



2018 EDITION

Economic Impacts of Commercial Real Estate

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**Prepared for and funded by
the NAIOP Research Foundation**

**Construction data provided by
Dodge Data & Analytics**

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About NAIOP

NAIOP, the Commercial Real Estate Development Association, is the leading organization for developers, owners and related professionals in office, industrial, retail and mixed-use real estate. NAIOP comprises some 19,000 members in North America. NAIOP advances responsible commercial real estate development and advocates for effective public policy. For more information, visit naiop.org.

The NAIOP Research Foundation was established in 2000 as a 501(c)(3) organization to support the work of individuals and organizations engaged in real estate development, investment and operations. The Foundation's core purpose is to provide these individuals and organizations with the highest level of research information on how real properties, especially office, industrial and mixed-use properties, impact and benefit communities throughout North America. The initial funding for the Research Foundation was underwritten by NAIOP and its Founding Governors with an endowment fund established to fund future research. For more information, visit naiop.org/research.

About Dodge Data & Analytics

Dodge Data & Analytics is the leading provider of data, analytics, news and intelligence serving the North American construction industry. The company's information enables building product manufacturers, general contractors and subcontractors, architects and engineers to size markets, prioritize prospects, target and build relationships, strengthen market positions and optimize sales strategies. The company's brands include Dodge, Dodge MarketShare™, Dodge BuildShare®, Dodge SpecShare®, Sweets, Architectural Record and Engineering News-Record. For more information, visit construction.com.

Contents

Introduction	1
Economic Contributions	5
Building and Nonbuilding Expenditures (U.S. Census Data)	5
Office, Industrial, Warehouse and Retail Development Expenditures (Dodge Data & Analytics Data)	7
Outlook: Residential and Nonresidential Construction and the U.S. Economy	10
Jobs Housed and Payroll Value	15
Note on 2017 Methodology	16
Economic Multipliers	17
Survey of NAIOP Members	18
Definitions	20

Appendices

Appendix A: Soft Costs Impacts by State	23
Appendix B: Site Development Impacts by State	28
Appendix C: Hard Costs Impacts by State	33
Appendix D: Tenant Improvement Impacts by State	38
Appendix E: Total Impacts by State	43
Appendix F: Operating Impacts by State	48
Appendix G: National and State Multipliers	53

Disclaimer

The data collection measures included in this report should be regarded as guidelines rather than as absolute standards. The data may differ according to the geographic area in question, and results may vary accordingly. Local and regional economic performance is a key factor. Further study and evaluation are recommended before any investment decisions are made.

This project is intended to provide information and insight to industry practitioners and does not constitute advice or recommendations. NAIOP disclaims any liability for action taken as a result of this project and its findings.

Introduction

Since 2008, NAIOP has conducted this study for purposes of estimating the annual economic contribution of commercial real estate development to the U.S. economy. The study uses key data sets from the U.S. Census Bureau and Dodge Data & Analytics. It applies several estimating and impact assessment methodologies to take “snapshots” of the commercial real estate development industry from a variety of perspectives.

Building and Nonbuilding Construction. The broadest measure taken calculates the contribution of building and nonbuilding construction to the U.S. economy for the year in review. The product types included in this reading are residential, nonresidential and infrastructure projects in the construction pipeline, based on U.S. Census data on the value of construction put in place. Appropriate multipliers supplied by the Bureau of Economic Analysis are applied to reflect the effects of construction expenditures on U.S. gross domestic product (GDP), the associated generation of new personal earnings and the jobs supported by these direct expenditures. (See Table 1.)

Table 1
Economic Contributions from Building and Nonbuilding Construction

Year	Direct Expenditures (In Billions of Dollars)	Total Economic Contribution ¹ to GDP (In Trillions of Dollars, Includes Multiplier Effect)	Percent Contribution to U.S. GDP	Personal Earnings ² (In Billions of Dollars, Includes Multiplier Effect)	Jobs Supported ³ (In Millions, Includes Multiplier Effect)
2017	\$1,217.3	\$3.499	18.0%	\$1,108.5	23.4
2016	1,160.0	3.376	18.3	1,068.2	23.8
2015	1,104.2	3.214	17.9	1,016.9	22.7
2014	993.4	2.891	16.6	914.8	20.4
2013	910.8	2.80	16.7	887.0	21.3
2012	857.0	2.65	16.3	836.9	20.1
2011	787.4	2.27	15.0	677.0	17.2
2010	803.6	2.31	15.9	691.0	17.6
2009	907.8	2.90	20.5	870.0	24.0
2007	1,160.0	3.97	28.8	1,225.0	33.2

Sources: U.S. Census, Value of Construction Put in Place; GMU Schar School of Policy and Government, Stephen S. Fuller Institute

¹ The total value of goods and services generated directly and indirectly as a result of construction and related expenditures within the U.S.

² The additional earnings (wages and salaries) generated within the U.S. from construction and related expenditures.

³ The jobs supported by the spending and re-spending of direct expenditures for all phases of development and operations.

Note: Data include construction of residential and nonresidential buildings as well as infrastructure for water, sewer, highways and power. Values in all tables in this study may not add up due to rounding.

Development of New Commercial Real Estate Buildings. Zeroing in exclusively on commercial real estate — the core of this study — the analysis begins with Dodge Data & Analytics figures relating to square footage and construction values for office, industrial, warehouse and retail projects. These data lay the foundation for estimating expenditures made during four distinct phases of the development process: pre-construction (soft costs), site development, on-site construction (hard costs) and tenant improvements. (Financing fees, insurance and taxes are not included in this analysis within the soft construction costs category, because they have little immediate economic impact.)

This study also examines the contribution of building operations, which are reported as a stand-alone phase that follows development. The impacts are shown for the estimated 523.6 million square feet of commercial buildings that commenced construction in 2017, according to Dodge Data & Analytics and for the nationwide 46.4 billion square foot inventory of commercial space existing in 2017 per Newmark Knight Frank.

Multipliers are applied to the direct expenditures to calculate the contribution to U.S. GDP, personal earnings and jobs supported during each distinct development phase. Residential and hotel properties and government buildings are not included in these calculations. (See Table 2.)

The full measure of the economic impact of office, industrial, warehouse and retail development includes all of the expenditures associated with each phase of the development process. In addition to the wide range of on-site construction services, these expenditures also support a wide range of professional and business services, including:

- Architecture and engineering services.
- Legal services.
- Marketing and management services.
- Grading, paving and landscaping services.
- Site engineering services.
- Interior design and construction services.

This combination of spending for pre-construction, construction and post-construction activities required to deliver buildings ready for occupancy represents the development industry's total direct contribution to national, state and local economies. It provides the appropriate basis for calculating the economic impacts of this spending as represented by its contribution to GDP, personal earnings (wages and salaries) and employment.

Table 2
Economic Contributions to the U.S. Economy from Development of Commercial Real Estate Buildings

		Development Phases					Operations Phase
		Pre-Construction	Construction			Totals	Post-Construction
		Soft Construction (Soft Costs)	Site Development	Hard Construction (Hard Costs)	Tenant Improvements		Building Operations
		architecture, engineering, legal, marketing, management, administration	grading, paving, landscaping, roadway, parking, off-site improvements	labor, materials, construction management	interior design and construction (excludes furniture and equipment)		maintenance, repairs, custodial, utilities, property management
Direct Expenditures (In Billions of Dollars)	2017	\$28.58	\$24.73	\$98.55	\$ 35.23	\$187.09	\$1.66
	2016	25.06	21.42	82.96	30.60	160.04	1.42
	2015	23.84	20.20	81.17	29.80	155.01	1.39
	2014	27.64	28.56	87.76	30.35	174.31	1.34
	2013	19.66	21.07	61.65	21.84	124.22	1.11
	2012	15.88	17.34	49.18	17.73	100.13	0.96
In 2017, direct expenditures of \$187.09 billion contributed \$541.01 billion to U.S. GDP.							
Total Economic Contribution¹ to GDP (In Billions of Dollars, Includes Multiplier Effect)	2017	\$85.33	\$71.09	\$ 283.31	\$101.28	\$541.01	\$4.22
	2016	72.19	62.34	241.40	89.06	464.99	3.74
	2015	68.68	58.79	236.20	86.71	450.38	3.67
	2014	75.54	88.12	270.77	93.66	528.09	3.71
	2013	53.73	65.00	190.22	67.40	376.35	3.07
	2012	43.39	53.51	151.75	54.71	303.36	2.64
In 2017, direct expenditures of \$187.09 billion generated \$173.54 billion in personal earnings in the U.S.							
Personal Earnings² (In Billions of Dollars, Includes Multiplier Effect)	2017	\$29.20	\$22.52	\$89.74	\$32.08	\$173.54	\$1.32
	2016	26.18	19.73	76.39	28.18	150.49	1.07
	2015	24.91	18.60	74.75	27.44	145.70	1.05
	2014	25.18	27.89	85.70	29.65	168.42	1.17
	2013	17.91	20.57	60.21	21.33	120.02	0.97
	2012	14.46	16.94	48.03	17.32	96.75	0.83
In 2017, direct expenditures of \$187.09 billion supported 3.6 million jobs in the U.S. economy.							
Jobs Supported³ (Includes Multiplier Effect)	2017	572,497	475,171	1,893,727	677,023	3,618,418	42,330
	2016	538,680	439,801	1,703,149	628,352	3,309,982	27,833
	2015	512,509	414,765	1,666,470	611,755	3,205,499	27,299
	2014	508,712	668,953	2,055,112	710,831	3,943,608	29,398
	2013	361,866	493,314	1,443,779	511,530	2,810,510	24,285
	2012	292,219	406,107	1,151,784	415,236	2,265,346	20,929

Sources: NAIOP; Dodge Data and Analytics; GMU Schar School, Stephen S. Fuller Institute

¹ The total value of goods and services generated directly and indirectly as a result of construction and related expenditures within the U.S.

² The additional earnings (wages and salaries) generated within the U.S. from construction and related expenditures.

³ The jobs supported by the spending and re-spending of direct expenditures for all phases of development and operations.

Note: Data include office, industrial, warehouse/flex and retail buildings under construction in the year indicated and excludes existing inventory. Operations figures are based on buildings delivered in the year indicated.

Existing Inventory of Commercial Real Estate Buildings. This study also includes the economic contributions of existing buildings. Based on the existing stock of commercial buildings — totaling 46.4 billion square feet in 2017 — direct expenditures for building operations totaled an estimated \$155.2 billion and contributed \$394.1 billion to GDP. These direct expenditures also generated \$112.9 billion in personal earnings (wages and salaries) and supported a total of 4.0 million jobs. (See Table 3.)

Combining New and Existing Commercial Real Estate Buildings.

Combining the economic contributions of new development with the economic contributions from operations of existing buildings in 2017 (data from Tables 2 and 3), direct expenditures of \$342.3 billion resulted in the following economic contributions to the U.S. economy:

- Contributed \$935.1 billion to U.S. GDP.
- Generated \$286.4 billion in personal earnings.
- Supported a total of 7.57 million jobs.

Year	Total Square Feet (In Billions)	Direct Expenditures for Building Operations	Total Economic Contribution ¹ to GDP	Personal Earnings ²	Jobs Supported ³ (In Millions)
2017	46.380	\$155.2	\$394.1	\$1,12.9	3.952
2016	45.820	150.1	396.0	1,13.9	2.944
2015	45.070	145.6	384.1	1,10.1	2.856
2014	44.010	138.1	381.3	1,20.1	3.023
2013	43.934	134.3	370.9	1,16.8	2.941
2012	43.208	134.5	371.5	1,17.0	2.945
2011	42.098	140.7	366.6	1,07.6	2.758
2010	42.008	134.8	342.4	1,00.2	2.413

Sources: BOMA; Newmark Knight Frank; GMU Schar School, Stephen S. Fuller Institute

¹ The total value of goods and services generated directly and indirectly as a result of building operating expenditures within the U.S.

² The earnings generated within the U.S. from direct expenditures for building operations.

³ The jobs supported by the spending and re-spending of direct outlay associated with building operations.

Note: Building operations include maintenance repair, cleaning, utilities, security, building management and administrative expenses; see Appendices for state and building type data.

Economic Contributions

Building and Nonbuilding Expenditures (U.S. Census Data)

The U.S. economy was projected to grow 2.3 percent in 2017, and give a much stronger performance than it did in 2016 when the GDP gain was just 1.5 percent. Below-projection GDP growth in 2016 was the result of numerous factors including weak global economic growth, weakness in U.S. export markets (due in part to unfavorable exchange rates from the strong U.S. dollar), continuing softness in the energy sector, limited wage growth among U.S. workers (compounded by zero growth in worker productivity), and uncertainty generated by the U.S. presidential election.

However, it was not the result of weaker expenditures for residential and nonresidential construction. The construction sector continued its recovery from the Great Recession and in fact outperformed the U.S. economy helping to mitigate some of the downside from the conditions cited above. Construction spending continued to expand in 2017 with gains in residential and nonresidential construction offsetting decreased expenditures for nonbuilding construction (e.g., cutbacks to power generation facilities; state and local government outlays for highways and streets; and sewage treatment and waste disposal facilities).

Construction Activity Contributes to Ongoing Economic Expansion in 2017. Construction spending remained a key determinant of the U.S. economy's continuing expansion in 2017. Construction spending has increased each year since 2011, gaining 54.6 percent between 2011 and October 2017. For the year ending in October 2017, total construction spending was up 2.9 percent exceeding the GDP growth rate for this same period.

Residential construction spending registered a gain of 7.2 percent for the 12-month period ending in October 2017, after gaining 7.3 percent for the same period in 2016. For 2017, residential starts are estimated to reach 1.201 million, up 2.0 percent from 2016, making it the fourth consecutive year in which starts exceeded 1 million units. Residential starts are projected to continue to increase each year through 2022.

However, a number of factors could contribute to a slowing rate of increase in housing starts over this period, including rising mortgage interest rates, a shift in the job mix to lower paying sectors and slower wage growth, restricted access to credit, student loan burdens, lower marriage rates, slower immigration, lower fertility rates, and changing generational values and preferences. Nevertheless, the rate of increase in housing starts is projected to rebound from its slower-than-projected growth rate in 2017 to 5.7 percent in 2018, accelerating in 2019, gaining to 9.8 percent before slowing in 2020 to 3.4 percent, 1.9 percent in 2021 and 1.2 percent in 2022.

The value of **nonresidential building construction** continued its positive trend in 2017 increasing 3.4 percent reflecting a mixed performance with increases in transportation/warehousing, health care, retail, education, and lodgings partially offset by decreases in spending on manufacturing and office construction. Nonresidential building construction spending has increased 37.0 percent between 2013 through October 2017, reflecting an increase of \$126.7 billion in construction spending over this period with all but two of the 10 building-type categories experiencing growth. (See Table 4.)

Table 4
U.S. Nonresidential Construction Spending, 2016-2017
(In Billions of Current Year Dollars)

Type of Structure	2016 ¹	2017 ²	% Change 2016-2017 ³
Transportation	\$41.1	\$46.8	13.5
Health Care	38.4	41.9	9.3
Retail	78.9	84.2	6.8
Manufacturing ⁴	71.9	61.8	-14.1
Amusement/Recreation	22.9	23.3	1.7
Education	99.7	100.4	12.0
Public Safety	8.1	8.6	6.3
Office	71.5	69.1	-3.4
Religious	3.1	3.1	-0.1
Lodgings	26.7	30.2	12.3
Total⁵	\$453.8	\$469.4	3.4

Source: : U.S. Census, Value of Construction Put In Place, 2017

¹ Change in construction values between October 2015 and 2016.

² Change in construction values between October 2016 and 2017.

³ Percentage change between October 2016 and 2017 calculated based on unrounded totals.

⁴ Includes warehouse/flex space

⁵ Totals include some miscellaneous state and local government buildings but exclude spending for nonbuilding construction on items relating to communications, power, highways, sewer and water.

Building and Nonbuilding Construction, Output Multipliers, and GDP. The estimated total value of building and nonbuilding construction spending put in place in the U.S. in 2017, based on U.S. Census data, is \$1.22 trillion. This accounted directly for 6.3 percent of the nation’s estimated GDP of \$19.4 trillion in 2017. With an output multiplier of 2.87, each \$1 of this construction spending generated a total of \$2.87 of value to the economy, reflecting the cumulative effects of the initial construction expenditures as they are re-spent throughout the economy. Applying this multiplier to the total value of direct construction spending in 2017 increases the value of its overall contribution to GDP to \$3.499 trillion, accounting for 18.0 percent of the nation’s economic activity.

Contribution of Building and Nonbuilding Construction Expenditures to GDP. The total impact of construction spending — direct, indirect and induced — on the U.S. economy accounted for 18.0 percent of all economic activity in 2017. For the year, GDP increased by \$763.6 billion from its 2016 value (in current dollars). In comparison to this overall gain in GDP during 2017, the total value of construction spending (\$1.22 trillion) was 1.6 times greater than the year’s annual GDP growth in dollar value, underscoring that growth in the construction sector outpaced growth in the overall economy.

The Bottom Line. The total contribution to GDP of building and nonbuilding expenditures also generated new personal earnings and supported jobs across all sectors of the economy. (See Table 1 on page 1.) In 2017, the \$1.22 trillion in construction spending:

- Contributed \$3.5 trillion to U.S. GDP.
- Generated \$1.1 trillion in new personal earnings.
- Supported a total of 23.4 million jobs throughout the U.S. economy.

Office, Industrial, Warehouse and Retail Development Expenditures (Dodge Data & Analytics Data)

Construction data provided by Dodge Data & Analytics for office, industrial, warehouse and retail buildings offer a more refined definition of hard construction expenditures over time. As presented in Table 5, total hard construction expenditures for these four building types totaled \$98.6 billion and increased by \$15.6 billion or 18.9 percent from 2016.

Office construction expenditures totaled \$36.5 billion in 2017 slight decrease (-0.4 percent from 2016, after registering gains of 28.7 percent in 2016).

Retail construction expenditures totaled \$17.1 billion in 2017, a decrease of 0.8 percent from their 2016 level, after declining 7.0 percent in 2016; these decreases follow gains in retail construction expenditures in 2015 (8.2 percent) and 2014 (1.1 percent).

Warehouse construction registered its seventh consecutive year of increased expenditures in 2017, up 55.7 percent from 2016 following a gain of 12.7 percent in 2015.

Industrial construction spending that had decreased sharply for a two consecutive years — down 46.2 percent in 2015 and 29.9 percent in 2016 — rebounded in 2017 gaining 52.5 percent. This pullback in industrial/manufacturing construction in 2015 and 2016 was attributed to the downturn in the energy sector and a weakening in global demand for U.S. manufactured goods due largely to the strength of the U.S. dollar and unfavorable trade policies with the United States' major trading partners. Gains made in 2017 reflect the modest turnaround in the energy sector.

Table 5
Comparing Construction Expenditures (Hard Costs), 2016 and 2017
(In Billions of Current Year Dollars)

Building Type	2016	2017	\$ Change (2016-2017)
Office	\$36.61	\$36.45	-\$0.61
Industrial	15.54	23.86	8.32
Warehouse	13.57	21.13	7.56
Retail/Entertainment	17.24	17.10	-0.14
Total	\$82.96	\$98.55	\$15.59

Sources: Dodge Data & Analytics; GMU Schar School, Stephen S. Fuller Institute

Expenditures and Square Footage (All Structures Combined). The total amount of new construction in 2017, as measured in square feet for these four building types, increased 27.4 percent from 2016 after having declined 4.5 percent between 2016 and 2015. The amount of space built increased for three of the building types (only retail space decreased in 2017) while the value of this added building space increased for two building types — industrial and warehouse; office and retail building construction expenditures experienced small decreases in value compared to 2016, down 0.4 percent and 0.8 percent. (See Table 6.)

Table 6
Office, Industrial/Manufacturing, Warehouse and Retail Construction, 2016 and 2017

Building Type	Square Feet (In Millions)		Construction Value ¹ (In Billions of Dollars)	
	2016	2017	2016	2017
Office	102.8	117.6	\$36.61	\$36.45
Industrial	53.5	53.9	15.54	23.86
Warehouse	167.0	267.9	13.57	21.13
Retail	86.8	84.2	17.24	17.10
Total	410.1	523.6	\$82.96	\$98.55

Sources: Dodge Data & Analytics; GMU Schar School, Stephen S. Fuller Institute

¹ Hard costs only

Hard Construction Expenditures (All Structures Combined), Multipliers and GDP. The economic impact of this construction activity can be calculated by applying the U.S. Department of Commerce Bureau of Economic Analysis's (BEA's) national construction multipliers for its contribution to GDP (2.895), personal earnings (0.9106), and employment (19.2163 jobs per \$1,000,000 of construction expenditure).

State-level direct spending and associated economic impacts for pre-construction (soft costs), construction and post-construction (operations) spending are included in the Appendices. It should be noted that individual state construction multipliers are smaller than the U.S. multipliers. They measure only the share of construction-related expenditures that are retained within the respective state economies. This means that construction-related spending flows that leak out of each state economy to other states (spill-over effects) are excluded. Smaller states and state economies that are less well developed tend to retain smaller portions of the benefits from construction-related spending than do states with larger and more complex economies; that is, a greater share of the smaller states' direct construction spending leaks out to other states.

The Bottom Line. The total contribution to U.S. GDP from the four phases of development tracked in this study is substantial. When the latest BEA multipliers are applied, direct expenditures of \$187.1 billion in 2017 resulted in a contribution of \$541.01 billion to U.S. GDP, generated \$173.54 billion in personal earnings and supported 3.6 million jobs. (See Table 7.)

Table 7
Office, Industrial, Warehouse, and Retail Construction and Operations Contribution to the U.S. Economy, 2017
(In Billions of 2017 Dollars)

	Direct Expenditures	Total Economic Contribution to GDP ¹	Personal Earnings ²	Jobs Supported ³
Development Phase	\$187.09	\$541.01	\$173.54	3,618,418
Soft Construction (Soft Costs)	28.58	85.33	29.20	572,497
Site Development ⁴	24.73	71.09	22.52	475,171
Hard Construction (Hard Costs)	98.55	283.31	89.74	1,893,727
Tenant Improvements ⁵	35.23	101.28	32.08	677,023
Annual Operations	\$1.661	\$4.220	\$1.316	42,330

Sources: Dodge Data & Analytics; GMU Schar School, Stephen S. Fuller Institute

¹ The total value of goods and services generated directly and indirectly as a result of direct construction expenditures within the U.S.

² The additional earnings generated within the U.S. from direct expenditures during the construction phase and post-construction phase for building operations.

³ The jobs supported nationwide by the spending and re-spending of direct expenditures associated with building construction or operations.

⁴ Site development includes grading, infrastructure, parking and landscaping.

⁵ Tenant improvements exclude furniture and equipment.

Note: See Appendices for state-level data.

Outlook: Residential and Nonresidential Construction and the U.S. Economy

The U.S. economy has been in recovery since July 2009 with this recovery extending to eight and one-half years as of January 2018, making it the third longest of the 12 business cycles that date from the end of World War II.

The first seven years of this recovery were characterized by uneven growth rates for GDP and personal earnings. In 2017, the economy's growth rate accelerated to an estimated 2.3 percent from a much slower 1.5 percent gain in 2016. Job growth remained strong throughout the year and unemployment declined to 4.1 percent. Personal earnings increased in 2017 but so did the rate of inflation; the Federal Reserve raised interest rates three times during the year as was expected although rates on construction loans and home mortgages did not increase as much. Overall, the economy in 2017 registered its best performance since 2015 with its growth rate exceeding the post-recession average.

In 2017, an estimated 2.1 million net new workers entered the economy, for a 1.5 percent employment growth rate. While this growth rate slowed in 2017 from the previous year's 1.8 percent gain, this is a normal pattern for job growth — faster rates in the early years of the business cycle and slower rates as the cycle ages — given the late stage of the business cycle and the tightening of the labor market. Rising consumer confidence, continued low energy costs, and a surging stock market supported increased consumer spending in 2017. More competitive exchange rates (the dollar weakened) helped to increase exports in 2017 and lower the foreign trade deficit. Additionally, increased domestic demand helped the manufacturing sector to reverse its production growth rate from a negative 1.2 percent in 2016 to a positive 2.0 percent in 2017. The increase in industrial production augmented factory utilization in 2017 from 75.1 percent to 75.8 percent; this rate is projected to increase significantly in 2018 to 77.1 percent.

If this increase occurs, it should help to reverse the two-year decline in fixed investment in manufacturing and spur additional construction.

Other factors will impact economic growth in 2018 and beyond. Several key variables to watch are: (a) **interest rates** that are projected to move higher in 2018 as the Federal Reserve raises its rate three-quarters of a point in three increments over the year; (b) **labor shortages** that are already appearing in several key sectors — construction is one of them — and will tighten further in 2018 with resulting increases in wage inflation; (c) **energy prices** that are currently projected to stay relatively steady in 2018, averaging slightly lower for the full year than in December 2017, but still slightly above the full year 2017 average; and (d) the **impact of the new 2017 federal tax law** and the effects of lower tax rates on consumer spending and corporate investment.

In the absence of the economic impacts from the new federal tax law, the December GDP forecast for 2018 (IHS Markit) is for 2.6 percent growth followed by 2.3 percent in 2019. IHS Markit projects that the GDP growth effect of the new federal tax law in 2018 would be 0.3 percent additional growth. Adding these two rates would point to the economy growing 2.9 percent in 2018. If this rate is achieved, it would duplicate the GDP growth rate in 2015; these would be the highest rates since 2005 (3.3 percent).

Residential building construction spending has increased each year since 2010 and, from its monthly low value in August of 2010, is up 124.6 percent through October 2017. Multifamily housing construction has increased its share of residential construction spending during the recovery and is expected to retain a larger share of residential construction spending even after single-family housing construction increases towards its equilibrium level of 1.45 million units annually by 2020.

Residential construction spending in 2017 fell substantially below forecast. At the beginning of the year, the increase in residential fixed investment was projected at 2.7 percent; the December 2017 estimate for the full year is only 1.2 percent. This sector's slow growth has been explained as a mid-to-late business cycle slump. A major factor affecting this slowdown may be the result of slower household formation rates among millennials. It may also be due to a shortage of building lots. Despite these trends, demand appears strong in the resale market. Prices will have risen on average 5 to 10 percent across the country in 2017 and total resales are projected to have risen 1.5 percent to their highest level since before the recession.

Single- and multifamily housing starts in 2017 are estimated to have totaled 1.201 million units, a gain of 2.0 percent from 2016. Starts are projected to increase in each of the next five years, with 1.269 million starts expected in 2018. By 2022, starts are projected to approach 1.5 million units. It's interesting to note that just a few years ago, 1.5 million starts had been expected in 2018. These figures illustrate the slower-than-anticipated pace of growth in residential construction dating back to the early years of the recovery.

Thirty-year fixed home mortgage rates, which hovered near 4.0 percent for most of 2017, are projected to average 4.5 percent over 2018 and to peak at 5.3 percent by 2022. Their trajectory and peak are much lower than previously projected. While these modestly higher rates will have a dampening effect on the residential market, demographic factors affecting household formation, fertility rates, size of home, etc., as well as the length of the business cycle will be the primary determinants of whether the residential construction sector can realize its inherent potential before the next recession.

Nonresidential construction expenditures turned positive in 2011, increased each year since, and have now grown a total of 47.8 percent through October 2017. Estimates for 2017 confirm an uneven pattern of investment across the broad range of building types. Construction spending

for manufacturing structures increased steadily over the 2011 to 2015 period (up 92.8 percent) with a one-year gain of 33.4 percent being registered in 2015. In contrast to this high rate of increase, fixed investment in manufacturing structures decreased 6.4 percent in 2016 and is estimated to have decreased 13.9 percent in 2017. Longer-term projections for manufacturing investment show it reversing this pattern to gain slightly in 2018 (3.3 percent) and to accelerate in 2019 (11.0 percent), then slowing or declining slightly over the 2020-2022 period. The favorable provisions of the new federal tax law could provide a positive boost to this sector and alter its growth pattern going forward.

Construction spending for office buildings has been increasing for the past three years at double-digit rates. These were not sustained in 2017 with the value of office construction put in place between October 2016 and 2017, decreasing 3.4 percent. In contrast, the value of retail construction put in place in 2017 was up for a seventh consecutive year, increasing 6.8 percent between October 2016 and October 2017, a rate similar to its gain the previous year. However, the outlook for continued growth of retail construction expenditures is for slower gains over the remainder of the decade.

Construction spending for warehouse and flex space increased steadily starting in 2011 through 2015, declined by 9.6 percent in 2016, and then rebounded in 2017 increasing 13.5 percent, based on the value of construction put in place. (See Table 4.)

The growth projections for nonresidential construction reflect the expected improved performance of the U.S. economy over the next two years followed by a more moderate growth rate between 2020 and 2022. The current forecast has GDP growth peaking in 2018 at a rate that could reach 2.9 percent or possibly 3.0 percent (inclusive of the positive effects of the recently enacted federal tax law) with these positive effects extending into 2019. Beyond 2019, the economy's growth trajectory is current projected to remain positive but at a below-trend rate averaging 1.9 percent. Forecasts for the

period beyond 2019 open the door to an increasing number of uncertainties but for the short term, the positive forces appear sufficiently strong to drive the economy to its best performance of the decade in 2018.

Construction employment, which declined by 2.3 million jobs between 2006 and 2010, began to add new jobs in early 2011, according to the Bureau of Labor Statistics. Construction employment now has increased for a seventh consecutive year. Between November 2016 and November 2017, the construction sector added 184,000 net new jobs, a 2.7 percent gain (compared to 1.5 percent growth in total jobs for this same period). From the low point in January 2011 through November 2017, a total of 1.54 million net new construction jobs were generated. However, employment in the construction sector remained 771,000 jobs below its peak in April 2006.

Outlook: The U.S. Economy. The importance of the construction sector to the well-being of the U.S. economy is well established. The recovery's sluggishness during the past eight years can be partially attributed to the magnitude of the correction that the construction sector endured, with its recession extending to mid-2011. Now that residential and nonresidential building construction spending has increased steadily each year since its 2011 low, it has contributed essential stimulus to the economy's sustained growth over the lengthy expansion. This is in spite of the economy's disappointing performance in 2016, when GDP increased only 1.5 percent. In 2017, had the construction sector achieved its beginning-of-the-year forecasted growth, GDP growth for the year would have exceeded its currently estimated gain of 2.3 percent by 0.1 or 0.2 points.

The outlook to the end of the decade remains positive with the rate of GDP growth projected to peak in 2018, remain above trend in 2019, and then slip slightly below trend in 2020. Forecasting these next several years in made more complicated by the yet-to-be-determined effects of the federal tax law on households, corporations and especially the residential and commercial real estate sectors. Adding more challenges to the forecast are questions about the durability of the business cycle that by historic measures is considered to be in its latter stages. Of note is that if the current cycle continues to February 2020 is will be longest in U.S. history.

Continued growth in construction activity has been the one positive force in the national economy's performance since 2009. While the construction sector appears to be poised for stronger growth in 2018 and 2019, there are good reasons to monitor the performance of individual building types and their changing market conditions as the U.S. economy's current expansion extends its run into record territory.

Table 8
**Total Impacts (Soft Costs, Site Development, Hard Costs, and Tenant Improvements)
on State Economies (in Four Categories), 2017**
(In Billions of 2017 Dollars)

State	Direct Spending	Total Output	Personal Earnings	Jobs Supported
Alabama	1.942	4.105	1.361	31,825
Alaska	0.036	0.060	0.021	404
Arizona	2.130	4.405	1.493	34,049
Arkansas	0.726	1.433	0.470	10,823
California	24.757	52.693	17.722	333,817
Colorado	3.359	7.303	2.469	52,555
Connecticut	1.645	3.094	1.005	18,376
Delaware	0.590	1.015	0.280	5,682
District of Columbia	1.972	2.304	0.167	2,756
Florida	9.261	19.321	6.578	155,926
Georgia	6.465	14.846	4.915	114,520
Hawaii	0.408	0.748	0.261	5,201
Idaho	0.379	0.703	0.238	5,619
Illinois	5.704	13.173	4.209	80,293
Indiana	1.702	3.700	1.182	25,756
Iowa	3.038	5.774	1.894	41,804
Kansas	1.843	3.702	1.112	24,658
Kentucky	1.998	4.116	1.280	29,579
Louisiana	6.429	12.682	4.350	92,153
Maine	0.188	0.354	0.120	2,845
Maryland	4.138	7.783	2.441	47,857
Massachusetts	4.761	9.047	2.912	54,180
Michigan	2.982	6.353	2.136	46,106
Minnesota	1.557	3.424	1.109	22,030
Mississippi	0.375	0.729	0.239	5,633
Missouri	3.797	8.047	2.468	55,674
Montana	0.244	0.450	0.155	3,663
Nebraska	2.638	4.973	1.650	35,966
Nevada	1.167	2.171	0.729	16,254
New Hampshire	0.261	0.503	0.157	3,049
New Jersey	5.140	10.708	3.328	62,381
New Mexico	0.306	0.538	0.185	4,342
New York	15.739	28.714	8.965	165,063
North Carolina	5.485	11.978	3.916	90,396
North Dakota	0.298	0.530	0.170	3,220
Ohio	3.191	7.219	2.317	50,325
Oklahoma	0.573	1.183	0.400	8,640
Oregon	1.547	3.092	0.993	21,571
Pennsylvania	16.174	36.382	11.440	227,188
Rhode Island	0.223	0.394	0.117	2,384
South Carolina	2.054	4.437	1.443	33,984
South Dakota	0.985	1.809	0.608	13,518
Tennessee	2.444	5.548	1.762	37,198
Texas	24.377	58.902	19.537	379,781
Utah	1.635	3.614	1.203	27,043
Vermont	0.145	0.259	0.086	2,009
Virginia	4.052	7.992	2.501	52,633
Washington	4.299	8.827	2.930	56,617
West Virginia	0.074	0.131	0.041	902
Wisconsin	1.818	3.736	1.255	26,981
Wyoming	0.039	0.064	0.022	462
State totals	187.090	395.066	128.343	2,625,688
Interstate spillovers		145.942	45.194	992,730
U.S. Total	187.090	541.008	173.537	3,618,418

Sources: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: This table include data for the District of Columbia, resulting in 51 states.

Table 9
Impacts of Operations on State Economies (in Four Categories), 2017
(In Thousands of 2017 Dollars)

State	Direct Spending	Total Output	Personal Earnings	Jobs Supported
Alabama	20,095	35,843	11,496	469
Alaska	241	377	125	5
Arizona	24,118	45,363	14,823	522
Arkansas	9,222	15,572	4,952	203
California	221,075	435,806	140,383	4,794
Colorado	37,794	74,601	24,271	838
Connecticut	12,535	22,135	6,823	221
Delaware	7,203	11,655	3,154	117
District of Columbia	17,662	21,272	1,930	77
Florida	99,782	189,385	62,174	2,392
Georgia	70,094	144,626	45,744	1,714
Hawaii	2,480	4,265	1,398	49
Idaho	5,237	8,577	2,813	118
Illinois	33,183	69,916	21,586	672
Indiana	22,748	43,731	13,540	472
Iowa	18,336	30,840	9,670	381
Kansas	19,028	33,950	9,689	354
Kentucky	24,210	44,452	13,316	499
Louisiana	11,151	19,796	6,381	255
Maine	3,073	5,270	1,738	68
Maryland	38,950	68,209	20,461	693
Massachusetts	25,535	45,853	14,156	462
Michigan	38,359	73,197	23,683	844
Minnesota	16,419	32,749	10,255	347
Mississippi	3,004	5,081	1,602	67
Missouri	35,485	67,162	19,886	749
Montana	5,385	8,721	2,901	122
Nebraska	19,122	32,282	10,265	415
Nevada	14,385	24,300	7,879	303
New Hampshire	2,713	4,630	1,376	46
New Jersey	33,595	66,089	19,626	624
New Mexico	3,041	4,914	1,613	68
New York	84,386	147,017	43,104	1,415
North Carolina	79,581	155,270	49,054	1,903
North Dakota	5,832	9,197	2,822	99
Ohio	42,912	86,917	27,060	898
Oklahoma	9,867	18,101	5,880	224
Oregon	16,554	29,428	9,212	324
Pennsylvania	45,764	90,398	27,669	895
Rhode Island	1,272	2,137	619	21
South Carolina	29,255	55,178	17,056	681
South Dakota	4,907	7,811	2,463	101
Tennessee	26,726	53,700	16,490	564
Texas	274,460	583,858	185,370	6,263
Utah	23,595	46,649	14,987	563
Vermont	1,494	2,411	764	31
Virginia	55,290	98,621	29,503	994
Washington	35,639	65,035	20,892	716
West Virginia	1,306	2,072	628	23
Wisconsin	27,572	50,285	16,198	614
Wyoming	205	302	98	4
State Totals	1,661,875	3,195,007	999,575	35,296
Interstate Spillovers		1,025,490	316,463	7,034
U.S. Totals	1,661,875	4,220,497	1,316,038	42,330

Sources: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: This table include data for the District of Columbia, resulting in 51 states.

Jobs Housed and Payroll Value

In addition to the annual operating expenditures associated with this new building space, these buildings represent new productive capacity within the national economy. While the value of this added capacity depends on how each building is used, two measures of this value are the number of jobs this new capacity can accommodate and the amount of payroll these new jobs have the potential to generate. Using an average jobs-per-square-foot estimate for each category of building, the total number of employees that could be housed within the buildings built in 2017 can be estimated. The total payroll value of these new workers also can be calculated by multiplying this employment estimate by the U.S. average 2017 wage earnings per worker for jobs associated with each building category.

These calculations are presented in Table 10. They show that the 523.6 million square feet of new office, industrial, warehouse and retail building space constructed in 2017 have the capacity to house 1.3 million new workers with a total estimated annual payroll of \$70.9 billion.

Table 10
Jobs Accommodated and Payroll Generated in Office, Industrial,
Warehouse and Retail Space Constructed in 2017

Building Type	Square Feet (In Millions)	Square Feet per Job	Jobs Accommodated (In Thousands)	Average Earnings per Job	Total Payroll (In Billions of Dollars)
Office	117.6	190	618.9	\$69,520	\$43.026
Industrial	53.9	750	71.9	52,622	3.783
Warehouse	267.9	600	446.5	40,819	18.226
Retail	84.2	475	177.3	33,062	5.862
Total/Average	523.6	398	1,314.6	\$53,930	\$70.897

Sources: Dodge Data & Analytics; GMU Schar School, Stephen S. Fuller Institute; U.S. Bureau of Labor Statistics; Newmark Knight Frank

Note on 2017 Methodology

Previous editions of this study were based on actual construction values in a calendar year.

For 2017, full-year construction values were estimated in order to publish the economic results in January 2018, so NAIOP members would have current data to use during their annual visit to Capitol Hill in Washington, D.C., which takes place in early February of each year.

The estimates are based on the following:

- actual construction values for the year's first nine months;
- the annual construction totals for the six preceding years (2011-2016); and
- the percentage of these values reported respectively for those years' first nine months, by building type (office, industrial/manufacturing, warehouse and retail) and by state were calculated and averaged for each independently.

These nine-month averages were applied to the actual 2017 values for nine months to estimate the year's 12-month values by building type and by state. (For details regarding the data cleaning, please contact the author.) Dodge Data & Analytics provided the data for these calculations. In 2014, Dodge Data & Analytics purchased McGraw-Hill Construction which previously supplied the data. Dodge Data & Analytics has reported no changes to the McGraw-Hill Construction data or to the data capture methodologies.

Please note that there are now just three listings of multipliers: construction, soft costs and operations. Management services and utilities, along with several other independent categories are now combined into a single multiplier that was used to calculate the economic impacts for operations expenditures. In the past these separate multipliers were weighted to reflect their respective share of operating costs. The newest listing of multipliers has made this extra calculation unnecessary.

Economic Multipliers

The output (GDP), personal earnings (wages and salaries) and jobs supported multipliers used in the 2018 report utilize the most recent revisions prepared by the U.S. Department of Commerce Bureau of Economic Analysis (BEA) released in 2017. All multipliers were updated from those utilized in the 2017 report. These newest multipliers reflect continuing post-recession trends of:

- (1) Decreasing value of the output multipliers, as the state and national economies have become more interdependent and global, resulting in more local benefits spilling over to adjacent states and increased use of imported materials from beyond the U.S.; and
- (2) Declining jobs and personal earnings multipliers as construction activities have become more efficient and incorporate new technologies, including off-site production.

These decreases in the above-mentioned multipliers suggest that the economic benefits of construction work at the national level are leaking into the global economy while state-level benefits are leaking into other states' economies and hence are not as locally impactful as they were previously.

Other multipliers used in this study are described below:

- **Construction** multipliers are utilized for hard costs, site improvements and tenant improvements.
- **Architectural and engineering services** multipliers are utilized to represent the bundle of construction-related professional services considered in this report and identified as soft costs (preconstruction).
- **Services to buildings** multipliers are utilized to represent the bundle of building operations services (including building management, repair and maintenance, custodial, security, and sales and marketing but excluding local taxes and finances costs).

In the past, utilities multipliers were blended into these operating costs multipliers. Utilities are characterized by low job multipliers and high output multipliers as they reflected the production of electricity and heating fuels and not the impacts at the retail level, thereby distorting the impact calculations — higher output values and lower overall jobs supported. As a result of this methodological revision in the 2018 report, the jobs supported by the operating outlays associated with new and existing commercial buildings are greater than those reported in the 2017 edition and the output values are lower per \$1 of expenditure.

Survey of NAIOP Members

NAIOP conducted a survey of its membership between Feb. 5 and Feb. 14, 2016, to determine the values of soft costs, site development improvements and expenditures for tenant improvements relative to the hard costs associated with building office, industrial, warehouse and retail buildings. The results of this survey are used in calculating the total building costs based on the value of hard construction data provided by Dodge Data & Analytics in order to capture the full economic value of building development on the U.S. and state economies. The distribution of these costs across the four building types differ and have changed over the past seven years in response to general economic conditions, changes in the marketplace and the locations where new building construction is occurring.

Questionnaires were emailed to 1,949 NAIOP members throughout the U.S.; 77 of these emails could not be delivered. Survey participants were mainly commercial real estate developers and owners involved in the construction of office, warehouse, manufacturing and retail buildings. There were a total of 123 responses to the survey, for a response rate of 6.31 percent. Forty-eight survey respondents indicated that their primary area of work was office building development; Nine indicated manufacturing facility development; 51 indicated warehouse or flex building development; and 16 indicated retail development.

The results of this survey are presented in the table on the next page as percentages of total building costs. These percent distributions by building type are used in this report to calculate soft construction costs, site improvement costs and costs of tenant improvements based on the value of hard construction costs provided by Dodge Data & Analytics.

Table 11
Survey of NAIOP Members
Building Cost Allocation Percentages (%), by Building Type
2006, 2008, 2013, 2016

Building Type	Soft Construction Costs ¹	Site Development Costs	Building Construction Costs	Tenant Improvement Costs
Office				
2016	16.44%	13.71%	49.21%	20.63%
2013	14.40	14.50	49.50	21.60
2008	17.43	14.24	49.74	18.58
2006	17.13	15.76	49.49	17.62
Manufacturing				
2016	12.25	9.38	57.13	21.25
2013	16.90	13.80	54.00	15.30
2008	14.34	19.32	52.59	13.75
2006	12.05	18.58	55.69	13.68
Warehouse/Flex				
2016	14.08	15.47	57.85	12.61
2013	14.60	19.00	53.30	13.10
2008	17.09	18.54	53.64	13.73
2006	14.23	16.81	55.00	14.07
Retail				
2016	17.70	14.41	49.26	18.63
2013	17.00	21.80	44.30	16.90
2008	15.76	20.82	47.00	16.41
2006	17.72	16.06	52.39	13.83
Combined²				
2016	15.37	14.19	53.24	17.20
2013	15.20	17.32	49.12	17.30
2008	15.62	17.19	51.24	15.94
2006	16.29	16.40	52.48	14.85

¹ Professional services and administrative and management processes required to support the construction project.

² Weighted average reflecting the numbers of responses by type.

Definitions

Area of Analysis — the geographic unit of analysis, normally a political unit, for which economic, demographic and fiscal information is reported.

Building Value — construction value would include hard costs (costs of the structure) and soft costs (management, architecture and engineering, legal fees, communications); the finished commercial value would reflect cash flow potential or current performance. Assessed valuation for tax purposes may be accepted as an appropriate substitute for actual market value.

Development Costs — includes all of the construction-related expenditures associated with developing a building, which include soft construction costs, site development costs, hard construction costs and tenant improvement expenditures.

Direct Expenditures — all spending in support of all phases of new construction required to deliver the final product as well as the operation phase (after the building delivers), including payroll of the workers directly involved and all nonpayroll spending for materials, management, overhead, utilities, equipment leasing or purchases and for or by subcontractors, suppliers and vendors.

Economic Impact — the generation of new spending within a jurisdiction as a result of investing in and operating new economic activity; in this case, office, industrial, warehouse and retail buildings.

Fiscal Impact — the effect of real estate development on the revenues and expenditures of the jurisdiction within which the building is located.

Gross Domestic Product (GDP), Gross State Product (GSP), Gross County Product (GCP) — the value of goods and services produced within the economy of the respective geographic area (nation, state, county/city).

Gross Square Feet — a measure of an individual building size or aggregate inventory of building space reflecting the total envelope of the structure, which is typically larger than the occupied or usable building area.

Hard Construction Costs — a category of construction costs that reflects the expenditures for the building's hard construction phase. Costs for labor, materials and construction management are the three basic types of hard costs. Soft construction costs, site development costs and tenant improvement expenditures are reported independently from hard construction costs.

Indirect Benefit — the additional economic benefits (measured in dollars or jobs) resulting from the accumulated additional value generated by direct expenditures, as these dollars are re-spent within the economy. Indirect effects are calculated using **Multipliers** and include sales and purchases by businesses supplying goods and services in support of building construction and operation as well as the re-spending of payroll by workers (**Induced Effects**) associated with the new building.

Induced Effects — the contributions of the payroll spending by workers in a specific industry or sector on local businesses providing goods and services to households.

Infrastructure — utilities, roads, parking lots, storm drainage structures; other site improvements could be included in estimating these costs if not included elsewhere. If these improvements are financed by the private sector, whether on-site or off-site, their costs should be included in the base values for calculating industry economic contributions.

Interstate Spillovers — economic contributions that are generated by direct construction expenditures in a given state that are realized by another state due to workers commuting across state lines (i.e., earning wages in one state and spending these earnings in their home state) and the importation of building materials from another state. These economic impacts are not reflected in the benefiting states' multipliers but are captured in the U.S. multipliers and reported in the U.S. totals.

Multiplier — a number used to calculate the final economic impact of one dollar spent. Types of multipliers include:

output multiplier measures the contribution of a direct expenditure on the overall economy (gross domestic product or gross state product).

employment multiplier measures the total number of jobs that can be supported by a direct expenditure (expressed in jobs supported per \$1 million in direct spending).

personal earnings multiplier measures the total personal earnings (wages and salaries) generated within the state or nation as a result of a direct expenditure and the jobs it supports.

Operating Costs — Costs (expenditures) associated with the day-to-day operation of an office, industrial, warehouse or retail building including building management, utilities, normal maintenance and repair, custodial services and security. These costs do not include the operating costs of building tenants.

Output — the goods and services produced for sale to other firms or industries as intermediate goods or services or for sale to consumers as final goods or services.

Personal Earnings — wages and salaries (payroll) paid out to all workers related directly or indirectly to the construction activity (pre-construction, construction, post-construction) for which direct expenditures are made. These wages and salaries include payment to the workers directly related to construction work being performed, employees of suppliers and vendors related to that work, and employees of businesses and organizations benefiting from the spending of these new wages and salaries generated as a result of these direct expenditures; that is, employees working in retail and consumer services, health care, education, local government and so on, whose business sales and cash flow have increased because of the new wages and salaries paid to workers in construction-related activities.

Sector — industries or firms grouped by similar characteristics of operations (e.g., retail trade sector, manufacturing sector, construction sector, services sector, government sector, etc.).

Site Development — a category of construction costs that reflect improvements made to the site before a building can be constructed. These costs include grading, infrastructure, landscaping, surface and structured parking, and other costs to prepare the site to support the functions of the building constructed on the site.

Soft Construction Costs — a category of development costs that reflects the professional services and administrative and management processes required to support the construction project. These may precede actual on-site construction by several years and may include legal and other consultant services, architectural and engineering services, management and administration.

Tenant Improvement Costs — a category of construction costs that reflects improvements made to the interior of a building to meet the needs of a specific tenant. Costs may include interior walls and partitions, floor coverings, and cabinets, but excludes furnishings. The building owner or the tenant may pay for these improvements.

Total Output — the sum of the direct and indirect benefits (expenditures) reflecting the combination of the initial expenditures by a firm and its subsequent accumulated value as this spending is recirculated throughout the economy. This includes benefits (induced) generated by the re-spending of personal earnings. This represents the total contribution to gross domestic product or gross state product.

Value Added — a measure of the incremental dollar value created by an industry, firm or individual employee as a result of its production process (work performed); the value created beyond the value of the individual inputs.

Appendix A: Soft Costs Impacts by State

Appendix A-1
Impacts of Soft Costs on State Economies (Office), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.042	0.085	0.030	625
Alaska	0.001	0.002	0.001	13
Arizona	0.097	0.217	0.078	1,565
Arkansas	0.042	0.078	0.028	591
California	2.303	5.335	1.913	33,594
Colorado	0.171	0.406	0.146	2,821
Connecticut	0.095	0.191	0.065	1,121
Delaware	0.056	0.101	0.028	496
District of Columbia	0.283	0.409	0.044	654
Florida	0.346	0.777	0.282	6,260
Georgia	0.484	1.173	0.412	8,867
Hawaii	0.021	0.041	0.015	288
Idaho	0.022	0.041	0.015	314
Illinois	0.412	1.002	0.343	6,118
Indiana	0.069	0.143	0.050	1,050
Iowa	0.055	0.100	0.035	738
Kansas	0.099	0.200	0.065	1,261
Kentucky	0.077	0.153	0.051	1,103
Louisiana	0.045	0.090	0.033	630
Maine	0.011	0.021	0.008	163
Maryland	0.441	0.926	0.307	5,353
Massachusetts	0.400	0.862	0.297	5,066
Michigan	0.137	0.300	0.109	2,080
Minnesota	0.079	0.179	0.062	1,195
Mississippi	0.001	0.002	0.001	15
Missouri	0.147	0.314	0.099	1,989
Montana	0.020	0.036	0.014	295
Nebraska	0.260	0.501	0.179	3,569
Nevada	0.047	0.092	0.033	667
New Hampshire	0.011	0.022	0.007	139
New Jersey	0.255	0.584	0.191	3,294
New Mexico	0.015	0.027	0.010	217
New York	1.748	3.504	1.105	18,338
North Carolina	0.458	1.021	0.361	7,770
North Dakota	0.029	0.052	0.018	307
Ohio	0.158	0.354	0.123	2,567
Oklahoma	0.032	0.066	0.024	484
Oregon	0.090	0.186	0.065	1,375
Pennsylvania	0.340	0.771	0.260	4,884
Rhode Island	0.009	0.017	0.006	112
South Carolina	0.107	0.231	0.081	1,700
South Dakota	0.028	0.050	0.018	371
Tennessee	0.168	0.385	0.132	2,651
Texas	1.543	3.908	1.369	24,829
Utah	0.079	0.181	0.065	1,436
Vermont	0.004	0.007	0.003	56
Virginia	0.428	0.908	0.296	5,376
Washington	0.310	0.659	0.237	4,320
West Virginia	0.003	0.006	0.002	43
Wisconsin	0.097	0.194	0.070	1,460
Wyoming	0.002	0.003	0.001	21
State Totals	12.179	26.914	9.182	170,252
Interstate Spillovers		9.444	3.260	73,678
U.S. Totals	12.179	36.358	12.442	243,929

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP
Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix A-2
Impacts of Soft Costs on State Economies (**Industrial**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.035	0.070	0.025	518
Alaska	0.000	0.000	0.000	2
Arizona	0.061	0.135	0.049	978
Arkansas	0.009	0.017	0.006	129
California	0.343	0.794	0.285	4,999
Colorado	0.061	0.146	0.052	1,013
Connecticut	0.007	0.014	0.005	80
Delaware	0.017	0.031	0.009	154
District of Columbia	-	-	-	-
Florida	0.043	0.097	0.035	779
Georgia	0.068	0.164	0.058	1,242
Hawaii	0.002	0.005	0.002	33
Idaho	0.009	0.017	0.006	130
Illinois	0.065	0.157	0.054	960
Indiana	0.052	0.109	0.038	795
Iowa	0.265	0.485	0.172	3,570
Kansas	0.026	0.053	0.017	334
Kentucky	0.041	0.081	0.027	586
Louisiana	0.691	1.388	0.507	9,710
Maine	0.008	0.016	0.006	128
Maryland	0.006	0.012	0.004	72
Massachusetts	0.144	0.311	0.107	1,827
Michigan	0.125	0.272	0.099	1,891
Minnesota	0.055	0.125	0.043	834
Mississippi	0.000	0.000	0.000	3
Missouri	0.078	0.165	0.052	1,046
Montana	0.005	0.009	0.003	72
Nebraska	0.074	0.143	0.051	1,021
Nevada	0.008	0.016	0.006	118
New Hampshire	0.001	0.002	0.001	12
New Jersey	0.021	0.048	0.016	271
New Mexico	0.001	0.002	0.001	14
New York	0.074	0.148	0.047	777
North Carolina	0.121	0.269	0.095	2,047
North Dakota	0.002	0.003	0.001	19
Ohio	0.083	0.185	0.064	1,344
Oklahoma	-	-	-	-
Oregon	0.004	0.008	0.003	62
Pennsylvania	1.460	3.315	1.118	20,985
Rhode Island	0.006	0.011	0.004	74
South Carolina	0.077	0.167	0.058	1,226
South Dakota	0.081	0.142	0.052	1,062
Tennessee	0.049	0.111	0.038	768
Texas	0.694	1.758	0.616	11,166
Utah	0.018	0.042	0.015	332
Vermont	0.007	0.013	0.005	100
Virginia	0.021	0.045	0.015	266
Washington	0.053	0.112	0.040	732
West Virginia	0.001	0.002	0.001	18
Wisconsin	0.044	0.088	0.032	665
Wyoming	-	-	-	-
State Totals	5.116	11.306	3.936	74,965
Interstate Spillovers		3.968	1.290	27,510
U.S. Totals	5.116	15.274	5.227	102,474

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP
Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix A-3
Impacts of Soft Costs on State Economies (**Warehouse**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.114	0.230	0.082	1,695
Alaska	0.002	0.003	0.001	21
Arizona	0.074	0.165	0.059	1,189
Arkansas	0.031	0.057	0.020	431
California	0.676	1.567	0.562	9,868
Colorado	0.139	0.330	0.118	2,290
Connecticut	0.044	0.089	0.030	519
Delaware	0.006	0.010	0.003	49
District of Columbia	-	-	-	-
Florida	0.442	0.995	0.361	8,012
Georgia	0.278	0.674	0.237	5,094
Hawaii	0.007	0.013	0.005	94
Idaho	0.009	0.016	0.006	122
Illinois	0.207	0.502	0.172	3,067
Indiana	0.066	0.137	0.048	1,003
Iowa	0.032	0.059	0.021	438
Kansas	0.112	0.227	0.073	1,430
Kentucky	0.106	0.210	0.070	1,513
Louisiana	0.017	0.034	0.012	238
Maine	0.002	0.003	0.001	27
Maryland	0.127	0.266	0.088	1,540
Massachusetts	0.069	0.148	0.051	868
Michigan	0.067	0.145	0.053	1,009
Minnesota	0.035	0.079	0.028	530
Mississippi	0.031	0.057	0.020	439
Missouri	0.182	0.387	0.122	2,449
Montana	0.001	0.001	0.000	8
Nebraska	0.009	0.018	0.006	129
Nevada	0.073	0.141	0.051	1,028
New Hampshire	0.017	0.034	0.011	210
New Jersey	0.340	0.779	0.254	4,391
New Mexico	0.003	0.005	0.002	38
New York	0.260	0.521	0.164	2,725
North Carolina	0.070	0.155	0.055	1,179
North Dakota	0.003	0.005	0.002	30
Ohio	0.063	0.142	0.049	1,027
Oklahoma	0.022	0.045	0.016	328
Oregon	0.066	0.135	0.048	1,004
Pennsylvania	0.180	0.409	0.138	2,591
Rhode Island	0.004	0.008	0.003	53
South Carolina	0.047	0.102	0.036	748
South Dakota	0.014	0.025	0.009	187
Tennessee	0.065	0.149	0.051	1,028
Texas	0.649	1.644	0.576	10,444
Utah	0.087	0.201	0.072	1,592
Vermont	0.002	0.005	0.002	35
Virginia	0.076	0.162	0.053	960
Washington	0.175	0.372	0.134	2,440
West Virginia	-	-	-	-
Wisconsin	0.043	0.085	0.030	639
Wyoming	0.002	0.003	0.001	22
State Totals	5.143	11.548	4.006	76,771
Interstate Spillovers		3.806	1.249	26,241
U.S. Totals	5.143	15.354	5.254	103,012

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix A-4

Impacts of Soft Costs on State Economies (Retail and Entertainment), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.105	0.212	0.076	1,564
Alaska	0.002	0.004	0.002	27
Arizona	0.092	0.206	0.074	1,484
Arkansas	0.031	0.056	0.020	426
California	0.557	1.291	0.463	8,129
Colorado	0.148	0.352	0.126	2,445
Connecticut	0.124	0.250	0.085	1,466
Delaware	0.012	0.022	0.006	109
District of Columbia	0.045	0.065	0.007	103
Florida	0.649	1.458	0.528	11,743
Georgia	0.175	0.424	0.149	3,206
Hawaii	0.038	0.075	0.027	529
Idaho	0.019	0.035	0.013	268
Illinois	0.212	0.515	0.176	3,145
Indiana	0.068	0.141	0.049	1,033
Iowa	0.056	0.102	0.036	749
Kansas	0.040	0.082	0.026	515
Kentucky	0.079	0.157	0.052	1,128
Louisiana	0.070	0.141	0.052	988
Maine	0.007	0.014	0.005	111
Maryland	0.090	0.190	0.063	1,095
Massachusetts	0.117	0.251	0.087	1,478
Michigan	0.116	0.253	0.092	1,756
Minnesota	0.066	0.149	0.052	995
Mississippi	0.026	0.048	0.017	374
Missouri	0.173	0.369	0.116	2,335
Montana	0.014	0.026	0.010	213
Nebraska	0.067	0.130	0.046	924
Nevada	0.053	0.103	0.037	748
New Hampshire	0.012	0.023	0.008	147
New Jersey	0.177	0.405	0.132	2,283
New Mexico	0.034	0.061	0.023	490
New York	0.470	0.942	0.297	4,929
North Carolina	0.216	0.481	0.170	3,665
North Dakota	0.015	0.027	0.009	158
Ohio	0.196	0.441	0.153	3,199
Oklahoma	0.040	0.082	0.030	603
Oregon	0.088	0.181	0.063	1,338
Pennsylvania	0.161	0.365	0.123	2,312
Rhode Island	0.015	0.029	0.009	189
South Carolina	0.078	0.170	0.059	1,250
South Dakota	0.010	0.017	0.006	128
Tennessee	0.100	0.230	0.079	1,583
Texas	0.835	2.115	0.741	13,434
Utah	0.069	0.158	0.057	1,254
Vermont	0.008	0.014	0.005	108
Virginia	0.130	0.276	0.090	1,632
Washington	0.130	0.277	0.099	1,812
West Virginia	0.007	0.013	0.004	93
Wisconsin	0.100	0.199	0.071	1,496
Wyoming	0.003	0.004	0.002	33
State Totals	6.145	13.629	4.724	91,220
Interstate Spillovers		4.717	1.554	31,862
U.S. Totals	6.145	18.345	6.278	123,081

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix A-5
Impacts of Soft Costs on State Economies (in Four Categories), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.296	0.598	0.214	4,402
Alaska	0.006	0.010	0.004	62
Arizona	0.324	0.722	0.260	5,215
Arkansas	0.113	0.207	0.075	1,576
California	3.879	8.987	3.223	56,590
Colorado	0.518	1.233	0.442	8,569
Connecticut	0.270	0.544	0.186	3,186
Delaware	0.091	0.165	0.045	808
District of Columbia	0.327	0.474	0.050	757
Florida	1.480	3.326	1.206	26,793
Georgia	1.005	2.435	0.855	18,409
Hawaii	0.068	0.134	0.049	944
Idaho	0.059	0.110	0.040	834
Illinois	0.896	2.177	0.745	13,289
Indiana	0.256	0.530	0.184	3,882
Iowa	0.407	0.746	0.264	5,494
Kansas	0.278	0.561	0.181	3,541
Kentucky	0.302	0.602	0.201	4,331
Louisiana	0.823	1.653	0.603	11,566
Maine	0.028	0.054	0.020	429
Maryland	0.663	1.395	0.462	8,060
Massachusetts	0.730	1.572	0.541	9,240
Michigan	0.445	0.971	0.352	6,737
Minnesota	0.236	0.533	0.185	3,554
Mississippi	0.058	0.107	0.038	830
Missouri	0.580	1.235	0.389	7,819
Montana	0.039	0.072	0.027	586
Nebraska	0.411	0.792	0.283	5,642
Nevada	0.181	0.352	0.126	2,561
New Hampshire	0.041	0.081	0.027	509
New Jersey	0.793	1.816	0.593	10,239
New Mexico	0.052	0.095	0.035	759
New York	2.552	5.114	1.612	26,769
North Carolina	0.864	1.926	0.681	14,662
North Dakota	0.049	0.087	0.030	514
Ohio	0.500	1.121	0.389	8,137
Oklahoma	0.093	0.192	0.070	1,415
Oregon	0.248	0.510	0.179	3,779
Pennsylvania	2.141	4.861	1.640	30,773
Rhode Island	0.035	0.066	0.021	428
South Carolina	0.309	0.670	0.234	4,924
South Dakota	0.133	0.234	0.085	1,748
Tennessee	0.381	0.875	0.301	6,030
Texas	3.721	9.424	3.301	59,872
Utah	0.253	0.583	0.209	4,613
Vermont	0.022	0.039	0.014	299
Virginia	0.655	1.391	0.454	8,235
Washington	0.669	1.420	0.510	9,305
West Virginia	0.012	0.021	0.007	154
Wisconsin	0.284	0.566	0.203	4,260
Wyoming	0.006	0.010	0.004	76
State Totals	28.583	63.397	21.848	413,207
Interstate Spillovers		21.935	7.353	159,290
U.S. Totals	28.583	85.332	29.200	572,497

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix B: Site Development Impacts by State

Appendix B-1

Impacts of Site Development on State Economies (Office), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.035	0.075	0.024	583
Alaska	0.001	0.002	0.001	11
Arizona	0.081	0.165	0.055	1,292
Arkansas	0.035	0.071	0.023	534
California	1.920	4.020	1.334	25,501
Colorado	0.142	0.304	0.102	2,205
Connecticut	0.079	0.147	0.047	874
Delaware	0.047	0.079	0.022	455
District of Columbia	0.236	0.262	0.017	287
Florida	0.288	0.593	0.199	4,785
Georgia	0.404	0.918	0.300	7,111
Hawaii	0.017	0.031	0.011	216
Idaho	0.019	0.034	0.011	277
Illinois	0.344	0.787	0.248	4,794
Indiana	0.058	0.126	0.040	872
Iowa	0.046	0.087	0.028	630
Kansas	0.083	0.166	0.049	1,115
Kentucky	0.064	0.133	0.041	956
Louisiana	0.037	0.073	0.025	537
Maine	0.009	0.017	0.006	135
Maryland	0.367	0.676	0.209	4,209
Massachusetts	0.334	0.619	0.196	3,722
Michigan	0.115	0.243	0.081	1,777
Minnesota	0.066	0.145	0.046	925
Mississippi	0.001	0.002	0.001	13
Missouri	0.123	0.260	0.079	1,829
Montana	0.017	0.030	0.010	248
Nebraska	0.217	0.408	0.133	2,956
Nevada	0.039	0.072	0.024	544
New Hampshire	0.009	0.018	0.005	106
New Jersey	0.213	0.435	0.134	2,553
New Mexico	0.012	0.022	0.007	175
New York	1.458	2.609	0.813	15,291
North Carolina	0.382	0.831	0.267	6,260
North Dakota	0.024	0.043	0.014	265
Ohio	0.131	0.298	0.094	2,061
Oklahoma	0.027	0.055	0.018	402
Oregon	0.075	0.150	0.047	1,032
Pennsylvania	0.283	0.636	0.198	3,966
Rhode Island	0.008	0.013	0.004	80
South Carolina	0.089	0.192	0.062	1,482
South Dakota	0.024	0.043	0.014	325
Tennessee	0.140	0.317	0.099	2,113
Texas	1.287	3.082	1.011	19,929
Utah	0.066	0.144	0.047	1,065
Vermont	0.003	0.006	0.002	47
Virginia	0.357	0.693	0.215	4,664
Washington	0.259	0.528	0.173	3,374
West Virginia	0.003	0.005	0.002	35
Wisconsin	0.081	0.168	0.056	1,201
Wyoming	0.001	0.002	0.001	17
State Totals	10.156	20.838	6.646	135,833
Interstate Spillovers		8.359	2.602	59,332
U.S. Totals	10.156	29.197	9.248	195,166

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix B-2
Impacts of Site Development on State Economies (**Industrial**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.027	0.057	0.019	444
Alaska	0.000	0.000	0.000	1
Arizona	0.046	0.095	0.032	742
Arkansas	0.007	0.014	0.005	107
California	0.262	0.549	0.182	3,484
Colorado	0.047	0.100	0.034	727
Connecticut	0.005	0.010	0.003	57
Delaware	0.013	0.023	0.006	130
District of Columbia	0.000	0.000	0.000	–
Florida	0.033	0.068	0.023	546
Georgia	0.052	0.118	0.039	914
Hawaii	0.002	0.003	0.001	23
Idaho	0.007	0.013	0.004	106
Illinois	0.050	0.113	0.036	691
Indiana	0.040	0.088	0.028	607
Iowa	0.203	0.387	0.126	2,798
Kansas	0.020	0.040	0.012	271
Kentucky	0.031	0.065	0.020	466
Louisiana	0.529	1.040	0.354	7,603
Maine	0.006	0.012	0.004	97
Maryland	0.005	0.008	0.003	52
Massachusetts	0.111	0.205	0.065	1,233
Michigan	0.096	0.203	0.067	1,483
Minnesota	0.042	0.093	0.030	593
Mississippi	0.000	0.000	0.000	3
Missouri	0.059	0.126	0.038	883
Montana	0.004	0.007	0.002	55
Nebraska	0.057	0.107	0.035	776
Nevada	0.006	0.012	0.004	88
New Hampshire	0.001	0.001	0.000	9
New Jersey	0.016	0.033	0.010	193
New Mexico	0.001	0.001	0.000	11
New York	0.057	0.101	0.032	595
North Carolina	0.092	0.201	0.065	1,515
North Dakota	0.001	0.002	0.001	15
Ohio	0.063	0.143	0.045	991
Oklahoma	0.000	0.000	0.000	–
Oregon	0.003	0.006	0.002	43
Pennsylvania	1.118	2.511	0.781	15,646
Rhode Island	0.005	0.008	0.002	48
South Carolina	0.059	0.127	0.041	981
South Dakota	0.062	0.114	0.038	852
Tennessee	0.037	0.084	0.026	562
Texas	0.531	1.273	0.418	8,229
Utah	0.014	0.031	0.010	226
Vermont	0.006	0.010	0.003	76
Virginia	0.016	0.031	0.010	212
Washington	0.040	0.082	0.027	525
West Virginia	0.001	0.002	0.001	13
Wisconsin	0.034	0.070	0.023	502
Wyoming	0.000	0.000	0.000	–
State Totals	3.918	8.390	2.704	56,223
Interstate Spillovers		2.872	0.863	19,058
U.S. Totals	3.918	11.262	3.567	75,281

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix B-3

Impacts of Site Development on State Economies (Warehouse), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.125	0.267	0.087	2,084
Alaska	0.002	0.003	0.001	24
Arizona	0.081	0.165	0.055	1,294
Arkansas	0.034	0.068	0.022	513
California	0.743	1.556	0.516	9,869
Colorado	0.152	0.325	0.109	2,358
Connecticut	0.048	0.089	0.029	533
Delaware	0.006	0.010	0.003	59
District of Columbia	0.000	0.000	0.000	-
Florida	0.486	0.999	0.336	8,068
Georgia	0.306	0.695	0.227	5,382
Hawaii	0.007	0.013	0.005	93
Idaho	0.010	0.018	0.006	142
Illinois	0.227	0.520	0.164	3,166
Indiana	0.073	0.159	0.050	1,098
Iowa	0.036	0.068	0.022	492
Kansas	0.123	0.248	0.073	1,665
Kentucky	0.116	0.241	0.074	1,729
Louisiana	0.019	0.037	0.012	268
Maine	0.002	0.004	0.001	30
Maryland	0.139	0.256	0.079	1,595
Massachusetts	0.075	0.140	0.044	841
Michigan	0.073	0.155	0.051	1,136
Minnesota	0.039	0.085	0.027	541
Mississippi	0.034	0.066	0.021	513
Missouri	0.199	0.422	0.129	2,967
Montana	0.001	0.001	0.000	9
Nebraska	0.010	0.019	0.006	140
Nevada	0.080	0.147	0.049	1,106
New Hampshire	0.018	0.035	0.011	213
New Jersey	0.374	0.765	0.235	4,484
New Mexico	0.003	0.005	0.002	40
New York	0.285	0.511	0.159	2,993
North Carolina	0.076	0.166	0.053	1,252
North Dakota	0.003	0.006	0.002	34
Ohio	0.069	0.157	0.050	1,087
Oklahoma	0.024	0.049	0.016	359
Oregon	0.072	0.144	0.045	992
Pennsylvania	0.198	0.445	0.138	2,772
Rhode Island	0.005	0.008	0.002	49
South Carolina	0.052	0.111	0.036	859
South Dakota	0.016	0.029	0.010	215
Tennessee	0.071	0.162	0.051	1,079
Texas	0.713	1.708	0.561	11,045
Utah	0.096	0.210	0.069	1,555
Vermont	0.003	0.005	0.002	38
Virginia	0.084	0.163	0.051	1,098
Washington	0.193	0.393	0.128	2,511
West Virginia	0.000	0.000	0.000	-
Wisconsin	0.047	0.097	0.032	692
Wyoming	0.002	0.003	0.001	24
State Totals	5.651	11.949	3.854	81,103
Interstate Spillovers		4.296	1.292	27,485
U.S. Totals	5.651	16.245	5.146	108,588

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix B-4

Impacts of Site Development on State Economies (Retail and Entertainment), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.086	0.182	0.060	1,425
Alaska	0.002	0.003	0.001	22
Arizona	0.075	0.153	0.051	1,197
Arkansas	0.025	0.050	0.016	375
California	0.454	0.950	0.315	6,024
Colorado	0.120	0.257	0.086	1,865
Connecticut	0.101	0.187	0.060	1,115
Delaware	0.010	0.017	0.005	98
District of Columbia	0.036	0.040	0.003	44
Florida	0.528	1.085	0.365	8,763
Georgia	0.143	0.324	0.106	2,509
Hawaii	0.031	0.056	0.019	388
Idaho	0.015	0.029	0.010	231
Illinois	0.173	0.395	0.124	2,406
Indiana	0.055	0.121	0.038	838
Iowa	0.045	0.086	0.028	624
Kansas	0.033	0.066	0.020	445
Kentucky	0.064	0.133	0.041	955
Louisiana	0.057	0.113	0.038	822
Maine	0.006	0.011	0.004	90
Maryland	0.073	0.135	0.042	841
Massachusetts	0.095	0.176	0.056	1,060
Michigan	0.094	0.200	0.066	1,464
Minnesota	0.054	0.118	0.038	751
Mississippi	0.021	0.042	0.014	324
Missouri	0.141	0.298	0.091	2,096
Montana	0.012	0.021	0.007	175
Nebraska	0.055	0.103	0.034	747
Nevada	0.043	0.079	0.026	596
New Hampshire	0.010	0.018	0.006	110
New Jersey	0.144	0.295	0.091	1,728
New Mexico	0.027	0.048	0.016	385
New York	0.383	0.685	0.213	4,013
North Carolina	0.176	0.383	0.123	2,882
North Dakota	0.012	0.022	0.007	133
Ohio	0.160	0.363	0.115	2,508
Oklahoma	0.032	0.067	0.022	488
Oregon	0.072	0.142	0.045	980
Pennsylvania	0.131	0.294	0.091	1,833
Rhode Island	0.013	0.022	0.006	131
South Carolina	0.064	0.138	0.044	1,064
South Dakota	0.008	0.015	0.005	109
Tennessee	0.082	0.185	0.058	1,232
Texas	0.680	1.628	0.534	10,526
Utah	0.056	0.123	0.040	908
Vermont	0.006	0.011	0.004	88
Virginia	0.106	0.206	0.064	1,382
Washington	0.106	0.216	0.071	1,382
West Virginia	0.006	0.011	0.003	72
Wisconsin	0.081	0.168	0.056	1,201
Wyoming	0.002	0.004	0.001	26
State Totals	5.003	10.472	3.377	71,469
Interstate Spillovers		3.910	1.179	24,667
U.S. Totals	5.003	14.382	4.556	96,136

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix B-5

Impacts of Site Development on State Economies (in Four Categories), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.272	0.580	0.190	4,536
Alaska	0.005	0.009	0.003	59
Arizona	0.283	0.578	0.194	4,524
Arkansas	0.101	0.203	0.065	1,529
California	3.380	7.075	2.347	44,878
Colorado	0.462	0.987	0.330	7,154
Connecticut	0.234	0.433	0.139	2,579
Delaware	0.076	0.129	0.036	742
District of Columbia	0.272	0.303	0.019	331
Florida	1.335	2.745	0.922	22,162
Georgia	0.904	2.055	0.672	15,916
Hawaii	0.057	0.104	0.036	719
Idaho	0.051	0.094	0.031	756
Illinois	0.793	1.814	0.572	11,056
Indiana	0.226	0.495	0.156	3,415
Iowa	0.329	0.629	0.204	4,543
Kansas	0.259	0.520	0.154	3,495
Kentucky	0.276	0.571	0.176	4,106
Louisiana	0.642	1.263	0.429	9,230
Maine	0.023	0.044	0.015	353
Maryland	0.585	1.075	0.333	6,697
Massachusetts	0.615	1.140	0.362	6,856
Michigan	0.378	0.801	0.265	5,859
Minnesota	0.201	0.440	0.140	2,809
Mississippi	0.056	0.110	0.036	852
Missouri	0.523	1.107	0.338	7,774
Montana	0.032	0.060	0.020	487
Nebraska	0.339	0.637	0.208	4,620
Nevada	0.168	0.310	0.103	2,335
New Hampshire	0.038	0.073	0.022	438
New Jersey	0.747	1.528	0.470	8,958
New Mexico	0.043	0.075	0.026	610
New York	2.183	3.906	1.217	22,892
North Carolina	0.727	1.581	0.509	11,909
North Dakota	0.041	0.073	0.023	448
Ohio	0.424	0.961	0.304	6,646
Oklahoma	0.083	0.171	0.057	1,248
Oregon	0.222	0.442	0.139	3,046
Pennsylvania	1.730	3.886	1.208	24,216
Rhode Island	0.030	0.052	0.015	308
South Carolina	0.263	0.568	0.182	4,386
South Dakota	0.109	0.201	0.067	1,501
Tennessee	0.330	0.748	0.234	4,986
Texas	3.211	7.691	2.524	49,729
Utah	0.231	0.507	0.167	3,754
Vermont	0.018	0.032	0.010	248
Virginia	0.563	1.094	0.339	7,356
Washington	0.598	1.220	0.398	7,792
West Virginia	0.010	0.018	0.005	120
Wisconsin	0.243	0.502	0.166	3,596
Wyoming	0.006	0.009	0.003	67
State Totals	24.727	51.649	16.581	344,628
Interstate Spillovers		19.437	5.936	130,543
U.S. Totals	24.727	71.09	22.52	475,171

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix C: Hard Costs Impacts by State

Appendix C-1

Impacts of Construction (**Hard Costs**) on State Economies (**Office**), 2017

State	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.268	0.088	2,093
Alaska	0.006	0.002	41
Arizona	0.592	0.198	4,639
Arkansas	0.254	0.082	1,916
California	14.430	4.787	91,533
Colorado	1.092	0.365	7,913
Connecticut	0.527	0.169	3,137
Delaware	0.285	0.079	1,634
District of Columbia	0.942	0.060	1,029
Florida	2.127	0.714	17,174
Georgia	3.296	1.078	25,522
Hawaii	0.112	0.039	774
Idaho	0.123	0.041	994
Illinois	2.824	0.890	17,207
Indiana	0.454	0.143	3,131
Iowa	0.313	0.101	2,260
Kansas	0.595	0.176	4,001
Kentucky	0.478	0.147	3,433
Louisiana	0.264	0.090	1,927
Maine	0.060	0.020	486
Maryland	2.425	0.751	15,107
Massachusetts	2.222	0.705	13,360
Michigan	0.872	0.289	6,377
Minnesota	0.519	0.166	3,319
Mississippi	0.006	0.002	47
Missouri	0.934	0.285	6,564
Montana	0.109	0.037	891
Nebraska	1.463	0.478	10,609
Nevada	0.260	0.086	1,954
New Hampshire	0.063	0.019	382
New Jersey	1.563	0.481	9,165
New Mexico	0.078	0.026	627
New York	9.366	2.918	54,886
North Carolina	2.982	0.960	22,469
North Dakota	0.156	0.049	953
Ohio	1.069	0.338	7,398
Oklahoma	0.198	0.066	1,441
Oregon	0.538	0.169	3,703
Pennsylvania	2.284	0.710	14,234
Rhode Island	0.048	0.014	286
South Carolina	0.689	0.221	5,319
South Dakota	0.156	0.052	1,165
Tennessee	1.137	0.356	7,585
Texas	11.063	3.630	71,532
Utah	0.517	0.170	3,823
Vermont	0.022	0.007	167
Virginia	2.489	0.772	16,742
Washington	1.896	0.619	12,109
West Virginia	0.018	0.006	124
Wisconsin	0.601	0.200	4,310
Wyoming	0.009	0.003	61
State Totals	74.795	23.855	487,554
Interstate Spillovers	30.004	9.341	212,965
U.S. Totals	104.799	33.195	700,519

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix C-2

Impacts of Construction (**Hard Costs**) on State Economies (**Industrial**), 2017

State	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.346	0.113	2,706
Alaska	0.001	0.000	7
Arizona	0.577	0.193	4,516
Arkansas	0.086	0.028	652
California	3.345	1.110	21,220
Colorado	0.611	0.204	4,429
Connecticut	0.058	0.019	347
Delaware	0.138	0.038	790
District of Columbia	0.000	0.000	–
Florida	0.412	0.138	3,328
Georgia	0.719	0.235	5,569
Hawaii	0.020	0.007	138
Idaho	0.080	0.027	644
Illinois	0.691	0.218	4,208
Indiana	0.535	0.168	3,694
Iowa	2.360	0.765	17,039
Kansas	0.246	0.073	1,651
Kentucky	0.395	0.121	2,841
Louisiana	6.337	2.153	46,306
Maine	0.074	0.025	592
Maryland	0.051	0.016	316
Massachusetts	1.249	0.396	7,507
Michigan	1.235	0.409	9,031
Minnesota	0.565	0.181	3,611
Mississippi	0.002	0.001	17
Missouri	0.765	0.234	5,378
Montana	0.041	0.014	338
Nebraska	0.652	0.213	4,729
Nevada	0.072	0.024	539
New Hampshire	0.009	0.003	53
New Jersey	0.200	0.062	1,175
New Mexico	0.008	0.003	64
New York	0.618	0.193	3,622
North Carolina	1.224	0.394	9,224
North Dakota	0.015	0.005	89
Ohio	0.872	0.276	6,033
Oklahoma	0.000	0.000	–
Oregon	0.038	0.012	259
Pennsylvania	15.293	4.755	95,292
Rhode Island	0.049	0.014	293
South Carolina	0.775	0.249	5,978
South Dakota	0.694	0.231	5,191
Tennessee	0.514	0.161	3,425
Texas	7.752	2.544	50,119
Utah	0.186	0.061	1,377
Vermont	0.060	0.020	466
Virginia	0.192	0.059	1,290
Washington	0.501	0.164	3,198
West Virginia	0.012	0.004	81
Wisconsin	0.427	0.142	3,060
Wyoming	0.000	0.000	–
State Totals	51.100	16.470	342,430
Interstate Spillovers	17.493	5.257	116,077
U.S. Totals	68.594	21.727	458,508

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP
 Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix C-3

Impacts of Construction (**Hard Costs**) on State Economies (**Warehouse**), 2017

State	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.997	0.326	7,793
Alaska	0.013	0.005	89
Arizona	0.618	0.207	4,837
Arkansas	0.254	0.082	1,918
California	5.818	1.930	36,904
Colorado	1.217	0.406	8,817
Connecticut	0.335	0.107	1,993
Delaware	0.039	0.011	222
District of Columbia	0.000	0.000	–
Florida	3.737	1.255	30,171
Georgia	2.599	0.850	20,125
Hawaii	0.050	0.017	348
Idaho	0.066	0.022	532
Illinois	1.943	0.612	11,840
Indiana	0.595	0.187	4,107
Iowa	0.255	0.083	1,841
Kansas	0.926	0.274	6,226
Kentucky	0.900	0.276	6,464
Louisiana	0.137	0.047	1,001
Maine	0.014	0.005	112
Maryland	0.957	0.297	5,965
Massachusetts	0.523	0.166	3,143
Michigan	0.581	0.192	4,247
Minnesota	0.316	0.101	2,022
Mississippi	0.248	0.080	1,917
Missouri	1.579	0.482	11,093
Montana	0.004	0.001	32
Nebraska	0.072	0.024	525
Nevada	0.550	0.182	4,136
New Hampshire	0.132	0.041	795
New Jersey	2.860	0.880	16,770
New Mexico	0.019	0.006	150
New York	1.910	0.595	11,193
North Carolina	0.621	0.200	4,681
North Dakota	0.021	0.007	129
Ohio	0.588	0.186	4,064
Oklahoma	0.184	0.061	1,341
Oregon	0.539	0.170	3,710
Pennsylvania	1.663	0.517	10,365
Rhode Island	0.031	0.009	184
South Carolina	0.416	0.134	3,211
South Dakota	0.107	0.036	804
Tennessee	0.605	0.189	4,035
Texas	6.388	2.096	41,302
Utah	0.786	0.258	5,816
Vermont	0.018	0.006	141
Virginia	0.610	0.189	4,104
Washington	1.470	0.480	9,390
West Virginia	0.000	0.000	–
Wisconsin	0.361	0.120	2,588
Wyoming	0.013	0.004	90
State Totals	44.683	14.411	303,283
Interstate Spillovers	16.065	4.831	102,780
U.S. Totals	60.748	19.242	406,063

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP
 Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix C-4

Impacts of Construction (Hard Costs) on State Economies (Retail and Entertainment), 2017

State	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.623	0.204	4,870
Alaska	0.011	0.004	76
Arizona	0.522	0.175	4,091
Arkansas	0.170	0.055	1,283
California	3.247	1.077	20,593
Colorado	0.880	0.294	6,375
Connecticut	0.640	0.206	3,813
Delaware	0.058	0.016	333
District of Columbia	0.138	0.009	151
Florida	3.710	1.246	29,955
Georgia	1.108	0.362	8,578
Hawaii	0.191	0.066	1,325
Idaho	0.098	0.033	789
Illinois	1.350	0.425	8,223
Indiana	0.415	0.131	2,863
Iowa	0.295	0.096	2,133
Kansas	0.226	0.067	1,520
Kentucky	0.454	0.140	3,264
Louisiana	0.385	0.131	2,811
Maine	0.038	0.013	308
Maryland	0.461	0.143	2,873
Massachusetts	0.603	0.191	3,625
Michigan	0.684	0.227	5,004
Minnesota	0.402	0.128	2,568
Mississippi	0.143	0.046	1,107
Missouri	1.020	0.311	7,165
Montana	0.073	0.025	597
Nebraska	0.352	0.115	2,554
Nevada	0.271	0.090	2,037
New Hampshire	0.062	0.019	377
New Jersey	1.007	0.310	5,906
New Mexico	0.163	0.055	1,315
New York	2.341	0.729	13,717
North Carolina	1.308	0.421	9,853
North Dakota	0.075	0.024	455
Ohio	1.239	0.392	8,573
Oklahoma	0.229	0.076	1,668
Oregon	0.486	0.153	3,349
Pennsylvania	1.006	0.313	6,266
Rhode Island	0.075	0.022	447
South Carolina	0.471	0.151	3,638
South Dakota	0.050	0.017	374
Tennessee	0.631	0.197	4,210
Texas	5.565	1.826	35,984
Utah	0.419	0.138	3,103
Vermont	0.039	0.013	300
Virginia	0.703	0.218	4,726
Washington	0.740	0.242	4,724
West Virginia	0.036	0.011	248
Wisconsin	0.573	0.190	4,106
Wyoming	0.012	0.004	89
State Totals	35.799	11.544	244,315
Interstate Spillovers	13.366	4.029	84,323
U.S. Totals	49.165	15.573	328,638

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP
 Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix C-5

Impacts of Construction (Hard Costs) on State Economies (in Four Categories), 2017

State	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	2.233	0.731	17,462
Alaska	0.031	0.011	214
Arizona	2.309	0.773	18,084
Arkansas	0.765	0.247	5,769
California	26.841	8.905	170,250
Colorado	3.799	1.269	27,534
Connecticut	1.560	0.501	9,290
Delaware	0.520	0.143	2,979
District of Columbia	1.080	0.069	1,180
Florida	9.987	3.354	80,628
Georgia	7.721	2.526	59,794
Hawaii	0.373	0.129	2,585
Idaho	0.367	0.123	2,959
Illinois	6.807	2.145	41,478
Indiana	1.999	0.629	13,795
Iowa	3.223	1.045	23,273
Kansas	1.993	0.590	13,398
Kentucky	2.227	0.684	16,002
Louisiana	7.122	2.420	52,045
Maine	0.186	0.062	1,498
Maryland	3.894	1.207	24,262
Massachusetts	4.597	1.458	27,635
Michigan	3.371	1.117	24,659
Minnesota	1.802	0.576	11,520
Mississippi	0.400	0.129	3,088
Missouri	4.299	1.312	30,201
Montana	0.228	0.077	1,857
Nebraska	2.539	0.830	18,417
Nevada	1.152	0.382	8,666
New Hampshire	0.267	0.082	1,607
New Jersey	5.630	1.732	33,016
New Mexico	0.267	0.090	2,156
New York	14.235	4.435	83,418
North Carolina	6.136	1.975	46,228
North Dakota	0.266	0.084	1,626
Ohio	3.768	1.191	26,068
Oklahoma	0.610	0.203	4,450
Oregon	1.600	0.504	11,021
Pennsylvania	20.246	6.295	126,158
Rhode Island	0.203	0.059	1,210
South Carolina	2.352	0.755	18,145
South Dakota	1.008	0.335	7,533
Tennessee	2.887	0.903	19,256
Texas	30.768	10.096	198,938
Utah	1.908	0.626	14,119
Vermont	0.138	0.045	1,074
Virginia	3.994	1.239	26,862
Washington	4.606	1.505	29,421
West Virginia	0.066	0.020	452
Wisconsin	1.962	0.651	14,063
Wyoming	0.034	0.011	240
State Totals	206.378	66.280	1,377,582
Interstate Spillovers	76.928	23.458	516,146
U.S. Totals	283.306	89.738	1,893,727

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP
 Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix D: Tenant Improvement Impacts by State

Appendix D-1

Impacts of Tenant Improvements on State Economies (Office), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.053	0.112	0.037	878
Alaska	0.002	0.003	0.001	17
Arizona	0.122	0.248	0.083	1,945
Arkansas	0.053	0.106	0.034	803
California	2.890	6.050	2.007	38,373
Colorado	0.214	0.458	0.153	3,317
Connecticut	0.119	0.221	0.071	1,315
Delaware	0.070	0.120	0.033	685
District of Columbia	0.355	0.395	0.025	432
Florida	0.434	0.892	0.300	7,200
Georgia	0.608	1.382	0.452	10,699
Hawaii	0.026	0.047	0.016	325
Idaho	0.028	0.052	0.017	417
Illinois	0.518	1.184	0.373	7,214
Indiana	0.087	0.190	0.060	1,313
Iowa	0.069	0.131	0.043	947
Kansas	0.124	0.249	0.074	1,677
Kentucky	0.097	0.200	0.062	1,439
Louisiana	0.056	0.111	0.038	808
Maine	0.013	0.025	0.008	204
Maryland	0.553	1.017	0.315	6,333
Massachusetts	0.502	0.932	0.295	5,601
Michigan	0.172	0.365	0.121	2,673
Minnesota	0.099	0.218	0.070	1,391
Mississippi	0.001	0.003	0.001	20
Missouri	0.185	0.392	0.120	2,752
Montana	0.025	0.046	0.016	373
Nebraska	0.327	0.613	0.200	4,448
Nevada	0.059	0.109	0.036	819
New Hampshire	0.014	0.027	0.008	160
New Jersey	0.320	0.655	0.202	3,842
New Mexico	0.019	0.032	0.011	263
New York	2.194	3.927	1.223	23,010
North Carolina	0.575	1.250	0.402	9,420
North Dakota	0.037	0.065	0.021	399
Ohio	0.198	0.448	0.142	3,101
Oklahoma	0.040	0.083	0.028	604
Oregon	0.113	0.225	0.071	1,552
Pennsylvania	0.426	0.958	0.298	5,967
Rhode Island	0.012	0.020	0.006	120
South Carolina	0.134	0.289	0.093	2,230
South Dakota	0.035	0.065	0.022	489
Tennessee	0.210	0.477	0.149	3,180
Texas	1.936	4.638	1.522	29,988
Utah	0.099	0.217	0.071	1,603
Vermont	0.005	0.009	0.003	70
Virginia	0.537	1.043	0.324	7,019
Washington	0.390	0.795	0.260	5,076
West Virginia	0.004	0.008	0.002	52
Wisconsin	0.122	0.252	0.084	1,807
Wyoming	0.002	0.004	0.001	26
State Totals	15.283	31.356	10.000	204,394
Interstate Spillovers		12.579	3.916	89,280
U.S. Totals	15.283	43.934	13.916	293,674

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix D-2

Impacts of Tenant Improvements on State Economies (**Industrial**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.060	0.129	0.042	1,006
Alaska	0.000	0.000	0.000	3
Arizona	0.105	0.215	0.072	1,680
Arkansas	0.016	0.032	0.010	242
California	0.594	1.244	0.413	7,893
Colorado	0.106	0.227	0.076	1,647
Connecticut	0.012	0.022	0.007	129
Delaware	0.030	0.051	0.014	294
District of Columbia	0.000	0.000	0.000	-
Florida	0.075	0.153	0.051	1,238
Georgia	0.118	0.267	0.087	2,071
Hawaii	0.004	0.007	0.003	51
Idaho	0.016	0.030	0.010	239
Illinois	0.112	0.257	0.081	1,565
Indiana	0.091	0.199	0.063	1,374
Iowa	0.459	0.878	0.285	6,338
Kansas	0.046	0.091	0.027	614
Kentucky	0.071	0.147	0.045	1,057
Louisiana	1.198	2.357	0.801	17,224
Maine	0.015	0.027	0.009	220
Maryland	0.010	0.019	0.006	118
Massachusetts	0.250	0.464	0.147	2,792
Michigan	0.217	0.459	0.152	3,359
Minnesota	0.096	0.210	0.067	1,343
Mississippi	0.000	0.001	0.000	6
Missouri	0.135	0.285	0.087	2,000
Montana	0.008	0.015	0.005	126
Nebraska	0.129	0.243	0.079	1,759
Nevada	0.014	0.027	0.009	200
New Hampshire	0.002	0.003	0.001	20
New Jersey	0.036	0.075	0.023	437
New Mexico	0.002	0.003	0.001	24
New York	0.128	0.230	0.072	1,347
North Carolina	0.209	0.455	0.147	3,431
North Dakota	0.003	0.005	0.002	33
Ohio	0.143	0.324	0.103	2,244
Oklahoma	0.000	0.000	0.000	-
Oregon	0.007	0.014	0.004	96
Pennsylvania	2.532	5.688	1.769	35,445
Rhode Island	0.010	0.018	0.005	109
South Carolina	0.133	0.288	0.092	2,224
South Dakota	0.140	0.258	0.086	1,931
Tennessee	0.084	0.191	0.060	1,274
Texas	1.204	2.883	0.946	18,642
Utah	0.032	0.069	0.023	512
Vermont	0.013	0.022	0.007	173
Virginia	0.037	0.071	0.022	480
Washington	0.091	0.186	0.061	1,190
West Virginia	0.002	0.004	0.001	30
Wisconsin	0.077	0.159	0.053	1,138
Wyoming	0.000	0.000	0.000	-
State Totals	8.875	19.007	6.126	127,370
Interstate Spillovers		6.507	1.956	43,176
U.S. Totals	8.875	25.514	8.082	170,546

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix D-3

Impacts of Tenant Improvements on State Economies (Warehouse), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.102	0.217	0.071	1,699
Alaska	0.002	0.003	0.001	19
Arizona	0.066	0.135	0.045	1,054
Arkansas	0.028	0.055	0.018	418
California	0.606	1.268	0.421	8,044
Colorado	0.124	0.265	0.089	1,922
Connecticut	0.039	0.073	0.023	434
Delaware	0.005	0.008	0.002	48
District of Columbia	0.000	0.000	0.000	-
Florida	0.396	0.815	0.274	6,577
Georgia	0.249	0.566	0.185	4,387
Hawaii	0.006	0.011	0.004	76
Idaho	0.008	0.014	0.005	116
Illinois	0.185	0.424	0.133	2,581
Indiana	0.059	0.130	0.041	895
Iowa	0.029	0.056	0.018	401
Kansas	0.101	0.202	0.060	1,357
Kentucky	0.095	0.196	0.060	1,409
Louisiana	0.015	0.030	0.010	218
Maine	0.002	0.003	0.001	24
Maryland	0.114	0.209	0.065	1,300
Massachusetts	0.061	0.114	0.036	685
Michigan	0.060	0.127	0.042	926
Minnesota	0.032	0.069	0.022	441
Mississippi	0.028	0.054	0.017	418
Missouri	0.163	0.344	0.105	2,418
Montana	0.000	0.001	0.000	7
Nebraska	0.008	0.016	0.005	114
Nevada	0.065	0.120	0.040	902
New Hampshire	0.015	0.029	0.009	173
New Jersey	0.305	0.623	0.192	3,655
New Mexico	0.002	0.004	0.001	33
New York	0.233	0.416	0.130	2,440
North Carolina	0.062	0.135	0.044	1,020
North Dakota	0.003	0.005	0.001	28
Ohio	0.057	0.128	0.040	886
Oklahoma	0.019	0.040	0.013	292
Oregon	0.059	0.117	0.037	809
Pennsylvania	0.161	0.363	0.113	2,259
Rhode Island	0.004	0.007	0.002	40
South Carolina	0.042	0.091	0.029	700
South Dakota	0.013	0.023	0.008	175
Tennessee	0.058	0.132	0.041	880
Texas	0.581	1.392	0.457	9,003
Utah	0.078	0.171	0.056	1,268
Vermont	0.002	0.004	0.001	31
Virginia	0.068	0.133	0.041	895
Washington	0.157	0.320	0.105	2,047
West Virginia	0.000	0.000	0.000	-
Wisconsin	0.038	0.079	0.026	564
Wyoming	0.002	0.003	0.001	20
State Totals	4.606	9.740	3.141	66,109
Interstate Spillovers		3.502	1.053	22,404
U.S. Totals	4.606	13.242	4.194	88,513

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix D-4

Impacts of Tenant Improvements on State Economies (Retail and Entertainment), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.111	0.236	0.077	1,842
Alaska	0.003	0.004	0.002	29
Arizona	0.097	0.198	0.066	1,547
Arkansas	0.032	0.064	0.021	485
California	0.587	1.228	0.407	7,788
Colorado	0.156	0.333	0.111	2,411
Connecticut	0.131	0.242	0.078	1,442
Delaware	0.013	0.022	0.006	126
District of Columbia	0.047	0.052	0.003	57
Florida	0.683	1.403	0.471	11,329
Georgia	0.184	0.419	0.137	3,244
Hawaii	0.040	0.072	0.025	501
Idaho	0.020	0.037	0.012	298
Illinois	0.223	0.510	0.161	3,110
Indiana	0.072	0.157	0.049	1,083
Iowa	0.058	0.112	0.036	807
Kansas	0.043	0.086	0.025	575
Kentucky	0.083	0.172	0.053	1,235
Louisiana	0.074	0.145	0.049	1,063
Maine	0.008	0.014	0.005	117
Maryland	0.095	0.174	0.054	1,087
Massachusetts	0.123	0.228	0.072	1,371
Michigan	0.122	0.259	0.086	1,893
Minnesota	0.069	0.152	0.049	971
Mississippi	0.028	0.054	0.017	419
Missouri	0.182	0.386	0.118	2,710
Montana	0.015	0.028	0.009	226
Nebraska	0.071	0.133	0.044	966
Nevada	0.055	0.102	0.034	770
New Hampshire	0.012	0.024	0.007	142
New Jersey	0.186	0.381	0.117	2,234
New Mexico	0.035	0.062	0.021	497
New York	0.495	0.885	0.276	5,188
North Carolina	0.227	0.495	0.159	3,727
North Dakota	0.016	0.028	0.009	172
Ohio	0.207	0.469	0.148	3,242
Oklahoma	0.042	0.086	0.029	631
Oregon	0.092	0.184	0.058	1,267
Pennsylvania	0.169	0.380	0.118	2,370
Rhode Island	0.016	0.028	0.008	169
South Carolina	0.083	0.178	0.057	1,376
South Dakota	0.010	0.019	0.006	141
Tennessee	0.105	0.239	0.075	1,592
Texas	0.879	2.105	0.691	13,609
Utah	0.072	0.159	0.052	1,173
Vermont	0.008	0.015	0.005	113
Virginia	0.137	0.266	0.082	1,787
Washington	0.137	0.280	0.091	1,787
West Virginia	0.008	0.014	0.004	94
Wisconsin	0.105	0.217	0.072	1,553
Wyoming	0.003	0.005	0.002	34
State Totals	6.468	13.539	4.366	92,399
Interstate Spillovers		5.055	1.524	31,891
U.S. Totals	6.468	18.594	5.890	124,290

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix D-5

Impacts of Tenant Improvements on State Economies (in Four Categories), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.326	0.694	0.227	5,424
Alaska	0.006	0.010	0.004	68
Arizona	0.390	0.795	0.266	6,226
Arkansas	0.129	0.258	0.083	1,949
California	4.677	9.790	3.248	62,098
Colorado	0.600	1.283	0.428	9,298
Connecticut	0.301	0.558	0.179	3,320
Delaware	0.118	0.201	0.056	1,153
District of Columbia	0.402	0.447	0.028	489
Florida	1.587	3.263	1.096	26,343
Georgia	1.159	2.635	0.862	20,402
Hawaii	0.076	0.137	0.047	953
Idaho	0.072	0.133	0.044	1,071
Illinois	1.038	2.375	0.748	14,470
Indiana	0.308	0.676	0.213	4,665
Iowa	0.615	1.176	0.381	8,493
Kansas	0.313	0.628	0.186	4,223
Kentucky	0.345	0.715	0.220	5,139
Louisiana	1.343	2.643	0.898	19,313
Maine	0.037	0.070	0.024	565
Maryland	0.772	1.419	0.440	8,838
Massachusetts	0.937	1.738	0.551	10,449
Michigan	0.570	1.210	0.401	8,851
Minnesota	0.297	0.649	0.207	4,146
Mississippi	0.057	0.112	0.036	862
Missouri	0.664	1.406	0.429	9,880
Montana	0.049	0.090	0.030	732
Nebraska	0.535	1.005	0.328	7,287
Nevada	0.194	0.358	0.119	2,692
New Hampshire	0.043	0.082	0.025	496
New Jersey	0.848	1.734	0.534	10,168
New Mexico	0.058	0.101	0.034	817
New York	3.050	5.458	1.701	31,984
North Carolina	1.074	2.336	0.752	17,598
North Dakota	0.058	0.104	0.033	633
Ohio	0.604	1.369	0.433	9,473
Oklahoma	0.101	0.209	0.070	1,527
Oregon	0.272	0.541	0.170	3,724
Pennsylvania	3.289	7.389	2.297	46,041
Rhode Island	0.042	0.074	0.022	438
South Carolina	0.392	0.846	0.272	6,529
South Dakota	0.198	0.366	0.122	2,736
Tennessee	0.458	1.039	0.325	6,926
Texas	4.600	11.018	3.616	71,242
Utah	0.281	0.616	0.202	4,556
Vermont	0.028	0.050	0.016	387
Virginia	0.779	1.514	0.470	10,180
Washington	0.775	1.581	0.517	10,099
West Virginia	0.014	0.026	0.008	176
Wisconsin	0.342	0.706	0.234	5,062
Wyoming	0.007	0.011	0.004	79
State Totals	35.232	73.642	23.634	490,272
Interstate Spillovers		27.642	8.448	186,751
U.S. Totals	35.232	101.284	32.082	677,023

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix E: Total Impacts by State

Appendix E-1

Total Impacts (Soft Costs, Site Development, Hard Costs and Tenant Improvements) on State Economies (**Office**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.255	0.539	0.179	4,179
Alaska	0.007	0.012	0.004	83
Arizona	0.591	1.223	0.415	9,441
Arkansas	0.258	0.509	0.167	3,844
California	14.007	29.836	10.041	189,001
Colorado	1.038	2.260	0.765	16,256
Connecticut	0.577	1.086	0.353	6,447
Delaware	0.340	0.585	0.161	3,271
District of Columbia	1.720	2.009	0.145	2,401
Florida	2.103	4.389	1.495	35,418
Georgia	2.946	6.769	2.242	52,199
Hawaii	0.126	0.230	0.080	1,602
Idaho	0.135	0.250	0.085	2,001
Illinois	2.509	5.796	1.853	35,332
Indiana	0.421	0.914	0.292	6,366
Iowa	0.333	0.631	0.208	4,574
Kansas	0.602	1.210	0.364	8,054
Kentucky	0.468	0.965	0.300	6,932
Louisiana	0.272	0.538	0.185	3,902
Maine	0.065	0.123	0.042	988
Maryland	2.680	5.044	1.583	31,003
Massachusetts	2.435	4.635	1.493	27,749
Michigan	0.835	1.780	0.599	12,908
Minnesota	0.482	1.061	0.344	6,830
Mississippi	0.006	0.012	0.004	94
Missouri	0.897	1.900	0.583	13,134
Montana	0.121	0.222	0.076	1,807
Nebraska	1.583	2.985	0.991	21,582
Nevada	0.286	0.532	0.179	3,984
New Hampshire	0.067	0.130	0.040	788
New Jersey	1.552	3.238	1.007	18,854
New Mexico	0.090	0.159	0.055	1,281
New York	10.634	19.406	6.059	111,526
North Carolina	2.786	6.084	1.991	45,919
North Dakota	0.178	0.317	0.101	1,924
Ohio	0.959	2.169	0.697	15,127
Oklahoma	0.194	0.401	0.136	2,931
Oregon	0.549	1.098	0.353	7,663
Pennsylvania	2.066	4.650	1.466	29,051
Rhode Island	0.056	0.099	0.029	598
South Carolina	0.649	1.402	0.456	10,730
South Dakota	0.171	0.314	0.106	2,350
Tennessee	1.020	2.316	0.736	15,529
Texas	9.385	22.692	7.533	146,278
Utah	0.479	1.059	0.353	7,927
Vermont	0.025	0.044	0.015	340
Virginia	2.602	5.134	1.607	33,801
Washington	1.888	3.878	1.288	24,879
West Virginia	0.021	0.037	0.011	254
Wisconsin	0.591	1.215	0.408	8,777
Wyoming	0.011	0.017	0.006	124
State Totals	74.072	153.902	49.683	998,032
Interstate Spillovers		60.387	19.119	435,255
U.S. Totals	74.072	214.289	68.802	1,433,288

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix E-2

Total Impacts (Soft Costs, Site Development, Hard Costs and Tenant Improvements) on State Economies (**Industrial**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.284	0.602	0.199	4,675
Alaska	0.001	0.002	0.001	13
Arizona	0.495	1.021	0.346	7,915
Arkansas	0.076	0.150	0.049	1,130
California	2.798	5.933	1.990	37,597
Colorado	0.501	1.085	0.366	7,816
Connecticut	0.055	0.103	0.033	613
Delaware	0.142	0.243	0.067	1,367
District of Columbia	0.000	0.000	0.000	-
Florida	0.351	0.730	0.248	5,891
Georgia	0.554	1.269	0.419	9,796
Hawaii	0.019	0.035	0.012	245
Idaho	0.075	0.140	0.047	1,119
Illinois	0.529	1.218	0.388	7,424
Indiana	0.428	0.931	0.297	6,470
Iowa	2.161	4.109	1.346	29,745
Kansas	0.214	0.430	0.129	2,871
Kentucky	0.334	0.689	0.214	4,949
Louisiana	5.639	11.122	3.814	80,842
Maine	0.068	0.129	0.044	1,037
Maryland	0.048	0.090	0.028	557
Massachusetts	1.179	2.229	0.715	13,359
Michigan	1.019	2.169	0.727	15,764
Minnesota	0.452	0.993	0.321	6,381
Mississippi	0.002	0.004	0.001	29
Missouri	0.633	1.341	0.411	9,307
Montana	0.039	0.073	0.025	590
Nebraska	0.608	1.145	0.379	8,285
Nevada	0.068	0.126	0.042	946
New Hampshire	0.008	0.015	0.005	94
New Jersey	0.171	0.356	0.110	2,076
New Mexico	0.008	0.014	0.005	113
New York	0.605	1.098	0.343	6,340
North Carolina	0.985	2.150	0.700	16,217
North Dakota	0.014	0.026	0.008	156
Ohio	0.674	1.525	0.488	10,612
Oklahoma	0.000	0.000	0.000	-
Oregon	0.033	0.066	0.021	459
Pennsylvania	11.918	26.807	8.422	167,368
Rhode Island	0.049	0.087	0.026	523
South Carolina	0.628	1.357	0.440	10,409
South Dakota	0.658	1.209	0.406	9,036
Tennessee	0.397	0.900	0.285	6,030
Texas	5.665	13.665	4.523	88,156
Utah	0.149	0.328	0.109	2,447
Vermont	0.059	0.105	0.035	816
Virginia	0.173	0.339	0.106	2,247
Washington	0.430	0.881	0.291	5,645
West Virginia	0.012	0.021	0.006	142
Wisconsin	0.362	0.744	0.249	5,366
Wyoming	0.000	0.000	0.000	-
State Totals	41.769	89.804	29.236	600,987
Interstate Spillovers		30.840	9.367	205,821
U.S. Totals	41.769	120.644	38.603	806,809

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix E-3

Total Impacts (Soft Costs, Site Development, Hard Costs and Tenant Improvements) on State Economies (**Warehouse**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.809	1.711	0.567	13,271
Alaska	0.014	0.023	0.008	154
Arizona	0.524	1.082	0.367	8,374
Arkansas	0.220	0.434	0.142	3,281
California	4.805	10.209	3.429	64,684
Colorado	0.984	2.137	0.722	15,387
Connecticut	0.312	0.586	0.190	3,479
Delaware	0.039	0.067	0.019	378
District of Columbia	0.000	0.000	0.000	-
Florida	3.143	6.546	2.225	52,827
Georgia	1.976	4.534	1.499	34,988
Hawaii	0.048	0.088	0.031	610
Idaho	0.062	0.114	0.039	913
Illinois	1.469	3.388	1.081	20,653
Indiana	0.469	1.021	0.326	7,103
Iowa	0.231	0.438	0.144	3,173
Kansas	0.798	1.602	0.481	10,677
Kentucky	0.750	1.547	0.481	11,116
Louisiana	0.120	0.238	0.082	1,725
Maine	0.013	0.024	0.008	193
Maryland	0.900	1.689	0.529	10,400
Massachusetts	0.487	0.924	0.297	5,537
Michigan	0.473	1.008	0.339	7,318
Minnesota	0.250	0.549	0.178	3,534
Mississippi	0.219	0.425	0.139	3,287
Missouri	1.290	2.732	0.838	18,927
Montana	0.004	0.007	0.002	55
Nebraska	0.067	0.126	0.042	908
Nevada	0.515	0.958	0.321	7,173
New Hampshire	0.119	0.230	0.071	1,392
New Jersey	2.417	5.027	1.561	29,301
New Mexico	0.018	0.032	0.011	261
New York	1.845	3.358	1.048	19,350
North Carolina	0.494	1.078	0.352	8,132
North Dakota	0.020	0.036	0.012	221
Ohio	0.448	1.014	0.325	7,064
Oklahoma	0.154	0.318	0.107	2,320
Oregon	0.468	0.935	0.300	6,515
Pennsylvania	1.280	2.880	0.906	17,988
Rhode Island	0.031	0.054	0.016	326
South Carolina	0.333	0.720	0.234	5,517
South Dakota	0.101	0.185	0.062	1,380
Tennessee	0.462	1.048	0.332	7,022
Texas	4.610	11.132	3.689	71,794
Utah	0.619	1.369	0.455	10,231
Vermont	0.018	0.031	0.010	244
Virginia	0.543	1.069	0.334	7,057
Washington	1.246	2.556	0.847	16,388
West Virginia	0.000	0.000	0.000	-
Wisconsin	0.302	0.621	0.208	4,482
Wyoming	0.013	0.022	0.007	156
State Totals	36.531	77.921	25.412	527,266
Interstate Spillovers		27.668	8.424	178,910
U.S. Totals	36.531	105.589	33.836	706,176

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix E-4

Total Impacts (Soft Costs, Site Development, Hard Costs and Tenant Improvements) on State Economies (**Retail and Entertainment**), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	0.594	1.253	0.416	9,700
Alaska	0.014	0.023	0.008	154
Arizona	0.520	1.078	0.366	8,319
Arkansas	0.173	0.340	0.112	2,569
California	3.148	6.715	2.262	42,535
Colorado	0.836	1.822	0.617	13,096
Connecticut	0.701	1.320	0.429	7,837
Delaware	0.069	0.119	0.033	666
District of Columbia	0.252	0.295	0.022	355
Florida	3.664	7.657	2.611	61,790
Georgia	0.989	2.275	0.754	17,537
Hawaii	0.215	0.394	0.137	2,743
Idaho	0.107	0.199	0.068	1,586
Illinois	1.198	2.770	0.887	16,884
Indiana	0.384	0.834	0.267	5,816
Iowa	0.314	0.595	0.196	4,312
Kansas	0.229	0.459	0.138	3,055
Kentucky	0.445	0.916	0.286	6,582
Louisiana	0.397	0.784	0.270	5,684
Maine	0.041	0.078	0.027	627
Maryland	0.509	0.960	0.302	5,896
Massachusetts	0.660	1.259	0.406	7,535
Michigan	0.655	1.396	0.471	10,116
Minnesota	0.373	0.820	0.266	5,285
Mississippi	0.148	0.288	0.094	2,223
Missouri	0.978	2.073	0.636	14,307
Montana	0.081	0.149	0.051	1,210
Nebraska	0.381	0.718	0.239	5,191
Nevada	0.298	0.555	0.187	4,151
New Hampshire	0.066	0.128	0.040	776
New Jersey	1.000	2.088	0.650	12,151
New Mexico	0.189	0.333	0.115	2,687
New York	2.655	4.852	1.515	27,846
North Carolina	1.220	2.666	0.873	20,127
North Dakota	0.085	0.151	0.048	919
Ohio	1.110	2.511	0.808	17,522
Oklahoma	0.225	0.464	0.157	3,389
Oregon	0.496	0.993	0.319	6,934
Pennsylvania	0.909	2.045	0.646	12,781
Rhode Island	0.087	0.154	0.046	936
South Carolina	0.443	0.958	0.312	7,328
South Dakota	0.055	0.101	0.034	752
Tennessee	0.566	1.284	0.409	8,617
Texas	4.717	11.413	3.792	73,553
Utah	0.388	0.859	0.287	6,437
Vermont	0.044	0.079	0.026	609
Virginia	0.734	1.450	0.454	9,528
Washington	0.736	1.512	0.503	9,704
West Virginia	0.041	0.073	0.023	506
Wisconsin	0.563	1.156	0.389	8,356
Wyoming	0.016	0.025	0.009	182
State Totals	34.718	73.440	24.011	499,402
Interstate Spillovers		27.047	8.285	172,743
U.S. Totals	34.718	100.487	32.296	672,145

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix E-5

Total Impacts (Soft Costs, Site Development, Hard Costs and Tenant Improvements) on State Economies (in Four Categories), 2017

State	Direct Spending (In Billions of Dollars)	Total Output (In Billions of Dollars)	Personal Earnings (In Billions of Dollars)	Jobs Supported
Alabama	1.942	4.105	1.361	31,825
Alaska	0.036	0.060	0.021	404
Arizona	2.130	4.405	1.493	34,049
Arkansas	0.726	1.433	0.470	10,823
California	24.757	52.693	17.722	333,817
Colorado	3.359	7.303	2.469	52,555
Connecticut	1.645	3.094	1.005	18,376
Delaware	0.590	1.015	0.280	5,682
District of Columbia	1.972	2.304	0.167	2,756
Florida	9.261	19.321	6.578	155,926
Georgia	6.465	14.846	4.915	114,520
Hawaii	0.408	0.748	0.261	5,201
Idaho	0.379	0.703	0.238	5,619
Illinois	5.704	13.173	4.209	80,293
Indiana	1.702	3.700	1.182	25,756
Iowa	3.038	5.774	1.894	41,804
Kansas	1.843	3.702	1.112	24,658
Kentucky	1.998	4.116	1.280	29,579
Louisiana	6.429	12.682	4.350	92,153
Maine	0.188	0.354	0.120	2,845
Maryland	4.138	7.783	2.441	47,857
Massachusetts	4.761	9.047	2.912	54,180
Michigan	2.982	6.353	2.136	46,106
Minnesota	1.557	3.424	1.109	22,030
Mississippi	0.375	0.729	0.239	5,633
Missouri	3.797	8.047	2.468	55,674
Montana	0.244	0.450	0.155	3,663
Nebraska	2.638	4.973	1.650	35,966
Nevada	1.167	2.171	0.729	16,254
New Hampshire	0.261	0.503	0.157	3,049
New Jersey	5.140	10.708	3.328	62,381
New Mexico	0.306	0.538	0.185	4,342
New York	15.739	28.714	8.965	165,063
North Carolina	5.485	11.978	3.916	90,396
North Dakota	0.298	0.530	0.170	3,220
Ohio	3.191	7.219	2.317	50,325
Oklahoma	0.573	1.183	0.400	8,640
Oregon	1.547	3.092	0.993	21,571
Pennsylvania	16.174	36.382	11.440	227,188
Rhode Island	0.223	0.394	0.117	2,384
South Carolina	2.054	4.437	1.443	33,984
South Dakota	0.985	1.809	0.608	13,518
Tennessee	2.444	5.548	1.762	37,198
Texas	24.377	58.902	19.537	379,781
Utah	1.635	3.614	1.203	27,043
Vermont	0.145	0.259	0.086	2,009
Virginia	4.052	7.992	2.501	52,633
Washington	4.299	8.827	2.930	56,617
West Virginia	0.074	0.131	0.041	902
Wisconsin	1.818	3.736	1.255	26,981
Wyoming	0.039	0.064	0.022	462
State Totals	187.090	395.066	128.343	2,625,688
Interstate Spillovers		145.942	45.194	992,730
U.S. Totals	187.090	541.008	173.537	3,618,418

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix F: Operating Impacts by State

Appendix F-1
Impacts of Operations on State Economies (Office), 2017

State	Direct Spending (In Thousands of Dollars)	Total Output (In Thousands of Dollars)	Personal Earnings (In Thousands of Dollars)	Jobs Supported
Alabama	4,472	7,977	2,558	104
Alaska	183	285	94	4
Arizona	13,548	25,482	8,326	293
Arkansas	4,949	8,357	2,658	109
California	165,071	325,404	104,820	3,580
Colorado	21,949	43,325	14,096	487
Connecticut	3,122	5,513	1,699	55
Delaware	5,568	9,009	2,438	91
District of Columbia	16,340	19,680	1,786	71
Florida	43,093	81,790	26,851	1,033
Georgia	35,599	73,452	23,232	870
Hawaii	1,378	2,369	777	27
Idaho	3,786	6,199	2,034	85
Illinois	15,687	33,054	10,205	317
Indiana	11,107	21,351	6,611	231
Iowa	5,524	9,291	2,913	115
Kansas	11,900	21,232	6,060	221
Kentucky	12,196	22,393	6,708	251
Louisiana	5,018	8,908	2,871	115
Maine	2,282	3,913	1,290	51
Maryland	28,117	49,239	14,770	500
Massachusetts	17,750	31,875	9,841	321
Michigan	19,070	36,389	11,774	420
Minnesota	10,113	20,171	6,316	214
Mississippi	126	213	67	3
Missouri	16,606	31,430	9,306	351
Montana	4,780	7,741	2,575	109
Nebraska	14,506	24,490	7,787	315
Nevada	6,375	10,769	3,492	134
New Hampshire	1,279	2,182	648	22
New Jersey	11,682	22,981	6,825	217
New Mexico	1,185	1,915	629	26
New York	63,056	109,855	32,209	1,058
North Carolina	58,820	114,764	36,257	1,407
North Dakota	4,541	7,161	2,197	77
Ohio	22,720	46,020	14,327	475
Oklahoma	5,924	10,868	3,531	134
Oregon	8,553	15,205	4,760	167
Pennsylvania	23,019	45,470	13,918	450
Rhode Island	538	903	261	9
South Carolina	16,605	31,319	9,681	387
South Dakota	3,749	5,967	1,882	78
Tennessee	19,180	38,539	11,834	405
Texas	184,093	391,620	124,336	4,201
Utah	14,123	27,922	8,971	337
Vermont	612	988	313	13
Virginia	43,249	77,143	23,078	778
Washington	18,685	34,097	10,953	376
West Virginia	1,031	1,636	495	18
Wisconsin	15,908	29,013	9,346	354
Wyoming	-	-	-	-
State Totals	1,018,766	1,956,872	610,405	21,465
Interstate Spillovers		630,387	196,356	4,485
U.S. Totals	1,018,766	2,587,259	806,761	25,950

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix F-2
Impacts of Operations on State Economies (**Industrial**), 2017

State	Direct Spending (In Thousands of Dollars)	Total Output (In Thousands of Dollars)	Personal Earnings (In Thousands of Dollars)	Jobs Supported
Alabama	965	1,722	552	23
Alaska	–	–	–	0
Arizona	999	1,879	614	22
Arkansas	15	25	8	0
California	3,453	6,808	2,193	75
Colorado	1,013	2,000	651	22
Connecticut	295	521	160	5
Delaware	564	913	247	9
District of Columbia	–	–	–	0
Florida	679	1,288	423	16
Georgia	4,359	8,993	2,844	107
Hawaii	120	206	67	2
Idaho	174	284	93	4
Illinois	1,591	3,353	1,035	32
Indiana	3,074	5,910	1,830	64
Iowa	8,759	14,732	4,619	182
Kansas	917	1,637	467	17
Kentucky	1,262	2,317	694	26
Louisiana	1,130	2,007	647	26
Maine	69	119	39	2
Maryland	234	410	123	4
Massachusetts	1,342	2,410	744	24
Michigan	4,790	9,140	2,957	105
Minnesota	749	1,493	468	16
Mississippi	16	27	9	0
Missouri	1,040	1,969	583	22
Montana	138	223	74	3
Nebraska	1,123	1,895	603	24
Nevada	455	769	249	10
New Hampshire	55	93	28	1
New Jersey	636	1,252	372	12
New Mexico	71	114	38	2
New York	1,838	3,202	939	31
North Carolina	2,293	4,474	1,413	55
North Dakota	63	99	30	1
Ohio	5,369	10,875	3,386	112
Oklahoma	–	–	–	0
Oregon	104	185	58	2
Pennsylvania	3,216	6,352	1,944	63
Rhode Island	61	103	30	1
South Carolina	4,596	8,669	2,680	107
South Dakota	586	932	294	12
Tennessee	393	789	242	8
Texas	4,205	8,945	2,840	96
Utah	1,681	3,324	1,068	40
Vermont	230	371	118	5
Virginia	642	1,145	343	12
Washington	1,954	3,566	1,146	39
West Virginia	124	197	60	2
Wisconsin	1,804	3,291	1,060	40
Wyoming	–	–	–	0
State Totals	69,248	131,032	41,082	1,484
Interstate Spillovers		44,831	13,756	280
U.S. Totals	69,248	175,863	54,838	1,764

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix F-3
Impacts of Operations on State Economies (**Warehouse**), 2017

State	Direct Spending (In Thousands of Dollars)	Total Output (In Thousands of Dollars)	Personal Earnings (In Thousands of Dollars)	Jobs Supported
Alabama	7,875	14,047	4,506	184
Alaska	59	92	30	1
Arizona	3,652	6,869	2,245	79
Arkansas	2,158	3,643	1,159	47
California	25,522	50,311	16,206	553
Colorado	7,306	14,421	4,692	162
Connecticut	2,812	4,966	1,531	50
Delaware	289	468	127	5
District of Columbia	-	-	-	0
Florida	21,598	40,993	13,458	518
Georgia	22,064	45,525	14,399	539
Hawaii	170	292	96	3
Idaho	305	500	164	7
Illinois	10,076	21,229	6,554	204
Indiana	4,921	9,461	2,929	102
Iowa	1,377	2,316	726	29
Kansas	4,607	8,219	2,346	86
Kentucky	5,871	10,779	3,229	121
Louisiana	1,054	1,871	603	24
Maine	175	301	99	4
Maryland	6,227	10,904	3,271	111
Massachusetts	2,091	3,756	1,159	38
Michigan	3,590	6,850	2,216	79
Minnesota	2,066	4,122	1,291	44
Mississippi	1,636	2,766	872	36
Missouri	7,028	13,302	3,938	148
Montana	66	108	36	2
Nebraska	450	760	242	10
Nevada	4,086	6,902	2,238	86
New Hampshire	1,096	1,870	556	19
New Jersey	12,249	24,096	7,156	228
New Mexico	109	176	58	2
New York	6,148	10,711	3,140	103
North Carolina	3,675	7,171	2,265	88
North Dakota	121	190	58	2
Ohio	3,969	8,039	2,503	83
Oklahoma	1,382	2,535	823	31
Oregon	3,143	5,586	1,749	61
Pennsylvania	10,455	20,652	6,321	204
Rhode Island	176	295	85	3
South Carolina	2,881	5,434	1,680	67
South Dakota	281	447	141	6
Tennessee	2,903	5,833	1,791	61
Texas	35,292	75,076	23,836	805
Utah	2,707	5,352	1,720	65
Vermont	103	167	53	2
Virginia	4,953	8,834	2,643	89
Washington	8,352	15,240	4,896	168
West Virginia	-	-	-	0
Wisconsin	2,360	4,304	1,386	53
Wyoming	21	32	10	0
State Totals	251,504	487,811	153,230	5,412
Interstate Spillovers		150,908	45,936	994
U.S. Totals	251,504	638,720	199,166	6,406

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix F-4

Impacts of Operations on State Economies (Retail and Entertainment), 2017

State	Direct Spending (In Thousands of Dollars)	Total Output (In Thousands of Dollars)	Personal Earnings (In Thousands of Dollars)	Jobs Supported
Alabama	6,782	12,097	3,880	158
Alaska	–	–	–	–
Arizona	5,919	11,133	3,638	128
Arkansas	2,100	3,547	1,128	46
California	27,029	53,283	17,164	586
Colorado	7,525	14,854	4,833	167
Connecticut	6,306	11,135	3,432	111
Delaware	781	1,264	342	13
District of Columbia	1,322	1,592	144	6
Florida	34,412	65,314	21,442	825
Georgia	8,073	16,656	5,268	197
Hawaii	813	1,398	458	16
Idaho	973	1,593	523	22
Illinois	5,829	12,281	3,792	118
Indiana	3,646	7,009	2,170	76
Iowa	2,676	4,501	1,411	56
Kansas	1,604	2,861	817	30
Kentucky	4,882	8,963	2,685	101
Louisiana	3,949	7,011	2,260	90
Maine	546	937	309	12
Maryland	4,372	7,656	2,297	78
Massachusetts	4,350	7,812	2,412	79
Michigan	10,910	20,819	6,736	240
Minnesota	3,491	6,963	2,181	74
Mississippi	1,226	2,074	654	27
Missouri	10,811	20,462	6,058	228
Montana	401	650	216	9
Nebraska	3,043	5,137	1,634	66
Nevada	3,469	5,859	1,900	73
New Hampshire	284	485	144	5
New Jersey	9,028	17,760	5,274	168
New Mexico	1,676	2,709	889	37
New York	13,344	23,248	6,816	224
North Carolina	14,792	28,861	9,118	354
North Dakota	1,107	1,746	536	19
Ohio	10,853	21,983	6,844	227
Oklahoma	2,561	4,699	1,526	58
Oregon	4,754	8,452	2,646	93
Pennsylvania	9,074	17,924	5,486	177
Rhode Island	498	836	242	8
South Carolina	5,172	9,755	3,015	120
South Dakota	292	464	146	6
Tennessee	4,249	8,538	2,622	90
Texas	50,870	108,216	34,358	1,161
Utah	5,084	10,051	3,229	121
Vermont	548	885	280	11
Virginia	6,446	11,498	3,440	116
Washington	6,648	12,132	3,897	134
West Virginia	151	239	72	3
Wisconsin	7,499	13,677	4,406	167
Wyoming	184	270	88	4
State Totals	322,356	619,291	194,857	6,935
Interstate Spillovers		199,364	60,416	1,276
U.S. Totals	322,356	818,655	255,274	8,211

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix F-5

Impacts of Operations on State Economies (in Four Categories), 2017

State	Direct Spending (In Thousands of Dollars)	Total Output (In Thousands of Dollars)	Personal Earnings (In Thousands of Dollars)	Jobs Supported
Alabama	20,095	35,843	11,496	469
Alaska	241	377	125	5
Arizona	24,118	45,363	14,823	522
Arkansas	9,222	15,572	4,952	203
California	221,075	435,806	140,383	4,794
Colorado	37,794	74,601	24,271	838
Connecticut	12,535	22,135	6,823	221
Delaware	7,203	11,655	3,154	117
District of Columbia	17,662	21,272	1,930	77
Florida	99,782	189,385	62,174	2,392
Georgia	70,094	144,626	45,744	1,714
Hawaii	2,480	4,265	1,398	49
Idaho	5,237	8,577	2,813	118
Illinois	33,183	69,916	21,586	672
Indiana	22,748	43,731	13,540	472
Iowa	18,336	30,840	9,670	381
Kansas	19,028	33,950	9,689	354
Kentucky	24,210	44,452	13,316	499
Louisiana	11,151	19,796	6,381	255
Maine	3,073	5,270	1,738	68
Maryland	38,950	68,209	20,461	693
Massachusetts	25,535	45,853	14,156	462
Michigan	38,359	73,197	23,683	844
Minnesota	16,419	32,749	10,255	347
Mississippi	3,004	5,081	1,602	67
Missouri	35,485	67,162	19,886	749
Montana	5,385	8,721	2,901	122
Nebraska	19,122	32,282	10,265	415
Nevada	14,385	24,300	7,879	303
New Hampshire	2,713	4,630	1,376	46
New Jersey	33,595	66,089	19,626	624
New Mexico	3,041	4,914	1,613	68
New York	84,386	147,017	43,104	1,415
North Carolina	79,581	155,270	49,054	1,903
North Dakota	5,832	9,197	2,822	99
Ohio	42,912	86,917	27,060	898
Oklahoma	9,867	18,101	5,880	224
Oregon	16,554	29,428	9,212	324
Pennsylvania	45,764	90,398	27,669	895
Rhode Island	1,272	2,137	619	21
South Carolina	29,255	55,178	17,056	681
South Dakota	4,907	7,811	2,463	101
Tennessee	26,726	53,700	16,490	564
Texas	274,460	583,858	185,370	6,263
Utah	23,595	46,649	14,987	563
Vermont	1,494	2,411	764	31
Virginia	55,290	98,621	29,503	994
Washington	35,639	65,035	20,892	716
West Virginia	1,306	2,072	628	23
Wisconsin	27,572	50,285	16,198	614
Wyoming	205	302	98	4
State Totals	1,661,875	3,195,007	999,575	35,296
Interstate Spillovers		1,025,490	316,463	7,034
U.S. Totals	1,661,875	4,220,497	1,316,038	42,330

Source: GMU Schar School of Policy and Government, The Stephen S. Fuller Institute; Dodge Data & Analytics; BEA; NAIOP

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix G: National and State Multipliers

Appendix G-1

Output, Earnings and Employment Multipliers: **Construction**

State	MULTIPLIERS		
	Output	Earnings	Jobs
Alabama	2.1301	0.6968	16.6560
Alaska	1.6658	0.5936	11.3985
Arizona	2.0385	0.6827	15.9624
Arkansas	2.0007	0.6459	15.0957
California	2.0934	0.6945	13.2785
Colorado	2.1371	0.7137	15.4873
Connecticut	1.8545	0.5957	11.0438
Delaware	1.7036	0.4699	9.7600
District of Columbia	1.1130	0.0706	1.2160
Florida	2.0556	0.6904	16.5954
Georgia	2.2734	0.7437	17.6052
Hawaii	1.8050	0.6223	12.5112
Idaho	1.8526	0.6186	14.9424
Illinois	2.2872	0.7206	13.9369
Indiana	2.1916	0.6897	15.1219
Iowa	1.9115	0.6196	13.8028
Kansas	2.0070	0.5944	13.4943
Kentucky	2.0721	0.6366	14.8912
Louisiana	1.9673	0.6684	14.3753
Maine	1.8813	0.6309	15.1497
Maryland	1.8387	0.5697	11.4550
Massachusetts	1.8546	0.5882	11.1494
Michigan	2.1210	0.7030	15.5145
Minnesota	2.1880	0.6992	13.9833
Mississippi	1.9635	0.6333	15.1575
Missouri	2.1169	0.6459	14.8721
Montana	1.8454	0.6250	15.0146
Nebraska	1.8779	0.6136	13.6193
Nevada	1.8449	0.6116	13.8831
New Hampshire	1.9109	0.5873	11.5185
New Jersey	2.0456	0.6294	11.9954
New Mexico	1.7428	0.5903	14.0902
New York	1.7896	0.5576	10.4871
North Carolina	2.1754	0.7002	16.3900
North Dakota	1.7777	0.5604	10.8581
Ohio	2.2663	0.7165	15.6771
Oklahoma	2.0650	0.6875	15.0677
Oregon	1.9887	0.6266	13.7000
Pennsylvania	2.2462	0.6984	13.9965
Rhode Island	1.7435	0.5104	10.3875
South Carolina	2.1589	0.6928	16.6570
South Dakota	1.8473	0.6140	13.8085
Tennessee	2.2657	0.7086	15.1100
Texas	2.3953	0.7860	15.4873
Utah	2.1936	0.7200	16.2323
Vermont	1.7769	0.5784	13.7989
Virginia	1.9434	0.6029	13.0716
Washington	2.0401	0.6665	13.0316
West Virginia	1.7882	0.5449	12.1756
Wisconsin	2.0661	0.6856	14.8092
Wyoming	1.6314	0.5407	11.6625
U.S. Total	2.8748	0.9106	19.2163

Source: BEA (2007–2015)

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix G-2
Output, Earnings and Employment Multipliers: **Soft Costs**

State	MULTIPLIERS		
	Output	Earnings	Jobs
Alabama	2.0221	0.7230	14.8855
Alaska	1.7729	0.6551	11.0432
Arizona	2.2324	0.8041	16.1146
Arkansas	1.8335	0.6603	13.9335
California	2.3168	0.8307	14.5878
Colorado	2.3789	0.8525	16.5268
Connecticut	2.0170	0.6889	11.8187
Delaware	1.8074	0.4940	8.8727
District of Columbia	1.4473	0.1542	2.3110
Florida	2.2476	0.8148	18.1059
Georgia	2.4220	0.8504	18.3093
Hawaii	1.9715	0.7189	13.9129
Idaho	1.8531	0.6812	14.1061
Illinois	2.4295	0.8313	14.8323
Indiana	2.0720	0.7211	15.1812
Iowa	1.8304	0.6480	13.4870
Kansas	2.0182	0.6525	12.7351
Kentucky	1.9921	0.6652	14.3236
Louisiana	2.0093	0.7334	14.0589
Maine	1.9170	0.7056	15.2134
Maryland	2.1026	0.6966	12.1503
Massachusetts	2.1526	0.7409	12.6558
Michigan	2.1826	0.7912	15.1498
Minnesota	2.2586	0.7841	15.0711
Mississippi	1.8358	0.6509	14.2433
Missouri	2.1305	0.6714	13.4892
Montana	1.8257	0.6825	14.8661
Nebraska	1.9249	0.6888	13.7127
Nevada	1.9477	0.6981	14.1815
New Hampshire	1.9983	0.6663	12.5254
New Jersey	2.2887	0.7468	12.9048
New Mexico	1.8198	0.6710	14.6014
New York	2.0038	0.6317	10.4883
North Carolina	2.2289	0.7879	16.9656
North Dakota	1.7749	0.6104	10.4742
Ohio	2.2427	0.7783	16.2829
Oklahoma	2.0592	0.7527	15.1499
Oregon	2.0549	0.7223	15.2315
Pennsylvania	2.2706	0.7659	14.3749
Rhode Island	1.8726	0.5976	12.2099
South Carolina	2.1695	0.7573	15.9352
South Dakota	1.7636	0.6397	13.1769
Tennessee	2.2930	0.7882	15.8090
Texas	2.5328	0.8871	16.0909
Utah	2.3050	0.8251	18.2508
Vermont	1.8130	0.6548	13.8720
Virginia	2.1222	0.6920	12.5652
Washington	2.1236	0.7630	13.9152
West Virginia	1.7332	0.6007	12.6868
Wisconsin	1.9953	0.7168	15.0185
Wyoming	1.6044	0.5846	11.8672
U.S. Total	2.9854	1.0216	20.0293

Source: BEA (2007–2015)

Note: Appendices include data for the District of Columbia, resulting in 51 states.

Appendix G-3

Output, Earnings and Employment Multipliers: **Building Operations**

State	MULTIPLIERS		
	Output	Earnings	Jobs
Alabama	1.7837	0.5721	23.3282
Alaska	1.5614	0.5169	19.4018
Arizona	1.8809	0.6146	21.628
Arkansas	1.6886	0.537	21.9612
California	1.9713	0.635	21.6867
Colorado	1.9739	0.6422	22.1713
Connecticut	1.7659	0.5443	17.6615
Delaware	1.6179	0.4379	16.2778
District of Columbia	1.2044	0.1093	4.3689
Florida	1.898	0.6231	23.975
Georgia	2.0633	0.6526	24.4491
Hawaii	1.7199	0.5639	19.6895
Idaho	1.6376	0.5372	22.5843
Illinois	2.107	0.6505	20.2371
Indiana	1.9224	0.5952	20.7605
Iowa	1.682	0.5274	20.7656
Kansas	1.7842	0.5092	18.5812
Kentucky	1.8361	0.55	20.6192
Louisiana	1.7753	0.5722	22.8595
Maine	1.7151	0.5655	22.2795
Maryland	1.7512	0.5253	17.7997
Massachusetts	1.7957	0.5544	18.104
Michigan	1.9082	0.6174	22.0103
Minnesota	1.9946	0.6246	21.1503
Mississippi	1.6913	0.5332	22.2367
Missouri	1.8927	0.5604	21.1083
Montana	1.6195	0.5387	22.7207
Nebraska	1.6882	0.5368	21.7028
Nevada	1.6892	0.5477	21.0697
New Hampshire	1.7065	0.507	17.0327
New Jersey	1.9672	0.5842	18.5779
New Mexico	1.6162	0.5305	22.3615
New York	1.7422	0.5108	16.7722
North Carolina	1.9511	0.6164	23.9122
North Dakota	1.5769	0.4838	16.9019
Ohio	2.0255	0.6306	20.9226
Oklahoma	1.8346	0.596	22.6797
Oregon	1.7777	0.5565	19.5671
Pennsylvania	1.9753	0.6046	19.5495
Rhode Island	1.6798	0.4862	16.7839
South Carolina	1.8861	0.583	23.2757
South Dakota	1.5918	0.502	20.683
Tennessee	2.0093	0.617	21.1171
Texas	2.1273	0.6754	22.8188
Utah	1.9771	0.6352	23.8663
Vermont	1.6144	0.5112	20.7441
Virginia	1.7837	0.5336	17.9861
Washington	1.8248	0.5862	20.1021
West Virginia	1.5872	0.4806	17.8579
Wisconsin	1.8238	0.5875	22.2799
Wyoming	1.4712	0.4794	20.5304
U.S. Total	2.5396	0.7919	25.4715

Source: BEA (2007–2015)

Note: Appendices include data for the District of Columbia, resulting in 51 states; categories for management services, utilities, and services to buildings are now combined under building operations.

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