

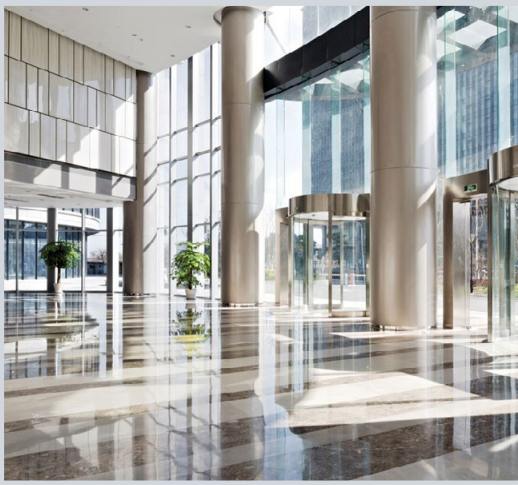

2016 EDITION

# Economic Impacts of Commercial Real Estate


Stephen S. Fuller, PhD
Dwight Schar Faculty Chair and University Professor
Senior Advisor and Director for Special Projects
Center for Regional Analysis
George Mason University | Arlington, Virginia



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# Economic Impacts of Commercial Real Estate

## 2016 Edition

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

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

By
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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 18,000 members in North America. NAIOP advances responsible commercial real estate development and advocates for effective public policy. For more information, visit naioprf.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 naioprf.org.

## 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.

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## 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 (formerly McGraw-Hill Construction). (Dodge Data & Analytics, which purchased McGraw-Hill Construction in 2014, made no changes to its data or data capture methodologies.) It applies several processes and methodologies to take "snapshots" of the commercial real estate development industry from various angles and across several scales.

At the greatest scale, the study calculates the contribution of building and nonbuilding construction to the U.S. economy for the year in review. The product types included in this broad measure 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, Excludes Multiplier Effect) | Jobs Supported[3] (In Millions, Includes Multiplier Effect) |
|---|---|---|---|---|---|
| 2015 | $1,098.2 | $3.196 | 17.8% | $1,011.3 | 22.5 |
| 2014[4] | 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 Center for Regional Analysis*

[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.

[4] Revised 2014 data for construction spending and GDP and newly released multipliers.

Note: Data include residential and nonresidential buildings as well as infrastructure such as water, sewer, highways and power.

Zeroing in exclusively on commercial real estate — the core of this study — the analysis begins with Dodge Data & Analytics data relating to square footage and values for office, industrial, warehouse and retail projects. It examines expenditures made during four distinct phases of the development process, including 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 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 429.3 million square feet of buildings that commenced construction in 2015, according to Dodge Data & Analytics.

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. Apartment and hotel properties 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 the 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 | | | | Post-Construction |
| | | Soft Construction (Soft Costs) | Site Development | Hard Construction (Hard Costs) | Tenant Improvements | Totals | 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) | **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 |
| | **2011** | 13.42 | 15.45 | 47.83 | 15.58 | 92.28 | 0.80 |
| **In 2015, direct expenditures of $155.009 billion contributed $450.38 billion to U.S. GDP.** | | | | | | | |
| **Total Economic Contribution[1] to GDP** (In Billions of Dollars, Includes Multiplier Effect) | **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 |
| | **2011** | 34.37 | 44.53 | 137.82 | 44.91 | 261.63 | 2.05 |
| **In 2015, direct expenditures of $155.009 billion generated $145.70 billion in personal earnings in the U.S.** | | | | | | | |
| **Personal Earnings[2]** (In Billions of Dollars, Includes Multiplier Effect) | **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 |
| | **2011** | 11.23 | 13.29 | 41.15 | 13.40 | 79.07 | 0.61 |
| **In 2015, direct expenditures of $155.009 billion supported 3.2 million jobs in the U.S. economy.** | | | | | | | |
| **Jobs Supported[3]** (Includes Multiplier Effect) | **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 |
| | **2011** | 259,805 | 339,156 | 1,049,630 | 341,981 | 1,990,572 | 15,600 |

*Sources: NAIOP; Dodge Data & Analytics; GMU Center for Regional Analysis*

[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.

This study includes the economic contributions of existing buildings. Based on the existing stock of commercial buildings, totaling 45.1 billion square feet in 2015, direct expenditures for building operations totaled $145.6 billion and contributed $384.1 billion to GDP. These direct expenditures also generated $110.1 billion in personal earnings (wages and salaries) and supported a total of 2.86 million jobs. (See Table 3.)

Combining the economic contributions of new development with the economic contributions from operations of existing buildings in 2015 (data from Tables 2 and 3), direct expenditures of $300.6 billion resulted in the following economic contributions to the U. S. economy:

- Contributed $834.4 billion to U.S. GDP.
- Generated $255.8 billion in personal earnings.
- Supported a total of 6.1 million jobs.

Table 3
**Economic Contributions to the U.S. Economy From Operations of Existing Buildings, 2010-2015**
(In Billions of Current Year Dollars)

| 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) |
|---|---|---|---|---|---|
| 2015 | 45.070 | $145.6 | $ 384.1 | $ 110.1 | 2.856 |
| 2014 | 44.010 | 138.1 | 381.3 | 120.1 | 3.023 |
| 2013 | 43.934 | 134.3 | 370.9 | 116.8 | 2.941 |
| 2012 | 43.208 | 134.5 | 371.5 | 117.0 | 2.945 |
| 2011 | 42.098 | 140.7 | 366.6 | 107.6 | 2.758 |
| 2010 | 42.008 | 134.8 | 342.4 | 100.2 | 2.413 |

*Sources: BOMA; Newmark Grubb Knight Frank (NGKF); GMU Center for Regional Analysis*

[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; column values may not add up to overall totals due to rounding; see Appendix G for state and building type data.

# Executive Summary

**To an economist, buildings are much more than structures providing shelter.** They are structures that create economic capacity for businesses. While the economic contributions accruing from the actual construction phase for new buildings are widely understood and valued, the pre-construction and post-construction impacts of the development process often are overlooked and undervalued.

Likewise, the job growth and income generated and supported by annual building operations represent a continuing flow of expenditures into local, state and national economies that extend over the life of the structures. These new buildings represent an expansion of the productive capacity of their local economies and serve as enablers that further enlarge the local, state and national economies. The jobs and output associated with the newly built capacity generate significant annual economic and fiscal benefits (e.g., tax revenues) at all governmental levels. Because these post-construction benefits are cumulative, their economic impacts become increasingly significant to the economy's growth.

## Summary of Construction Activity

The commercial construction sector continued its recovery in 2015 after first showing signs of a rebound in 2011, following several consecutive years of decreased spending from its peak in 2008. The 2015 gains spanned most commercial building types and have generated increased construction employment.

Forecasts for 2016 project accelerating construction spending, with gains in fixed investment in commercial structures, such as office, retail, health care and distribution facilities, being partially offset by cutbacks in energy-related construction expenditures. However, the 2015 pullback in energy-related construction expenditures, which is expected to continue in 2016, is projected to rebound in 2017. Similarly, the positive trends in commercial construction spending, especially in office, retail, health care and warehouse buildings, are projected to continue their expansion in 2017 and 2018.

The contribution of construction spending to the U.S. economy is well understood. This linkage between the national economy's accelerating expansion and the recovery of residential and nonresidential construction spending was particularly evident in 2013. It accelerated in 2014 and continued in 2015, despite sharp reductions in the energy sector that curtailed related construction spending. Still, total residential and nonresidential construction expenditures across all categories increased 17.6 percent in 2015, helping the U.S. economy to achieve a 2.4 percent gain in GDP in the face of weakening global economic performance. (The total GDP contribution of construction spending increased 10.5 percent.) According to IHS economics, the construction industry is expected to continue growing at single-digit rates after 2018, until at least the end of the current decade.

With the direct and indirect impact of construction spending on the U.S. economy (GDP) in 2015 totaling $3.2 trillion and accounting for 17.8 percent of GDP, the continuing growth of construction spending that began in 2011 will provide continuing support to the economy's growth rate during the next several years. That is, the growth rate for construction spending will exceed the GDP growth rate annually for at least the next five years.

**Measuring Economic Value.** To fully understand the impact of development expenditures on the performance of the national, state and local economies, one must identify and measure the range and composition of activities and associated spending and their interdependencies with the economy's other sectors. The economic value of commercial buildings extends well beyond their initial construction value, and even this

construction value is often understated. In order to establish the comprehensive measure of this value, it is necessary to understand that the process of creating the built environment is carried out in a logical sequence, and the underlying elements in each phase must be examined to determine the full expenditures associated with commercial buildings. These key phases consist of the following:

- Pre-construction (soft costs), including design, engineering, legal and other processes.
- Construction, including site development, building activity (hard costs) and tenant improvements.
- Post-construction, including ongoing building operations.

Direct spending during these three development phases provides the foundation for calculating the contribution of development to the national economy as well as to respective state and local economies.

Five expenditure types are examined to determine the monetary expenditures associated with development, construction and operations. These consist of the following:

- Soft construction costs (architecture, engineering, marketing, legal, management, administration).
- Site development costs (grading, paving, landscaping, roadway, parking, off-site improvements).
- Hard construction costs (labor, materials, construction management).
- Tenant improvements (interior design and construction, excluding furniture and equipment).
- Building operations (maintenance, repair, custodial services, utilities, property management).

The direct spending for development and operations generates additional jobs and increases payrolls. These dollars are re-spent within the local, state and national economies, generating additional economic benefits. The total economic impact of these direct development-related expenditures can be calculated by applying national, state and local multipliers. These multipliers measure the far-reaching effects of the initial expenditures on the overall U.S. economy as these initial expenditures are recycled/re-spent within the economy. Using the multipliers, this report calculates the following:

- Total economic contribution to the U.S. economy (GDP).
- New personal earnings (wages and salaries) generated.
- Jobs supported throughout the U.S. economy, including direct construction jobs.

The "jobs supported" figures do not equate only to net new jobs; they include both new and existing jobs in the economy needed to support the 2015 level of development, construction and operations reported herein.

Combined, the pre-construction, construction, and operations phases — and their associated economic impacts — represent commercial real estate development's enduring financial strength and compounded contribution to the economy. The economic contributions associated with new office, industrial, warehouse and retail development in 2015 are summarized in Table 2.

**The Importance of the Construction Sector to U.S. GDP.** In 2015, construction spending nationwide for residential and nonresidential buildings and nonbuildings (e.g., roads, bridges, pipelines) totaled $1.1 trillion and, when multiplied to reflect its full contribution, accounted for 17.8 percent of GDP. (See Table 1.) This spending level, while still below its high in 2006, when construction spending totaled $1.16 trillion and accounted, with the full

multiplier effect, for 28.8 percent of GDP, is the greatest value of direct construction spending since that peak. The importance of the construction sector to the vitality of the national economy is illustrated by the 30.0 percent decline in construction spending between 2007 and 2010 and the 2.2 million construction jobs lost during that period.

Beyond those construction jobs, this decline in construction spending negatively impacted employment across the broader economy, most visibly in the manufacturing, professional and business services, and retail sectors. Decreased employment brought about declining personal earnings across all sectors as payroll expenditures fell during the building industry's long recession.

The construction sector's recovery, beginning in mid-2011, established the foundation for the forecasts for the U.S. economy going forward. However, this recovery lost momentum in 2013, as the global economy continued to struggle with its recovery (especially in Europe) and the U.S. economy digested changes in fiscal policy and federal spending reductions. In 2014, GDP gained 2.4 percent, despite its first-quarter decline, and was boosted by increased consumer confidence and increasing consumer spending in response to a rapid decline in energy prices during the second half of 2014.

These favorable conditions at the end of 2014 raised the initial 2015 GDP forecast to 3.0 percent. However, lower-than-expected growth in the Asian economies, continuing weak economic performance in Europe, declining U.S. exports due to the strength of the dollar against the currencies of the nation's major trading partners and continuing geopolitical uncertainty took their toll on the U.S. economy and resulted in annual growth of only 2.4 percent.

With these global headwinds projected to continue in 2016, combined with the negative effects from disinvestment in the domestic energy sector as well as the strength of the U.S. dollar and the adverse effect on demand for U.S. manufactured goods, the revised GDP forecast for 2016 was lowered in April 2016 to 2.1 percent from its 2.9 percent target at the beginning of the year. With the Federal Reserve Board expected to continue to slowly tighten interest rates this year and in each of the next two years as wage rates and inflation pressures rise, GDP growth is expected to moderate slightly after peaking in 2017 but remain positive at least to 2021. Strong consumer spending and growth in housing investment and construction more broadly will drive much of this economic growth going forward.

Table 4
**Total U.S. Construction Spending, 2010-2015**
(In Billions of Current Year Dollars)

| Type | Value | Percent Change 2014-2015 |
|---|---|---|
| Residential Building | | |
| 2015 | $ 424.0 | 13.0% |
| 2014 | 375.1 | |
| 2013 | 329.2 | |
| 2012 | 276.0 | |
| 2011 | 252.6 | |
| 2010 | 252.3 | |
| Nonresidential Building | | |
| 2015 | $ 430.7 | 15.8% |
| 2014 | 371.8 | |
| 2013 | 342.7 | |
| 2012 | 338.6 | |
| 2011 | 319.1 | |
| 2010 | 330.2 | |
| Nonbuilding[1] | | |
| 2015 | $243.5 | -1.2% |
| 2014 | 246.5 | |
| 2013 | 234.4 | |
| 2012 | 235.8 | |
| 2011 | 216.6 | |
| 2010 | 226.7 | |
| **Total** | | |
| **2015** | **$1,098.2** | **17.6%** |
| **2014** | **933.4** | |
| **2013** | **906.4** | |
| **2012** | **850.4** | |
| **2011** | **788.3** | |
| **2010** | **809.3** | |

*Source: U.S. Census, Value of Construction Put in Place, 2016*
[1]Includes infrastructure such as water and sewer, highways, power.
Note: All historic data have been updated to reflect the latest census release.

**Office, Industrial, Warehouse and Retail Hard Construction Spending Weakens in 2015.** At the pre-recession peak in 2007, hard construction expenditures totaled $96.2 billion and accounted for 875.6 million square feet of new office, industrial, warehouse and retail building space. (See Table 5.) During the next three years, hard construction spending declined by 55.4 percent and the amount of space constructed declined by 73.3 percent.

Hard construction spending reversed this downward trend in 2011, when it increased for the first time since 2007. This recovery accelerated for four years, through 2014. However, due to construction spending reductions in highly specialized and tremendously costly energy-related buildings, industrial construction expenditures declined by 31.6 percent in 2015, offsetting the 6.6 percent increase in construction expenditures for office, warehouse and retail buildings combined. In 2015, hard cost expenditures for office, industrial, warehouse and retail development totaled $81.2 billion, down $6.6 billion from its 2014 total of $87.8 billion, for a decline of 7.5 percent. A total of 429.3 million square feet of building space was added to the inventory in 2015, down 3.1 percent from the 443.2 million square feet added in 2014.

Table 5
**Office, Industrial, Warehouse and Retail Construction in the U.S.**

| Year | Value (In Billions of Current Year Dollars)[1] | Net New Square Feet (In Millions) |
|---|---|---|
| 2015 | $81.2 | 429.3 |
| 2014 | 87.8 | 443.2 |
| 2013 | 61.1 | 363.6 |
| 2012 | 52.8 | 333.2 |
| 2011 | 53.3 | 262.3 |
| 2010 | 42.9 | 233.6 |
| 2009 | 47.7 | 273.1 |
| 2008 | 91.0 | 640.1 |
| 2007 | 96.2 | 875.6 |

*Source: Dodge Data & Analytics, Construction Analytics*
[1]Hard costs

As the U.S. economic recovery began to expand in 2010, hard construction spending has generated important economic benefits and has helped drive the economy's growth, beginning in mid-2011, with the generation of 64,000 direct construction jobs during the last half of the year. Since 2011, continuing growth of construction spending has added a total of 986,000 net new direct construction jobs through 2015, with 296,000 of these being added in 2015.

The growth of construction spending has stimulated job growth in construction-related industries. The accumulated effects of this direct, indirect and induced job growth are reflected in the trends in total construction job growth nationally. These turned positive in 2011, following a 0.7 percent decline in 2010 and, according to the U.S. Bureau of Labor Statistics, have increased each year since: up 1.7 percent in 2012, 1.6 percent in 2013, 1.9 percent in 2014 and 2.1 percent in 2015. Total U.S. employment is projected to increase 1.9 percent in 2016.

As shown in Table 2 on page 3, the effects of $81.2 billion in hard construction expenditures added $236.2 billion to the national economy (GDP) in 2015, as the full impact of these hard construction expenditures (payroll and purchases) circulated through the economy. This hard construction spending supported 1.7 million jobs (full-time, year-round equivalent) across all sectors of the economy, generating personal earnings totaling $74.8 billion. This hard construction spending accounted for 52.4 percent of total spending for office, industrial, warehouse and retail building development in 2015.

The other 47.6 percent of total development-related expenditures included soft construction (soft costs), site development and tenant improvement costs. In 2015, this development-related spending totaled an estimated $73.8 billion. It also:

- Contributed $214.2 billion to U.S. GDP.
- Generated $71.0 billion in new personal earnings.
- Supported a total of 1.5 million jobs.

The combined economic contributions of the $155.0 billion in expenditures made during all four phases of development added 429.3 million square feet of new office, industrial, warehouse and retail building space to the existing inventory during 2015. It also:

- Contributed $450.4 billion to U.S. GDP.
- Generated $145.7 billion in new personal earnings.
- Supported a total of 3.2 million jobs that spanned the full breadth of the economy.

**Contributions of Building Operations in 2015.** In addition to the significant contribution to GDP and job and income growth nationwide that constructing 429.3 million square feet of new building space represents, these buildings continue to provide economic benefits to their economies long after construction is completed. These economic impacts include spending required to maintain and operate the buildings and the value of the work done in them. The operating expenditures associated with the office, industrial, warehouse and retail space built in 2015 are estimated to total $1.4 billion annually. This direct spending for building operations will:

- Add $3.7 billion to U.S. GDP.
- Generate $1.1 billion in new personal earnings.
- Support 27,299 new jobs.

These operating expenditures are annual and recur yearly over the life span of the building. Adding these new operating expenditures to those required to operate the total 45.1 billion square foot inventory of office, retail and industrial/flex building space in existence in 2015 brings this operating expenditure total to $147.0 billion with an overall contribution to GDP totaling $387.7 billion. These total operating expenditures would support 2.9 million jobs nationwide with personal earnings (wages and salaries) of $111.1 billion.

**Jobs Housed in Net New 2015 Space.** Similarly, the potential productive value of these new building spaces represents a significant annual contribution to the local, state and national economies. The actual total output value of this new space is the sum of the values of the work done in these buildings. A partial measure of this total value is represented by the jobs that could be housed in this space and the earnings that these jobs may generate. Using updated jobs-per-square feet estimates reflecting current occupancy patterns and current average salary levels, this new space would have the capacity to house 1.084 million jobs with an annual payroll of $53.0 billion. (See Table 20 on page 33.)

**Outlook: Construction Spending and U.S. GDP.** The strength of the U.S. economy's recovery is directly linked to the pace of recovery experienced by the construction sector, both residential and nonresidential. As construction expenditures have increased since 2011, GDP has grown as well in spite of major disruptions from external

forces such as federal spending reductions in 2013 and collapse of the commodities-dependent (oil and other minerals) economies in 2015 that resulted in the U.S. economy not reaching its full potential. Still, the U.S. economy has sustained a 2.4 percent growth rate two years in a row in spite of growing uncertainties in international markets and the growing strength of the dollar among international currencies. And, these conditions are expected to prevail through 2016 and continue to dampen GDP growth this year.

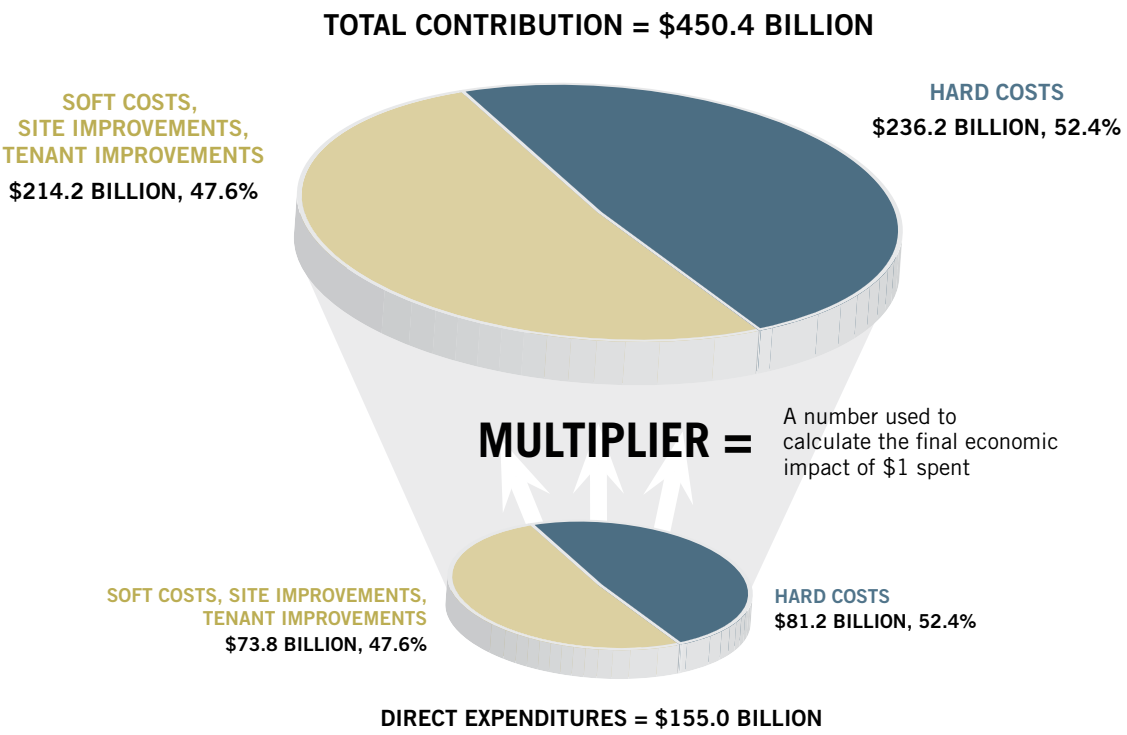
In spite of these uncertain global economic conditions, forecasts for the U.S. economy beyond 2016 remain positive, with the broad base of the economy projected to grow through 2021 according to IHS Economics (April 2016). This positive economic outlook reflects continued strong performance of both residential and nonresidential construction with combined annual growth rates exceeding the projected GDP growth rate for each of the next five years.

IHS Economics (April 2016) projects that fixed investment in both residential and nonresidential (retail, office, health care and warehouse) construction will increase between 8 and 10 percent in 2016. With total construction spending accounting directly for 6.1 percent of GDP and contributing a total economic impact in support of GDP of 17.8 percent, the growth of construction spending this year will be important to sustaining the economy's expansion, given the growing turbulence in the global economy.

Employment growth in 2016 is projected to closely parallel the record gains achieved in 2015. The growth of personal income, which has lagged the recovery, is expected to register stronger growth as unemployment remains below 5 percent, thereby fueling expansion-induced wage pressures. With growing personal earnings and continuing low energy prices, consumer spending is projected to remain strong in 2016 and should continue to support the growth of the residential construction sector. This combination of continuing job growth and increasing residential demand will provide a solid foundation for the construction sector in 2016. Going forward, the U.S. economy cannot achieve a sustained expansion in the absence of the construction industry's full recovery, which currently is projected to be achieved in 2017.

The analyses presented in this report define the economic impacts of the nonresidential building construction industry, highlighting the economic impacts flowing from office, industrial, warehouse and retail construction and operations. As the economy continues to grow, it is important for government officials at all levels — as well as investors, developers and builders — to understand the range and magnitude of the construction industry's contributions to the national, state and local economies; their patterns of performance during the business cycle; and the direct correlation between the magnitude and length of the expansion and the health and performance of the building industry.

Figure 1
**How Commercial Building Development Contributed to the U.S. Economy in 2015**



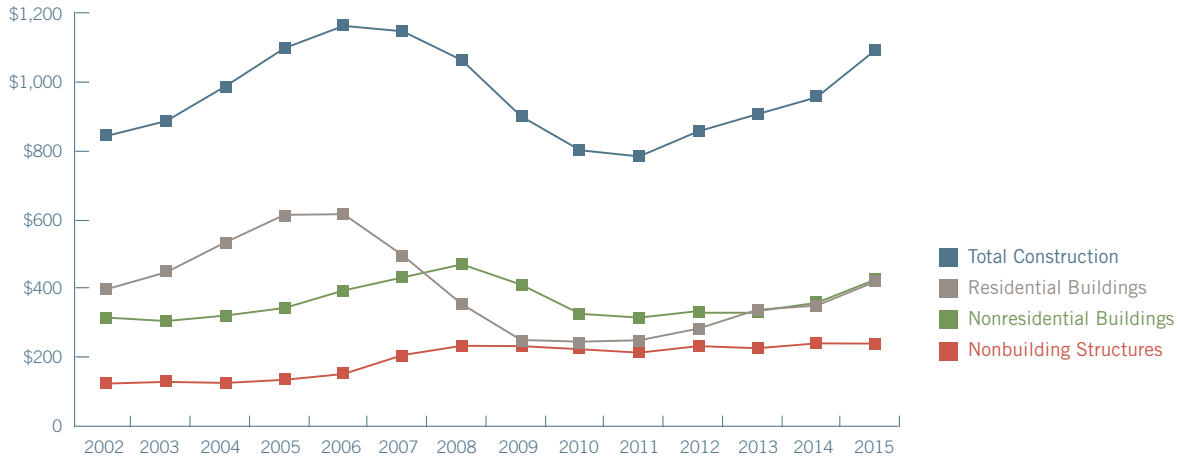

## Construction Sector Trends and Outlook

The Great Recession began in December 2007 and ended in June 2009. Although the economy will have been in recovery for a full seven years by June 2016, the consequences of the recession remain evident. Many sectors have not recovered the jobs lost during the downturn, and their growth has been uneven from quarter to quarter.

While employment growth accelerated in 2014 and this positive trend continued through 2015 and into the first quarter of 2016, adding an average of more than 200,000 net new jobs per month, average wage growth has not recovered to pre-recession levels. Still, unemployment has fallen below 5 percent and the labor force is now increasing for the first time since the recession. This has raised concerns that wage inflation will impact the economy's performance going forward, as will higher interest rates. (The Federal Reserve Board raised the federal funds rate to 0.5 percent at its December 2015 meeting and is expected to possibly raise rates twice in 2016, to 1.0 percent by the December 2016 meeting. The federal funds rate is expected to peak at 3.0 percent by 2019.)

Construction was one of the hardest-hit sectors during the recession. The value of total construction put in place, according to data provided by the U.S. Census, decreased from $1.167 trillion to $778.2 billion, a decline of 33.3 percent, from its peak in 2006 to the bottom of the business cycle (for the construction sector) in 2011. The value of residential construction declined 60.2 percent from its peak in 2006 to its trough in 2011. For nonresidential construction (buildings and nonbuildings), the value of construction activity peaked in 2008 and declined 31 percent over three years to 2011, when construction spending began the recovery that registered a solid gain of 9.3 percent in 2012, followed by a 19.2 percent gain in 2013. In 2014 construction spending increased 13.9 percent and in 2015 it registered its third consecutive year of double-digit gains, increasing 13.0 percent (See Figure 2.)

Figure 2
**Construction Spending in the U.S., 2002-2015**
(In Billions of Current Dollars)




*Source: U.S. Census, Value of Construction Put in Place*

**Construction Sector Growth Remains Strong in 2015.** The construction sector has been in recovery for five years and still has not regained pre-recession levels of activity. Still it has come a long way back. In 2015, the total value of construction put in place was 39.3 percent greater than construction spending in 2011. But not all types of construction spending are growing at the same rate. The value of residential construction spending increased 67.8 percent between 2011 and 2015, while the value of nonresidential building construction expenditures increased 35.0 percent. Nonbuilding construction spending (infrastructure) increased 12.4 percent over this three-year period.

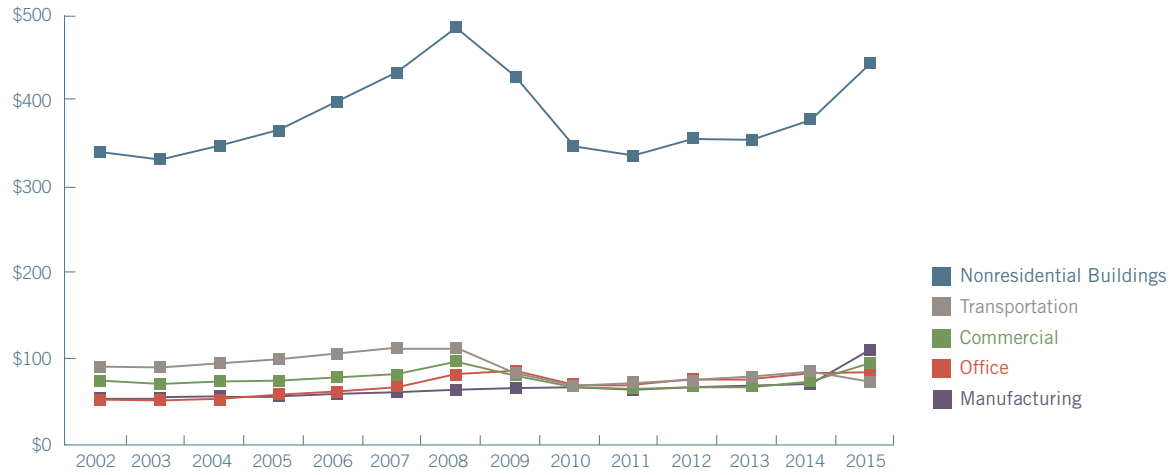
Current forecasts by IHS Economics show the construction sector continuing its upward trend in the value of construction put in place, although different building types will experience different performance patterns. Residential construction is projected to increase each year (starts and residential fixed investment), at least until 2021, with the peak rate of construction spending occurring in 2017. In contrast, nonresidential building construction spending presents an uneven growth trend. It will be negatively impacted by weakness in manufacturing and energy-related construction in 2017 and 2018. Yet construction spending for retail, office and health care buildings is projected to remain strong in 2016, peak in 2017 and continue to grow through at least 2021.

**Residential Construction Continues to Expand.** Figure 2 illustrates the patterns of total construction spending by major category over the business cycle. Residential construction spending peaked as a percentage of total construction spending in 2005 at 56 percent, with its share declining each subsequent year to 2009, when it reached 28.1 percent. After bottoming out in mid-2011, residential construction has regained share each year. By 2015, residential construction spending accounted for 38.6 percent of total construction (both building and nonbuilding).

**Nonresidential Construction Expands in 2015.** The value of nonresidential building construction peaked in 2008. In 2009, nonresidential building construction spending declined by 8.4 percent. This contraction accelerated in 2010, with the value of new nonresidential construction decreasing 14.4 percent. During the three-year period from 2008 to 2011, the value of nonresidential construction declined 24.6 percent. This downward trend in construction spending slowed to 3.8 percent in 2011 and, for several building types, turned positive. Nonresidential building construction spending increased in 2012 but held steady in 2013 before registering a solid 7.1 percent gain in 2014. In 2015, the value of nonresidential construction put in place increased 9.0 percent.

As shown in Figure 3, construction spending for four categories of nonresidential building types — office, retail, transportation (which, in the U.S. Census data set, includes warehouse properties) and manufacturing — has tracked a relatively smooth pattern through each category's respective growth cycle. Since 2012, total construction spending for 10 nonresidential building types (see Table 6) has increased 27.2 percent. Over this period, three building types — health care, public safety and religious — have experienced decreases in construction spending, while strong gains have been registered by retail (42.3 percent), manufacturing (74.8 percent), office (48.7 percent), lodgings (95.4 percent) and transportation, which includes warehouse (17.9 percent). The performance of these nonresidential building types is shown in Figure 3 and in Table 6.

Figure 3
**Nonresidential Construction Spending in the U.S., 2002-2015**
(In Billions of Current Dollars)




*Source: U.S. Census, Value of Construction Put in Place*

Table 6
**U.S. Nonresidential Construction Spending, 2012-2015**
(In Billions of Current Year Dollars)

| Type of Structure | 2012 | 2013 | 2014 | 2015 | % Change 2012-2015 |
|---|---|---|---|---|---|
| Transportation | $37.9 | $39.4 | $41.8 | $44.7 | 17.9 |
| Health Care | 42.6 | 40.7 | 38.4 | 40.0 | -6.1 |
| Retail | 47.3 | 53.2 | 62.7 | 67.3 | 42.3 |
| Manufacturing[1] | 47.7 | 50.5 | 57.8 | 83.4 | 74.8 |
| Amusement/Recreation | 15.5 | 15.2 | 16.6 | 20.7 | 33.5 |
| Education | 84.7 | 79.1 | 79.7 | 85.0 | 0.4 |
| Public Safety | 10.4 | 9.5 | 9.4 | 8.9 | -14.4 |
| Office | 37.8 | 38.0 | 46.1 | 56.2 | 48.7 |
| Religious | 3.9 | 3.6 | 3.2 | 3.4 | -12.8 |
| Lodgings | 10.8 | 13.5 | 16.1 | 21.1 | 95.4 |
| **Total**[2] | **$338.6** | **$342.7** | **$371.8** | **$430.7** | **27.2%** |

*Source: U. S. Census, Value of Construction Put in Place, 2016*

[1] Includes warehouse/flex space.

[2] Totals include some miscellaneous state and local government buildings but exclude spending for nonbuilding construction on items such as communications, power, highways, sewer and water.

Note: All historic data have been updated to reflect the latest census release.

**Outlook: Residential and Nonresidential Construction.** The U.S. economy completed its seventh year of recovery in June 2016. This recovery has been characterized by uneven growth rates for GDP and personal earnings, a job growth trend that was the strongest since 2006 and has continued through the first quarter of 2016, a steadily declining unemployment rate and a lengthy recovery of the residential and nonresidential construction sectors. In 2015, the unemployment rate fell from 5.6 to 5.0 percent by year's end while 2.6 million net new jobs were added. Increases in consumer confidence and lower energy costs supported increased consumer spending in 2015 as was expected. Yet weakness in manufacturing, attributable primarily to decreased exports, dampened the GDP forecast in 2015, with actual GDP coming in at 2.4 percent, the same as for 2014. The economic headwinds that could undercut 2016's growth rate include higher interest rates, a weaker dollar that is making exports more expensive and imports cheaper, continuing weaker global economic performance, geopolitical uncertainty and incidents of terrorism, and disruptions in the energy sector affecting capital investment and consumer confidence.

**Residential** building construction spending has increased each year since 2010 and is up 68.0 percent over this period. Multifamily housing construction has increased its share of residential construction spending during this recovery and is expected to retain a larger share of residential construction spending even after single-family housing construction increases towards its equilibrium level over the next three years. Current forecasts by IHS Economics (April 2016) indicate that residential construction spending is projected to increase 9.5 percent in 2016 after increasing a strong 8.9 percent in 2015. IHS Economics is projecting healthy gains in residential fixed investment in 2017 (up 8.3 percent) and in 2018 (up 5.5 percent).

Single- and multifamily housing starts in 2015 totaled 1.1 million units. Starts are projected to increase each of the next five years, with 1.2 million starts expected in 2016. By 2020, starts are projected to reach 1.6 million units. Current forecasts have residential building peaking in 2021 at 1.63 million starts. Still, just a year ago, this volume of starts had been expected by 2017. This underscores the slower pace of growth in residential construction than had been anticipated, dating back to the early years of the recovery. Thirty-year fixed home mortgage rates, currently just below 4.0 percent, are projected to rise to 5.0 percent by 2018 and to peak at 5.7 percent by 2019. These higher rates will reinforce the slower recovery of residential construction during the remainder of this business cycle.

**Nonresidential** construction expenditures turned positive in 2011, increased by 7.2 percent in 2012, and held almost steady in 2013, when they increased by 0.5 percent. They then registered solid gains of 7.1 percent and 9.0 percent in 2014 and 2015, respectively. Forecasts for 2016 confirm an uneven pattern of investment across the broad range of building types. Construction spending for manufacturing structures increased steadily over the 2011 to 2014 period (by 42.4 percent), with fixed investment up 49.1 percent in 2015. In contrast to this high rate of increase, fixed investment in manufacturing structures is projected to decrease slightly, by 0.6 percent, in 2016 and to decrease more significantly, by 7.2 percent, in 2017.

Construction spending for retail and office buildings was up in 2015 and is projected to continue growing in 2016 before peaking in 2017. Beyond 2017, it is expected to experience continuing but slower growth. Construction spending for warehouse and flex space has increased steadily since 2011, but is projected to register slower growth in 2016. These slower growth trends are expected to continue over the remainder of the decade. The growth projections for nonresidential construction reflect the expected moderate performance of the U.S. economy over the next five years, with growth rates peaking in 2017 and 2018 at about 2.7 percent and returning to around 2.4 percent in 2019. The annual GDP growth rate for 2016 is currently forecast at 2.3 percent, slightly slower than the 2.4 percent rates achieved in both 2014 and 2015.

**Construction employment**, which declined by 2.2 million jobs between 2006 and 2010, began to add new jobs in mid-2011, according to the Bureau of Labor Statistics. Construction employment now has increased for a fifth year. Between December 2014 and December 2015, the construction sector added 296,000 net new jobs. From the low point in May 2011 through 2015, a total of 1.081 million net new construction jobs were created. Still, employment in the construction sector remained 1.092 million jobs below its peak in March 2006.

**Outlook: The U.S. Economy.** The importance of the construction sector to the recovery of the U.S. economy is well established. The recovery's sluggishness during its first seven years, dating from June 2009, 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 been steadily increasing each year from its 2011 low, the U.S. economy has gained traction in spite of its disappointing performance in 2013, when GDP only increased 1.5 percent, and slower-than-expected acceleration in 2014 and in 2015, with GDP up 2.4 percent in each of those years.

The continuing recovery of the construction sector helped to buttress the national economy during 2013 as federal spending, as well as state and local government spending, was curtailed. This expected uptick in construction activity has helped to establish the foundation for the national economy's expected positive performance over the remainder of this decade. Over the next five years, the construction sector is projected to grow (by value) at annual rates ranging between 2.5 percent and 6.5 percent. This continuing expansion will support GDP gains during this same period ranging from 2.4 to 2.8 percent, according to IHS Economics (April 2016 forecast). By compensating for slower-growing sectors, the construction sector's gains will provide the foundation that will extend the economy's expansion into the next decade, making it the longest business cycle in history. (If the economy avoids recession through June 2020, it will tie the previous longest business cycle record of 10 years, which was achieved in the 1980s).

# Economic Contributions

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

The U.S. economy continued its slow recovery during 2015. Expectations for stronger growth in 2015 were dashed early in the year by continuing uncertainty generated by the European economy's continuing weak performance, the Asian economies' slowing down and the deep freeze that settled over North America in January and February, including record-setting snowfall in New England. These factors and others combined to push GDP growth negative (-0.2 percent) in the first quarter. With a strong GDP rebound in the second quarter (3.9 percent) and continuing gains in the third quarter, the Federal Reserve Bank began to signal that economic conditions had improved sufficiently to support an increase in interest rates. This first increase in the federal funds rate since August 2007 took effect in January 2016.

The uneven GDP performance in 2015 showed how difficult it is to predict. In addition to the global factors impacting GDP growth, domestic variables became increasingly important. The strong second quarter performance was due in large part to inventory accumulation, with substantial economic activity directed at producing products for future sale. Unfortunately, this buildup in inventories undermined economic activity in the second half of 2015 and these oversized inventories of both goods and building space continue to weigh on the economy's performance in 2016.

These inventory surpluses include petroleum products, consumer goods and some types of building space; for example, excess manufacturing space as a result of continuing low utilization rates. In some markets, office and retail vacancy rates have been increasing for more than a year. The inventory cycle is self-correcting and, as inventories are reduced, new orders and increased economic activity will result. Forecasts for the second through fourth quarters of 2016 are for substantially stronger GDP growth of 2.6 to 2.9 percent. This trend is expected to accelerate and peak in 2017. This continuation of the economic expansion will be sustained and, for some building types, will result in increased construction investment in 2016 and 2017.

**Construction Activity Supports Continuing Economic Growth in 2015**. A key factor in the economy's continuing growth in 2015 was the continuing expansion of the construction sector, with construction spending increasing each year since 2011, gaining 39.3 percent between 2011 and 2015. Total construction spending registered its strongest one-year gain in 2015, increasing 19.9 percent from 2014.

**Residential construction** spending registered a healthy gain of 13.0 percent in 2015, after a strong performance (increasing 13.3 percent) in 2014. In 2014, residential starts exceeded 1 million for the first time since 2007 (before the recession). They currently are projected to continue increasing each year through the end of the decade. However, a number of factors will contribute to a slowing rate of increase in housing starts over this period, including poor wage growth, limited access to credit, student loan burdens, lower marriage rates, slower immigration and changing generational values and preferences. The rate of increase in housing starts is projected to moderate over this period, from 10.6 percent in 2015 and 8.4 percent in 2016 to 4.3 percent by 2020.

The value of **nonresidential building construction** increased 15.8 percent during 2015, double its growth rate in 2014 (8.5 percent). Since its recovery began in mid-2011, nonresidential building construction spending has increased 35.0 percent through 2015, reflecting an increase of $111.6 billion in construction spending, with all 10 building type categories experiencing gains in 2015. (See Table 6.)

**Building and Nonbuilding Construction, Output Multipliers, and GDP.** According to the U.S. Census, the total value of building and nonbuilding construction spending put in place in the U.S. in 2015 was $1.1 trillion. This accounted directly for 6.1 percent of the nation's GDP of $17.9 trillion. With an output multiplier of 2.91, each $1 of this construction spending generated an additional $2.91 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 2015 increases the value of its overall contribution to GDP to $3.2 trillion, accounting for 17.8 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 17.8 percent of all economic activity in 2015. For the year, GDP increased by $421 billion from its 2014 value (in real dollars). In comparison to this overall gain in GDP during 2015, the total value of construction spending ($1.1 trillion) was 2.6 times greater than the year's annual GDP growth in dollar value.

**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 2015, the $1.1 trillion in construction spending:

- Contributed $3.2 trillion to U.S. GDP.
- Generated $1.01 trillion in new personal earnings.
- Supported a total of 22.5 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 7, total hard construction expenditures for these four building types decreased in 2015 by 7.5 percent from 2014.

**Office construction** expenditures increased by 3.0 percent in 2015, building on their strong gain of 29.8 percent in 2014.

**Retail construction** expenditures experienced a strong gain in 2015, up 8.2 percent from 2014, when they had registered a 1.1 percent gain.

**Warehouse construction** registered a fifth strong year of increased expenditures in 2015, gaining 10.8 percent.

**Industrial construction** spending decreased sharply in 2015, falling 46.2 percent, following a very strong gain in 2014, when it increased 74.2 percent. This pullback in industrial/manufacturing construction in 2015 can be attributed to the downturn in the energy sector and a slowdown in global demand for U.S. manufactured goods.

Table 7
**Comparing Construction Expenditures (Hard Costs), 2014 and 2015**
(In Billions of Current Year Dollars)

| Building Type | 2014 | 2015 | $ Change |
|---|---|---|---|
| Office | $27.60 | $28.44 | $0.84 |
| Industrial | 32.41 | 22.16 | –10.25 |
| Warehouse | 10.74 | 12.04 | 1.30 |
| Retail/Entertainment | 17.01 | 18.53 | 1.52 |
| **Total** | **$87.76** | **$81.17** | **–$6.59** |

*Sources: Dodge Data & Analytics, GMU Center for Regional Analysis*

**Expenditures and Square Footage (All Structures Combined)**. The total square feet of new construction in 2015 for these four building types experienced a decline of 3.1 percent from 2014. While the amount of space built decreased for three of the building types (only warehouse space increased in 2015), the value of this added building space increased for three building types—office, warehouse and retail. Only manufacturing building construction experienced decreases in both the square footage of space added and its value of construction compared to 2014. (See Table 8.)

Table 8
**Office, Industrial, Warehouse and Retail Construction, 2015**

| Building Type | Square Feet (In Millions) | Construction Value[1] (In Billions of 2015 Dollars) |
|---|---|---|
| Office | 89.1 | $28.44 |
| Industrial | 58.4 | 22.16 |
| Warehouse | 175.0 | 12.04 |
| Retail | 106.8 | 18.53 |
| **Total** | **429.3** | **$81.17** |

*Sources: Dodge Data & Analytics; GMU Center for Regional Analysis*
[1] Hard costs.

**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 (2.91),

personal earnings (0.9209), and employment (20.5308). This report uses new multipliers released by the BEA in fall 2015; previous reports used BEA multipliers that had not been updated since 2013. For more information, see "New Economic Multipliers" on page 33.

State-level direct spending and associated economic impacts for pre-construction, construction and post-construction 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 expenditures that are retained within the respective state economies. Construction-related spending flows that leak out of each state economy to other states are excluded. Smaller states and state economies that are less well developed tend to retain smaller portions of the benefits from construction 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 new BEA multipliers are applied, direct expenditures of $155.01 billion in 2015 resulted in a contribution of $450.4 billion to U.S. GDP, generated $145.7 billion in new personal earnings and supported 3.2 million new jobs. (See Table 9.)

Table 9
**Office, Industrial, Warehouse and Retail Construction and Operations Contribution to the U.S. Economy, 2015**
(In Billions of 2015 Dollars)

| Source | Direct Expenditures | Total Economic Contribution to GDP[1] | Personal Earnings[2] | Jobs Supported[3] |
|---|---|---|---|---|
| **Development Phase** | **$155.01** | **$450.38** | **$145.70** | **3,205,499** |
| Soft Construction (Soft Costs) | 23.84 | 68.68 | 24.91 | 512,509 |
| Site Development[4] | 20.20 | 58.79 | 18.60 | 414,765 |
| Hard Construction (Hard Costs) | 81.17 | 236.20 | 74.75 | 1,666,470 |
| Tenant Improvements[5] | 29.80 | 86.71 | 27.44 | 611,755 |
| **Annual Operations** | **$1.392** | **$3.672** | **$1.052** | **27,299** |

*Sources: Dodge Data & Analytics; GMU Center for Regional Analysis*

[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 E and F for state-level data.

# Calculating Economic Contributions

## Soft Construction (Soft Costs), Site Development and Tenant Improvement Expenditures

To estimate the expenditures associated with the non-hard construction phases of development, NAIOP surveyed its membership in November 2006, April 2007, February 2012, February 2013 and February 2016. The 2016 survey captured recent trends in construction spending by building type for the four phases of development (soft construction, site development, hard construction and tenant improvement) that reflect the continuing change in the mix of products, location and market conditions describing the commercial building sector. The results of the 2016 survey have been utilized in these 2015 calculations. The results of the 2016 survey are reported in Appendix H along with the results of the previous surveys.

Soft construction (soft costs), site development and tenant improvement expenditures in 2015 totaled an estimated $73.8 billion. Table 10 presents the spending that occurred for each phase. The variations in the distribution of these costs by building type reflect differences in building design and function. Tenant improvement costs for office buildings, for example, are typically more expensive than those for warehouses because of the more expensive finishes required by office tenants.

Table 10
**Direct Expenditures by Building Type, 2015**
(In Billions of 2015 Dollars)

| Building Type | Soft Construction (Soft Costs) | Site Development | Tenant Improvements | Total |
|---|---|---|---|---|
| Office | $9.50 | $7.92 | $11.92 | $29.34 |
| Industrial | 4.75 | 3.64 | 8.24 | 16.63 |
| Warehouse | 2.93 | 3.22 | 2.63 | 8.78 |
| Retail | 6.66 | 5.42 | 7.01 | 19.09 |
| **Total** | **$23.84** | **$20.20** | **$29.80** | **$73.84** |

*Sources: NAIOP; GMU Center for Regional Analysis*
Note: Column and row values may not add up due to rounding; see Appendices A, B and D for state and building type data.

**Output Multipliers and GDP.** The direct spending associated with the soft construction (soft costs), site development and tenant improvement phases of development generate economic impacts beyond the initial value of these expenditures.

Financing fees, insurance and taxes are not included in this analysis within the soft construction category, as these have little immediate economic impact. These economic impacts are calculated by applying national multipliers to determine their contributions to GDP, personal earnings and employment. Composite multipliers were developed to reflect the mix of services and activities associated with each category of expenditure, as described below:

Soft Construction Expenditures (Soft Costs):

- For each $1 of soft construction expenditures, a total contribution to GDP of $2.88 is generated.
- For each $1 million of soft construction expenditures, personal earnings increase by $1,044,882 and 21.5 jobs are supported.

Site Development and Tenant Improvements:

- For each $1 of site development and tenant improvement spending, a total contribution to GDP of $2.91 is generated.
- For each $1 million of site development and tenant improvement expenditures, personal earnings increase by $920,799 and 20.5 jobs are supported.

State multipliers (see Appendix G) are smaller than the national multipliers because they reflect only the portion of expenditures that are retained within the state economy. Local development-related spending that is captured by other states is excluded.

Smaller states and less well-developed state economies tend to retain smaller portions of the benefits from construction spending as this spending circulates through the national economy.

Nationwide, the $23.8 billion in direct soft construction expenditures in 2015:

- Contributed $68.7 billion to U.S. GDP.
- Generated $24.9 billion in new personal earnings.
- Supported a total of 512,509 jobs.

Site development expenditures of $20.2 billion in 2015:

- Contributed $58.8 billion to U.S. GDP.
- Generated $18.6 billion in new personal earnings.
- Supported a total of 414,765 jobs.

Tenant improvement expenditures of $29.8 billion in 2015:

- Contributed $86.7 billion to U.S. GDP.
- Generated $27.4 billion in new personal earnings.
- Supported a total of 611,755 jobs.

These economic contributions for office, industrial, warehouse and retail products under construction in 2015 are detailed in Table 11.

Table 11
**Contributions of Direct Expenditures for Soft Construction (Soft Costs), Site Development and Tenant Improvements to the U.S. Economy, 2015**
(In Billions of 2015 Dollars)

| Building Type/Source | Direct Expenditures | Total Economic Contribution to GDP[1] | Personal Earnings[2] | Jobs Supported[3] |
|---|---|---|---|---|
| Office | | | | |
| Soft Costs | $9.50 | $27.37 | $9.93 | 204,208 |
| Site Development[4] | 7.92 | 23.05 | 7.29 | 162,645 |
| Tenant Improvements[5] | 11.92 | 34.69 | 10.98 | 244,739 |
| **Total** | **$29.34** | **$85.11** | **$28.20** | **611,592** |
| Industrial | | | | |
| Soft Costs | $4.75 | $13.69 | $4.96 | 102,137 |
| Site Development | 3.64 | 10.59 | 3.35 | 74,693 |
| Tenant Improvements | 8.24 | 23.98 | 7.59 | 169,215 |
| **Total** | **$16.63** | **$48.26** | **$15.90** | **346,045** |
| Warehouse | | | | |
| Soft Costs | $2.93 | $8.44 | $3.06 | 63,006 |
| Site Development | 3.22 | 9.37 | 2.97 | 66,115 |
| Tenant Improvements | 2.63 | 7.64 | 2.42 | 53,892 |
| **Total** | **$8.78** | **$25.45** | **$8.45** | **183,013** |
| Retail | | | | |
| Soft Costs | $6.66 | $19.18 | $6.96 | 143,158 |
| Site Development | 5.42 | 15.78 | 4.99 | 111,311 |
| Tenant Improvements | 7.01 | 20.40 | 6.45 | 143,909 |
| **Total** | **$19.09** | **$55.36** | **$18.40** | **398,378** |
| Total | | | | |
| Soft Costs | $23.84 | $68.68 | $24.91 | 512,509 |
| Site Development | 20.20 | 58.79 | 18.60 | 414,765 |
| Tenant Improvements | 29.80 | 86.71 | 27.44 | 611,755 |
| **Total** | **$73.84** | **$214.18** | **$70.95** | **1,539,029** |

*Sources: NAIOP; GMU Center for Regional Analysis*
[1] The total value of goods and services generated directly and indirectly as a result of initial construction outlays within the U.S.
[2] The additional earnings generated within the U.S. from direct outlays during the construction phase.
[3] The jobs supported nationwide by the spending and re-spending of direct outlays associated with building construction.
[4] Site development includes grading, infrastructure, parking and landscaping.
[5] Tenant improvements exclude furniture and equipment.
Note: Column values may not add up to overall totals due to rounding; see Appendices A, B, and D for state and building type data.

## Economic Contributions of Hard Construction Expenditures (Hard Costs)

Commercial construction spending in 2015 (for the hard construction phase only) reported by Dodge Data & Analytics for office, industrial, warehouse and retail structures totaled $81.2 billion and represented the addition of 429.3 million square feet of new building space. Applying the national construction multiplier of 2.91, the full economic contribution to GDP of this spending can be calculated as $236.2 billion. (See Table 12.) These direct, indirect and induced benefits supported 1.7 million jobs across all sectors of the economy and generated $74.8 billion in new personal earnings.

Table 12
**Economic Contributions of Hard Construction Expenditures (Hard Costs) to the U.S. Economy, 2015**
(In Billions of 2015 Dollars)

| Building Type | Direct Expenditures | Total Economic Contribution to GDP[1] | Personal Earnings[2] | Jobs Supported[3] |
|---|---|---|---|---|
| Office | $28.44 | $82.75 | $26.18 | 583,791 |
| Industrial | 22.16 | 64.48 | 20.41 | 454,929 |
| Warehouse | 12.04 | 35.04 | 11.09 | 247,238 |
| Retail | 18.52 | 53.93 | 17.07 | 380,512 |
| **Total** | **$81.17** | **$236.20** | **$74.75** | **1,666,470** |

*Sources: Dodge Data & Analytics; GMU Center for Regional Analysis*

[1] The total value of goods and services generated directly and indirectly as a result of initial construction outlays within the U.S.

[2] The additional earnings generated within the U.S. from direct outlays during the construction phase.

[3] The jobs supported nationwide by the spending and re-spending of direct outlays associated with building construction.

Note: Column values may not add up due to rounding; see Appendix C for state-level hard cost data.

**Construction Value by State.** The 10 states with the largest construction values (totaling $51.4 billion) accounted for 63.4 percent of the construction expenditures in the U.S., while the top 20 states accounted for 81.6 percent. The top 10 rankings are shown in Table 13 and Figure 4. For comparison with 2014, see Table 14.

Table 13
**Top 10 States by Construction Value, 2015**

| Ranking | Office | Industrial | Warehouse | Retail | All Categories |
|---|---|---|---|---|---|
| 1 | New York | Louisiana | Texas | New York | Texas |
| 2 | Texas | Texas | California | Texas | New York |
| 3 | California | Tennessee | Florida | California | Louisiana |
| 4 | Iowa | Missouri | New York | Florida | California |
| 5 | Illinois | California | Pennsylvania | Ohio | Florida |
| 6 | Washington | Indiana | Illinois | Illinois | Illinois |
| 7 | Massachusetts | North Dakota | New Jersey | Pennsylvania | Ohio |
| 8 | Colorado | Alabama | Ohio | North Carolina | Tennessee |
| 9 | Ohio | Georgia | Georgia | Virginia | Georgia |
| 10 | South Carolina | Michigan | North Carolina | Tennessee | Iowa |

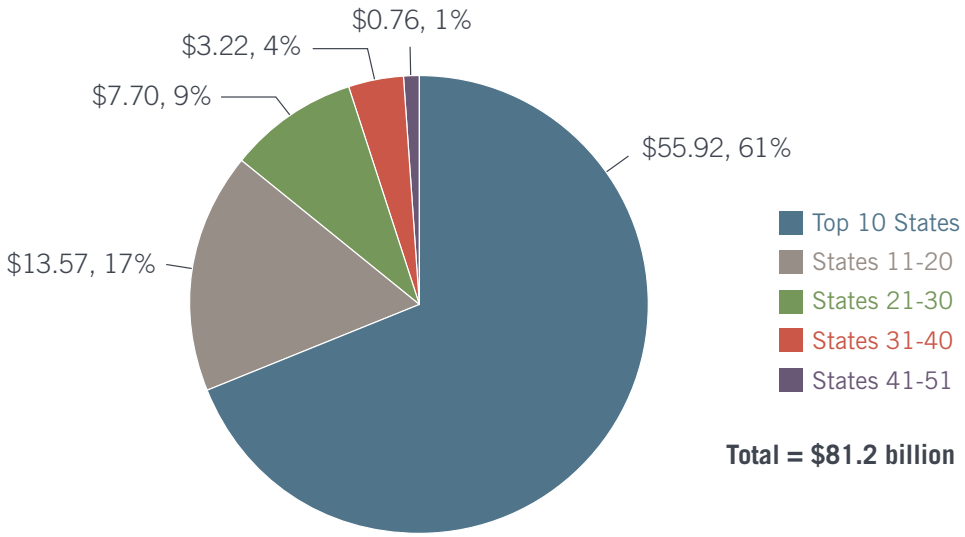
*Sources: Dodge Data & Analytics; GMU Center for Regional Analysis*

Table 14
**Top 10 States by Construction Value, 2014**

| Ranking | Office | Industrial | Warehouse | Retail | All Categories |
|---|---|---|---|---|---|
| 1 | California | Texas | Texas | Texas | Texas |
| 2 | Texas | Louisiana | California | California | California |
| 3 | New York | Nevada | New Jersey | New York | New York |
| 4 | Pennsylvania | Oklahoma | Pennsylvania | Florida | Louisiana |
| 5 | Iowa | Washington | Florida | Illinois | Nevada |
| 6 | Massachusetts | Arkansas | Indiana | North Carolina | Pennsylvania |
| 7 | Illinois | Georgia | Illinois | Pennsylvania | Florida |
| 8 | Washington | Indiana | Georgia | Ohio | Washington |
| 9 | Florida | Minnesota | Ohio | Georgia | Illinois |
| 10 | Virginia | Oregon | Tennessee | Massachusetts | Oklahoma |

*Source: Dodge Data & Analytics*

Figure 4
**Top 10 States Combined by Construction Value in Four Categories, 2015**
(Hard Costs Only; in Billions of 2015 Dollars)




*Source: Dodge Data & Analytics*

## Construction Expenditures

**Office.** Construction expenditures for office buildings accounted for 37.3 percent of the total impacts from all construction expenditures in 2015, up significantly from 2014, when they accounted for 32.0 percent.

**Industrial.** In contrast, construction expenditures for industrial buildings in 2015 decreased their share of total expenditures, from 34.4 percent in 2014 to 25.0 percent in 2015.

**Warehouse.** Construction expenditures for warehouse and flex space increased their share of the total to 13.4 percent in 2015, up from 11.6 percent in 2014.

**Retail.** The share of construction expenditures for retail buildings in 2015 increased to 24.3 percent of the total, up from 22.0 percent in 2014.

## Economic Contributions of Total Development Expenditures

The total economic impact of office, industrial, warehouse and retail development expenditures in 2015 totaled $155.0 billion, reflecting the total of all four development phases. (See Tables 11 and 12). These development expenditures and their economic impacts, by building type, are shown in Table 15.

The magnitude of development expenditures and their associated impacts on GDP, personal earnings and jobs supported, for all building types combined, decreased in 2015. Their total contribution to GDP declined from $528.09 billion in 2014 to $450.38 billion in 2015, a decrease of 14.7 percent. Only warehouse and flex space buildings exceeded their 2014 values and economic impact values in 2015, reflecting the 11.1 percent increase in square feet delivered. All other building types recorded less new space delivered in 2015 than in 2014.

Table 15
**Economic Contributions of Total Development Expenditures to the U.S. Economy**
(In Billions of 2015 Dollars)

| Building Type | Direct Expenditures | Total Economic Contribution to GDP[1] | Personal Earnings[2] | Jobs Supported[3] |
|---|---|---|---|---|
| Office | $57.78 | $167.85 | $54.38 | 1,195,383 |
| Industrial | 38.79 | 112.74 | 36.31 | 800,975 |
| Warehouse | 20.82 | 60.50 | 19.49 | 430,252 |
| Retail | 37.62 | 109.29 | 37.47 | 778,889 |
| **Total** | **$155.01** | **$450.38** | **$145.70** | **3,205,499** |

*Sources: Dodge Data & Analytics; GMU Center for Regional Analysis*

[1] The total value of goods and services generated directly and indirectly as a result of all four development phases within the U.S.

[2] The additional earnings generated within the U.S. from direct outlays during all four development phases.

[3] The jobs supported nationwide by the spending and re-spending of direct outlays associated with all four development phases.

Note: Column values may not add up due to rounding; see Appendix D for state-level hard cost data.

## Building Operations Expenditures

The **existing stock** of built space represents a large and continuing source of economic activity that supports job and income growth across the full breadth of local and state economies. While the expenditures associated with the soft construction, site development, hard construction and tenant improvement phases of development in 2015 represent an important contribution to the national economy, these benefits end once construction is completed. However, the expenditures that support the operations of buildings constructed in 2015 generate ongoing economic contributions that accumulate during the life span of these new buildings. These expenditures extend and magnify the economic benefits that the development of office, industrial, warehouse and retail buildings have on their local economies.

Building operations include expenditures for the following:

- Regular maintenance and repair.
- Custodial (cleaning) services.
- Utilities.
- Management.

Management expenditures represent a wide range of services, including:

- Building management.
- Marketing.
- Leasing.
- Security.
- Building engineering services.
- Finance and accounting.

**Output Multipliers and GDP.** Each of these services has a multiplier effect on the economy and supports on- and off-site jobs within the local, regional and national economies, generating additional personal earnings to the benefit of local residents. These multipliers vary by type of service and state. (See Appendix Tables G-3 to G-6). A sampling of national multipliers is presented in Table 16.

Table 16
**Multipliers for Contributions to GDP, Personal Earnings and Jobs Supported for Select Categories of Building Operations, 2015**

| Category | GDP Mulitipliers[1] | Personal Earnings[2] | Jobs Supported[3] |
|---|---|---|---|
| Building Services | 2.5698 | 0.8008 | 27.2 |
| Management | 2.8145 | 0.9642 | 17.6 |
| Utilities | 2.2475 | 0.5075 | 9.5 |
| Repair and Maintenance | 2.9100 | 0.9209 | 20.5 |

*Source: U.S. Department of Commerce, Bureau of Economic Analysis*

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

[2] The additional earnings generated within the U.S. from direct outlays for building operations.

[3] The jobs supported nationwide by the spending and re-spending of direct outlays associated with building operations. These multipliers represent the number of jobs supported per $1 million of direct expenditures.

**Annual Operating Expenditures.** Operating and managing the 429.3 million square feet of new office, industrial, warehouse and retail building space constructed in 2015 will require $1.392 billion in annual operating expenditures each year going forward.

Operating and managing these buildings, without adjustment for annual inflation or changes in the level and quality of services, will:

- Contribute $3.7 billion to U.S. GDP each year.
- Generate $1.05 billion in total personal earnings each year.
- Support a total of 27,299 jobs each year.

These economic contributions are detailed by building type in Table 17.

Table 17
**Annual Contribution to the U.S. Economy of Post-construction Expenditures for New Building Operations, 2015**
(In Millions of 2015 Dollars)

| Building Type | Direct Expenditures | Total Economic Contribution to GDP[1] | Personal Earnings[2] | Jobs Supported[3] |
|---|---|---|---|---|
| Office | $756.7 | $1,996.0 | $572.1 | 14,841 |
| Industrial | 73.6 | 194.2 | 55.7 | 1,444 |
| Warehouse | 161.0 | 424.6 | 121.7 | 3,157 |
| Retail | 400.6 | 1,056.8 | 302.9 | 7,857 |
| **Total** | **$1,391.9** | **$3,671.6** | **$1,052.4** | **27,299** |

*Sources: BOMA; Delta Associates Inc.; GMU Center for Regional Analysis*

[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 nationwide by the spending and re-spending of direct outlays associated with building operations.

Note: Building operations include maintenance and repair, cleaning, utilities, security, building management and administrative expenses; column values may not add up to overall totals due to rounding; see Appendix F for state and building type data. Column totals may not add up to overall totals due to rounding.

**Economic Contribution of Building Operations in 2015 of New and Existing Inventory.** The economic contribution of annual building operation expenditures is determined by adding operating expenditures for buildings delivered in 2015 to the operating expenditures associated with the existing office, industrial, retail and warehouse stock of 2014. (See Table 18).

In 2015, the inventory of existing office, retail and industrial/flex building space in the U.S. was estimated by CoStar and Newmark Grubb Knight Frank (NGKF) to total 45.07 billion square feet, reflecting a net increase of 1.98 billion square feet from 2014. This increase of 2.2 percent masks

larger actual changes that have occurred in the inventory, including the retirement of older buildings as well as the modernization of existing buildings and the repurposing of some of these buildings from commercial to other uses, such as multifamily housing. The 2014-2015 net changes in the nation's total building inventory are shown in Table 18.

Table 18
**National Building Space Inventory, 2014 and 2015**
(In Billions of Square Feet)

| Building Type | 2014 | 2015 | % Change |
|---|---|---|---|
| Industrial/Warehouse | 21.15 | 21.52 | 1.7 |
| Retail | 12.47 | 12.95 | 3.6 |
| Office | 10.47 | 10.63 | 1.5 |
| **Total** | **44.09** | **45.10** | **2.2** |

*Sources: CoStar; NGKF*

This existing building inventory totaled 45.1 billion square feet in 2015 (excluding buildings being constructed in 2015) and would have generated annual operating expenditures estimated to total $145.6 billion. The addition of 429.4 million square feet to the 2015 inventory would bring total spending in 2015 for building operations to $147.0 billion for building operations of 45.5 billion square feet (existing plus new building space in 2015) with an overall contribution to the U. S. economy (GDP) of $387.7 billion. This total spending for building operations would support 2.9 million jobs and generate personal earnings (wages and salaries) of $111.1 billion.

The total annual and recurring economic impacts resulting from the operating expenditures associated with the nation's office, retail and industrial/flex space is significant, accounting for 2.1 percent of GDP in 2015. Unlike the expenditures associated with the construction of new building space, this annual and recurring contribution to the national economy does not vary greatly from year to year, even during cyclical downturns.

Recent trends in building operating expenditures are shown in Table 19. While these increased by $7.5 billion in 2015, operating expenditures do not always increase with the size of the building inventory. These variations in annual expenditures for building operations reflect not only a net change in building space and therefore the mix of commercial buildings across the inventory, but also respective changes in annual operating costs for each building type. For example, industrial space costs less to operate on a per-square-foot basis than office space and office space operating costs may reflect larger incremental annual changes.

Lastly, building owners tend to become more efficient and cost conscious in their management practices during periods of economic uncertainly. Increased energy efficiency and use of advanced technology as a substitute for on-site labor also contribute to lower operating costs. These factors may explain the operating cost reductions reflected in the building operations multipliers. (See Table 16.)

Still, it is the magnitude and constancy of this annual contribution to the U.S., state and local economies that underscores the importance of post-construction spending associated with the operation of the total inventory of office, retail and industrial/flex building space. These building operation expenditures continue over the life span of each year's newly constructed buildings and extend their economic value to the economy well beyond initial construction expenditures.

Table 19
**Square Footage and Direct Expenditures From Existing Building Operations**

| | Total Square Feet (In Billions) | Direct Expenditures (In Billions of Dollars) |
|---|---|---|
| 2015 | 45.070 | $ 145.58 |
| 2014 | 44.090 | 138.09 |
| 2013 | 43.934 | 134.30 |
| 2012 | 43.208 | 134.50 |
| 2011 | 42.098 | 140.70 |
| 2010 | 42.008 | 134.80 |

*Sources: BOMA; CoStar; NGKF; GMU Center for Regional Analysis*

**Jobs Housed and Payroll Value in 2015 Buildings Under Construction.** 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 would generate. Using a standard jobs-per-square-foot estimate for each category of building, the total number of employees that could be housed within the buildings built in 2015 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 wage earnings per worker for jobs associated with each building category.

These calculations are presented in Table 20. They show that the 429.4 million square feet of new office, retail, industrial and warehouse building space constructed in 2015 have the capacity to house 1.084 million new workers with a total estimated annual payroll of $53.0 billion.

Table 20
**Jobs Accommodated and Payroll Generated in Office, Industrial, Warehouse and Retail Space Constructed in 2015**
(Square Feet in Millions; Jobs in Thousands; Payroll in Billions of 2015 Dollars)

| Building Type | Square Feet | Square Feet per Job | Jobs Accommodated | Average Earnings | Total Payroll |
|---|---|---|---|---|---|
| Office | 89.13 | 190 | 469.10 | $65,825 | $30.878 |
| Industrial | 58.43 | 750 | 77.91 | 49,825 | 3.812 |
| Warehouse | 174.96 | 600 | 291.60 | 38,510 | 11.230 |
| Retail | 106.83 | 475 | 244.91 | 31,305 | 7.041 |
| **Total/Average** | **429.35** | **396** | **1,083.52** | **$48,718** | **$53.031** |

*Sources: GMU Center for Regional Analysis; U.S. Bureau of Labor Statistics; NGKF*

## New Economic Multipliers

The output, personal earnings and jobs multipliers used in this report utilize the most recent revisions produced by the U.S. Department of Commerce Bureau of Economic Analysis (BEA), which were released in fall 2015. The 2015 edition of this report used BEA multipliers that had not been updated since 2013 because the federal budget sequester had resulted in BEA's suspending its regular updating schedule. Data used in the 2013 multipliers reflected economic conditions that existed before the 2007 recession, while the newly updated multipliers reflect economic conditions characterizing the post-recession economy and the early stages of the recovery.

As a result of the recession, many businesses realigned their operations to be more efficient by replacing workers or changing how work was accomplished with greater utilization of technology. As one of the sectors hardest hit by the recession, the construction sector has undergone significant changes that are reflected in the revised multipliers. Building operations have experienced similar changes affecting staffing and payrolls.

These changes reflect a reduction in the number and types of construction-related expenditures. These job impact changes include fewer direct jobs per $1 million in construction-related expenditures and more indirect and induced jobs. This shift from direct jobs to indirect jobs suggests that construction businesses are outsourcing more work than they did before the

recession. It also suggests that more of the economic benefits of construction work are leaking into the global economy and hence are not as locally impactful as they were previously.

One important side effect of this workforce shift is seen in lower personal earnings multipliers. Smaller personal earnings multipliers indicate that the share of the labor income resulting from the re-spending of direct construction payroll dollars that is captured within the state in which the work is being performed is declining. The lower multipliers also indicate that the local jobs (induced jobs) being supported have lower wages or annual earnings associated with them than prior to the recession. This is consistent with the decline in average wages experienced in the U.S. economy during and immediately after the recession. It is also consistent with the low wage growth that has occurred more broadly in the national economy through 2015. A greater utilization of part-time and independent workers in the service economy has further contributed to these lower personal earnings and jobs supported multipliers.

The result of using these new multipliers is that the economic impacts generated by construction-related expenditures are smaller on a per-dollar basis. To illustrate these changes, Table 21 compares some of the multipliers used in this and previous economic impact studies.

Table 21
**Comparison of BEA National Multipliers**

| | 2015 Multipliers | 2013 Multipliers |
|---|---|---|
| Soft Costs | Expenditure of $1 yields $2.88 in GDP | Expenditure of $1 yields $2.73 in GDP |
| | Expenditure of $1 million yields $1,044,882 in personal earnings and 21.5 jobs | Expenditure of $1 million yields $910,800 in personal earnings and 18.4 jobs |
| Site Development and Tenant Improvements | Expenditure of $1 yields $2.91 in GDP | Expenditure of $1 yields $3.09 in GDP |
| | Expenditure of $1 million yields $920,799 in personal earnings and 20.5 jobs | Expenditure of $1 million yields $976,600 in personal earnings and 23.4 jobs |

*Source: BEA*
Note: This edition uses the 2015 multipliers, which are based on 2013 data. The 2015 and 2014 editions of this report used the 2013 multipliers, which were based on 2010 data.

Because of these changes in multipliers, the same level of construction spending will have different economic impacts, making impact comparisons between years more difficult. Not only does the square footage of new construction by type of building change each year, but the cost per square foot of construction by building type also changes. The changes incorporated in the revised BEA multipliers used in this year's report reflect a larger

change than normal, partly because 1) the multipliers were not revised by the BEA for three years and 2) during the cessation of annual revisions, the deepest recession since 1940 came and went, further magnifying the differences between the previous and current multipliers.

Most of the multipliers were reduced, decreasing the impacts of direct expenditures in the economy. Others, however, increased. The sectors that experienced multiplier increases are generally those involving professional and management services. These are sectors that have been able to employ new technologies to enhance the productivity of their workers and have not needed to reduce their workforces. A case in point is reflected in the building operations calculations. The total multiplier for management services increased from 2.76 to 2.81 and its personal earnings multiplier increased from 0.932 to 0.964 while its jobs supported multiplier decreased only marginally, from 17.7 to 17.6 per $1 million in management services expenditures. These differences further illustrate the impacts of the recession and the adoption of technology on the construction industry of today and tomorrow. (See Table 16 on page 29.)

## Economic Impacts by State

Economic impacts at the state level are presented in Table 22. These are the data that appear on NAIOP's individual "state cards," which are used in the association's government affairs efforts at the federal, state and local levels.

Table 22
**Impacts of Soft Costs, Site Development, Hard Costs and Tenant Improvements on State Economies (in Four Categories), 2015**
(In Billions of 2015 Dollars)

| | Direct Spending | Total Output | Personal Earnings | Jobs Supported |
|---|---|---|---|---|
| Alabama | 1.469 | 3.109 | 1.044 | 25,142 |
| Alaska | 0.124 | 0.211 | 0.076 | 1,528 |
| Arizona | 1.814 | 3.741 | 1.294 | 30,397 |
| Arkansas | 0.519 | 1.022 | 0.340 | 8,347 |
| California | 10.336 | 22.191 | 7.536 | 152,306 |
| Colorado | 3.079 | 6.729 | 2.303 | 52,529 |
| Connecticut | 0.979 | 1.817 | 0.599 | 11,594 |
| Delaware | 0.146 | 0.259 | 0.071 | 1,541 |
| District of Columbia | 1.131 | 1.321 | 0.118 | 2,063 |
| Florida | 5.694 | 11.807 | 4.081 | 100,569 |
| Georgia | 3.538 | 8.155 | 2.728 | 64,037 |
| Hawaii | 0.616 | 1.140 | 0.404 | 8,688 |
| Idaho | 0.529 | 0.968 | 0.333 | 8,303 |
| Illinois | 4.733 | 10.919 | 3.531 | 73,082 |
| Indiana | 2.585 | 5.619 | 1.817 | 41,975 |
| Iowa | 3.434 | 6.571 | 2.180 | 50,571 |
| Kansas | 1.329 | 2.620 | 0.798 | 18,688 |
| Kentucky | 1.657 | 3.455 | 1.085 | 26,627 |
| Louisiana | 16.175 | 32.014 | 11.016 | 237,115 |
| Maine | 0.203 | 0.385 | 0.133 | 3,290 |
| Maryland | 2.063 | 3.934 | 1.280 | 26,010 |
| Massachusetts | 2.985 | 5.758 | 1.872 | 35,930 |
| Michigan | 1.920 | 4.075 | 1.390 | 32,840 |
| Minnesota | 1.258 | 2.749 | 0.902 | 19,540 |
| Mississippi | 0.555 | 1.080 | 0.362 | 8,918 |
| Missouri | 2.806 | 5.970 | 1.850 | 43,106 |
| Montana | 0.149 | 0.273 | 0.096 | 2,403 |
| Nebraska | 0.728 | 1.370 | 0.461 | 10,349 |
| Nevada | 2.074 | 3.853 | 1.317 | 28,457 |
| New Hampshire | 0.200 | 0.388 | 0.122 | 2,573 |
| New Jersey | 2.599 | 5.381 | 1.698 | 34,434 |
| New Mexico | 0.201 | 0.353 | 0.124 | 3,042 |
| New York | 23.232 | 43.143 | 13.638 | 266,131 |
| North Carolina | 3.293 | 7.190 | 2.390 | 58,872 |
| North Dakota | 1.227 | 2.155 | 0.699 | 14,352 |
| Ohio | 3.961 | 9.010 | 2.928 | 65,498 |
| Oklahoma | 1.785 | 3.651 | 1.252 | 28,554 |
| Oregon | 1.604 | 3.227 | 1.050 | 24,688 |
| Pennsylvania | 3.055 | 6.831 | 2.185 | 45,156 |
| Rhode Island | 0.084 | 0.148 | 0.045 | 954 |
| South Carolina | 2.930 | 6.330 | 2.088 | 52,539 |
| South Dakota | 0.485 | 0.888 | 0.304 | 7,519 |
| Tennessee | 3.745 | 8.409 | 2.706 | 59,663 |
| Texas | 23.078 | 55.374 | 18.529 | 387,609 |
| Utah | 0.903 | 2.005 | 0.677 | 16,119 |
| Vermont | 0.188 | 0.341 | 0.114 | 2,788 |
| Virginia | 2.467 | 4.832 | 1.536 | 34,482 |
| Washington | 2.722 | 5.643 | 1.895 | 38,885 |
| West Virginia | 0.106 | 0.189 | 0.060 | 1,376 |
| Wisconsin | 1.927 | 3.947 | 1.345 | 31,090 |
| Wyoming | 0.592 | 0.953 | 0.325 | 7,159 |
| **State totals** | **155.009** | **323.501** | **106.728** | **2,309,426** |
| **Interstate spillovers** | | **126.879** | **38.976** | **896,072** |
| **U.S. Total** | **155.009** | **450.381** | **145.704** | **3,205,498** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

# **Appendix A:** Soft Costs Impacts by States

**Appendix A-1**

Impacts of **Office** Soft Costs on State Economies, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.019 | 0.037 | 0.014 | 329 |
| Alaska | 0.010 | 0.018 | 0.007 | 144 |
| Arizona | 0.091 | 0.198 | 0.077 | 1,685 |
| Arkansas | 0.023 | 0.042 | 0.017 | 395 |
| California | 0.516 | 1.169 | 0.447 | 8,131 |
| Colorado | 0.238 | 0.552 | 0.211 | 4,412 |
| Connecticut | 0.077 | 0.150 | 0.056 | 994 |
| Delaware | 0.010 | 0.018 | 0.005 | 100 |
| District of Columbia | 0.155 | 0.216 | 0.031 | 491 |
| Florida | 0.208 | 0.456 | 0.177 | 4,013 |
| Georgia | 0.194 | 0.458 | 0.171 | 3,484 |
| Hawaii | 0.012 | 0.024 | 0.010 | 209 |
| Idaho | 0.008 | 0.014 | 0.005 | 127 |
| Illinois | 0.390 | 0.919 | 0.337 | 6,517 |
| Indiana | 0.088 | 0.178 | 0.068 | 1,527 |
| Iowa | 0.422 | 0.768 | 0.299 | 6,869 |
| Kansas | 0.054 | 0.102 | 0.036 | 810 |
| Kentucky | 0.064 | 0.125 | 0.045 | 1,065 |
| Louisiana | 0.058 | 0.112 | 0.044 | 918 |
| Maine | 0.011 | 0.021 | 0.008 | 196 |
| Maryland | 0.142 | 0.296 | 0.108 | 2,058 |
| Massachusetts | 0.288 | 0.608 | 0.225 | 3,927 |
| Michigan | 0.064 | 0.134 | 0.053 | 1,119 |
| Minnesota | 0.078 | 0.172 | 0.064 | 1,300 |
| Mississippi | 0.027 | 0.048 | 0.019 | 446 |
| Missouri | 0.145 | 0.300 | 0.102 | 2,178 |
| Montana | 0.011 | 0.020 | 0.008 | 201 |
| Nebraska | 0.045 | 0.084 | 0.033 | 705 |
| Nevada | 0.133 | 0.257 | 0.100 | 2,095 |
| New Hampshire | 0.003 | 0.005 | 0.002 | 37 |
| New Jersey | 0.131 | 0.288 | 0.101 | 1,931 |
| New Mexico | 0.007 | 0.013 | 0.005 | 120 |
| New York | 2.794 | 5.592 | 1.897 | 33,307 |
| North Carolina | 0.211 | 0.453 | 0.173 | 3,904 |
| North Dakota | 0.024 | 0.041 | 0.016 | 324 |
| Ohio | 0.222 | 0.486 | 0.182 | 3,810 |
| Oklahoma | 0.141 | 0.280 | 0.111 | 2,527 |
| Oregon | 0.130 | 0.260 | 0.099 | 2,271 |
| Pennsylvania | 0.127 | 0.273 | 0.100 | 1,874 |
| Rhode Island | 0.000 | 0.000 | 0.000 | 3 |
| South Carolina | 0.211 | 0.439 | 0.166 | 3,919 |
| South Dakota | 0.040 | 0.069 | 0.028 | 648 |
| Tennessee | 0.172 | 0.377 | 0.140 | 2,953 |
| Texas | 1.045 | 2.510 | 0.941 | 18,345 |
| Utah | 0.054 | 0.120 | 0.046 | 1,112 |
| Vermont | 0.010 | 0.017 | 0.007 | 155 |
| Virginia | 0.184 | 0.368 | 0.127 | 2,444 |
| Washington | 0.311 | 0.647 | 0.250 | 4,821 |
| West Virginia | 0.003 | 0.005 | 0.002 | 44 |
| Wisconsin | 0.091 | 0.177 | 0.069 | 1,524 |
| Wyoming | 0.006 | 0.009 | 0.004 | 78 |
| **State Totals** | **9.499** | **19.929** | **7.244** | **142,596** |
| **Interstate Spillovers** | | **7.437** | **2.682** | **61,612** |
| **U.S. Totals** | **9.499** | **27.366** | **9.926** | **204,208** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

## Appendix A-2

Impacts of **Industrial** Soft Costs on State Economies, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.105 | 0.205 | 0.080 | 1,830 |
| Alaska | 0.000 | 0.001 | 0.000 | 6 |
| Arizona | 0.011 | 0.024 | 0.009 | 200 |
| Arkansas | 0.011 | 0.021 | 0.008 | 193 |
| California | 0.115 | 0.260 | 0.099 | 1,809 |
| Colorado | 0.032 | 0.075 | 0.029 | 598 |
| Connecticut | 0.008 | 0.015 | 0.005 | 97 |
| Delaware | 0.001 | 0.001 | 0.000 | 8 |
| District of Columbia | – | – | – | – |
| Florida | 0.017 | 0.036 | 0.014 | 321 |
| Georgia | 0.094 | 0.222 | 0.083 | 1,692 |
| Hawaii | – | – | – | – |
| Idaho | 0.036 | 0.064 | 0.026 | 601 |
| Illinois | 0.017 | 0.041 | 0.015 | 291 |
| Indiana | 0.110 | 0.223 | 0.084 | 1,906 |
| Iowa | 0.026 | 0.048 | 0.019 | 426 |
| Kansas | 0.029 | 0.055 | 0.020 | 439 |
| Kentucky | 0.027 | 0.052 | 0.019 | 444 |
| Louisiana | 1.845 | 3.573 | 1.416 | 29,317 |
| Maine | 0.001 | 0.001 | 0.001 | 14 |
| Maryland | 0.010 | 0.021 | 0.008 | 149 |
| Massachusetts | 0.034 | 0.071 | 0.026 | 460 |
| Michigan | 0.070 | 0.146 | 0.057 | 1,214 |
| Minnesota | 0.019 | 0.041 | 0.015 | 310 |
| Mississippi | 0.005 | 0.008 | 0.003 | 78 |
| Missouri | 0.116 | 0.238 | 0.081 | 1,732 |
| Montana | 0.000 | 0.000 | 0.000 | 1 |
| Nebraska | 0.019 | 0.036 | 0.014 | 302 |
| Nevada | 0.044 | 0.084 | 0.033 | 685 |
| New Hampshire | 0.004 | 0.008 | 0.003 | 61 |
| New Jersey | 0.018 | 0.039 | 0.014 | 258 |
| New Mexico | 0.001 | 0.001 | 0.000 | 11 |
| New York | 0.032 | 0.065 | 0.022 | 387 |
| North Carolina | 0.044 | 0.094 | 0.036 | 809 |
| North Dakota | 0.108 | 0.182 | 0.069 | 1,451 |
| Ohio | 0.069 | 0.152 | 0.057 | 1,191 |
| Oklahoma | 0.034 | 0.067 | 0.027 | 608 |
| Oregon | 0.033 | 0.067 | 0.026 | 587 |
| Pennsylvania | 0.028 | 0.060 | 0.022 | 412 |
| Rhode Island | 0.002 | 0.004 | 0.002 | 32 |
| South Carolina | 0.065 | 0.136 | 0.051 | 1,213 |
| South Dakota | 0.006 | 0.010 | 0.004 | 93 |
| Tennessee | 0.173 | 0.379 | 0.141 | 2,967 |
| Texas | 1.174 | 2.820 | 1.057 | 20,611 |
| Utah | 0.009 | 0.020 | 0.008 | 190 |
| Vermont | 0.010 | 0.019 | 0.007 | 167 |
| Virginia | 0.011 | 0.022 | 0.008 | 148 |
| Washington | 0.007 | 0.014 | 0.005 | 105 |
| West Virginia | 0.000 | 0.000 | 0.000 | 1 |
| Wisconsin | 0.057 | 0.110 | 0.043 | 948 |
| Wyoming | 0.065 | 0.101 | 0.041 | 889 |
| **State Totals** | **4.751** | **9.936** | **3.808** | **78,259** |
| **Interstate Spillovers** | | **3.751** | **1.156** | **23,878** |
| **U.S. Totals** | **4.751** | **13.687** | **4.964** | **102,137** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*
Note: Appendices include data for the District of Columbia, resulting in 51 states.

## Appendix A-3

Impacts of **Warehouse** Soft Costs on State Economies, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.003 | 0.006 | 0.002 | 56 |
| Alaska | 0.002 | 0.004 | 0.002 | 30 |
| Arizona | 0.076 | 0.165 | 0.064 | 1,399 |
| Arkansas | 0.003 | 0.005 | 0.002 | 50 |
| California | 0.361 | 0.819 | 0.313 | 5,693 |
| Colorado | 0.077 | 0.179 | 0.068 | 1,428 |
| Connecticut | 0.016 | 0.031 | 0.012 | 207 |
| Delaware | 0.003 | 0.005 | 0.001 | 27 |
| District of Columbia | 0.003 | 0.004 | 0.001 | 9 |
| Florida | 0.196 | 0.431 | 0.167 | 3,793 |
| Georgia | 0.098 | 0.231 | 0.086 | 1,754 |
| Hawaii | 0.003 | 0.005 | 0.002 | 46 |
| Idaho | 0.011 | 0.020 | 0.008 | 189 |
| Illinois | 0.136 | 0.321 | 0.118 | 2,272 |
| Indiana | 0.077 | 0.156 | 0.059 | 1,337 |
| Iowa | 0.039 | 0.071 | 0.028 | 638 |
| Kansas | 0.058 | 0.110 | 0.039 | 870 |
| Kentucky | 0.080 | 0.157 | 0.057 | 1,336 |
| Louisiana | 0.012 | 0.023 | 0.009 | 188 |
| Maine | 0.000 | 0.001 | 0.000 | 8 |
| Maryland | 0.053 | 0.111 | 0.041 | 770 |
| Massachusetts | 0.042 | 0.089 | 0.033 | 576 |
| Michigan | 0.042 | 0.087 | 0.034 | 729 |
| Minnesota | 0.031 | 0.068 | 0.025 | 510 |
| Mississippi | 0.010 | 0.018 | 0.007 | 164 |
| Missouri | 0.056 | 0.115 | 0.039 | 838 |
| Montana | 0.002 | 0.004 | 0.002 | 37 |
| Nebraska | 0.014 | 0.027 | 0.011 | 228 |
| Nevada | 0.067 | 0.130 | 0.051 | 1,061 |
| New Hampshire | 0.004 | 0.007 | 0.002 | 51 |
| New Jersey | 0.134 | 0.293 | 0.103 | 1,966 |
| New Mexico | 0.001 | 0.002 | 0.001 | 21 |
| New York | 0.158 | 0.316 | 0.107 | 1,883 |
| North Carolina | 0.087 | 0.188 | 0.072 | 1,619 |
| North Dakota | 0.015 | 0.025 | 0.010 | 198 |
| Ohio | 0.098 | 0.214 | 0.080 | 1,679 |
| Oklahoma | 0.027 | 0.053 | 0.021 | 476 |
| Oregon | 0.022 | 0.044 | 0.017 | 385 |
| Pennsylvania | 0.138 | 0.298 | 0.109 | 2,042 |
| Rhode Island | 0.000 | 0.000 | 0.000 | 2 |
| South Carolina | 0.083 | 0.172 | 0.065 | 1,535 |
| South Dakota | 0.016 | 0.027 | 0.011 | 254 |
| Tennessee | 0.051 | 0.112 | 0.041 | 873 |
| Texas | 0.386 | 0.928 | 0.348 | 6,780 |
| Utah | 0.023 | 0.051 | 0.019 | 471 |
| Vermont | 0.001 | 0.001 | 0.001 | 12 |
| Virginia | 0.043 | 0.087 | 0.030 | 578 |
| Washington | 0.041 | 0.085 | 0.033 | 637 |
| West Virginia | 0.002 | 0.003 | 0.001 | 23 |
| Wisconsin | 0.028 | 0.055 | 0.022 | 476 |
| Wyoming | 0.001 | 0.001 | 0.000 | 10 |
| **State Totals** | **2.931** | **6.356** | **2.374** | **48,218** |
| **Interstate Spillovers** | | **2.088** | **0.689** | **14,788** |
| **U.S. Totals** | **2.931** | **8.443** | **3.062** | **63,006** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*
Note: Appendices include data for the District of Columbia, resulting in 51 states.

**Appendix A-4**

Impacts of **Retail and Entertainment** Soft Costs on State Economies, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.084 | 0.163 | 0.064 | 1,456 |
| Alaska | 0.007 | 0.013 | 0.005 | 102 |
| Arizona | 0.112 | 0.242 | 0.094 | 2,055 |
| Arkansas | 0.046 | 0.083 | 0.033 | 778 |
| California | 0.654 | 1.482 | 0.566 | 10,303 |
| Colorado | 0.145 | 0.337 | 0.129 | 2,695 |
| Connecticut | 0.059 | 0.114 | 0.042 | 756 |
| Delaware | 0.011 | 0.019 | 0.006 | 107 |
| District of Columbia | 0.030 | 0.042 | 0.006 | 95 |
| Florida | 0.513 | 1.126 | 0.437 | 9,914 |
| Georgia | 0.159 | 0.376 | 0.141 | 2,856 |
| Hawaii | 0.092 | 0.182 | 0.071 | 1,559 |
| Idaho | 0.020 | 0.036 | 0.014 | 333 |
| Illinois | 0.222 | 0.522 | 0.192 | 3,702 |
| Indiana | 0.106 | 0.213 | 0.081 | 1,826 |
| Iowa | 0.066 | 0.119 | 0.046 | 1,068 |
| Kansas | 0.062 | 0.117 | 0.041 | 929 |
| Kentucky | 0.085 | 0.166 | 0.060 | 1,410 |
| Louisiana | 0.119 | 0.231 | 0.092 | 1,894 |
| Maine | 0.022 | 0.042 | 0.017 | 396 |
| Maryland | 0.130 | 0.270 | 0.099 | 1,876 |
| Massachusetts | 0.116 | 0.245 | 0.090 | 1,580 |
| Michigan | 0.118 | 0.246 | 0.097 | 2,053 |
| Minnesota | 0.073 | 0.161 | 0.060 | 1,216 |
| Mississippi | 0.050 | 0.090 | 0.035 | 834 |
| Missouri | 0.103 | 0.212 | 0.072 | 1,542 |
| Montana | 0.011 | 0.020 | 0.008 | 197 |
| Nebraska | 0.035 | 0.066 | 0.026 | 551 |
| Nevada | 0.076 | 0.146 | 0.057 | 1,190 |
| New Hampshire | 0.022 | 0.043 | 0.015 | 317 |
| New Jersey | 0.125 | 0.275 | 0.097 | 1,844 |
| New Mexico | 0.026 | 0.046 | 0.018 | 438 |
| New York | 0.858 | 1.718 | 0.583 | 10,234 |
| North Carolina | 0.183 | 0.395 | 0.151 | 3,399 |
| North Dakota | 0.017 | 0.028 | 0.011 | 224 |
| Ohio | 0.238 | 0.520 | 0.195 | 4,082 |
| Oklahoma | 0.081 | 0.161 | 0.064 | 1,455 |
| Oregon | 0.068 | 0.137 | 0.052 | 1,197 |
| Pennsylvania | 0.190 | 0.409 | 0.150 | 2,803 |
| Rhode Island | 0.011 | 0.020 | 0.007 | 148 |
| South Carolina | 0.093 | 0.192 | 0.073 | 1,717 |
| South Dakota | 0.015 | 0.027 | 0.011 | 253 |
| Tennessee | 0.163 | 0.357 | 0.133 | 2,797 |
| Texas | 0.779 | 1.873 | 0.702 | 13,686 |
| Utah | 0.060 | 0.134 | 0.052 | 1,248 |
| Vermont | 0.007 | 0.013 | 0.005 | 118 |
| Virginia | 0.168 | 0.337 | 0.116 | 2,240 |
| Washington | 0.085 | 0.178 | 0.069 | 1,323 |
| West Virginia | 0.013 | 0.022 | 0.009 | 180 |
| Wisconsin | 0.126 | 0.245 | 0.096 | 2,112 |
| Wyoming | 0.004 | 0.006 | 0.003 | 56 |
| **State Totals** | **6.659** | **14.220** | **5.291** | **107,147** |
| **Interstate Spillovers** | | **4.964** | **1.668** | **36,011** |
| **U.S. Totals** | **6.659** | **19.184** | **6.958** | **143,158** |

*Sources: CRA; 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 **in Four Categories** on State Economies, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.211 | 0.411 | 0.161 | 3,671 |
| Alaska | 0.020 | 0.036 | 0.014 | 283 |
| Arizona | 0.290 | 0.629 | 0.244 | 5,339 |
| Arkansas | 0.084 | 0.152 | 0.060 | 1,416 |
| California | 1.646 | 3.730 | 1.426 | 25,936 |
| Colorado | 0.493 | 1.143 | 0.437 | 9,132 |
| Connecticut | 0.160 | 0.310 | 0.115 | 2,055 |
| Delaware | 0.024 | 0.043 | 0.013 | 242 |
| District of Columbia | 0.188 | 0.262 | 0.038 | 596 |
| Florida | 0.934 | 2.048 | 0.795 | 18,042 |
| Georgia | 0.544 | 1.287 | 0.481 | 9,785 |
| Hawaii | 0.107 | 0.211 | 0.083 | 1,814 |
| Idaho | 0.074 | 0.134 | 0.054 | 1,251 |
| Illinois | 0.765 | 1.803 | 0.662 | 12,782 |
| Indiana | 0.382 | 0.771 | 0.292 | 6,596 |
| Iowa | 0.554 | 1.006 | 0.392 | 9,002 |
| Kansas | 0.203 | 0.385 | 0.136 | 3,048 |
| Kentucky | 0.256 | 0.500 | 0.182 | 4,255 |
| Louisiana | 2.034 | 3.939 | 1.561 | 32,318 |
| Maine | 0.035 | 0.066 | 0.026 | 614 |
| Maryland | 0.336 | 0.698 | 0.255 | 4,853 |
| Massachusetts | 0.480 | 1.013 | 0.374 | 6,543 |
| Michigan | 0.293 | 0.613 | 0.241 | 5,115 |
| Minnesota | 0.200 | 0.443 | 0.165 | 3,336 |
| Mississippi | 0.091 | 0.165 | 0.064 | 1,522 |
| Missouri | 0.420 | 0.865 | 0.295 | 6,290 |
| Montana | 0.025 | 0.044 | 0.018 | 437 |
| Nebraska | 0.113 | 0.212 | 0.083 | 1,786 |
| Nevada | 0.320 | 0.618 | 0.240 | 5,031 |
| New Hampshire | 0.032 | 0.063 | 0.023 | 466 |
| New Jersey | 0.408 | 0.895 | 0.314 | 5,999 |
| New Mexico | 0.034 | 0.062 | 0.025 | 589 |
| New York | 3.843 | 7.691 | 2.610 | 45,811 |
| North Carolina | 0.525 | 1.130 | 0.432 | 9,730 |
| North Dakota | 0.164 | 0.276 | 0.105 | 2,197 |
| Ohio | 0.628 | 1.372 | 0.514 | 10,762 |
| Oklahoma | 0.283 | 0.561 | 0.222 | 5,065 |
| Oregon | 0.253 | 0.509 | 0.193 | 4,440 |
| Pennsylvania | 0.483 | 1.040 | 0.380 | 7,131 |
| Rhode Island | 0.014 | 0.025 | 0.009 | 185 |
| South Carolina | 0.452 | 0.940 | 0.356 | 8,385 |
| South Dakota | 0.076 | 0.133 | 0.053 | 1,249 |
| Tennessee | 0.560 | 1.226 | 0.455 | 9,590 |
| Texas | 3.383 | 8.131 | 3.047 | 59,422 |
| Utah | 0.146 | 0.325 | 0.125 | 3,021 |
| Vermont | 0.028 | 0.050 | 0.020 | 452 |
| Virginia | 0.406 | 0.815 | 0.280 | 5,410 |
| Washington | 0.444 | 0.924 | 0.357 | 6,885 |
| West Virginia | 0.018 | 0.031 | 0.012 | 248 |
| Wisconsin | 0.302 | 0.587 | 0.230 | 5,059 |
| Wyoming | 0.075 | 0.118 | 0.048 | 1,033 |
| **State Totals** | **23.841** | **50.4411** | **18.716** | **376,220** |
| **Interstate Spillovers** | | **18.2398** | **6.194** | **136,289** |
| **U.S. Totals** | **23.841** | **68.6809** | **24.911** | **512,509** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

# **Appendix B:** Site Development Impacts by States

**Appendix B-1**

Impacts of Site Development on State Economies **(Office)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.016 | 0.034 | 0.011 | 269 |
| Alaska | 0.009 | 0.015 | 0.005 | 104 |
| Arizona | 0.076 | 0.156 | 0.053 | 1,253 |
| Arkansas | 0.020 | 0.039 | 0.013 | 313 |
| California | 0.430 | 0.914 | 0.303 | 6,257 |
| Colorado | 0.198 | 0.429 | 0.143 | 3,330 |
| Connecticut | 0.065 | 0.119 | 0.038 | 751 |
| Delaware | 0.008 | 0.015 | 0.004 | 88 |
| District of Columbia | 0.129 | 0.145 | 0.011 | 201 |
| Florida | 0.173 | 0.355 | 0.120 | 3,004 |
| Georgia | 0.162 | 0.371 | 0.121 | 2,929 |
| Hawaii | 0.010 | 0.019 | 0.007 | 139 |
| Idaho | 0.006 | 0.012 | 0.004 | 98 |
| Illinois | 0.325 | 0.747 | 0.235 | 4,944 |
| Indiana | 0.074 | 0.162 | 0.051 | 1,183 |
| Iowa | 0.352 | 0.681 | 0.219 | 5,085 |
| Kansas | 0.045 | 0.089 | 0.026 | 626 |
| Kentucky | 0.053 | 0.113 | 0.034 | 853 |
| Louisiana | 0.048 | 0.096 | 0.032 | 698 |
| Maine | 0.009 | 0.017 | 0.006 | 147 |
| Maryland | 0.119 | 0.223 | 0.070 | 1,455 |
| Massachusetts | 0.240 | 0.456 | 0.144 | 2,821 |
| Michigan | 0.054 | 0.114 | 0.038 | 912 |
| Minnesota | 0.065 | 0.142 | 0.045 | 998 |
| Mississippi | 0.022 | 0.044 | 0.014 | 357 |
| Missouri | 0.121 | 0.259 | 0.079 | 1,870 |
| Montana | 0.010 | 0.018 | 0.006 | 151 |
| Nebraska | 0.037 | 0.070 | 0.023 | 519 |
| Nevada | 0.111 | 0.205 | 0.068 | 1,485 |
| New Hampshire | 0.002 | 0.004 | 0.001 | 27 |
| New Jersey | 0.109 | 0.224 | 0.069 | 1,421 |
| New Mexico | 0.006 | 0.010 | 0.003 | 86 |
| New York | 2.330 | 4.261 | 1.325 | 26,478 |
| North Carolina | 0.176 | 0.384 | 0.124 | 3,117 |
| North Dakota | 0.020 | 0.035 | 0.011 | 230 |
| Ohio | 0.185 | 0.425 | 0.134 | 3,044 |
| Oklahoma | 0.118 | 0.242 | 0.081 | 1,842 |
| Oregon | 0.108 | 0.218 | 0.069 | 1,621 |
| Pennsylvania | 0.106 | 0.238 | 0.074 | 1,565 |
| Rhode Island | 0.000 | 0.000 | 0.000 | 2 |
| South Carolina | 0.176 | 0.383 | 0.123 | 3,140 |
| South Dakota | 0.033 | 0.061 | 0.020 | 507 |
| Tennessee | 0.144 | 0.324 | 0.102 | 2,259 |
| Texas | 0.871 | 2.089 | 0.685 | 14,515 |
| Utah | 0.045 | 0.099 | 0.033 | 774 |
| Vermont | 0.008 | 0.014 | 0.005 | 116 |
| Virginia | 0.153 | 0.299 | 0.093 | 2,160 |
| Washington | 0.260 | 0.538 | 0.175 | 3,646 |
| West Virginia | 0.003 | 0.005 | 0.001 | 34 |
| Wisconsin | 0.076 | 0.157 | 0.052 | 1,214 |
| Wyoming | 0.005 | 0.008 | 0.003 | 56 |
| **State Totals** | **7.922** | **16.076** | **5.108** | **110,695** |
| **Interstate Spillovers** | | **6.977** | **2.188** | **51,950** |
| **U.S. Totals** | **7.922** | **23.053** | **7.295** | **162,645** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.081 | 0.173 | 0.057 | 1,374 |
| Alaska | 0.000 | 0.001 | 0.000 | 4 |
| Arizona | 0.008 | 0.017 | 0.006 | 137 |
| Arkansas | 0.009 | 0.018 | 0.006 | 140 |
| California | 0.088 | 0.187 | 0.062 | 1,279 |
| Colorado | 0.025 | 0.053 | 0.018 | 414 |
| Connecticut | 0.006 | 0.011 | 0.003 | 68 |
| Delaware | 0.001 | 0.001 | 0.000 | 6 |
| District of Columbia | – | – | – | – |
| Florida | 0.013 | 0.026 | 0.009 | 221 |
| Georgia | 0.072 | 0.165 | 0.054 | 1,306 |
| Hawaii | – | – | – | – |
| Idaho | 0.027 | 0.050 | 0.017 | 424 |
| Illinois | 0.013 | 0.031 | 0.010 | 203 |
| Indiana | 0.084 | 0.186 | 0.058 | 1,356 |
| Iowa | 0.020 | 0.039 | 0.012 | 290 |
| Kansas | 0.022 | 0.045 | 0.013 | 311 |
| Kentucky | 0.020 | 0.043 | 0.013 | 326 |
| Louisiana | 1.413 | 2.805 | 0.945 | 20,464 |
| Maine | 0.001 | 0.001 | 0.000 | 10 |
| Maryland | 0.008 | 0.015 | 0.005 | 97 |
| Massachusetts | 0.026 | 0.049 | 0.015 | 303 |
| Michigan | 0.053 | 0.113 | 0.038 | 908 |
| Minnesota | 0.014 | 0.031 | 0.010 | 218 |
| Mississippi | 0.004 | 0.007 | 0.002 | 57 |
| Missouri | 0.088 | 0.189 | 0.058 | 1,365 |
| Montana | 0.000 | 0.000 | 0.000 | 1 |
| Nebraska | 0.015 | 0.028 | 0.009 | 204 |
| Nevada | 0.033 | 0.062 | 0.020 | 446 |
| New Hampshire | 0.003 | 0.006 | 0.002 | 41 |
| New Jersey | 0.013 | 0.028 | 0.008 | 174 |
| New Mexico | 0.000 | 0.001 | 0.000 | 7 |
| New York | 0.025 | 0.045 | 0.014 | 283 |
| North Carolina | 0.033 | 0.073 | 0.024 | 593 |
| North Dakota | 0.083 | 0.146 | 0.046 | 945 |
| Ohio | 0.053 | 0.122 | 0.039 | 874 |
| Oklahoma | 0.026 | 0.054 | 0.018 | 407 |
| Oregon | 0.026 | 0.052 | 0.016 | 384 |
| Pennsylvania | 0.021 | 0.048 | 0.015 | 316 |
| Rhode Island | 0.002 | 0.003 | 0.001 | 20 |
| South Carolina | 0.050 | 0.109 | 0.035 | 893 |
| South Dakota | 0.004 | 0.008 | 0.003 | 66 |
| Tennessee | 0.133 | 0.299 | 0.094 | 2,084 |
| Texas | 0.899 | 2.155 | 0.706 | 14,974 |
| Utah | 0.007 | 0.016 | 0.005 | 121 |
| Vermont | 0.008 | 0.014 | 0.005 | 114 |
| Virginia | 0.009 | 0.017 | 0.005 | 120 |
| Washington | 0.005 | 0.011 | 0.003 | 73 |
| West Virginia | 0.000 | 0.000 | 0.000 | 1 |
| Wisconsin | 0.043 | 0.089 | 0.030 | 693 |
| Wyoming | 0.050 | 0.080 | 0.027 | 588 |
| **State Totals** | **3.638** | **7.720** | **2.536** | **55,703** |
| **Interstate Spillovers** | | **2.867** | **0.814** | **18,991** |
| **U.S. Totals** | **3.638** | **10.587** | **3.350** | **74,693** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.004 | 0.008 | 0.002 | 61 |
| Alaska | 0.002 | 0.004 | 0.001 | 29 |
| Arizona | 0.083 | 0.170 | 0.057 | 1,371 |
| Arkansas | 0.003 | 0.007 | 0.002 | 52 |
| California | 0.397 | 0.843 | 0.279 | 5,772 |
| Colorado | 0.085 | 0.183 | 0.061 | 1,420 |
| Connecticut | 0.018 | 0.032 | 0.010 | 206 |
| Delaware | 0.003 | 0.005 | 0.001 | 32 |
| District of Columbia | 0.003 | 0.004 | 0.000 | 5 |
| Florida | 0.216 | 0.442 | 0.149 | 3,741 |
| Georgia | 0.107 | 0.246 | 0.080 | 1,943 |
| Hawaii | 0.003 | 0.006 | 0.002 | 41 |
| Idaho | 0.012 | 0.023 | 0.008 | 192 |
| Illinois | 0.149 | 0.343 | 0.108 | 2,271 |
| Indiana | 0.085 | 0.187 | 0.059 | 1,366 |
| Iowa | 0.043 | 0.083 | 0.027 | 623 |
| Kansas | 0.064 | 0.126 | 0.037 | 885 |
| Kentucky | 0.088 | 0.186 | 0.057 | 1,409 |
| Louisiana | 0.013 | 0.026 | 0.009 | 188 |
| Maine | 0.000 | 0.001 | 0.000 | 7 |
| Maryland | 0.059 | 0.110 | 0.035 | 718 |
| Massachusetts | 0.046 | 0.088 | 0.028 | 545 |
| Michigan | 0.046 | 0.098 | 0.032 | 782 |
| Minnesota | 0.034 | 0.073 | 0.023 | 516 |
| Mississippi | 0.011 | 0.021 | 0.007 | 173 |
| Missouri | 0.061 | 0.131 | 0.040 | 948 |
| Montana | 0.002 | 0.004 | 0.001 | 37 |
| Nebraska | 0.016 | 0.030 | 0.010 | 221 |
| Nevada | 0.074 | 0.137 | 0.046 | 991 |
| New Hampshire | 0.004 | 0.008 | 0.002 | 49 |
| New Jersey | 0.147 | 0.301 | 0.093 | 1,905 |
| New Mexico | 0.001 | 0.002 | 0.001 | 20 |
| New York | 0.174 | 0.317 | 0.099 | 1,972 |
| North Carolina | 0.096 | 0.210 | 0.068 | 1,704 |
| North Dakota | 0.016 | 0.029 | 0.009 | 185 |
| Ohio | 0.108 | 0.247 | 0.078 | 1,768 |
| Oklahoma | 0.029 | 0.060 | 0.020 | 457 |
| Oregon | 0.024 | 0.049 | 0.015 | 362 |
| Pennsylvania | 0.152 | 0.342 | 0.107 | 2,247 |
| Rhode Island | 0.000 | 0.000 | 0.000 | 2 |
| South Carolina | 0.091 | 0.198 | 0.064 | 1,620 |
| South Dakota | 0.017 | 0.032 | 0.010 | 262 |
| Tennessee | 0.056 | 0.126 | 0.040 | 879 |
| Texas | 0.424 | 1.017 | 0.333 | 7,068 |
| Utah | 0.025 | 0.055 | 0.018 | 432 |
| Vermont | 0.001 | 0.001 | 0.000 | 12 |
| Virginia | 0.048 | 0.093 | 0.029 | 673 |
| Washington | 0.045 | 0.094 | 0.030 | 634 |
| West Virginia | 0.002 | 0.003 | 0.001 | 24 |
| Wisconsin | 0.031 | 0.064 | 0.021 | 499 |
| Wyoming | 0.001 | 0.001 | 0.000 | 10 |
| **State Totals** | **3.220** | **6.868** | **2.214** | **49,330** |
| **Interstate Spillovers** | | **2.503** | **0.752** | **16,786** |
| **U.S. Totals** | **3.220** | **9.371** | **2.966** | **66,115** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.068 | 0.146 | 0.048 | 1,162 |
| Alaska | 0.006 | 0.010 | 0.004 | 72 |
| Arizona | 0.091 | 0.185 | 0.063 | 1,493 |
| Arkansas | 0.038 | 0.075 | 0.024 | 600 |
| California | 0.532 | 1.131 | 0.374 | 7,741 |
| Colorado | 0.118 | 0.256 | 0.085 | 1,986 |
| Connecticut | 0.048 | 0.088 | 0.028 | 558 |
| Delaware | 0.009 | 0.015 | 0.004 | 92 |
| District of Columbia | 0.024 | 0.027 | 0.002 | 38 |
| Florida | 0.418 | 0.857 | 0.288 | 7,245 |
| Georgia | 0.129 | 0.297 | 0.097 | 2,344 |
| Hawaii | 0.075 | 0.137 | 0.047 | 1,015 |
| Idaho | 0.016 | 0.030 | 0.010 | 250 |
| Illinois | 0.180 | 0.414 | 0.130 | 2,742 |
| Indiana | 0.086 | 0.189 | 0.060 | 1,382 |
| Iowa | 0.053 | 0.103 | 0.033 | 772 |
| Kansas | 0.050 | 0.100 | 0.030 | 700 |
| Kentucky | 0.069 | 0.146 | 0.044 | 1,102 |
| Louisiana | 0.097 | 0.193 | 0.065 | 1,406 |
| Maine | 0.018 | 0.034 | 0.012 | 289 |
| Maryland | 0.106 | 0.198 | 0.063 | 1,295 |
| Massachusetts | 0.094 | 0.179 | 0.056 | 1,108 |
| Michigan | 0.096 | 0.204 | 0.068 | 1,633 |
| Minnesota | 0.059 | 0.130 | 0.041 | 912 |
| Mississippi | 0.041 | 0.081 | 0.026 | 652 |
| Missouri | 0.084 | 0.179 | 0.055 | 1,293 |
| Montana | 0.009 | 0.017 | 0.006 | 145 |
| Nebraska | 0.028 | 0.054 | 0.017 | 396 |
| Nevada | 0.062 | 0.114 | 0.038 | 823 |
| New Hampshire | 0.018 | 0.035 | 0.011 | 225 |
| New Jersey | 0.102 | 0.209 | 0.064 | 1,324 |
| New Mexico | 0.021 | 0.037 | 0.012 | 307 |
| New York | 0.699 | 1.278 | 0.398 | 7,942 |
| North Carolina | 0.149 | 0.327 | 0.106 | 2,650 |
| North Dakota | 0.014 | 0.024 | 0.008 | 155 |
| Ohio | 0.194 | 0.444 | 0.140 | 3,185 |
| Oklahoma | 0.066 | 0.136 | 0.045 | 1,036 |
| Oregon | 0.056 | 0.112 | 0.035 | 834 |
| Pennsylvania | 0.155 | 0.348 | 0.108 | 2,285 |
| Rhode Island | 0.009 | 0.016 | 0.005 | 98 |
| South Carolina | 0.075 | 0.164 | 0.053 | 1,343 |
| South Dakota | 0.013 | 0.023 | 0.008 | 193 |
| Tennessee | 0.133 | 0.300 | 0.094 | 2,088 |
| Texas | 0.634 | 1.522 | 0.499 | 10,571 |
| Utah | 0.049 | 0.109 | 0.036 | 848 |
| Vermont | 0.006 | 0.011 | 0.003 | 86 |
| Virginia | 0.137 | 0.267 | 0.083 | 1,933 |
| Washington | 0.070 | 0.144 | 0.047 | 977 |
| West Virginia | 0.011 | 0.019 | 0.006 | 137 |
| Wisconsin | 0.102 | 0.212 | 0.070 | 1,642 |
| Wyoming | 0.003 | 0.005 | 0.002 | 39 |
| **State Totals** | **5.422** | **11.330** | **3.652** | **81,146** |
| **Interstate Spillovers** | | **4.447** | **1.341** | **30,165** |
| **U.S. Totals** | **5.422** | **15.777** | **4.993** | **111,311** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.168 | 0.360 | 0.118 | 2,866 |
| Alaska | 0.017 | 0.029 | 0.010 | 209 |
| Arizona | 0.259 | 0.528 | 0.178 | 4,254 |
| Arkansas | 0.069 | 0.139 | 0.045 | 1,105 |
| California | 1.447 | 3.075 | 1.018 | 21,049 |
| Colorado | 0.426 | 0.920 | 0.307 | 7,150 |
| Connecticut | 0.136 | 0.250 | 0.080 | 1,582 |
| Delaware | 0.021 | 0.036 | 0.010 | 219 |
| District of Columbia | 0.157 | 0.176 | 0.013 | 244 |
| Florida | 0.820 | 1.680 | 0.566 | 14,210 |
| Georgia | 0.470 | 1.079 | 0.353 | 8,522 |
| Hawaii | 0.088 | 0.161 | 0.056 | 1,195 |
| Idaho | 0.062 | 0.114 | 0.038 | 963 |
| Illinois | 0.669 | 1.536 | 0.483 | 10,160 |
| Indiana | 0.329 | 0.725 | 0.228 | 5,287 |
| Iowa | 0.469 | 0.906 | 0.291 | 6,770 |
| Kansas | 0.181 | 0.360 | 0.107 | 2,522 |
| Kentucky | 0.231 | 0.487 | 0.149 | 3,690 |
| Louisiana | 1.571 | 3.120 | 1.051 | 22,757 |
| Maine | 0.029 | 0.054 | 0.018 | 453 |
| Maryland | 0.291 | 0.545 | 0.173 | 3,565 |
| Massachusetts | 0.407 | 0.772 | 0.244 | 4,778 |
| Michigan | 0.249 | 0.529 | 0.176 | 4,235 |
| Minnesota | 0.173 | 0.376 | 0.120 | 2,645 |
| Mississippi | 0.078 | 0.153 | 0.050 | 1,239 |
| Missouri | 0.355 | 0.759 | 0.231 | 5,476 |
| Montana | 0.021 | 0.039 | 0.013 | 335 |
| Nebraska | 0.096 | 0.181 | 0.059 | 1,340 |
| Nevada | 0.280 | 0.517 | 0.172 | 3,745 |
| New Hampshire | 0.027 | 0.053 | 0.016 | 342 |
| New Jersey | 0.372 | 0.761 | 0.235 | 4,825 |
| New Mexico | 0.028 | 0.050 | 0.017 | 420 |
| New York | 3.227 | 5.901 | 1.836 | 36,675 |
| North Carolina | 0.454 | 0.994 | 0.321 | 8,064 |
| North Dakota | 0.133 | 0.234 | 0.074 | 1,515 |
| Ohio | 0.540 | 1.238 | 0.391 | 8,871 |
| Oklahoma | 0.239 | 0.492 | 0.164 | 3,742 |
| Oregon | 0.213 | 0.430 | 0.135 | 3,201 |
| Pennsylvania | 0.434 | 0.977 | 0.304 | 6,413 |
| Rhode Island | 0.011 | 0.019 | 0.006 | 122 |
| South Carolina | 0.393 | 0.854 | 0.275 | 6,995 |
| South Dakota | 0.067 | 0.124 | 0.041 | 1,029 |
| Tennessee | 0.465 | 1.049 | 0.329 | 7,310 |
| Texas | 2.828 | 6.784 | 2.223 | 47,128 |
| Utah | 0.126 | 0.279 | 0.092 | 2,176 |
| Vermont | 0.023 | 0.041 | 0.013 | 329 |
| Virginia | 0.346 | 0.675 | 0.211 | 4,887 |
| Washington | 0.379 | 0.786 | 0.256 | 5,330 |
| West Virginia | 0.015 | 0.027 | 0.008 | 195 |
| Wisconsin | 0.253 | 0.522 | 0.173 | 4,048 |
| Wyoming | 0.058 | 0.095 | 0.031 | 694 |
| **State Totals** | **20.202** | **41.995** | **13.510** | **296,874** |
| **Interstate Spillovers** | | **16.793** | **5.094** | **117,891** |
| **U.S. Totals** | **20.202** | **58.79** | **18.60** | **414,765** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*
Note: Appendices include data for the District of Columbia, resulting in 51 states.

# **Appendix C:** Hard Costs Impacts by States

**Appendix C-1**

Impacts of Construction on State Economies **(Office),** 2015

| State | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|
| Alabama | 0.121 | 0.040 | 966 |
| Alaska | 0.053 | 0.019 | 374 |
| Arizona | 0.559 | 0.188 | 4,499 |
| Arkansas | 0.141 | 0.045 | 1,122 |
| California | 3.281 | 1.086 | 22,460 |
| Colorado | 1.538 | 0.514 | 11,951 |
| Connecticut | 0.426 | 0.137 | 2,696 |
| Delaware | 0.053 | 0.014 | 316 |
| District of Columbia | 0.520 | 0.039 | 720 |
| Florida | 1.275 | 0.429 | 10,781 |
| Georgia | 1.331 | 0.435 | 10,514 |
| Hawaii | 0.068 | 0.023 | 500 |
| Idaho | 0.042 | 0.014 | 351 |
| Illinois | 2.683 | 0.844 | 17,746 |
| Indiana | 0.582 | 0.183 | 4,247 |
| Iowa | 2.444 | 0.785 | 18,253 |
| Kansas | 0.321 | 0.095 | 2,245 |
| Kentucky | 0.404 | 0.124 | 3,061 |
| Louisiana | 0.344 | 0.116 | 2,506 |
| Maine | 0.063 | 0.021 | 526 |
| Maryland | 0.799 | 0.253 | 5,223 |
| Massachusetts | 1.635 | 0.516 | 10,125 |
| Michigan | 0.409 | 0.136 | 3,273 |
| Minnesota | 0.510 | 0.163 | 3,584 |
| Mississippi | 0.159 | 0.052 | 1,283 |
| Missouri | 0.931 | 0.284 | 6,712 |
| Montana | 0.063 | 0.021 | 543 |
| Nebraska | 0.252 | 0.082 | 1,863 |
| Nevada | 0.736 | 0.245 | 5,330 |
| New Hampshire | 0.015 | 0.005 | 96 |
| New Jersey | 0.804 | 0.248 | 5,100 |
| New Mexico | 0.037 | 0.012 | 308 |
| New York | 15.293 | 4.757 | 95,040 |
| North Carolina | 1.380 | 0.446 | 11,190 |
| North Dakota | 0.127 | 0.040 | 824 |
| Ohio | 1.525 | 0.482 | 10,928 |
| Oklahoma | 0.870 | 0.290 | 6,613 |
| Oregon | 0.781 | 0.246 | 5,818 |
| Pennsylvania | 0.855 | 0.267 | 5,617 |
| Rhode Island | 0.001 | 0.000 | 7 |
| South Carolina | 1.376 | 0.442 | 11,269 |
| South Dakota | 0.219 | 0.073 | 1,819 |
| Tennessee | 1.163 | 0.364 | 8,107 |
| Texas | 7.500 | 2.458 | 52,099 |
| Utah | 0.356 | 0.117 | 2,779 |
| Vermont | 0.052 | 0.017 | 417 |
| Virginia | 1.071 | 0.335 | 7,754 |
| Washington | 1.930 | 0.629 | 13,086 |
| West Virginia | 0.017 | 0.005 | 122 |
| Wisconsin | 0.562 | 0.187 | 4,356 |
| Wyoming | 0.027 | 0.009 | 202 |
| **State Totals** | **57.702** | **18.334** | **397,324** |
| **Interstate Spillovers** | **25.044** | **7.852** | **186,466** |
| **U.S. Totals** | **82.745** | **26.186** | **583,790** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

**Appendix C-2**

Impacts of Construction on State Economies **(Industrial)**, 2014

| State | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|
| Alabama | 1.052 | 0.344 | 8,368 |
| Alaska | 0.004 | 0.001 | 25 |
| Arizona | 0.103 | 0.035 | 831 |
| Arkansas | 0.107 | 0.034 | 853 |
| California | 1.138 | 0.377 | 7,787 |
| Colorado | 0.325 | 0.109 | 2,524 |
| Connecticut | 0.065 | 0.021 | 412 |
| Delaware | 0.006 | 0.002 | 37 |
| District of Columbia | – | – | – |
| Florida | 0.159 | 0.053 | 1,343 |
| Georgia | 1.007 | 0.329 | 7,955 |
| Hawaii | – | – | – |
| Idaho | 0.305 | 0.102 | 2,582 |
| Illinois | 0.187 | 0.059 | 1,234 |
| Indiana | 1.132 | 0.356 | 8,262 |
| Iowa | 0.236 | 0.076 | 1,765 |
| Kansas | 0.271 | 0.080 | 1,897 |
| Kentucky | 0.263 | 0.080 | 1,988 |
| Louisiana | 17.086 | 5.754 | 124,641 |
| Maine | 0.007 | 0.002 | 58 |
| Maryland | 0.090 | 0.029 | 589 |
| Massachusetts | 0.298 | 0.094 | 1,848 |
| Michigan | 0.691 | 0.229 | 5,532 |
| Minnesota | 0.189 | 0.060 | 1,330 |
| Mississippi | 0.043 | 0.014 | 347 |
| Missouri | 1.153 | 0.351 | 8,315 |
| Montana | 0.001 | 0.000 | 5 |
| Nebraska | 0.168 | 0.055 | 1,243 |
| Nevada | 0.375 | 0.125 | 2,716 |
| New Hampshire | 0.038 | 0.012 | 249 |
| New Jersey | 0.168 | 0.052 | 1,062 |
| New Mexico | 0.005 | 0.002 | 43 |
| New York | 0.277 | 0.086 | 1,722 |
| North Carolina | 0.445 | 0.144 | 3,612 |
| North Dakota | 0.889 | 0.281 | 5,754 |
| Ohio | 0.743 | 0.235 | 5,322 |
| Oklahoma | 0.326 | 0.109 | 2,478 |
| Oregon | 0.314 | 0.099 | 2,341 |
| Pennsylvania | 0.293 | 0.091 | 1,923 |
| Rhode Island | 0.019 | 0.006 | 121 |
| South Carolina | 0.664 | 0.213 | 5,436 |
| South Dakota | 0.049 | 0.016 | 405 |
| Tennessee | 1.821 | 0.571 | 12,691 |
| Texas | 13.128 | 4.302 | 91,200 |
| Utah | 0.095 | 0.031 | 738 |
| Vermont | 0.087 | 0.028 | 696 |
| Virginia | 0.101 | 0.032 | 732 |
| Washington | 0.065 | 0.021 | 443 |
| West Virginia | 0.001 | 0.000 | 4 |
| Wisconsin | 0.545 | 0.181 | 4,222 |
| Wyoming | 0.488 | 0.162 | 3,584 |
| **State Totals** | **47.021** | **15.447** | **339,265** |
| **Interstate Spillovers** | **17.459** | **4.959** | **115,665** |
| **U.S. Totals** | **64.481** | **20.406** | **454,929** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

**Appendix C-3**

Impacts of Construction on State Economies **(Warehouse)**, 2015

| State | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|
| Alabama | 0.029 | 0.009 | 227 |
| Alaska | 0.015 | 0.005 | 107 |
| Arizona | 0.637 | 0.215 | 5,129 |
| Arkansas | 0.024 | 0.008 | 194 |
| California | 3.153 | 1.044 | 21,585 |
| Colorado | 0.683 | 0.228 | 5,309 |
| Connecticut | 0.122 | 0.039 | 769 |
| Delaware | 0.020 | 0.005 | 119 |
| District of Columbia | 0.013 | 0.001 | 19 |
| Florida | 1.654 | 0.557 | 13,990 |
| Georgia | 0.920 | 0.301 | 7,265 |
| Hawaii | 0.021 | 0.007 | 153 |
| Idaho | 0.085 | 0.028 | 717 |
| Illinois | 1.284 | 0.404 | 8,493 |
| Indiana | 0.700 | 0.220 | 5,107 |
| Iowa | 0.312 | 0.100 | 2,328 |
| Kansas | 0.473 | 0.140 | 3,308 |
| Kentucky | 0.696 | 0.213 | 5,270 |
| Louisiana | 0.097 | 0.033 | 705 |
| Maine | 0.003 | 0.001 | 28 |
| Maryland | 0.410 | 0.130 | 2,683 |
| Massachusetts | 0.329 | 0.104 | 2,039 |
| Michigan | 0.365 | 0.121 | 2,925 |
| Minnesota | 0.275 | 0.088 | 1,931 |
| Mississippi | 0.080 | 0.026 | 648 |
| Missouri | 0.492 | 0.150 | 3,545 |
| Montana | 0.016 | 0.005 | 139 |
| Nebraska | 0.112 | 0.036 | 826 |
| Nevada | 0.512 | 0.170 | 3,704 |
| New Hampshire | 0.028 | 0.009 | 184 |
| New Jersey | 1.124 | 0.347 | 7,125 |
| New Mexico | 0.009 | 0.003 | 74 |
| New York | 1.187 | 0.369 | 7,374 |
| North Carolina | 0.786 | 0.254 | 6,371 |
| North Dakota | 0.107 | 0.034 | 693 |
| Ohio | 0.922 | 0.291 | 6,610 |
| Oklahoma | 0.225 | 0.075 | 1,711 |
| Oregon | 0.182 | 0.057 | 1,354 |
| Pennsylvania | 1.280 | 0.399 | 8,403 |
| Rhode Island | 0.001 | 0.000 | 7 |
| South Carolina | 0.740 | 0.238 | 6,059 |
| South Dakota | 0.118 | 0.039 | 980 |
| Tennessee | 0.472 | 0.148 | 3,288 |
| Texas | 3.805 | 1.247 | 26,431 |
| Utah | 0.207 | 0.068 | 1,615 |
| Vermont | 0.006 | 0.002 | 44 |
| Virginia | 0.348 | 0.109 | 2,518 |
| Washington | 0.350 | 0.114 | 2,372 |
| West Virginia | 0.013 | 0.004 | 90 |
| Wisconsin | 0.241 | 0.080 | 1,868 |
| Wyoming | 0.005 | 0.002 | 36 |
| **State Totals** | **25.684** | **8.278** | **184,468** |
| **Interstate Spillovers** | **9.359** | **2.812** | **62,770** |
| **U.S. Totals** | **35.043** | **11.090** | **247,238** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

**Appendix C-4**

Impacts of Construction on State Economies **(Retail and Entertainment)**, 2015

| State | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|
| Alabama | 0.499 | 0.163 | 3,973 |
| Alaska | 0.035 | 0.012 | 246 |
| Arizona | 0.634 | 0.214 | 5,102 |
| Arkansas | 0.257 | 0.083 | 2,052 |
| California | 3.866 | 1.279 | 26,463 |
| Colorado | 0.874 | 0.292 | 6,788 |
| Connecticut | 0.301 | 0.097 | 1,907 |
| Delaware | 0.052 | 0.014 | 316 |
| District of Columbia | 0.094 | 0.007 | 130 |
| Florida | 2.929 | 0.986 | 24,767 |
| Georgia | 1.015 | 0.332 | 8,014 |
| Hawaii | 0.469 | 0.162 | 3,470 |
| Idaho | 0.101 | 0.034 | 853 |
| Illinois | 1.417 | 0.446 | 9,373 |
| Indiana | 0.647 | 0.204 | 4,723 |
| Iowa | 0.353 | 0.114 | 2,639 |
| Kansas | 0.342 | 0.101 | 2,393 |
| Kentucky | 0.498 | 0.152 | 3,767 |
| Louisiana | 0.659 | 0.222 | 4,806 |
| Maine | 0.118 | 0.039 | 988 |
| Maryland | 0.677 | 0.214 | 4,428 |
| Massachusetts | 0.612 | 0.193 | 3,789 |
| Michigan | 0.697 | 0.231 | 5,581 |
| Minnesota | 0.444 | 0.142 | 3,118 |
| Mississippi | 0.276 | 0.090 | 2,228 |
| Missouri | 0.613 | 0.187 | 4,418 |
| Montana | 0.058 | 0.020 | 497 |
| Nebraska | 0.183 | 0.060 | 1,354 |
| Nevada | 0.389 | 0.129 | 2,814 |
| New Hampshire | 0.119 | 0.036 | 771 |
| New Jersey | 0.714 | 0.220 | 4,526 |
| New Mexico | 0.125 | 0.042 | 1,050 |
| New York | 4.369 | 1.359 | 27,150 |
| North Carolina | 1.117 | 0.361 | 9,058 |
| North Dakota | 0.082 | 0.026 | 531 |
| Ohio | 1.519 | 0.480 | 10,887 |
| Oklahoma | 0.466 | 0.155 | 3,540 |
| Oregon | 0.383 | 0.121 | 2,851 |
| Pennsylvania | 1.190 | 0.371 | 7,813 |
| Rhode Island | 0.054 | 0.016 | 336 |
| South Carolina | 0.561 | 0.180 | 4,591 |
| South Dakota | 0.080 | 0.026 | 661 |
| Tennessee | 1.024 | 0.321 | 7,139 |
| Texas | 5.202 | 1.705 | 36,137 |
| Utah | 0.372 | 0.122 | 2,900 |
| Vermont | 0.037 | 0.012 | 295 |
| Virginia | 0.913 | 0.285 | 6,609 |
| Washington | 0.492 | 0.160 | 3,339 |
| West Virginia | 0.065 | 0.020 | 467 |
| Wisconsin | 0.724 | 0.240 | 5,612 |
| Wyoming | 0.018 | 0.006 | 135 |
| **State Totals** | **38.731** | **12.485** | **277,396** |
| **Interstate Spillovers** | **15.202** | **4.583** | **103,116** |
| **U.S. Totals** | **53.933** | **17.068** | **380,512** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

**Appendix C-5**

Impacts of Construction on State Economies **(in Four Categories)**, 2015

| State | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|
| Alabama | 1.701 | 0.557 | 13,535 |
| Alaska | 0.106 | 0.037 | 753 |
| Arizona | 1.933 | 0.652 | 15,561 |
| Arkansas | 0.530 | 0.171 | 4,221 |
| California | 11.438 | 3.785 | 78,295 |
| Colorado | 3.420 | 1.143 | 26,573 |
| Connecticut | 0.914 | 0.294 | 5,784 |
| Delaware | 0.131 | 0.036 | 789 |
| District of Columbia | 0.627 | 0.048 | 868 |
| Florida | 6.017 | 2.025 | 50,881 |
| Georgia | 4.272 | 1.398 | 33,748 |
| Hawaii | 0.557 | 0.193 | 4,123 |
| Idaho | 0.533 | 0.179 | 4,503 |
| Illinois | 5.570 | 1.753 | 36,846 |
| Indiana | 3.061 | 0.963 | 22,339 |
| Iowa | 3.345 | 1.075 | 24,985 |
| Kansas | 1.407 | 0.417 | 9,844 |
| Kentucky | 1.861 | 0.569 | 14,086 |
| Louisiana | 18.185 | 6.124 | 132,657 |
| Maine | 0.191 | 0.064 | 1,601 |
| Maryland | 1.977 | 0.626 | 12,924 |
| Massachusetts | 2.874 | 0.907 | 17,800 |
| Michigan | 2.161 | 0.718 | 17,311 |
| Minnesota | 1.418 | 0.453 | 9,962 |
| Mississippi | 0.558 | 0.181 | 4,506 |
| Missouri | 3.188 | 0.971 | 22,990 |
| Montana | 0.138 | 0.047 | 1,184 |
| Nebraska | 0.715 | 0.233 | 5,287 |
| Nevada | 2.011 | 0.669 | 14,565 |
| New Hampshire | 0.201 | 0.061 | 1,300 |
| New Jersey | 2.810 | 0.867 | 17,813 |
| New Mexico | 0.175 | 0.059 | 1,475 |
| New York | 21.125 | 6.572 | 131,286 |
| North Carolina | 3.728 | 1.205 | 30,230 |
| North Dakota | 1.206 | 0.381 | 7,802 |
| Ohio | 4.709 | 1.488 | 33,746 |
| Oklahoma | 1.887 | 0.629 | 14,341 |
| Oregon | 1.660 | 0.523 | 12,364 |
| Pennsylvania | 3.618 | 1.127 | 23,755 |
| Rhode Island | 0.075 | 0.022 | 471 |
| South Carolina | 3.340 | 1.073 | 27,355 |
| South Dakota | 0.465 | 0.155 | 3,865 |
| Tennessee | 4.480 | 1.404 | 31,226 |
| Texas | 29.635 | 9.712 | 205,867 |
| Utah | 1.030 | 0.339 | 8,033 |
| Vermont | 0.181 | 0.059 | 1,452 |
| Virginia | 2.434 | 0.761 | 17,613 |
| Washington | 2.837 | 0.925 | 19,240 |
| West Virginia | 0.096 | 0.029 | 683 |
| Wisconsin | 2.072 | 0.688 | 16,057 |
| Wyoming | 0.539 | 0.179 | 3,956 |
| **State Totals** | **169.139** | **54.544** | **1,198,452** |
| **Interstate Spillovers** | **67.064** | **20.205** | **468,018** |
| **U.S. Totals** | **236.203** | **74.749** | **1,666,470** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.024 | 0.051 | 0.017 | 405 |
| Alaska | 0.013 | 0.022 | 0.008 | 157 |
| Arizona | 0.115 | 0.234 | 0.079 | 1,886 |
| Arkansas | 0.029 | 0.059 | 0.019 | 470 |
| California | 0.647 | 1.375 | 0.455 | 9,416 |
| Colorado | 0.299 | 0.645 | 0.215 | 5,010 |
| Connecticut | 0.097 | 0.179 | 0.057 | 1,130 |
| Delaware | 0.012 | 0.022 | 0.006 | 133 |
| District of Columbia | 0.194 | 0.218 | 0.017 | 302 |
| Florida | 0.261 | 0.534 | 0.180 | 4,520 |
| Georgia | 0.243 | 0.558 | 0.183 | 4,408 |
| Hawaii | 0.016 | 0.028 | 0.010 | 210 |
| Idaho | 0.009 | 0.017 | 0.006 | 147 |
| Illinois | 0.490 | 1.125 | 0.354 | 7,439 |
| Indiana | 0.111 | 0.244 | 0.077 | 1,781 |
| Iowa | 0.530 | 1.024 | 0.329 | 7,652 |
| Kansas | 0.068 | 0.135 | 0.040 | 941 |
| Kentucky | 0.080 | 0.170 | 0.052 | 1,283 |
| Louisiana | 0.073 | 0.144 | 0.048 | 1,050 |
| Maine | 0.014 | 0.026 | 0.009 | 221 |
| Maryland | 0.179 | 0.335 | 0.106 | 2,190 |
| Massachusetts | 0.362 | 0.685 | 0.216 | 4,245 |
| Michigan | 0.081 | 0.171 | 0.057 | 1,372 |
| Minnesota | 0.098 | 0.214 | 0.068 | 1,502 |
| Mississippi | 0.034 | 0.067 | 0.022 | 538 |
| Missouri | 0.182 | 0.390 | 0.119 | 2,814 |
| Montana | 0.014 | 0.026 | 0.009 | 228 |
| Nebraska | 0.056 | 0.106 | 0.034 | 781 |
| Nevada | 0.167 | 0.309 | 0.103 | 2,235 |
| New Hampshire | 0.003 | 0.006 | 0.002 | 40 |
| New Jersey | 0.165 | 0.337 | 0.104 | 2,138 |
| New Mexico | 0.009 | 0.015 | 0.005 | 129 |
| New York | 3.506 | 6.411 | 1.994 | 39,843 |
| North Carolina | 0.264 | 0.578 | 0.187 | 4,691 |
| North Dakota | 0.030 | 0.053 | 0.017 | 346 |
| Ohio | 0.279 | 0.639 | 0.202 | 4,581 |
| Oklahoma | 0.177 | 0.365 | 0.122 | 2,772 |
| Oregon | 0.163 | 0.327 | 0.103 | 2,439 |
| Pennsylvania | 0.159 | 0.359 | 0.112 | 2,355 |
| Rhode Island | 0.000 | 0.000 | 0.000 | 3 |
| South Carolina | 0.265 | 0.577 | 0.185 | 4,724 |
| South Dakota | 0.050 | 0.092 | 0.031 | 763 |
| Tennessee | 0.216 | 0.488 | 0.153 | 3,399 |
| Texas | 1.311 | 3.144 | 1.030 | 21,841 |
| Utah | 0.067 | 0.149 | 0.049 | 1,165 |
| Vermont | 0.012 | 0.022 | 0.007 | 175 |
| Virginia | 0.230 | 0.449 | 0.140 | 3,251 |
| Washington | 0.391 | 0.809 | 0.264 | 5,486 |
| West Virginia | 0.004 | 0.007 | 0.002 | 51 |
| Wisconsin | 0.114 | 0.236 | 0.078 | 1,826 |
| Wyoming | 0.007 | 0.012 | 0.004 | 85 |
| **State Totals** | **11.921** | **24.190** | **7.686** | **166,568** |
| **Interstate Spillovers** | | **10.499** | **3.292** | **78,171** |
| **U.S. Totals** | **11.921** | **34.689** | **10.978** | **244,739** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.182 | 0.391 | 0.128 | 3,113 |
| Alaska | 0.001 | 0.001 | 0.000 | 9 |
| Arizona | 0.019 | 0.038 | 0.013 | 309 |
| Arkansas | 0.020 | 0.040 | 0.013 | 317 |
| California | 0.199 | 0.423 | 0.140 | 2,897 |
| Colorado | 0.056 | 0.121 | 0.040 | 939 |
| Connecticut | 0.013 | 0.024 | 0.008 | 153 |
| Delaware | 0.001 | 0.002 | 0.001 | 14 |
| District of Columbia | – | – | – | – |
| Florida | 0.029 | 0.059 | 0.020 | 500 |
| Georgia | 0.163 | 0.375 | 0.123 | 2,959 |
| Hawaii | – | – | – | – |
| Idaho | 0.062 | 0.114 | 0.038 | 960 |
| Illinois | 0.030 | 0.069 | 0.022 | 459 |
| Indiana | 0.191 | 0.421 | 0.133 | 3,073 |
| Iowa | 0.045 | 0.088 | 0.028 | 656 |
| Kansas | 0.051 | 0.101 | 0.030 | 706 |
| Kentucky | 0.046 | 0.098 | 0.030 | 739 |
| Louisiana | 3.201 | 6.355 | 2.140 | 46,361 |
| Maine | 0.001 | 0.003 | 0.001 | 22 |
| Maryland | 0.018 | 0.034 | 0.011 | 219 |
| Massachusetts | 0.059 | 0.111 | 0.035 | 687 |
| Michigan | 0.121 | 0.257 | 0.085 | 2,058 |
| Minnesota | 0.032 | 0.070 | 0.023 | 495 |
| Mississippi | 0.008 | 0.016 | 0.005 | 129 |
| Missouri | 0.200 | 0.429 | 0.131 | 3,093 |
| Montana | 0.000 | 0.000 | 0.000 | 2 |
| Nebraska | 0.033 | 0.062 | 0.020 | 462 |
| Nevada | 0.076 | 0.140 | 0.046 | 1,010 |
| New Hampshire | 0.007 | 0.014 | 0.004 | 93 |
| New Jersey | 0.030 | 0.062 | 0.019 | 395 |
| New Mexico | 0.001 | 0.002 | 0.001 | 16 |
| New York | 0.056 | 0.103 | 0.032 | 641 |
| North Carolina | 0.076 | 0.166 | 0.054 | 1,343 |
| North Dakota | 0.187 | 0.331 | 0.105 | 2,140 |
| Ohio | 0.121 | 0.276 | 0.087 | 1,980 |
| Oklahoma | 0.059 | 0.121 | 0.040 | 922 |
| Oregon | 0.058 | 0.117 | 0.037 | 871 |
| Pennsylvania | 0.048 | 0.109 | 0.034 | 715 |
| Rhode Island | 0.004 | 0.007 | 0.002 | 45 |
| South Carolina | 0.113 | 0.247 | 0.079 | 2,022 |
| South Dakota | 0.010 | 0.018 | 0.006 | 150 |
| Tennessee | 0.300 | 0.677 | 0.212 | 4,721 |
| Texas | 2.036 | 4.883 | 1.600 | 33,923 |
| Utah | 0.016 | 0.035 | 0.012 | 275 |
| Vermont | 0.018 | 0.032 | 0.010 | 259 |
| Virginia | 0.019 | 0.038 | 0.012 | 272 |
| Washington | 0.012 | 0.024 | 0.008 | 165 |
| West Virginia | 0.000 | 0.000 | 0.000 | 1 |
| Wisconsin | 0.098 | 0.203 | 0.067 | 1,570 |
| Wyoming | 0.112 | 0.182 | 0.060 | 1,333 |
| **State Totals** | **8.242** | **17.490** | **5.746** | **126,192** |
| **Interstate Spillovers** | | **6.494** | **1.844** | **43,022** |
| **U.S. Totals** | **8.242** | **23.984** | **7.590** | **169,215** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.003 | 0.006 | 0.002 | 49 |
| Alaska | 0.002 | 0.003 | 0.001 | 23 |
| Arizona | 0.068 | 0.139 | 0.047 | 1,118 |
| Arkansas | 0.003 | 0.005 | 0.002 | 42 |
| California | 0.324 | 0.687 | 0.227 | 4,705 |
| Colorado | 0.069 | 0.149 | 0.050 | 1,157 |
| Connecticut | 0.014 | 0.026 | 0.009 | 168 |
| Delaware | 0.002 | 0.004 | 0.001 | 26 |
| District of Columbia | 0.003 | 0.003 | 0.000 | 4 |
| Florida | 0.176 | 0.361 | 0.121 | 3,049 |
| Georgia | 0.087 | 0.200 | 0.066 | 1,584 |
| Hawaii | 0.002 | 0.004 | 0.002 | 33 |
| Idaho | 0.010 | 0.018 | 0.006 | 156 |
| Illinois | 0.122 | 0.280 | 0.088 | 1,851 |
| Indiana | 0.069 | 0.153 | 0.048 | 1,113 |
| Iowa | 0.035 | 0.068 | 0.022 | 507 |
| Kansas | 0.052 | 0.103 | 0.031 | 721 |
| Kentucky | 0.072 | 0.152 | 0.046 | 1,149 |
| Louisiana | 0.011 | 0.021 | 0.007 | 154 |
| Maine | 0.000 | 0.001 | 0.000 | 6 |
| Maryland | 0.048 | 0.089 | 0.028 | 585 |
| Massachusetts | 0.038 | 0.072 | 0.023 | 444 |
| Michigan | 0.037 | 0.080 | 0.026 | 638 |
| Minnesota | 0.027 | 0.060 | 0.019 | 421 |
| Mississippi | 0.009 | 0.017 | 0.006 | 141 |
| Missouri | 0.050 | 0.107 | 0.033 | 773 |
| Montana | 0.002 | 0.004 | 0.001 | 30 |
| Nebraska | 0.013 | 0.024 | 0.008 | 180 |
| Nevada | 0.060 | 0.112 | 0.037 | 807 |
| New Hampshire | 0.003 | 0.006 | 0.002 | 40 |
| New Jersey | 0.120 | 0.245 | 0.076 | 1,553 |
| New Mexico | 0.001 | 0.002 | 0.001 | 16 |
| New York | 0.141 | 0.259 | 0.080 | 1,607 |
| North Carolina | 0.078 | 0.171 | 0.055 | 1,389 |
| North Dakota | 0.013 | 0.023 | 0.007 | 151 |
| Ohio | 0.088 | 0.201 | 0.064 | 1,441 |
| Oklahoma | 0.024 | 0.049 | 0.016 | 373 |
| Oregon | 0.020 | 0.040 | 0.012 | 295 |
| Pennsylvania | 0.124 | 0.279 | 0.087 | 1,832 |
| Rhode Island | 0.000 | 0.000 | 0.000 | 2 |
| South Carolina | 0.074 | 0.161 | 0.052 | 1,321 |
| South Dakota | 0.014 | 0.026 | 0.009 | 214 |
| Tennessee | 0.046 | 0.103 | 0.032 | 717 |
| Texas | 0.346 | 0.829 | 0.272 | 5,761 |
| Utah | 0.020 | 0.045 | 0.015 | 352 |
| Vermont | 0.001 | 0.001 | 0.000 | 10 |
| Virginia | 0.039 | 0.076 | 0.024 | 549 |
| Washington | 0.037 | 0.076 | 0.025 | 517 |
| West Virginia | 0.002 | 0.003 | 0.001 | 20 |
| Wisconsin | 0.025 | 0.053 | 0.017 | 407 |
| Wyoming | 0.001 | 0.001 | 0.000 | 8 |
| **State Totals** | **2.625** | **5.599** | **1.804** | **40,210** |
| **Interstate Spillovers** | | **2.040** | **0.613** | **13,683** |
| **U.S. Totals** | **2.625** | **7.639** | **2.417** | **53,892** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.088 | 0.189 | 0.062 | 1,503 |
| Alaska | 0.008 | 0.013 | 0.005 | 93 |
| Arizona | 0.117 | 0.240 | 0.081 | 1,930 |
| Arkansas | 0.049 | 0.097 | 0.031 | 776 |
| California | 0.688 | 1.462 | 0.484 | 10,008 |
| Colorado | 0.153 | 0.330 | 0.110 | 2,567 |
| Connecticut | 0.062 | 0.114 | 0.037 | 721 |
| Delaware | 0.011 | 0.020 | 0.005 | 120 |
| District of Columbia | 0.032 | 0.035 | 0.003 | 49 |
| Florida | 0.540 | 1.108 | 0.373 | 9,367 |
| Georgia | 0.167 | 0.384 | 0.126 | 3,031 |
| Hawaii | 0.097 | 0.177 | 0.061 | 1,312 |
| Idaho | 0.021 | 0.038 | 0.013 | 323 |
| Illinois | 0.233 | 0.536 | 0.169 | 3,545 |
| Indiana | 0.111 | 0.245 | 0.077 | 1,786 |
| Iowa | 0.069 | 0.134 | 0.043 | 998 |
| Kansas | 0.065 | 0.129 | 0.038 | 905 |
| Kentucky | 0.089 | 0.188 | 0.058 | 1,425 |
| Louisiana | 0.125 | 0.249 | 0.084 | 1,818 |
| Maine | 0.024 | 0.045 | 0.015 | 374 |
| Maryland | 0.137 | 0.256 | 0.081 | 1,675 |
| Massachusetts | 0.122 | 0.231 | 0.073 | 1,433 |
| Michigan | 0.124 | 0.264 | 0.087 | 2,111 |
| Minnesota | 0.077 | 0.168 | 0.054 | 1,179 |
| Mississippi | 0.053 | 0.104 | 0.034 | 843 |
| Missouri | 0.108 | 0.232 | 0.071 | 1,671 |
| Montana | 0.012 | 0.022 | 0.007 | 188 |
| Nebraska | 0.037 | 0.069 | 0.023 | 512 |
| Nevada | 0.080 | 0.147 | 0.049 | 1,064 |
| New Hampshire | 0.023 | 0.045 | 0.014 | 291 |
| New Jersey | 0.132 | 0.270 | 0.083 | 1,712 |
| New Mexico | 0.027 | 0.047 | 0.016 | 397 |
| New York | 0.904 | 1.652 | 0.514 | 10,268 |
| North Carolina | 0.193 | 0.422 | 0.137 | 3,426 |
| North Dakota | 0.018 | 0.031 | 0.010 | 201 |
| Ohio | 0.251 | 0.575 | 0.182 | 4,117 |
| Oklahoma | 0.086 | 0.176 | 0.059 | 1,339 |
| Oregon | 0.072 | 0.145 | 0.046 | 1,078 |
| Pennsylvania | 0.200 | 0.450 | 0.140 | 2,955 |
| Rhode Island | 0.012 | 0.020 | 0.006 | 127 |
| South Carolina | 0.097 | 0.212 | 0.068 | 1,736 |
| South Dakota | 0.016 | 0.030 | 0.010 | 250 |
| Tennessee | 0.172 | 0.387 | 0.121 | 2,700 |
| Texas | 0.820 | 1.967 | 0.645 | 13,667 |
| Utah | 0.063 | 0.141 | 0.046 | 1,097 |
| Vermont | 0.008 | 0.014 | 0.005 | 112 |
| Virginia | 0.177 | 0.345 | 0.108 | 2,499 |
| Washington | 0.090 | 0.186 | 0.061 | 1,263 |
| West Virginia | 0.014 | 0.025 | 0.008 | 177 |
| Wisconsin | 0.133 | 0.274 | 0.091 | 2,122 |
| Wyoming | 0.004 | 0.007 | 0.002 | 51 |
| **State Totals** | **7.009** | **14.648** | **4.722** | **104,910** |
| **Interstate Spillovers** | | **5.749** | **1.733** | **38,998** |
| **U.S. Totals** | **7.009** | **20.397** | **6.455** | **143,909** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.297 | 0.637 | 0.208 | 5,070 |
| Alaska | 0.023 | 0.040 | 0.014 | 283 |
| Arizona | 0.319 | 0.651 | 0.220 | 5,243 |
| Arkansas | 0.101 | 0.202 | 0.065 | 1,606 |
| California | 1.858 | 3.948 | 1.307 | 27,025 |
| Colorado | 0.577 | 1.245 | 0.416 | 9,674 |
| Connecticut | 0.187 | 0.343 | 0.110 | 2,172 |
| Delaware | 0.027 | 0.048 | 0.013 | 292 |
| District of Columbia | 0.228 | 0.256 | 0.019 | 355 |
| Florida | 1.006 | 2.062 | 0.694 | 17,436 |
| Georgia | 0.661 | 1.517 | 0.496 | 11,981 |
| Hawaii | 0.115 | 0.210 | 0.073 | 1,555 |
| Idaho | 0.102 | 0.188 | 0.063 | 1,586 |
| Illinois | 0.875 | 2.010 | 0.633 | 13,295 |
| Indiana | 0.483 | 1.062 | 0.334 | 7,753 |
| Iowa | 0.680 | 1.314 | 0.422 | 9,814 |
| Kansas | 0.236 | 0.468 | 0.139 | 3,273 |
| Kentucky | 0.288 | 0.607 | 0.186 | 4,596 |
| Louisiana | 3.410 | 6.770 | 2.280 | 49,383 |
| Maine | 0.039 | 0.074 | 0.025 | 622 |
| Maryland | 0.381 | 0.714 | 0.226 | 4,668 |
| Massachusetts | 0.580 | 1.100 | 0.347 | 6,809 |
| Michigan | 0.363 | 0.771 | 0.256 | 6,178 |
| Minnesota | 0.235 | 0.512 | 0.164 | 3,597 |
| Mississippi | 0.103 | 0.204 | 0.066 | 1,651 |
| Missouri | 0.541 | 1.158 | 0.353 | 8,350 |
| Montana | 0.028 | 0.052 | 0.018 | 448 |
| Nebraska | 0.139 | 0.262 | 0.085 | 1,936 |
| Nevada | 0.383 | 0.707 | 0.235 | 5,117 |
| New Hampshire | 0.037 | 0.072 | 0.022 | 465 |
| New Jersey | 0.447 | 0.915 | 0.282 | 5,798 |
| New Mexico | 0.038 | 0.066 | 0.022 | 558 |
| New York | 4.608 | 8.425 | 2.621 | 52,359 |
| North Carolina | 0.611 | 1.338 | 0.432 | 10,849 |
| North Dakota | 0.248 | 0.439 | 0.139 | 2,838 |
| Ohio | 0.738 | 1.691 | 0.534 | 12,119 |
| Oklahoma | 0.346 | 0.711 | 0.237 | 5,406 |
| Oregon | 0.312 | 0.629 | 0.198 | 4,683 |
| Pennsylvania | 0.531 | 1.196 | 0.373 | 7,856 |
| Rhode Island | 0.016 | 0.028 | 0.008 | 177 |
| South Carolina | 0.550 | 1.197 | 0.385 | 9,803 |
| South Dakota | 0.090 | 0.166 | 0.055 | 1,377 |
| Tennessee | 0.734 | 1.655 | 0.519 | 11,536 |
| Texas | 4.512 | 10.824 | 3.547 | 75,192 |
| Utah | 0.167 | 0.370 | 0.122 | 2,889 |
| Vermont | 0.038 | 0.069 | 0.022 | 555 |
| Virginia | 0.466 | 0.908 | 0.284 | 6,571 |
| Washington | 0.529 | 1.096 | 0.357 | 7,431 |
| West Virginia | 0.019 | 0.035 | 0.011 | 249 |
| Wisconsin | 0.370 | 0.765 | 0.254 | 5,926 |
| Wyoming | 0.124 | 0.201 | 0.067 | 1,476 |
| **State Totals** | **29.797** | **61.927** | **19.958** | **437,880** |
| **Interstate Spillovers** | | **24.782** | **7.482** | **173,874** |
| **U.S. Totals** | **29.797** | **86.709** | **27.440** | **611,755** |

*Sources: CRA; 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**

Impacts of Soft Costs, Site Development, Hard Costs and Tenant Improvements on State Economies **(Office)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.115 | 0.243 | 0.082 | 1,970 |
| Alaska | 0.063 | 0.108 | 0.039 | 780 |
| Arizona | 0.556 | 1.147 | 0.397 | 9,323 |
| Arkansas | 0.143 | 0.281 | 0.094 | 2,300 |
| California | 3.138 | 6.740 | 2.291 | 46,263 |
| Colorado | 1.447 | 3.164 | 1.084 | 24,703 |
| Connecticut | 0.470 | 0.873 | 0.288 | 5,572 |
| Delaware | 0.061 | 0.107 | 0.030 | 637 |
| District of Columbia | 0.941 | 1.098 | 0.098 | 1,714 |
| Florida | 1.263 | 2.620 | 0.906 | 22,317 |
| Georgia | 1.179 | 2.718 | 0.911 | 21,334 |
| Hawaii | 0.075 | 0.139 | 0.049 | 1,058 |
| Idaho | 0.046 | 0.084 | 0.029 | 723 |
| Illinois | 2.373 | 5.474 | 1.771 | 36,646 |
| Indiana | 0.538 | 1.167 | 0.378 | 8,738 |
| Iowa | 2.570 | 4.917 | 1.632 | 37,861 |
| Kansas | 0.328 | 0.647 | 0.197 | 4,623 |
| Kentucky | 0.390 | 0.812 | 0.255 | 6,262 |
| Louisiana | 0.352 | 0.695 | 0.241 | 5,173 |
| Maine | 0.067 | 0.128 | 0.044 | 1,090 |
| Maryland | 0.866 | 1.652 | 0.538 | 10,926 |
| Massachusetts | 1.753 | 3.384 | 1.101 | 21,118 |
| Michigan | 0.390 | 0.828 | 0.283 | 6,677 |
| Minnesota | 0.475 | 1.039 | 0.341 | 7,385 |
| Mississippi | 0.163 | 0.318 | 0.106 | 2,625 |
| Missouri | 0.884 | 1.880 | 0.583 | 13,574 |
| Montana | 0.069 | 0.127 | 0.045 | 1,122 |
| Nebraska | 0.272 | 0.512 | 0.172 | 3,869 |
| Nevada | 0.811 | 1.507 | 0.516 | 11,145 |
| New Hampshire | 0.016 | 0.030 | 0.009 | 200 |
| New Jersey | 0.798 | 1.654 | 0.523 | 10,590 |
| New Mexico | 0.042 | 0.075 | 0.026 | 642 |
| New York | 16.994 | 31.556 | 9.974 | 194,668 |
| North Carolina | 1.281 | 2.796 | 0.930 | 22,902 |
| North Dakota | 0.147 | 0.257 | 0.084 | 1,723 |
| Ohio | 1.352 | 3.075 | 1.000 | 22,363 |
| Oklahoma | 0.859 | 1.757 | 0.603 | 13,754 |
| Oregon | 0.788 | 1.586 | 0.517 | 12,149 |
| Pennsylvania | 0.772 | 1.726 | 0.552 | 11,410 |
| Rhode Island | 0.001 | 0.002 | 0.001 | 14 |
| South Carolina | 1.285 | 2.775 | 0.917 | 23,052 |
| South Dakota | 0.241 | 0.441 | 0.151 | 3,737 |
| Tennessee | 1.048 | 2.352 | 0.759 | 16,718 |
| Texas | 6.353 | 15.243 | 5.114 | 106,800 |
| Utah | 0.326 | 0.725 | 0.245 | 5,831 |
| Vermont | 0.058 | 0.105 | 0.035 | 863 |
| Virginia | 1.117 | 2.187 | 0.695 | 15,609 |
| Washington | 1.893 | 3.923 | 1.318 | 27,039 |
| West Virginia | 0.019 | 0.035 | 0.011 | 251 |
| Wisconsin | 0.553 | 1.131 | 0.386 | 8,919 |
| Wyoming | 0.035 | 0.056 | 0.019 | 420 |
| **State Totals** | **57.777** | **117.896** | **38.371** | **817,183** |
| **Interstate Spillovers** | | **49.957** | **16.013** | **378,200** |
| **U.S. Totals** | **57.777** | **167.853** | **54.384** | **1,195,382** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

## Appendix E-2

Impacts of Soft Costs, Site Development, Hard Costs and Tenant Improvements on State Economies **(Industrial)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.858 | 1.820 | 0.609 | 14,685 |
| Alaska | 0.004 | 0.006 | 0.002 | 45 |
| Arizona | 0.089 | 0.182 | 0.063 | 1,477 |
| Arkansas | 0.094 | 0.185 | 0.061 | 1,504 |
| California | 0.937 | 2.008 | 0.678 | 13,772 |
| Colorado | 0.263 | 0.574 | 0.195 | 4,476 |
| Connecticut | 0.062 | 0.115 | 0.038 | 730 |
| Delaware | 0.006 | 0.011 | 0.003 | 65 |
| District of Columbia | – | – | – | – |
| Florida | 0.136 | 0.280 | 0.096 | 2,385 |
| Georgia | 0.768 | 1.770 | 0.589 | 13,912 |
| Hawaii | – | – | – | – |
| Idaho | 0.292 | 0.533 | 0.183 | 4,567 |
| Illinois | 0.142 | 0.328 | 0.105 | 2,186 |
| Indiana | 0.901 | 1.962 | 0.632 | 14,597 |
| Iowa | 0.214 | 0.411 | 0.135 | 3,137 |
| Kansas | 0.239 | 0.472 | 0.143 | 3,354 |
| Kentucky | 0.218 | 0.455 | 0.142 | 3,497 |
| Louisiana | 15.066 | 29.820 | 10.256 | 220,784 |
| Maine | 0.006 | 0.012 | 0.004 | 104 |
| Maryland | 0.084 | 0.160 | 0.052 | 1,053 |
| Massachusetts | 0.276 | 0.530 | 0.171 | 3,298 |
| Michigan | 0.568 | 1.207 | 0.409 | 9,712 |
| Minnesota | 0.152 | 0.332 | 0.108 | 2,352 |
| Mississippi | 0.038 | 0.074 | 0.025 | 611 |
| Missouri | 0.943 | 2.009 | 0.621 | 14,504 |
| Montana | 0.001 | 0.001 | 0.000 | 9 |
| Nebraska | 0.156 | 0.294 | 0.098 | 2,211 |
| Nevada | 0.356 | 0.660 | 0.224 | 4,857 |
| New Hampshire | 0.035 | 0.067 | 0.021 | 443 |
| New Jersey | 0.143 | 0.296 | 0.093 | 1,890 |
| New Mexico | 0.005 | 0.009 | 0.003 | 78 |
| New York | 0.265 | 0.491 | 0.154 | 3,033 |
| North Carolina | 0.356 | 0.778 | 0.257 | 6,357 |
| North Dakota | 0.881 | 1.549 | 0.502 | 10,289 |
| Ohio | 0.567 | 1.293 | 0.417 | 9,367 |
| Oklahoma | 0.277 | 0.568 | 0.194 | 4,414 |
| Oregon | 0.273 | 0.550 | 0.178 | 4,183 |
| Pennsylvania | 0.228 | 0.510 | 0.162 | 3,365 |
| Rhode Island | 0.019 | 0.034 | 0.010 | 218 |
| South Carolina | 0.534 | 1.155 | 0.379 | 9,564 |
| South Dakota | 0.046 | 0.085 | 0.029 | 714 |
| Tennessee | 1.413 | 3.176 | 1.017 | 22,462 |
| Texas | 9.581 | 22.987 | 7.666 | 160,707 |
| Utah | 0.075 | 0.166 | 0.056 | 1,324 |
| Vermont | 0.084 | 0.152 | 0.050 | 1,236 |
| Virginia | 0.091 | 0.178 | 0.056 | 1,273 |
| Washington | 0.055 | 0.114 | 0.038 | 785 |
| West Virginia | 0.001 | 0.001 | 0.000 | 7 |
| Wisconsin | 0.461 | 0.947 | 0.321 | 7,433 |
| Wyoming | 0.529 | 0.851 | 0.290 | 6,394 |
| **State Totals** | **38.790** | **82.168** | **27.537** | **599,419** |
| **Interstate Spillovers** | | **30.571** | **8.773** | **201,555** |
| **U.S. Totals** | **38.790** | **112.739** | **36.310** | **800,975** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

**Appendix E-3**

Impacts of Soft Costs, Site Development, Hard Costs and Tenant Improvements on State Economies **(Warehouse)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.023 | 0.049 | 0.016 | 393 |
| Alaska | 0.015 | 0.026 | 0.009 | 188 |
| Arizona | 0.539 | 1.111 | 0.383 | 9,017 |
| Arkansas | 0.021 | 0.041 | 0.014 | 337 |
| California | 2.566 | 5.503 | 1.863 | 37,756 |
| Colorado | 0.547 | 1.194 | 0.407 | 9,313 |
| Connecticut | 0.114 | 0.212 | 0.070 | 1,349 |
| Delaware | 0.019 | 0.034 | 0.009 | 204 |
| District of Columbia | 0.021 | 0.024 | 0.002 | 37 |
| Florida | 1.395 | 2.888 | 0.994 | 24,574 |
| Georgia | 0.693 | 1.597 | 0.533 | 12,546 |
| Hawaii | 0.020 | 0.036 | 0.013 | 273 |
| Idaho | 0.080 | 0.146 | 0.050 | 1,254 |
| Illinois | 0.966 | 2.228 | 0.718 | 14,888 |
| Indiana | 0.550 | 1.196 | 0.386 | 8,924 |
| Iowa | 0.279 | 0.534 | 0.177 | 4,096 |
| Kansas | 0.412 | 0.812 | 0.247 | 5,784 |
| Kentucky | 0.571 | 1.191 | 0.373 | 9,164 |
| Louisiana | 0.084 | 0.166 | 0.057 | 1,235 |
| Maine | 0.003 | 0.006 | 0.002 | 49 |
| Maryland | 0.379 | 0.720 | 0.234 | 4,756 |
| Massachusetts | 0.300 | 0.578 | 0.187 | 3,604 |
| Michigan | 0.297 | 0.630 | 0.214 | 5,074 |
| Minnesota | 0.218 | 0.476 | 0.156 | 3,378 |
| Mississippi | 0.070 | 0.137 | 0.046 | 1,126 |
| Missouri | 0.397 | 0.845 | 0.262 | 6,104 |
| Montana | 0.015 | 0.028 | 0.010 | 244 |
| Nebraska | 0.103 | 0.193 | 0.065 | 1,455 |
| Nevada | 0.479 | 0.890 | 0.304 | 6,563 |
| New Hampshire | 0.025 | 0.049 | 0.015 | 325 |
| New Jersey | 0.949 | 1.963 | 0.618 | 12,549 |
| New Mexico | 0.009 | 0.015 | 0.005 | 130 |
| New York | 1.122 | 2.079 | 0.656 | 12,837 |
| North Carolina | 0.620 | 1.355 | 0.449 | 11,082 |
| North Dakota | 0.105 | 0.184 | 0.060 | 1,228 |
| Ohio | 0.696 | 1.584 | 0.513 | 11,497 |
| Oklahoma | 0.189 | 0.387 | 0.132 | 3,017 |
| Oregon | 0.156 | 0.314 | 0.102 | 2,397 |
| Pennsylvania | 0.983 | 2.199 | 0.701 | 14,524 |
| Rhode Island | 0.001 | 0.002 | 0.001 | 13 |
| South Carolina | 0.588 | 1.271 | 0.418 | 10,535 |
| South Dakota | 0.110 | 0.202 | 0.069 | 1,710 |
| Tennessee | 0.362 | 0.812 | 0.261 | 5,757 |
| Texas | 2.742 | 6.579 | 2.200 | 46,041 |
| Utah | 0.161 | 0.358 | 0.121 | 2,870 |
| Vermont | 0.005 | 0.010 | 0.003 | 78 |
| Virginia | 0.308 | 0.604 | 0.191 | 4,318 |
| Washington | 0.292 | 0.605 | 0.202 | 4,160 |
| West Virginia | 0.012 | 0.022 | 0.007 | 157 |
| Wisconsin | 0.202 | 0.413 | 0.140 | 3,251 |
| Wyoming | 0.005 | 0.008 | 0.003 | 64 |
| **State Totals** | **20.819** | **44.507** | **14.669** | **322,225** |
| **Interstate Spillovers** | | **15.989** | **4.866** | **108,027** |
| **U.S. Totals** | **20.819** | **60.496** | **19.535** | **430,252** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

**Appendix E-4**

Impacts of Soft Costs, Site Development, Hard Costs and Tenant Improvements on State Economies **(Retail and Entertainment)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 0.473 | 0.997 | 0.337 | 8,094 |
| Alaska | 0.042 | 0.071 | 0.026 | 514 |
| Arizona | 0.630 | 1.301 | 0.451 | 10,580 |
| Arkansas | 0.261 | 0.514 | 0.172 | 4,206 |
| California | 3.694 | 7.941 | 2.704 | 54,515 |
| Colorado | 0.821 | 1.797 | 0.617 | 14,037 |
| Connecticut | 0.333 | 0.618 | 0.204 | 3,943 |
| Delaware | 0.060 | 0.107 | 0.030 | 635 |
| District of Columbia | 0.170 | 0.199 | 0.018 | 312 |
| Florida | 2.900 | 6.019 | 2.084 | 51,293 |
| Georgia | 0.898 | 2.071 | 0.695 | 16,245 |
| Hawaii | 0.521 | 0.965 | 0.342 | 7,357 |
| Idaho | 0.112 | 0.204 | 0.071 | 1,759 |
| Illinois | 1.252 | 2.889 | 0.937 | 19,361 |
| Indiana | 0.597 | 1.295 | 0.421 | 9,717 |
| Iowa | 0.371 | 0.710 | 0.236 | 5,477 |
| Kansas | 0.350 | 0.689 | 0.211 | 4,927 |
| Kentucky | 0.479 | 0.997 | 0.314 | 7,704 |
| Louisiana | 0.674 | 1.332 | 0.462 | 9,923 |
| Maine | 0.126 | 0.240 | 0.083 | 2,047 |
| Maryland | 0.734 | 1.401 | 0.457 | 9,275 |
| Massachusetts | 0.655 | 1.267 | 0.413 | 7,910 |
| Michigan | 0.665 | 1.410 | 0.483 | 11,377 |
| Minnesota | 0.413 | 0.903 | 0.297 | 6,425 |
| Mississippi | 0.283 | 0.551 | 0.185 | 4,556 |
| Missouri | 0.581 | 1.236 | 0.384 | 8,924 |
| Montana | 0.064 | 0.116 | 0.041 | 1,028 |
| Nebraska | 0.197 | 0.371 | 0.125 | 2,814 |
| Nevada | 0.428 | 0.795 | 0.273 | 5,891 |
| New Hampshire | 0.125 | 0.241 | 0.076 | 1,604 |
| New Jersey | 0.708 | 1.468 | 0.465 | 9,405 |
| New Mexico | 0.145 | 0.255 | 0.089 | 2,192 |
| New York | 4.850 | 9.017 | 2.853 | 55,593 |
| North Carolina | 1.036 | 2.261 | 0.754 | 18,531 |
| North Dakota | 0.094 | 0.165 | 0.054 | 1,112 |
| Ohio | 1.346 | 3.059 | 0.997 | 22,271 |
| Oklahoma | 0.459 | 0.939 | 0.323 | 7,369 |
| Oregon | 0.386 | 0.777 | 0.254 | 5,959 |
| Pennsylvania | 1.073 | 2.397 | 0.769 | 15,857 |
| Rhode Island | 0.062 | 0.110 | 0.033 | 710 |
| South Carolina | 0.523 | 1.129 | 0.374 | 9,388 |
| South Dakota | 0.088 | 0.160 | 0.055 | 1,358 |
| Tennessee | 0.922 | 2.069 | 0.669 | 14,725 |
| Texas | 4.402 | 10.564 | 3.550 | 74,061 |
| Utah | 0.340 | 0.756 | 0.256 | 6,094 |
| Vermont | 0.041 | 0.075 | 0.025 | 611 |
| Virginia | 0.951 | 1.863 | 0.593 | 13,281 |
| Washington | 0.482 | 1.000 | 0.337 | 6,901 |
| West Virginia | 0.074 | 0.132 | 0.042 | 960 |
| Wisconsin | 0.711 | 1.455 | 0.498 | 11,488 |
| Wyoming | 0.023 | 0.037 | 0.013 | 281 |
| **State Totals** | **37.624** | **78.930** | **26.150** | **570,599** |
| **Interstate Spillovers** | | **30.362** | **9.324** | **208,290** |
| **U.S. Totals** | **37.624** | **109.292** | **35.474** | **778,889** |

*Sources: CRA; Dodge Data & Analytics; BEA; NAIOP*

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

**Appendix E-5**

Impacts of Soft Costs, Site Development, Hard Costs and Tenant Improvements on State Economies **(in Four Categories)**, 2015

| State | Direct Spending (In Billions of Dollars) | Total Output (In Billions of Dollars) | Personal Earnings (In Billions of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 1.469 | 3.109 | 1.044 | 25,142 |
| Alaska | 0.124 | 0.211 | 0.076 | 1,528 |
| Arizona | 1.814 | 3.741 | 1.294 | 30,397 |
| Arkansas | 0.519 | 1.022 | 0.340 | 8,347 |
| California | 10.336 | 22.191 | 7.536 | 152,306 |
| Colorado | 3.079 | 6.729 | 2.303 | 52,529 |
| Connecticut | 0.979 | 1.817 | 0.599 | 11,594 |
| Delaware | 0.146 | 0.259 | 0.071 | 1,541 |
| District of Columbia | 1.131 | 1.321 | 0.118 | 2,063 |
| Florida | 5.694 | 11.807 | 4.081 | 100,569 |
| Georgia | 3.538 | 8.155 | 2.728 | 64,037 |
| Hawaii | 0.616 | 1.140 | 0.404 | 8,688 |
| Idaho | 0.529 | 0.968 | 0.333 | 8,303 |
| Illinois | 4.733 | 10.919 | 3.531 | 73,082 |
| Indiana | 2.585 | 5.619 | 1.817 | 41,975 |
| Iowa | 3.434 | 6.571 | 2.180 | 50,571 |
| Kansas | 1.329 | 2.620 | 0.798 | 18,688 |
| Kentucky | 1.657 | 3.455 | 1.085 | 26,627 |
| Louisiana | 16.175 | 32.014 | 11.016 | 237,115 |
| Maine | 0.203 | 0.385 | 0.133 | 3,290 |
| Maryland | 2.063 | 3.934 | 1.280 | 26,010 |
| Massachusetts | 2.985 | 5.758 | 1.872 | 35,930 |
| Michigan | 1.920 | 4.075 | 1.390 | 32,840 |
| Minnesota | 1.258 | 2.749 | 0.902 | 19,540 |
| Mississippi | 0.555 | 1.080 | 0.362 | 8,918 |
| Missouri | 2.806 | 5.970 | 1.850 | 43,106 |
| Montana | 0.149 | 0.273 | 0.096 | 2,403 |
| Nebraska | 0.728 | 1.370 | 0.461 | 10,349 |
| Nevada | 2.074 | 3.853 | 1.317 | 28,457 |
| New Hampshire | 0.200 | 0.388 | 0.122 | 2,573 |
| New Jersey | 2.599 | 5.381 | 1.698 | 34,434 |
| New Mexico | 0.201 | 0.353 | 0.124 | 3,042 |
| New York | 23.232 | 43.143 | 13.638 | 266,131 |
| North Carolina | 3.293 | 7.190 | 2.390 | 58,872 |
| North Dakota | 1.227 | 2.155 | 0.699 | 14,352 |
| Ohio | 3.961 | 9.010 | 2.928 | 65,498 |
| Oklahoma | 1.785 | 3.651 | 1.252 | 28,554 |
| Oregon | 1.604 | 3.227 | 1.050 | 24,688 |
| Pennsylvania | 3.055 | 6.831 | 2.185 | 45,156 |
| Rhode Island | 0.084 | 0.148 | 0.045 | 954 |
| South Carolina | 2.930 | 6.330 | 2.088 | 52,539 |
| South Dakota | 0.485 | 0.888 | 0.304 | 7,519 |
| Tennessee | 3.745 | 8.409 | 2.706 | 59,663 |
| Texas | 23.078 | 55.374 | 18.529 | 387,609 |
| Utah | 0.903 | 2.005 | 0.677 | 16,119 |
| Vermont | 0.188 | 0.341 | 0.114 | 2,788 |
| Virginia | 2.467 | 4.832 | 1.536 | 34,482 |
| Washington | 2.722 | 5.643 | 1.895 | 38,885 |
| West Virginia | 0.106 | 0.189 | 0.060 | 1,376 |
| Wisconsin | 1.927 | 3.947 | 1.345 | 31,090 |
| Wyoming | 0.592 | 0.953 | 0.325 | 7,159 |
| **State Totals** | **155.009** | **323.501** | **106.728** | **2,309,426** |
| **Interstate Spillovers** | | **126.879** | **38.976** | **896,072** |
| **U.S. Totals** | **155.009** | **450.381** | **145.704** | **3,205,498** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Thousands of Dollars) | Total Output (In Thousands of Dollars) | Personal Earnings (In Thousands of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 1,348 | 2,508 | 781 | 24 |
| Alaska | 671 | 1,118 | 355 | 9 |
| Arizona | 15,337 | 29,276 | 9,347 | 258 |
| Arkansas | 4,838 | 8,522 | 2,619 | 80 |
| California | 53,152 | 107,773 | 33,668 | 800 |
| Colorado | 27,310 | 56,567 | 17,787 | 473 |
| Connecticut | 6,560 | 11,393 | 3,433 | 81 |
| Delaware | 722 | 1,208 | 306 | 8 |
| District of Columbia | 3,371 | 4,112 | 405 | 10 |
| Florida | 22,848 | 43,759 | 14,005 | 405 |
| Georgia | 10,952 | 22,764 | 7,078 | 190 |
| Hawaii | 157 | 275 | 88 | 2 |
| Idaho | 1,165 | 1,936 | 614 | 19 |
| Illinois | 20,836 | 44,112 | 13,311 | 326 |
| Indiana | 15,080 | 29,054 | 8,756 | 243 |
| Iowa | 18,799 | 32,088 | 9,783 | 286 |
| Kansas | 5,282 | 9,608 | 2,688 | 74 |
| Kentucky | 14,925 | 28,082 | 8,155 | 240 |
| Louisiana | 5,432 | 10,130 | 3,173 | 88 |
| Maine | 919 | 1,591 | 508 | 15 |
| Maryland | 22,137 | 39,855 | 11,907 | 293 |
| Massachusetts | 9,727 | 17,662 | 5,303 | 125 |
| Michigan | 9,129 | 17,384 | 5,501 | 149 |
| Minnesota | 7,541 | 15,015 | 4,577 | 119 |
| Mississippi | 2,674 | 4,729 | 1,445 | 44 |
| Missouri | 12,133 | 23,133 | 6,609 | 187 |
| Montana | 2,049 | 3,518 | 1,116 | 35 |
| Nebraska | 7,550 | 12,925 | 3,988 | 116 |
| Nevada | 12,991 | 22,258 | 6,990 | 192 |
| New Hampshire | 118 | 205 | 59 | 2 |
| New Jersey | 10,078 | 19,545 | 5,681 | 138 |
| New Mexico | 1,122 | 1,914 | 599 | 18 |
| New York | 75,589 | 133,327 | 37,937 | 905 |
| North Carolina | 26,961 | 52,408 | 16,261 | 476 |
| North Dakota | 4,865 | 8,138 | 2,390 | 64 |
| Ohio | 32,670 | 66,476 | 20,164 | 519 |
| Oklahoma | 18,647 | 35,985 | 11,234 | 314 |
| Oregon | 14,680 | 26,602 | 8,040 | 228 |
| Pennsylvania | 10,251 | 20,711 | 6,160 | 149 |
| Rhode Island | – | – | – | – |
| South Carolina | 23,099 | 44,007 | 13,385 | 407 |
| South Dakota | 4,219 | 6,902 | 2,154 | 66 |
| Tennessee | 20,109 | 40,172 | 12,101 | 317 |
| Texas | 128,435 | 285,065 | 88,026 | 2,249 |
| Utah | 8,384 | 17,287 | 5,393 | 157 |
| Vermont | 634 | 1,043 | 318 | 10 |
| Virginia | 18,561 | 33,539 | 9,708 | 250 |
| Washington | 31,180 | 58,585 | 18,227 | 462 |
| West Virginia | 48 | 81 | 23 | 1 |
| Wisconsin | 10,770 | 19,640 | 6,180 | 174 |
| Wyoming | 660 | 1,023 | 315 | 9 |
| **State Totals** | **756,715** | **1,475,011** | **448,653** | **11,807** |
| **Interstate Spillovers** | | **521,044** | **123,461** | **3,035** |
| **U.S. Totals** | **756,715** | **1,996,055** | **572,114** | **14,841** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Thousands of Dollars) | Total Output (In Thousands of Dollars) | Personal Earnings (In Thousands of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 3,410 | 6,343 | 1,976 | 60 |
| Alaska | 5 | 9 | 3 | 0 |
| Arizona | 594 | 1,134 | 362 | 10 |
| Arkansas | 143 | 251 | 77 | 2 |
| California | 1,629 | 3,302 | 1,032 | 24 |
| Colorado | 1,034 | 2,142 | 674 | 18 |
| Connecticut | 219 | 380 | 115 | 3 |
| Delaware | 50 | 84 | 21 | 1 |
| District of Columbia | – | – | – | – |
| Florida | 571 | 1,094 | 350 | 10 |
| Georgia | 5,658 | 11,760 | 3,656 | 98 |
| Hawaii | – | – | – | – |
| Idaho | 1,140 | 1,893 | 601 | 19 |
| Illinois | 737 | 1,561 | 471 | 12 |
| Indiana | 7,313 | 14,090 | 4,247 | 118 |
| Iowa | 1,523 | 2,599 | 792 | 23 |
| Kansas | 921 | 1,675 | 469 | 13 |
| Kentucky | 1,171 | 2,202 | 640 | 19 |
| Louisiana | 161 | 301 | 94 | 3 |
| Maine | 33 | 56 | 18 | 1 |
| Maryland | 626 | 1,127 | 337 | 8 |
| Massachusetts | 682 | 1,238 | 372 | 9 |
| Michigan | 3,188 | 6,071 | 1,921 | 52 |
| Minnesota | 923 | 1,837 | 560 | 15 |
| Mississippi | 365 | 646 | 197 | 6 |
| Missouri | 4,243 | 8,090 | 2,311 | 65 |
| Montana | 4 | 7 | 2 | 0 |
| Nebraska | 396 | 678 | 209 | 6 |
| Nevada | 21 | 36 | 11 | 0 |
| New Hampshire | 285 | 495 | 143 | 4 |
| New Jersey | 828 | 1,605 | 467 | 11 |
| New Mexico | 73 | 125 | 39 | 1 |
| New York | 1,167 | 2,059 | 586 | 14 |
| North Carolina | 1,326 | 2,577 | 799 | 23 |
| North Dakota | 38 | 63 | 18 | 0 |
| Ohio | 3,565 | 7,255 | 2,200 | 57 |
| Oklahoma | 627 | 1,210 | 378 | 11 |
| Oregon | 769 | 1,394 | 421 | 12 |
| Pennsylvania | 2,088 | 4,218 | 1,255 | 30 |
| Rhode Island | 107 | 179 | 50 | 1 |
| South Carolina | 3,884 | 7,400 | 2,251 | 68 |
| South Dakota | 344 | 563 | 176 | 5 |
| Tennessee | 7,406 | 14,794 | 4,456 | 117 |
| Texas | 10,552 | 23,421 | 7,232 | 185 |
| Utah | 341 | 703 | 219 | 6 |
| Vermont | 125 | 206 | 63 | 2 |
| Virginia | 452 | 816 | 236 | 6 |
| Washington | 138 | 259 | 81 | 2 |
| West Virginia | – | – | – | – |
| Wisconsin | 2,722 | 4,963 | 1,562 | 44 |
| Wyoming | 25 | 39 | 12 | 0 |
| **State Totals** | **73,620** | **144,950** | **44,162** | **1,195** |
| **Interstate Spillovers** | | **49,245** | **11,499** | **249** |
| **U.S. Totals** | **73,620** | **194,195** | **55,661** | **1,444** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Thousands of Dollars) | Total Output (In Thousands of Dollars) | Personal Earnings (In Thousands of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 69 | 129 | 40 | 1 |
| Alaska | 107 | 178 | 57 | 1 |
| Arizona | 4,231 | 8,077 | 2,579 | 71 |
| Arkansas | 116 | 205 | 63 | 2 |
| California | 23,051 | 46,740 | 14,601 | 347 |
| Colorado | 4,088 | 8,469 | 2,663 | 71 |
| Connecticut | 820 | 1,424 | 429 | 10 |
| Delaware | 110 | 184 | 47 | 1 |
| District of Columbia | 104 | 127 | 12 | 0 |
| Florida | 9,689 | 18,556 | 5,939 | 172 |
| Georgia | 6,798 | 14,130 | 4,393 | 118 |
| Hawaii | 40 | 70 | 22 | 1 |
| Idaho | 587 | 976 | 310 | 10 |
| Illinois | 9,258 | 19,601 | 5,915 | 145 |
| Indiana | 6,276 | 12,091 | 3,644 | 101 |
| Iowa | 1,988 | 3,393 | 1,035 | 30 |
| Kansas | 4,128 | 7,507 | 2,100 | 58 |
| Kentucky | 7,244 | 13,630 | 3,958 | 116 |
| Louisiana | 261 | 486 | 152 | 4 |
| Maine | 18 | 31 | 10 | 0 |
| Maryland | 2,544 | 4,580 | 1,368 | 34 |
| Massachusetts | 2,856 | 5,185 | 1,557 | 37 |
| Michigan | 1,870 | 3,562 | 1,127 | 31 |
| Minnesota | 1,496 | 2,979 | 908 | 24 |
| Mississippi | 423 | 748 | 228 | 7 |
| Missouri | 2,204 | 4,202 | 1,201 | 34 |
| Montana | 91 | 155 | 49 | 2 |
| Nebraska | 895 | 1,533 | 473 | 14 |
| Nevada | 4,606 | 7,891 | 2,478 | 68 |
| New Hampshire | 231 | 401 | 116 | 3 |
| New Jersey | 5,045 | 9,784 | 2,844 | 69 |
| New Mexico | 52 | 89 | 28 | 1 |
| New York | 3,899 | 6,878 | 1,957 | 47 |
| North Carolina | 2,874 | 5,587 | 1,734 | 51 |
| North Dakota | 607 | 1,016 | 298 | 8 |
| Ohio | 6,277 | 12,772 | 3,874 | 100 |
| Oklahoma | 1,624 | 3,134 | 979 | 27 |
| Oregon | 1,098 | 1,990 | 602 | 17 |
| Pennsylvania | 8,401 | 16,973 | 5,048 | 122 |
| Rhode Island | 11 | 18 | 5 | 0 |
| South Carolina | 4,269 | 8,132 | 2,473 | 75 |
| South Dakota | 714 | 1,168 | 364 | 11 |
| Tennessee | 1,984 | 3,964 | 1,194 | 31 |
| Texas | 21,845 | 48,485 | 14,972 | 383 |
| Utah | 1,525 | 3,145 | 981 | 28 |
| Vermont | 22 | 36 | 11 | 0 |
| Virginia | 1,847 | 3,337 | 966 | 25 |
| Washington | 1,512 | 2,842 | 884 | 22 |
| West Virginia | 67 | 112 | 33 | 1 |
| Wisconsin | 1,062 | 1,937 | 610 | 17 |
| Wyoming | 25 | 38 | 12 | 0 |
| **State Totals** | **160,959** | **318,677** | **97,342** | **2,549** |
| **Interstate Spillovers** | | **105,900** | **24,351** | **608** |
| **U.S. Totals** | **160,959** | **424,577** | **121,693** | **3,157** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Thousands of Dollars) | Total Output (In Thousands of Dollars) | Personal Earnings (In Thousands of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 7,671 | 14,268 | 4,446 | 134 |
| Alaska | 104 | 173 | 55 | 1 |
| Arizona | 8,811 | 16,819 | 5,370 | 148 |
| Arkansas | 3,203 | 5,641 | 1,733 | 53 |
| California | 21,986 | 44,579 | 13,926 | 331 |
| Colorado | 10,640 | 22,039 | 6,930 | 184 |
| Connecticut | 3,930 | 6,825 | 2,057 | 49 |
| Delaware | 436 | 729 | 185 | 5 |
| District of Columbia | 1,920 | 2,343 | 231 | 6 |
| Florida | 36,603 | 70,102 | 22,436 | 649 |
| Georgia | 11,225 | 23,331 | 7,254 | 195 |
| Hawaii | 2,436 | 4,260 | 1,359 | 37 |
| Idaho | 1,848 | 3,071 | 975 | 30 |
| Illinois | 9,897 | 20,952 | 6,322 | 155 |
| Indiana | 10,572 | 20,369 | 6,139 | 171 |
| Iowa | 3,377 | 5,764 | 1,757 | 51 |
| Kansas | 4,502 | 8,189 | 2,291 | 63 |
| Kentucky | 8,533 | 16,055 | 4,662 | 137 |
| Louisiana | 10,083 | 18,803 | 5,890 | 164 |
| Maine | 1,488 | 2,576 | 822 | 25 |
| Maryland | 9,937 | 17,891 | 5,345 | 132 |
| Massachusetts | 3,876 | 7,039 | 2,114 | 50 |
| Michigan | 6,734 | 12,822 | 4,057 | 110 |
| Minnesota | 5,382 | 10,716 | 3,267 | 85 |
| Mississippi | 4,764 | 8,426 | 2,575 | 79 |
| Missouri | 7,708 | 14,696 | 4,198 | 119 |
| Montana | 713 | 1,224 | 388 | 12 |
| Nebraska | 1,695 | 2,902 | 895 | 26 |
| Nevada | 2,988 | 5,120 | 1,608 | 44 |
| New Hampshire | 1,208 | 2,096 | 606 | 15 |
| New Jersey | 7,861 | 15,246 | 4,431 | 108 |
| New Mexico | 1,989 | 3,393 | 1,061 | 32 |
| New York | 20,902 | 36,867 | 10,490 | 250 |
| North Carolina | 12,014 | 23,353 | 7,246 | 212 |
| North Dakota | 1,284 | 2,147 | 631 | 17 |
| Ohio | 17,029 | 34,649 | 10,510 | 271 |
| Oklahoma | 8,864 | 17,104 | 5,340 | 149 |
| Oregon | 2,982 | 5,404 | 1,633 | 46 |
| Pennsylvania | 12,360 | 24,972 | 7,428 | 180 |
| Rhode Island | 143 | 239 | 66 | 2 |
| South Carolina | 7,878 | 15,008 | 4,565 | 139 |
| South Dakota | 1,225 | 2,004 | 625 | 19 |
| Tennessee | 12,533 | 25,037 | 7,542 | 198 |
| Texas | 54,208 | 120,316 | 37,153 | 949 |
| Utah | 5,403 | 11,140 | 3,476 | 101 |
| Vermont | 684 | 1,125 | 343 | 10 |
| Virginia | 13,749 | 24,843 | 7,191 | 185 |
| Washington | 3,754 | 7,053 | 2,194 | 56 |
| West Virginia | 774 | 1,291 | 376 | 10 |
| Wisconsin | 10,364 | 18,898 | 5,947 | 168 |
| Wyoming | 361 | 560 | 173 | 5 |
| **State Totals** | **400,627** | **780,473** | **238,313** | **6,367** |
| **Interstate Spillovers** | | **276,297** | **64,580** | **1,490** |
| **U.S. Totals** | **400,627** | **1,056,769** | **302,894** | **7,857** |

*Sources: CRA; 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)**, 2015

| State | Direct Spending (In Thousands of Dollars) | Total Output (In Thousands of Dollars) | Personal Earnings (In Thousands of Dollars) | Jobs Supported |
|---|---|---|---|---|
| Alabama | 12,499 | 23,248 | 7,244 | 219 |
| Alaska | 887 | 1,478 | 469 | 12 |
| Arizona | 28,974 | 55,306 | 17,658 | 488 |
| Arkansas | 8,300 | 14,619 | 4,492 | 137 |
| California | 99,817 | 202,394 | 63,227 | 1,501 |
| Colorado | 43,073 | 89,217 | 28,054 | 746 |
| Connecticut | 11,529 | 20,023 | 6,033 | 143 |
| Delaware | 1,319 | 2,205 | 558 | 15 |
| District of Columbia | 5,395 | 6,582 | 649 | 16 |
| Florida | 69,711 | 133,511 | 42,729 | 1,237 |
| Georgia | 34,633 | 71,986 | 22,381 | 601 |
| Hawaii | 2,634 | 4,605 | 1,469 | 40 |
| Idaho | 4,740 | 7,875 | 2,500 | 77 |
| Illinois | 40,728 | 86,226 | 26,019 | 637 |
| Indiana | 39,241 | 75,604 | 22,786 | 633 |
| Iowa | 25,686 | 43,844 | 13,367 | 391 |
| Kansas | 14,833 | 26,979 | 7,547 | 209 |
| Kentucky | 31,873 | 59,970 | 17,414 | 512 |
| Louisiana | 15,937 | 29,719 | 9,310 | 260 |
| Maine | 2,457 | 4,254 | 1,358 | 41 |
| Maryland | 35,244 | 63,453 | 18,957 | 467 |
| Massachusetts | 17,141 | 31,124 | 9,346 | 219 |
| Michigan | 20,921 | 39,838 | 12,606 | 341 |
| Minnesota | 15,341 | 30,547 | 9,312 | 243 |
| Mississippi | 8,226 | 14,549 | 4,446 | 136 |
| Missouri | 26,288 | 50,120 | 14,319 | 405 |
| Montana | 2,856 | 4,904 | 1,556 | 48 |
| Nebraska | 10,536 | 18,038 | 5,566 | 162 |
| Nevada | 20,606 | 35,306 | 11,088 | 304 |
| New Hampshire | 1,842 | 3,198 | 925 | 24 |
| New Jersey | 23,811 | 46,180 | 13,423 | 326 |
| New Mexico | 3,237 | 5,522 | 1,727 | 53 |
| New York | 101,557 | 179,131 | 50,970 | 1,216 |
| North Carolina | 43,174 | 83,925 | 26,041 | 763 |
| North Dakota | 6,793 | 11,364 | 3,337 | 90 |
| Ohio | 59,541 | 121,152 | 36,749 | 946 |
| Oklahoma | 29,762 | 57,433 | 17,930 | 501 |
| Oregon | 19,530 | 35,391 | 10,697 | 303 |
| Pennsylvania | 33,099 | 66,874 | 19,891 | 482 |
| Rhode Island | 261 | 436 | 121 | 3 |
| South Carolina | 39,129 | 74,548 | 22,674 | 689 |
| South Dakota | 6,501 | 10,636 | 3,319 | 102 |
| Tennessee | 42,032 | 83,967 | 25,293 | 663 |
| Texas | 215,040 | 477,287 | 147,383 | 3,766 |
| Utah | 15,652 | 32,275 | 10,069 | 292 |
| Vermont | 1,465 | 2,409 | 734 | 22 |
| Virginia | 34,608 | 62,535 | 18,101 | 466 |
| Washington | 36,584 | 68,739 | 21,386 | 542 |
| West Virginia | 889 | 1,483 | 432 | 12 |
| Wisconsin | 24,918 | 45,438 | 14,299 | 404 |
| Wyoming | 1,070 | 1,660 | 512 | 15 |
| **State Totals** | **1,391,921** | **2,719,111** | **828,470** | **21,918** |
| **Interstate Spillovers** | | **952,485** | **223,892** | **5,381** |
| **U.S. Totals** | **1,391,921** | **3,671,596** | **1,052,361** | **27,300** |

*Sources: CRA; 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 | 2.1444 | 0.7018 | 17.0657 |
| Alaska | 1.6928 | 0.5958 | 12.0441 |
| Arizona | 2.0424 | 0.6888 | 16.4421 |
| Arkansas | 2.0016 | 0.6447 | 15.9508 |
| California | 2.1244 | 0.7031 | 14.5424 |
| Colorado | 2.1596 | 0.7216 | 16.7783 |
| Connecticut | 1.8400 | 0.5910 | 11.6449 |
| Delaware | 1.7637 | 0.4807 | 10.6261 |
| District of Columbia | 1.1226 | 0.0852 | 1.5548 |
| Florida | 2.0503 | 0.6902 | 17.3388 |
| Georgia | 2.2943 | 0.7505 | 18.1227 |
| Hawaii | 1.8257 | 0.6315 | 13.5220 |
| Idaho | 1.8333 | 0.6146 | 15.4965 |
| Illinois | 2.2974 | 0.7231 | 15.1972 |
| Indiana | 2.2002 | 0.6923 | 16.0555 |
| Iowa | 1.9324 | 0.6210 | 14.4339 |
| Kansas | 1.9857 | 0.5881 | 13.8961 |
| Kentucky | 2.1092 | 0.6446 | 15.9681 |
| Louisiana | 1.9853 | 0.6686 | 14.4823 |
| Maine | 1.8935 | 0.6338 | 15.8670 |
| Maryland | 1.8736 | 0.5931 | 12.2490 |
| Massachusetts | 1.8947 | 0.5980 | 11.7328 |
| Michigan | 2.1276 | 0.7064 | 17.0410 |
| Minnesota | 2.1818 | 0.6973 | 15.3290 |
| Mississippi | 1.9767 | 0.6423 | 15.9729 |
| Missouri | 2.1393 | 0.6519 | 15.4292 |
| Montana | 1.8439 | 0.6259 | 15.8797 |
| Nebraska | 1.8824 | 0.6143 | 13.9239 |
| Nevada | 1.8446 | 0.6140 | 13.3579 |
| New Hampshire | 1.9384 | 0.5927 | 12.5641 |
| New Jersey | 2.0473 | 0.6317 | 12.9788 |
| New Mexico | 1.7534 | 0.5929 | 14.7413 |
| New York | 1.8285 | 0.5688 | 11.3634 |
| North Carolina | 2.1890 | 0.7075 | 17.7512 |
| North Dakota | 1.7668 | 0.5587 | 11.4290 |
| Ohio | 2.2915 | 0.7241 | 16.4212 |
| Oklahoma | 2.0583 | 0.6860 | 15.6436 |
| Oregon | 2.0132 | 0.6346 | 14.9960 |
| Pennsylvania | 2.2512 | 0.7015 | 14.7823 |
| Rhode Island | 1.7570 | 0.5138 | 10.9996 |
| South Carolina | 2.1756 | 0.6993 | 17.8207 |
| South Dakota | 1.8466 | 0.6133 | 15.3338 |
| Tennessee | 2.2550 | 0.7066 | 15.7184 |
| Texas | 2.3987 | 0.7861 | 16.6634 |
| Utah | 2.2180 | 0.7294 | 17.2979 |
| Vermont | 1.8106 | 0.5865 | 14.5454 |
| Virginia | 1.9499 | 0.6094 | 14.1119 |
| Washington | 2.0715 | 0.6752 | 14.0483 |
| West Virginia | 1.7955 | 0.5522 | 12.8056 |
| Wisconsin | 2.0672 | 0.6858 | 16.0172 |
| Wyoming | 1.6172 | 0.5380 | 11.8665 |
| **U.S. Total** | **2.9100** | **0.9209** | **20.5308** |

*Source: BEA*

**Appendix G-2**

Output, Earnings and Employment Multipliers: **Soft Costs**

| State | MULTIPLIERS | | |
|---|---|---|---|
| | Output | Earnings | Jobs |
| Alabama | 1.9504 | 0.7622 | 17.4013 |
| Alaska | 1.7681 | 0.7092 | 13.8984 |
| Arizona | 2.1707 | 0.8421 | 18.4322 |
| Arkansas | 1.8058 | 0.7145 | 16.8312 |
| California | 2.2665 | 0.8663 | 15.7580 |
| Colorado | 2.3202 | 0.8871 | 18.5386 |
| Connecticut | 1.9391 | 0.7191 | 12.8534 |
| Delaware | 1.7835 | 0.5273 | 10.0302 |
| District of Columbia | 1.3955 | 0.2022 | 3.1768 |
| Florida | 2.1932 | 0.8517 | 19.3169 |
| Georgia | 2.3635 | 0.8845 | 17.9749 |
| Hawaii | 1.9704 | 0.7738 | 16.9016 |
| Idaho | 1.7974 | 0.7213 | 16.8244 |
| Illinois | 2.3566 | 0.8649 | 16.7056 |
| Indiana | 2.0197 | 0.7642 | 17.2753 |
| Iowa | 1.8170 | 0.7075 | 16.2597 |
| Kansas | 1.8959 | 0.6691 | 15.0110 |
| Kentucky | 1.9534 | 0.7103 | 16.6342 |
| Louisiana | 1.9363 | 0.7675 | 15.8866 |
| Maine | 1.8990 | 0.7577 | 17.7171 |
| Maryland | 2.0771 | 0.7601 | 14.4432 |
| Massachusetts | 2.1080 | 0.7791 | 13.6209 |
| Michigan | 2.0919 | 0.8204 | 17.4449 |
| Minnesota | 2.2082 | 0.8247 | 16.6418 |
| Mississippi | 1.8020 | 0.7008 | 16.6352 |
| Missouri | 2.0610 | 0.7019 | 14.9865 |
| Montana | 1.7842 | 0.7287 | 17.5553 |
| Nebraska | 1.8743 | 0.7315 | 15.7703 |
| Nevada | 1.9310 | 0.7505 | 15.7180 |
| New Hampshire | 1.9337 | 0.6957 | 14.3698 |
| New Jersey | 2.1958 | 0.7708 | 14.7128 |
| New Mexico | 1.7937 | 0.7225 | 17.1300 |
| New York | 2.0012 | 0.6790 | 11.9203 |
| North Carolina | 2.1533 | 0.8226 | 18.5370 |
| North Dakota | 1.6894 | 0.6438 | 13.4392 |
| Ohio | 2.1846 | 0.8187 | 17.1369 |
| Oklahoma | 1.9799 | 0.7849 | 17.8914 |
| Oregon | 2.0079 | 0.7623 | 17.5223 |
| Pennsylvania | 2.1531 | 0.7872 | 14.7621 |
| Rhode Island | 1.8565 | 0.6439 | 13.4657 |
| South Carolina | 2.0791 | 0.7870 | 18.5512 |
| South Dakota | 1.7417 | 0.6961 | 16.3575 |
| Tennessee | 2.1904 | 0.8134 | 17.1391 |
| Texas | 2.4033 | 0.9006 | 17.5630 |
| Utah | 2.2307 | 0.8572 | 20.7190 |
| Vermont | 1.8078 | 0.7099 | 16.2348 |
| Virginia | 2.0051 | 0.6892 | 13.3117 |
| Washington | 2.0789 | 0.8031 | 15.4905 |
| West Virginia | 1.6919 | 0.6512 | 13.7055 |
| Wisconsin | 1.9475 | 0.7634 | 16.7725 |
| Wyoming | 1.5631 | 0.6317 | 13.7244 |
| **U.S. Total** | **2.8808** | **1.0449** | **21.4968** |

*Source: BEA*

**Appendix G-3**

Output, Earnings and Employment Multipliers: **Services to Buildings**

| State | MULTIPLIERS | | |
|---|---|---|---|
| | Output | Earnings | Jobs |
| Alabama | 1.7921 | 0.5761 | 25.0809 |
| Alaska | 1.5764 | 0.5213 | 20.2826 |
| Arizona | 1.8776 | 0.616 | 22.8987 |
| Arkansas | 1.6901 | 0.5376 | 23.7426 |
| California | 1.9982 | 0.6429 | 21.6728 |
| Colorado | 1.9947 | 0.6485 | 24.0099 |
| Connecticut | 1.7513 | 0.5404 | 18.8623 |
| Delaware | 1.6601 | 0.4465 | 17.6124 |
| District of Columbia | 1.2177 | 0.1281 | 5.3811 |
| Florida | 1.8995 | 0.6235 | 25.3805 |
| Georgia | 2.0961 | 0.6617 | 24.571 |
| Hawaii | 1.7394 | 0.5698 | 21.1433 |
| Idaho | 1.6313 | 0.535 | 23.9897 |
| Illinois | 2.1207 | 0.6551 | 22.2546 |
| Indiana | 1.9311 | 0.5964 | 22.4899 |
| Iowa | 1.7023 | 0.5335 | 22.3115 |
| Kansas | 1.7651 | 0.504 | 19.4051 |
| Kentucky | 1.8702 | 0.5591 | 22.8621 |
| Louisiana | 1.7898 | 0.5763 | 24.4788 |
| Maine | 1.7307 | 0.569 | 23.6287 |
| Maryland | 1.8013 | 0.5512 | 19.6379 |
| Massachusetts | 1.8272 | 0.5637 | 19.2655 |
| Michigan | 1.9229 | 0.6222 | 23.0957 |
| Minnesota | 1.9899 | 0.6237 | 22.7869 |
| Mississippi | 1.7011 | 0.5367 | 23.8003 |
| Missouri | 1.9055 | 0.564 | 22.3258 |
| Montana | 1.62 | 0.5388 | 24.4248 |
| Nebraska | 1.6901 | 0.5371 | 23.3536 |
| Nevada | 1.6976 | 0.5507 | 22.4998 |
| New Hampshire | 1.7273 | 0.5113 | 18.3862 |
| New Jersey | 1.9671 | 0.5849 | 20.1022 |
| New Mexico | 1.6267 | 0.5349 | 23.883 |
| New York | 1.7711 | 0.5195 | 18.1428 |
| North Carolina | 1.9619 | 0.622 | 26.0806 |
| North Dakota | 1.5619 | 0.4811 | 19.6003 |
| Ohio | 2.0495 | 0.638 | 21.9941 |
| Oklahoma | 1.8284 | 0.5931 | 24.0507 |
| Oregon | 1.8057 | 0.5636 | 21.5082 |
| Pennsylvania | 1.973 | 0.6053 | 20.7752 |
| Rhode Island | 1.7014 | 0.4916 | 17.8955 |
| South Carolina | 1.9018 | 0.5879 | 24.8989 |
| South Dakota | 1.5867 | 0.5005 | 22.4711 |
| Tennessee | 1.9968 | 0.6153 | 22.3613 |
| Texas | 2.1282 | 0.6744 | 25.5611 |
| Utah | 1.9962 | 0.6419 | 26.0185 |
| Vermont | 1.6388 | 0.5178 | 22.9434 |
| Virginia | 1.7734 | 0.5267 | 19.2935 |
| Washington | 1.8483 | 0.5931 | 21.649 |
| West Virginia | 1.5864 | 0.4818 | 19.2475 |
| Wisconsin | 1.8293 | 0.5893 | 23.364 |
| Wyoming | 1.4622 | 0.4767 | 21.9758 |
| **U.S. Total** | **2.7236** | **0.7447** | **16.6567** |

*Source: BEA*

## Appendix G-4

Output, Earnings and Employment Multipliers: **Management Services**

| State | MULTIPLIERS | | |
|---|---|---|---|
| | Output | Earnings | Jobs |
| Alabama | 1.98 | 0.803 | 22.2943 |
| Alaska | 1.8248 | 0.7556 | 16.3897 |
| Arizona | 2.2376 | 0.8924 | 23.0916 |
| Arkansas | 1.846 | 0.7584 | 21.0093 |
| California | 2.3451 | 0.9204 | 18.5128 |
| Colorado | 2.395 | 0.9402 | 22.2625 |
| Connecticut | 2.0074 | 0.7684 | 14.9747 |
| Delaware | 1.8181 | 0.5591 | 12.5816 |
| District of Columbia | 1.4135 | 0.2139 | 3.9423 |
| Florida | 2.2744 | 0.9078 | 22.4034 |
| Georgia | 2.4449 | 0.9391 | 20.853 |
| Hawaii | 2.0262 | 0.8216 | 22.2706 |
| Idaho | 1.8439 | 0.7653 | 21.339 |
| Illinois | 2.4404 | 0.9211 | 19.4311 |
| Indiana | 2.0687 | 0.8104 | 21.2033 |
| Iowa | 1.8622 | 0.7523 | 20.123 |
| Kansas | 1.9332 | 0.7053 | 18.2073 |
| Kentucky | 1.9977 | 0.7527 | 20.1535 |
| Louisiana | 1.9815 | 0.8119 | 19.7434 |
| Maine | 1.9471 | 0.8038 | 22.1073 |
| Maryland | 2.1356 | 0.806 | 16.649 |
| Massachusetts | 2.1767 | 0.8282 | 16.1734 |
| Michigan | 2.1419 | 0.8667 | 20.2411 |
| Minnesota | 2.2861 | 0.8786 | 20.0267 |
| Mississippi | 1.844 | 0.7433 | 20.7272 |
| Missouri | 2.1237 | 0.7465 | 18.8472 |
| Montana | 1.8319 | 0.774 | 21.8783 |
| Nebraska | 1.9236 | 0.7767 | 19.7741 |
| Nevada | 1.9881 | 0.7981 | 18.6263 |
| New Hampshire | 1.9737 | 0.7358 | 16.749 |
| New Jersey | 2.2792 | 0.8218 | 16.895 |
| New Mexico | 1.8326 | 0.7644 | 21.2845 |
| New York | 2.0894 | 0.7292 | 14.3098 |
| North Carolina | 2.2095 | 0.8705 | 21.323 |
| North Dakota | 1.7177 | 0.6796 | 17.0049 |
| Ohio | 2.24 | 0.8663 | 20.0086 |
| Oklahoma | 2.0412 | 0.8342 | 21.7367 |
| Oregon | 2.0601 | 0.8071 | 21.6918 |
| Pennsylvania | 2.2038 | 0.8314 | 17.0871 |
| Rhode Island | 1.9226 | 0.6893 | 16.8909 |
| South Carolina | 2.111 | 0.8275 | 22.6115 |
| South Dakota | 1.7875 | 0.7412 | 20.5708 |
| Tennessee | 2.2556 | 0.8624 | 19.7931 |
| Texas | 2.4683 | 0.9507 | 20.3011 |
| Utah | 2.3004 | 0.9085 | 24.974 |
| Vermont | 1.8634 | 0.7574 | 20.1201 |
| Virginia | 2.0516 | 0.7288 | 15.3673 |
| Washington | 2.1312 | 0.8488 | 18.4083 |
| West Virginia | 1.7251 | 0.6912 | 16.6841 |
| Wisconsin | 2.0073 | 0.8129 | 21.0737 |
| Wyoming | 1.6034 | 0.6733 | 16.7093 |
| **U.S. Total** | **2.8145** | **0.9642** | **17.5741** |

*Source: BEA*

**Appendix G-5**

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

| State | MULTIPLIERS | | |
|---|---|---|---|
| | Output | Earnings | Jobs |
| Alabama | 1.6086 | 0.3307 | 6.5199 |
| Alaska | 1.6383 | 0.3312 | 5.2654 |
| Arizona | 1.6111 | 0.3478 | 6.5592 |
| Arkansas | 1.5749 | 0.3128 | 6.0497 |
| California | 1.7673 | 0.3744 | 6.0142 |
| Colorado | 1.8653 | 0.4038 | 7.3335 |
| Connecticut | 1.4538 | 0.2852 | 4.3519 |
| Delaware | 1.5087 | 0.2585 | 4.2488 |
| District of Columbia | 1.18 | 0.0808 | 1.0895 |
| Florida | 1.5794 | 0.341 | 6.757 |
| Georgia | 1.6321 | 0.3469 | 6.6075 |
| Hawaii | 1.5094 | 0.3082 | 5.4147 |
| Idaho | 1.4261 | 0.2876 | 5.5179 |
| Illinois | 1.7448 | 0.3629 | 6.3962 |
| Indiana | 1.5917 | 0.3161 | 5.9731 |
| Iowa | 1.4148 | 0.2669 | 4.959 |
| Kansas | 1.6575 | 0.3163 | 5.7393 |
| Kentucky | 1.6203 | 0.312 | 6.0909 |
| Louisiana | 1.7652 | 0.37 | 6.7284 |
| Maine | 1.4518 | 0.2996 | 5.7155 |
| Maryland | 1.5159 | 0.2996 | 4.9417 |
| Massachusetts | 1.4981 | 0.2937 | 4.5211 |
| Michigan | 1.5343 | 0.3179 | 5.7387 |
| Minnesota | 1.6337 | 0.3324 | 5.8909 |
| Mississippi | 1.6126 | 0.3232 | 6.2809 |
| Missouri | 1.5637 | 0.2984 | 5.6998 |
| Montana | 1.6369 | 0.3304 | 6.3822 |
| Nebraska | 1.449 | 0.281 | 4.9393 |
| Nevada | 1.4366 | 0.288 | 4.9954 |
| New Hampshire | 1.4145 | 0.2601 | 4.2604 |
| New Jersey | 1.5929 | 0.3124 | 5.259 |
| New Mexico | 1.6668 | 0.3287 | 6.1891 |
| New York | 1.4862 | 0.2756 | 4.2802 |
| North Carolina | 1.5376 | 0.3168 | 6.0845 |
| North Dakota | 1.6824 | 0.3201 | 5.3225 |
| Ohio | 1.6617 | 0.3385 | 6.0981 |
| Oklahoma | 1.855 | 0.388 | 6.8763 |
| Oregon | 1.4821 | 0.2849 | 5.3646 |
| Pennsylvania | 1.7514 | 0.3578 | 6.0363 |
| Rhode Island | 1.401 | 0.239 | 3.9868 |
| South Carolina | 1.5395 | 0.3037 | 6.2564 |
| South Dakota | 1.4077 | 0.2807 | 5.2616 |
| Tennessee | 1.6064 | 0.3251 | 6.0574 |
| Texas | 1.9999 | 0.4358 | 7.7027 |
| Utah | 1.8415 | 0.3961 | 7.7567 |
| Vermont | 1.3631 | 0.2409 | 4.2614 |
| Virginia | 1.5589 | 0.3091 | 5.3104 |
| Washington | 1.5798 | 0.3234 | 5.7053 |
| West Virginia | 1.607 | 0.297 | 5.5595 |
| Wisconsin | 1.4854 | 0.3031 | 5.3796 |
| Wyoming | 1.5552 | 0.3 | 5.0743 |
| **U.S. Total** | **2.2475** | **0.5075** | **9.5091** |

*Source: BEA*

## Appendix G-6

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

| State | MULTIPLIERS | | |
|---|---|---|---|
| | Output | Earnings | Jobs |
| Alabama | 1.8600 | 0.5796 | 17.5005 |
| Alaska | 1.6668 | 0.5291 | 13.4300 |
| Arizona | 1.9088 | 0.6094 | 16.8514 |
| Arkansas | 1.7614 | 0.5412 | 16.4663 |
| California | 2.0277 | 0.6334 | 15.0419 |
| Colorado | 2.0713 | 0.6513 | 17.3297 |
| Connecticut | 1.7367 | 0.5233 | 12.3964 |
| Delaware | 1.6718 | 0.4231 | 11.3119 |
| District of Columbia | 1.2201 | 0.1203 | 3.0098 |
| Florida | 1.9152 | 0.6129 | 17.7417 |
| Georgia | 2.0785 | 0.6462 | 17.3630 |
| Hawaii | 1.7486 | 0.5579 | 15.1559 |
| Idaho | 1.6616 | 0.5274 | 16.3440 |
| Illinois | 2.1171 | 0.6388 | 15.6471 |
| Indiana | 1.9267 | 0.5807 | 16.1293 |
| Iowa | 1.7069 | 0.5204 | 15.2083 |
| Kansas | 1.8189 | 0.5088 | 14.0737 |
| Kentucky | 1.8815 | 0.5464 | 16.0616 |
| Louisiana | 1.8648 | 0.5842 | 16.2925 |
| Maine | 1.7319 | 0.5526 | 16.5193 |
| Maryland | 1.8004 | 0.5379 | 13.2430 |
| Massachusetts | 1.8158 | 0.5452 | 12.8039 |
| Michigan | 1.9042 | 0.6026 | 16.3077 |
| Minnesota | 1.9911 | 0.6070 | 15.8070 |
| Mississippi | 1.7688 | 0.5405 | 16.5017 |
| Missouri | 1.9066 | 0.5447 | 15.4247 |
| Montana | 1.7171 | 0.5448 | 16.9047 |
| Nebraska | 1.7119 | 0.5283 | 15.3298 |
| Nevada | 1.7134 | 0.5381 | 14.7439 |
| New Hampshire | 1.7361 | 0.5021 | 12.7720 |
| New Jersey | 1.9394 | 0.5637 | 13.6905 |
| New Mexico | 1.7058 | 0.5334 | 16.3068 |
| New York | 1.7638 | 0.5019 | 11.9717 |
| North Carolina | 1.9439 | 0.6031 | 17.6678 |
| North Dakota | 1.6729 | 0.4912 | 13.2052 |
| Ohio | 2.0348 | 0.6172 | 15.8853 |
| Oklahoma | 1.9297 | 0.6024 | 16.8468 |
| Oregon | 1.8121 | 0.5477 | 15.5002 |
| Pennsylvania | 2.0204 | 0.6009 | 14.5764 |
| Rhode Island | 1.6717 | 0.4629 | 12.1988 |
| South Carolina | 1.9052 | 0.5795 | 17.6119 |
| South Dakota | 1.6360 | 0.5105 | 15.6378 |
| Tennessee | 1.9977 | 0.6017 | 15.7763 |
| Texas | 2.2195 | 0.6854 | 17.5132 |
| Utah | 2.0620 | 0.6433 | 18.6690 |
| Vermont | 1.6445 | 0.5011 | 15.2308 |
| Virginia | 1.8070 | 0.5230 | 13.4558 |
| Washington | 1.8790 | 0.5846 | 14.8114 |
| West Virginia | 1.6676 | 0.4856 | 13.4371 |
| Wisconsin | 1.8235 | 0.5738 | 16.1945 |
| Wyoming | 1.5509 | 0.4782 | 13.9011 |
| **U.S. Total** | **2.6378** | **0.7560** | **19.6129** |

*Source: BEA*

# **Appendix H:** 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. This is the fourth NAIOP survey (others were conducted in 2006, 2008 and 2013, and the results of past surveys were included in Appendix I of the preceding years' reports). 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; 9 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.

| 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 |
| **Combined**[2] | | | | |
| 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.

# **Appendix I:** 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 benefitting 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.

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