support 40,493 cumulative jobs. If total distributed local funding to date (\$1.1 billion) is included with regional revenue fund (\$3.8 billion), that capital spending of \$4.9 billion can generate a total cumulative economic impact of \$6.8 billion and support 37,074 cumulative jobs in Northern Virginia while the cumulative statewide impact can reach \$7.5 billion that support 42,937 cumulative jobs.”

Tax revenue for the state and local governments is another benefit of the NVTa investment. From FY2025 through FY2034, total

Contents

1. EXECUTIVE SUMMARY	1
2. BACKGROUND	3
3. ECONOMIC IMPACT OF NVTa TOTAL	
3.1. Economic Impact of NVTa Regional Revenue Fund Programs	5
3.1.1. Economic Impact of NVTa's FY2024-29 Six Year Program	6
3.1.2. Economic Impact of NVTa Regional Revenue Fund Program (FY2014 Program Through FY2024-29 Six Year Program).....	7
3.2. Economic Impact of NVTa Total Investment, Including 30% Local Funds Project.....	7
4. FISCAL IMPACT	9
APPENDIX 1. IMPACT STUDY GLOSSARY	10

¹ Fiscal Year 2015 is from July 1, 2014 to June 30, 2015.

² Please see Section 2 for details of the NVTa funding structure.

³ Please see Section 2 for a list of cities and counties in the Northern Virginia region.

⁴ The state economic impact is inclusive of the impact in Northern Virginia.

NVTa investment can generate an estimated tax revenue of \$119.1 million for the state government and \$7.0 million for local governments in Northern Virginia.⁵

⁵ Tax revenue is part of the broader economic impact. State fiscal impact does not include tax revenue intended for local governments.

2. Background

The Northern Virginia Transportation Authority (NVTa or the Authority), created by the General Assembly of Virginia in 2002, bears responsibility for long-range planning of multimodal transportation projects in Northern Virginia.⁶ The member jurisdictions of the NVTa include the counties of Arlington, Fairfax, Loudoun, and Prince William; and the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park.⁷

In 2013, the Virginia General Assembly passed legislation that authorized a dedicated funding stream—through regional increases in sales tax, transient occupancy tax, and grantor's tax—for transportation projects in Northern Virginia. In 2018, the General Assembly redirected the proceeds of the regional increase in transient occupancy tax and grantor's tax to meet funding commitments to the Washington Metropolitan Area Transit Authority (WMATA).

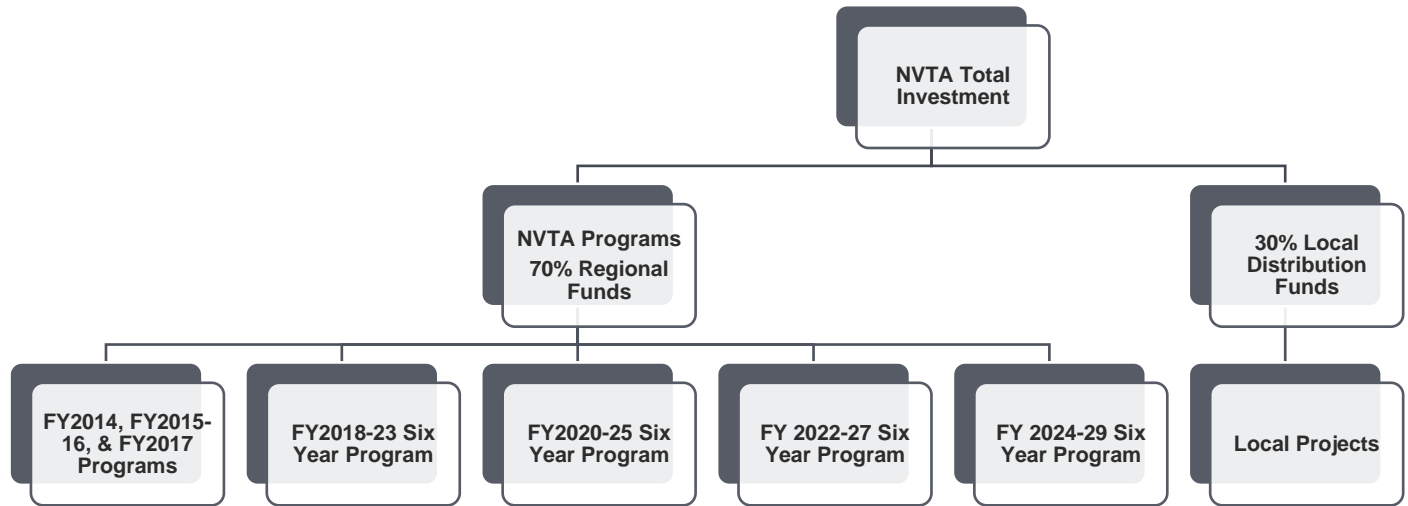
This report refers to the dedicated funding stream authorized by the General Assembly as the NVTa total investment. All funds received by the NVTa must be used for transportation purposes within the region and the Authority holds responsibility for developing Northern Virginia's long-range, multimodal transportation plan, TransAction. Of the funds received annually, 70% must be used for regional transportation projects included in TransAction (referred to as Regional Revenue Fund programs in this report). After completing an annual certification process through the Authority, member jurisdictions receive their share of the remaining 30% of funding (Local Distribution Funds) for transportation projects at the discretion of those member jurisdictions.

The Authority plans for and implements many projects through its Regional Revenue Fund programs. Three funding programs were developed before 2018, which are the FY2014, FY2015-16, and FY2017 programs. Total investment for projects in those programs reached \$657.7 million. In 2018, the NVTa adopted its inaugural Six Year Program (FY2018-23 Six Year Program), totaling \$1.3 billion of investment. In 2020, the NVTa adopted the second six-year program, FY2020-25 Six Year Program, with planned investments of \$548.5 million. In 2022, they adopted the FY2022-27 Six Year Program, with total planned investments of \$763.5 million. In 2024, the NVTa adopted the FY2024-29 Six Year program, with a total planned investment of \$580.1 million. In addition, local governments plan their project investments through the use of the Local Distribution Fund revenues. Figure 2.1 illustrates the funding structure for NVTa total investment.

⁶ NVTa website, accessed October 22, 2024, <http://thenovaauthority.org/about/the-authority/>.

⁷ These cities and counties are collectively referred to as "Northern Virginia" in this report.

Figure 2.1: NVT A Funding Structure



Since 2018, Chmura Economics & Analytics (Chmura)⁸ regularly conducted economic and fiscal impact studies of the NVT A investment programs in Northern Virginia and the Commonwealth of Virginia. In 2024, NVT A retained Chmura to update the economic impact analysis of NVT A investment, focusing on the FY2024-29 Six Year Program. In this study, Chmura presents the economic impact of NVT A's FY2024-29 Six Year Program, all NVT A Regional Revenue Fund programs, and NVT A total investment (including Local Distribution Fund projects). Because broader data on the ongoing benefits of the NVT A investment is unavailable, this study only quantifies the economic impact of capital expenditure activities.⁹

Chmura analyzed the direct, indirect, and induced economic impact of the capital expenditure from NVT A's transportation investment.¹⁰ Direct impact measures the actual dollar amount spent on transportation projects in Northern Virginia and Virginia. Indirect and induced impacts measure the secondary benefits of NVT A capital spending for state and regional businesses. For example, indirect impact is attributed to state and regional industries' supporting construction activities, such as site development and heavy equipment deployment. Induced impact occurs when individuals hired by the construction firms spend their income at regional or state businesses (such as retailers or doctor's offices), thus injecting more money into the regional and state economies.

the indirect and induced impacts are estimated using Chmura's JobsEQ economic impact model after the direct impact is estimated. This study also estimates the tax revenues to state and local governments from NVT A's capital investment.

⁸ Chmura provides economic software, consulting, and data so clients can make informed decisions that benefit their communities. Our PhD economists, data scientists, and strategic planners guide clients through their local labor market. Over the past 25 years, Chmura has served hundreds of clients nationwide with thoroughness, accuracy, and objectivity.

⁹ The 2018 report prepared by Chmura included a qualitative discussion of such benefits.

¹⁰ Appendix of this study provides a glossary including these terms.

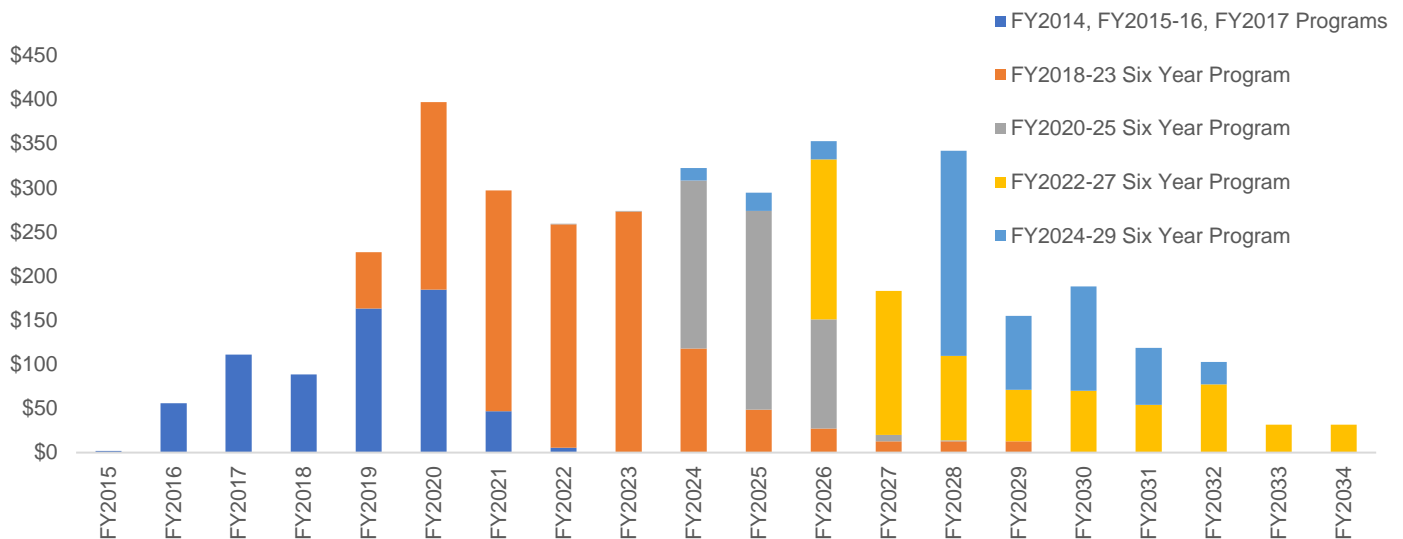
3. Economic Impact of NVT A Total Investment

3.1. Economic Impact of NVT A Regional Revenue Fund Programs

The newly approved NVT A FY2024-29 Six Year Program includes investments totaling \$580.1 million for multimodal transportation projects. This plan's spending is expected to occur from FY2024 through FY2032 (Figure 3.1).¹¹ The prior three Six Year Programs demonstrated a total investment of \$763.5 million (the FY2022-27 Six Year Program), \$548.5 million (the FY2020-25 Six Year Program), and \$1.3 billion (the FY 2018-23 Six Year Program). In addition, NVT A's FY2014, FY2015-16, and FY2017 programs included projects with a total investment of \$657.7 million.¹²

These programs overlap in certain years. For example, the total investment in FY2024 was \$322.5 million, including projects funded by three Six Year Programs—the FY2018-23, FY 2020-25, and FY2024- 29 Programs. NVT A funding programs cover a variety of transportation projects across Northern Virginia, including construction of transit facilities, bike/pedestrian facilities and necessary parking, transit equipment installation, road and bridge construction, transportation technology deployment, and capital asset acquisition.

Figure 3.1: NVT A Regional Revenue Fund Programs Total \$3.8 Billion



Source: NVT A

The total investment presented in Figure 3.1 only includes NVT A projects with 70% Regional Revenue Fund proceeds. The 30% Local Distribution Fund proceeds are not part of this investment. The available data indicate that total funding allocated

¹¹ Please note that while the plan is called the Six Year Program, actual spending of funds may occur over more than six years.

¹² In the analysis, the impacts are estimated based on the year in which the project spending occurs, not the program year. For example, the NVT A FY2020-25 Six Year Program includes capital expenditure from FY2024 through FY2027.

to local jurisdictions, through all programs, can amount to \$1.8 billion from FY2014 through FY2030. Adding Regional Revenue Fund and Local Distribution Fund projects, the total actual and planned investment of NVTa (NVTa total investment) can reach \$5.7 billion from FY2015 through FY2034.

3.1.1. Economic Impact of NVTa's FY2024-29 Six Year Program

Table 3.1 presents the estimated economic impact of the NVTa's FY2024-29 Six Year Program. The total planned investment is \$580.1 million. Chmura excludes 62% of the right-of-way cost because it involves a property transfer which makes the economic impact analysis difficult to quantify. Approximately 38% of the right-of-way cost is related to utility work, which is included in the analysis.¹³ Chmura further excludes estimated spending outside the region. As a result, the estimated direct spending in Northern Virginia is \$418.5 million (in nominal dollars) and spending occurs from FY2024 through FY2032.

Table 3.1: Annual Impact of NVTa FY2024-29 Six Year Program Averages \$82.1 Million in Virginia

			Direct	Indirect	Induced	Total Impact
Northern Virginia	Cumulative (FY2024-32)	Spending (\$Million)	\$418.5	\$110.3	\$131.7	\$660.5
		Employment	1,901	415	805	3,121
	Annual Average (FY2024-32)	Spending (\$Million)	\$46.5	\$12.3	\$14.6	\$73.4
		Employment	211	46	89	347
Virginia	Cumulative (FY2024-32)	Spending (\$Million)	\$425.7	\$160.4	\$152.8	\$738.9
		Employment	1,971	703	920	3,594
	Annual Average (FY2026-34)	Spending (\$Million)	\$47.3	\$17.8	\$17.0	\$82.1
		Employment	219	78	102	399

Note: Numbers may not sum due to rounding

Source: JobsEQ by Chmura

Chmura estimates that capital expenditure from NVTa's FY2024-29 Six Year Program will generate a total economic impact (direct, indirect, and induced) of \$660.5 million in Northern Virginia, and support a total of 3,121 cumulative jobs.¹⁴ Of the total economic impact, \$418.5 million is the estimated direct spending within Northern Virginia, with direct cumulative jobs amounting to 1,901 from FY2024 through FY2032, or 211 per year. The cumulative indirect impact in Northern Virginia, an estimated \$110.3 million, can support 415 cumulative jobs (or 46 per year) in industries related to construction, such as site preparation, truck transportation, and congestion-relieving technology. The expected cumulative induced impact totaling \$131.7 million, provides 805 cumulative jobs (or 89 per year) in the region. These jobs are concentrated in consumer service-related industries such as restaurants, hospitals, and retail stores. From FY2024 through FY2032, the estimated annual average economic impact of NVTa's capital expenditure is \$73.4 million which supports 347 jobs in Northern Virginia.

The economic impact of NVTa's Six Year Program in Virginia is larger than in Northern Virginia alone, as businesses elsewhere in the state will also benefit from NVTa's investment activities. Chmura estimates that from FY2026 through

¹³ Source: NVTa

¹⁴ Please note that the cumulative jobs are the sum of jobs in each year. For example, a construction worker involved with the project for two years equals two cumulative jobs.

FY2034, the annual average statewide impact can reach \$82.1 million (direct, indirect, and induced) which can support 399 annual jobs in Virginia.

3.1.2. Economic Impact of NVTa Regional Revenue Fund Program (FY2014 Program Through FY2024-29 Six Year Program)

Combining economic impacts from the FY2024-29 Six Year Program, the FY2022-27 Six Year Program, the FY2020-25 Six Year Program, the FY2018-23 Six Year Program, and NVTa's FY2014, FY2015-16, and FY2017 programs, Table 3.2 summarizes the economic impact of all NVTa Regional Revenue Fund programs since NVTa started receiving dedicated funding. In Northern Virginia, from FY2015 through FY2034, Chmura estimates that the capital expenditure can generate a total economic impact (direct, indirect, and induced) of \$5.0 billion, supporting 26,471 cumulative jobs. On an annual average basis, the estimated economic impact of all NVTa Regional Revenue Fund programs can reach \$251.3 million which can support 1,324 jobs in Northern Virginia from FY2015 through FY2034.

Table 3.2: Annual Impact of NVTa Regional Revenue Fund Programs (FY2014 Through FY2024-29 Programs) Averages \$275.9 Million in Virginia

			Direct	Indirect	Induced	Total Impact
Northern Virginia	Cumulative (FY2015-34)	Spending (\$Million)	\$3,137.8	\$933.1	\$954.1	\$5,025.0
		Employment	15,654	3,941	6,876	26,471
	Annual Average (FY2015-34)	Spending (\$Million)	\$156.9	\$46.7	\$47.7	\$251.3
		Employment	783	197	344	1,324
Virginia	Cumulative (FY2015-34)	Spending (\$Million)	\$3,189.7	\$1,186.7	\$1,141.3	\$5,517.7
		Employment	16,535	5,913	7,816	30,264
	Annual Average (FY2015-34)	Spending (\$Million)	\$159.5	\$59.3	\$57.1	\$275.9
		Employment	827	296	391	1,513

Note: Numbers may not sum due to rounding

Source: JobsEQ by Chmura

The economic impact of NVTa's Regional Revenue Fund projects is larger in Virginia than in Northern Virginia alone, and the estimated annual average statewide impact of \$275.9 million (direct, indirect, and induced) can support 1,513 annual jobs in Virginia from FY2015 through FY2034.

3.2. Economic Impact of NVTa Total Investment, Including 30% Local Funds Project

The economic impact analyzed in Table 3.2 only includes NVTa funding programs supported by the Regional Revenue Funds, accounting for 70% of the total funding stream allocated by the state legislation. The 30% funding allocated to local jurisdictions also generates a sizable economic impact in Northern Virginia and Virginia.

Table 3.3: Annual Impact of NVTa Total Investment Averages \$433.1 Million in Virginia

			Direct	Indirect	Induced	Total Impact
Northern Virginia	Cumulative (FY2015-34)	Spending (\$Million)	\$4,861.8	\$1,482.5	\$1,496.6	\$7,840.9
		Employment	26,208	6,907	10,613	43,728
	Annual Average (FY2015-34)	Spending (\$Million)	\$243.1	\$74.1	\$74.8	\$392.0
		Employment	1,310	345	531	2,186
Virginia	Cumulative (FY2015-34)	Spending (\$Million)	\$4,957.5	\$1,893.3	\$1,812.1	\$8,662.9
		Employment	28,259	10,944	11,688	50,890
	Annual Average (FY2015-34)	Spending (\$Million)	\$247.9	\$94.7	\$90.6	\$433.1
		Employment	1,413	547	584	2,545

Note: Numbers may not sum due to rounding

Source: JobsEQ by Chmura

Adding the impact from local projects, Table 3.3 summarizes the economic impact of total NVTa investments. In Northern Virginia, from FY2015 through FY2034, Chmura estimates that capital spending from NVTa total investments can generate a total economic impact (direct, indirect, and induced) of \$7.8 billion and support 43,728 cumulative jobs in the region. On an annual average basis, the estimated economic impact of NVTa total investment of \$392.0 million can support 2,186 jobs in Northern Virginia from FY2015 through FY2034. The economic impact of NVTa total investments in the state is larger than in Northern Virginia alone, and the annual average statewide impact can reach \$433.1 million (direct, indirect, and induced) and support 2,545 jobs in Virginia.

The above economic impact includes the allocated, distributed, and projected local funding totaling \$1.8 billion. Some of those local fundings have not been allocated or distributed yet. If only the allocated local funding to date (\$0.9 billion) is included with the regional revenue fund, Chmura estimated that capital spending from NVTa total investments—regional revenues and local funds allocated to date—can generate a total cumulative economic impact (direct, indirect, and induced) of \$6.4 billion and support 35,029 cumulative jobs in Northern Virginia from FY2015 through FY2034. The estimated annual average economic impact (direct, indirect, and induced) will be \$338.5 million, supporting 1,858 jobs in the region. The annual average statewide impact can reach \$373.4 million (direct, indirect, and induced) and support 2,152 jobs in Virginia, while the cumulative statewide impact can reach \$7.1 billion that support 40,493 cumulative jobs.

If distributed local funding to date (\$1.1 billion) is included with regional revenue fund,¹⁵ Chmura estimated that capital spending from NVTa total investments—regional revenues and local funds distributed to date—can generate a total cumulative economic impact (direct, indirect, and induced) of \$6.8 billion and support 37,074 cumulative jobs in Northern Virginia from FY2015 through FY2034. The estimated annual average economic impact (direct, indirect, and induced) will be \$359.4 million, supporting 1,986 jobs in the region. The annual average statewide impact can reach \$396.7 million (direct, indirect, and induced) and support 2,305 jobs in Virginia, while the cumulative statewide impact can reach \$7.5 billion that support 42,937 cumulative jobs.

¹⁵ The distributed local funding includes allocated local funding.

4. Fiscal Impact

NVTA investments also generate tax revenue for local and state governments. To be conservative, only tax revenue from the direct impact is estimated in this section.¹⁶

For capital expenditure activities, local governments collect business, professional, and occupational license (BPOL) tax, and the state government collects individual and corporate income taxes. Chmura used the average BPOL tax rates of all local governments in Northern Virginia to calculate BPOL tax revenue, estimated at \$0.6 million for the FY2024-29 Six Year Program. When including all NVTA Regional Revenue Fund programs, the total BPOL tax is estimated to be \$4.6 million from FY2015 through FY2034. Finally, adding local projects, local tax revenue from all NVTA investment is estimated to be \$7.0 million from FY2015 through FY2034 in Northern Virginia (Table 4.1).

Table 4.1: State and Local Fiscal Impacts Averages 6.3 Million per Year

	Impact Years	Northern Virginia		Virginia	
		Cumulative	Annual Average	Cumulative	Annual Average
NVTA FY2024-29 Six Year Program	FY2024-32	\$0.6	\$0.1	\$9.5	\$1.1
All NVTA Regional Revenue Fund Programs (FY2015, FY2015-16, FY2017, FY2018-23, FY2020-25, FY2022-27, FY2024-29)	FY2015-34	\$4.6	\$0.2	\$73.8	\$3.7
NVTA Total Investment (NVTA Regional Revenue Fund Programs & Local Distribution Fund Projects)	FY2015-34	\$7.0	\$0.4	\$119.1	\$6.0

Source: Chmura

For the Virginia state government, revenue originates from individual and corporate income taxes as a result of new employment and profits from capital expenditure. The estimated total state tax revenue is \$9.5 million from FY2024 through FY2032, from planned investment based of the FY2024-29 Six Year Program. Including all NVTA Regional Revenue Fund programs, total state tax is estimated at \$73.8 million. Finally, adding local projects, total NVTA investment can generate an estimated tax revenue of \$119.1 million for the state from FY2015 through FY2034. In total, NVTA investment can generate \$6.3 million state and local tax revenues per year from FY2015 to FY2034.¹⁷

¹⁶ This approach is recommended by Burchell and Listokin in *The Fiscal Impact Handbook*. The fiscal impact is part of the broader economic impact estimated in Section 3.

¹⁷ Numbers may not sum due to rounding.

Appendix 1. Impact Study Glossary

JobsEQ Economic Impact—an economic impact assessment modeling system. It allows the user to build economic models to estimate the impacts of economic changes in states, counties, or communities.

Input-Output Analysis—an examination of business-business and business-consumer economic relationships capturing all monetary transactions in a given period, allowing one to calculate the effects of a change in an economic activity on the entire economy (impact analysis).

Direct Impact—economic activity generated by a project or operation. For construction, this represents the activity of the contractor; for operations, this represents activity by tenants of the property.

Indirect Impact—secondary economic activity that is generated by a project or operation. An example might be a new office building generating demand for parking garages.

Induced (Household) Impact—economic activity generated by household income resulting from direct and indirect impacts.

Ripple Effect—the sum of induced and indirect impacts. In some projects, it is more appropriate to report ripple effects than indirect and induced impacts separately.

Multiplier—the cumulative impacts of a unit change in economic activity on the entire economy

