ACEC RESEARCH INSTITUTE

2020 Engineering Industry Economic Contribution

ACECResearchInstitute.org

Table of Contents

*This report was updated on February 10, 2021 to reflect the most up-to-date state tax information. Changes are reflected to local tax data in the state map and table on page 24 and in the charts on Appendix II on pages 30-31.

Overview

Introduction

The ACEC Research Institute commissioned a series of studies - the Industry Impact Series - to profile and analyze performance in the Engineering, Architectural, and Surveying Services Industry (A/E Services). The series was conducted by Rockport Analytics, an independent market and economic research firm using both publicly and privately available data, as well as proprietary analysis. The study aims to describe, measure, and demonstrate the indispensable partnership between engineering, architects, and other related professional services to deliver the built environment of the United States. The built environment refers to all human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks/green space to neighborhoods and cities including their supporting infrastructure, such as water supply or energy networks.

The overarching goals of this research are to:

- Establish a definition of the Engineering & Architectural sector based upon published recurring data that can be continuously updated and called upon to track performance for ACEC's many constituencies.

- Provide a comprehensive view of the size, growth, and composition of the engineering and related professional services sector using the most current and comprehensive data available. This is covered in the first report, the 2020 Engineering Industry Profile, which can be found at https://programs.acec.org/impact-report/.

- Measure the economic contribution of the Engineering & Architectural industry using established metrics found in virtually all industry economic impact analysis.

- Analyze the key economic drivers of the Engineering & Architectural sector, build a statistical model using the strongest correlations between Engineering & Architectural performance and those drivers, and construct a recurring industry outlook. The outlook and modeling assets can be used to forecast future Engineering & Architectural performance and evaluate scenarios surrounding policy, geopolitical, and other future conditions.

This research is intended to be of value to ACEC members and their constituents. It will provide industry insight to members and can be leveraged as a planning and educational resource. It will also assist ACEC advocacy, communications, and other outreach efforts. This second phase of the work aims to measure the economic contribution of the U.S. Engineering and Architectural Industry using metrics such as GDP, jobs, wages and taxes. The approach deploys a standard methodology used widely to measure economic impact, making the results both defensible and comparable with other industries.

Engineering and Architectural Services Industry Definition

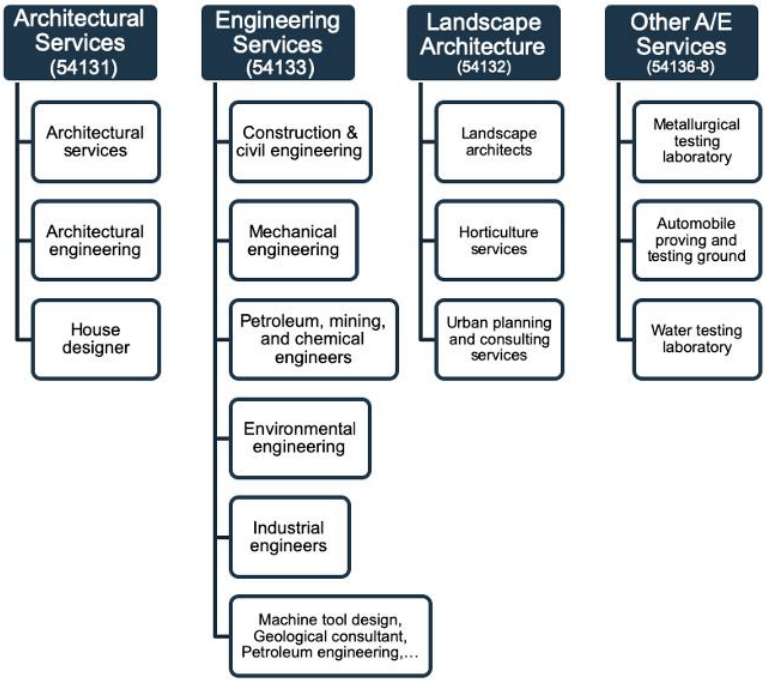
It is important to note that the definition of the Engineering & Architectural Services industry has been primarily developed based upon the ways in which public and private data sources collect and publish information from all businesses across the U.S. -the North American Industry Classification System, or NAICS. NAICS is a hierarchical industry taxonomy that provides classification standards for businesses according to their stated activities. Most public and private data collection conforms to these standards. This study focuses on engineering services first, given their dominant role (e.g., 67% of all jobs) in the overall Engineering & Architectural Services industry. Where other related professional services must be included due to data constraints will be noted throughout the report.

The NAICS code "5413, Architectural, Engineering, and Related Services" is part of the broad category, "54 - Professional, Scientific, & Technical Services" and includes both private and public sector organizations from a number of sub-sectors including:

- Architectural Services
- Landscape Architectural Services
- Engineering Services
- Drafting Services
- Building Inspection Services
- Geophysical Surveying and Mapping Services
- Surveying and Mapping (except Geophysical) Services
- Testing Laboratories

This study will focus on the all-inclusive NAICS 5413 category to define Engineering & Architectural activity for several reasons:

- More data with higher frequencies and greater regional detail are available at the 4-digit (5413) NAICS level. The deeper we drill into the NAICS structure, the less available and robust the data describing sector performance.
- Second, as a result of mergers and/or vertical integration strategies, more and more traditional ACEC members do operate across many of the sub-sectors within 5413.
- Third, given the economic and policy drivers of the Engineering and Architectural industry, it is likely that measured trends for NAICS 5413 will hold for most, if not all, of its member sub-sectors. Finally, a broader definition of A/E may bring more potential members into the ACEC family.



One important note regarding the analysis and interpretation of the results in this study. Our focus on NAICS 5413 in its entirety is not perfectly representative of board licensed professionals providing engineering services for the built environment (physical infrastructure) and the firms for which they work. Such firms are notable and different for a number reasons, including:

- Professional licensure creates direct moral and liability considerations for the licensed professional and their firms, regarding the safety and health of people and property.
- Federal, state, and local governments have laws and statutes which provide for separate procurement processes that involve the selection of providers of licensed professional and related services based on capability and experience criteria.
- Services can only be provided in disciplines (civil, mechanical, electrical, structural, environmental, etc.) the professionals are qualified to perform, and in many states, firm ownership is required to consist of all or a certain percentage of active professionals in the firm. This has the effect of also limiting the size of many such firms.
- Design work usually requires the teaming of firms with varied discipline capabilities and experience.

- Board licensing is for individual states or territories, resulting in geographical emphasis or limits on where work can be performed by individual firms.

- Since built environment involves facilities and infrastructure that are unique, due to the physical conditions involved, their designs must be correct when complete. Prototypes and beta testing are not an option since the initial construction costs and later corrections are prohibitive. The designs must be right the first time.

Since the definitions of NAICS Code 5413 and 541330 do not distinguish design of built environment from the design of equipment, systems, materials, instruments, software, and similar repeatable products and most data gathering surveys and processes allow for self-determination of NAICS Code reporting, many manufacturing, industrial, and management firms are included in the results. Often these are large enterprises that may skew the results.

While these firms may be "applying physical laws and principles of engineering in their design work", they are essentially operating in a different business sector of the A/E industry. ACEC represents the business interests of firms across all of NAICS Code 5413, but recognizes the difference involved. We have attempted to provide context and insight where we have evidence that the more relevant data might deviate from the broader findings.

It must be emphasized that while the data contained in this report is suitable for many purposes, including understanding the size and impact of the A/E services industry, the data available and presented is not suitable for evaluating and establishing guidance for decisions on procurement practices or developing size standards for either the aggregate industry or the portion of the industry focused on design of the built environment. The latter portion is heavily concentrated in physical infrastructure design services provided to federal, state, and local governments and entities involved in public works. The firms operating in this sector of the A/E services industry make up the largest portion of ACEC membership.

The Engineering and Architectural Industry U.S. Economic Contribution Methodology

The economic contribution of the Engineering and Architectural Industry will be assessed based upon the 4-digit NAICS 5413 definition of the industry and its $386 billion in revenue for 2019. This phase of the research aims to:

- examine the industry from the perspective of its sources and uses,
- detail the Engineering and Architectural sector's contribution to the U.S. economy,
- contrast state-by-state results, and
- provide key perspectives and talking points to build awareness of Engineering's critical role in the U.S. economy.

The Engineering and Architectural industry economic contribution was developed utilizing national economic accounts data, the IMPLAN[1] input/output model of the U.S. Economy, the Bureau of Economic Analysis' RIMS II state-by-state impact multipliers[2], and other data from the US Bureau of Labor Statistics, U.S. Census Bureau, and the US Bureau of Economic Analysis. Critical findings of this phase include:

- Estimates of the direct, indirect, and induced value-added, or GDP, contribution made by the A/E Service Industry.
- The number of full & part-time jobs supported by Engineering Services activity, along with their paid wages.
- The federal, state, and local fiscal impact of the industry.
- U.S. total and state-by-state estimates of these economic contribution measures of the Engineering and Architectural sector.

[1] https://www.implan.com
[2] The Regional Input-Output Modeling System (RIMS II) -https://www.bea.gov/resources/methodologies/RIMSII-user-guide

Engineering and Architectural Services Data Sources

The data-driven effort to profile the Engineering and Architectural Services industry took advantage of a comprehensive set of published data from several public and private sources including:

- **U.S. Census Bureau** - Statistics of US Business (SUBS) -demographics, housing, income, employment and business establishment data and trends
- **Bureau of Labor Statistics (BLS)** - industry employment & earnings plus occupational employment and annual salary statistics
- **Bureau of Economic Analysis** - National Income & Product Accounts (GDP), employment, sales, wages, and supply chain purchases
- **Bureau of Economic Analysis** - RIMS II state-by-state industry impact multipliers
- **Dun & Bradstreet** - specific company-level data covering physical locations, jobs, sales, and ownership hierarchies
- **IMPLAN** - a non-proprietary input/output model of the U.S. economy
- **Dodge Data**
- **Other public and private sources**

Engineering and Architectural Services by the Numbers

- **Total Engineering and Architectural Services industry revenue was $386 billion in 2019.** This includes sales from any company designated as NAICS 5413 to all end-markets including construction, oil & gas, mining, utilities, manufacturing, government and exports.

- **Combined, the sector directly employed more than 1.5 million Americans in 2019**, including full and part-time workers. Combined with 3 million indirect jobs, this constitutes about 3% of all U.S. jobs.

- **According to the U.S. Census Bureau, there were 140,000 business establishments operating within engineering and related design services (NAICS 5413) at the end of 2019.** This number does not include self-employed or government locations dedicated to A/E. Establishments are physical locations, not companies. In fact, the ownership composition of the industry shows that a relatively small number of companies own a large proportion of these establishments. More on this later.

- **Engineering and architectural services workers are relatively well paid.** The average annual salary of a full-time A/E employee was $88,000 per year in 2019, according to the Bureau of Labor Statistics. This includes a broad range of occupations and skill sets, everything from Civil Engineers to Accountants and Computer Systems Analysts to Administrative Assistants. Meanwhile, the average annual salary across all U.S. industries was only $60,300.

- **Revenue or sales is one metric that measures industry but a better measure of the economic weight of the sector is value-added or GDP.** Value-added is a measure that strips out the double counting associated with the value of A/E's supply chain to focus solely on the value of A/E labor and capital used in producing the industry's sales. It measures the incremental contribution to overall U.S. GDP. **The sector's total value-added for 2019 reached $229 billion.** Total U.S. GDP reached $21.4 trillion that same year.

- **Engineering and architectural service activity generates a tremendous amount of tax revenue, about $45 billion in 2019.** This includes transactional taxes such as sales and excise levies, income taxes, property taxes, and other licenses and fees at federal, state, and local levels. Having relatively higher compensation values, A/E Services contributes more total taxes per company and per employee than many other U.S. sectors.

Providing Perspective: The True Impact of the Engineering Industry

This section provides some perspective for the overall report data. Read on for more information in the detailed sections below to understand additional context for how the numbers in this perspective section were gathered.

How Does the Engineering and Architectural Industry Contribute to the U.S. Economy?

The metrics that describe the economic contribution of the Engineering and Architectural Services industry are striking. The A/E sector's contribution to U.S. GDP, American jobs, wage income, and tax receipts are all significant. In fact, the numbers are large enough that they may seem unrelatable to the average business owner, citizen, or policy maker. This section uses other, perhaps more relatable, data, along with comparisons and simple transformation to help put the outsized economic contribution of the Engineering and Architectural industry into perspective.

Promotes a Healthy Job Market

- During 2019, 1.5 million Americans worked for firms operating in the Engineering and Architectural sector. This constitutes 1% of total U.S. employment. Meanwhile, 3 million more U.S. jobs were supported by the Engineering and Architectural industry. The combined total contributed more than 3% of all U.S. jobs.
- 1 in every 33 Americans owes his/her job to the Engineering and Architectural Services industry.
- The Engineering and Architectural sector generates and supports what economic developers consider "high-quality" jobs. These are jobs with annual wages well in excess of economy-wide averages. The average annual full time A/E industry salary was over $88,000 in 2019. This is nearly 50% greater than the average for all U.S. industries of $60,300.
- In 2019, the Engineering and Architectural sector was responsible for about 2.8% of U.S. GDP and 3.3% of all jobs.
- For each new job created in the Engineering and Architectural industry, 2 more are generated in sectors that support or benefit from A/E operations.
- The Engineering and Architectural sector employs or supports 24% of the 1.7 million engineers working across every sector of the U.S. economy, 35% of all drafters & engineering technicians, and 80% of architects, surveyors, and cartographers.

Represents a Vital Part of U.S. Construction & Infrastructure

- About 5½¢ of every U.S. construction dollar goes towards the acquisition of Engineering and Architectural services[3].

- Engineering and Architectural-initiated annual taxes are sufficient to pay for the maintenance of nearly 100,000 miles of highway per year[4] –about the total road inventory of New Jersey and Delaware combined.

- The Engineering and Architectural industry contributes enough annual taxes to pay for the repair of 172,000 of America's 231,000 structurally deficient bridges[5].

Contributes to Businesses Beyond Construction

- In 2019, Engineering and Architectural Services operations generated supply chain sales of $34 million for Manufacturing, $20 million for Information, $35 million for Administrative Services, $16 million for Finance & Insurance, and $11 million for the Hospitality sector.

- Engineering and Architectural Services is a critical component of international trade. A/E Service exports totaled $30 billion in 2019, about 4.4% of all non-travel-related U.S. service exports. A/E Service exports made up 16% of total business services exports in 2019.

- Each additional $1 in Engineering and Architectural revenue contributes $1.55 to U.S. Gross Domestic Product.

Helps Support Public Education & Other Government Services

- In 2019, Engineering and Architectural Industry-initiated state & local tax contributions were enough to pay the cost to educate more than 3 million U.S. public school students, or about 6% of total enrollment[6].

- Engineering and Architectural-initiated state & local taxes were enough to cover the salaries of 645,000 U.S. public school teachers, about 20% of total[7].

- Engineering and Architectural state and local tax contributions were sufficient to cover the costs of 262,000 police officers[8]. This is 38% of estimated total U.S. officer costs.

- Engineering and Architectural Services supported the generation of $40 billion in personal income taxes, $12.7 billion in sales taxes, $11.8 billion in property taxes, and $5 billion in corporate income taxes.

Provides Relief for the Tax Burden of U.S. Households

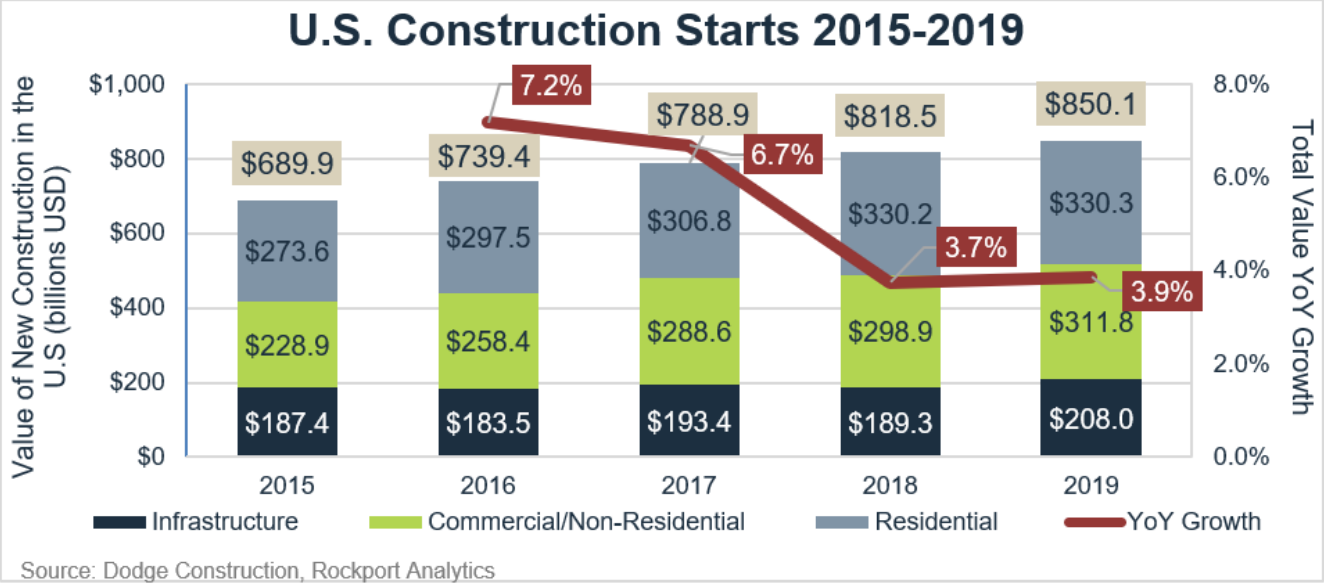
- Take away the Engineering and Architectural Industry and each of America's 128.6 million households would have to pay $948 more in annual taxes to maintain current levels of government services.

[3]IMPLAN model of the U.S. Economy –www.implan.com. Construction includes new structures, renovation, and maintenance.
[4]U.S. Department of Transportation Federal Highway Administration
[5]U.S. Department of Transportation National Bridge Inventory (NBI), American Road & Transportation Builders Association (ARTBA, and Federal Highway Administration (FHWA)
[6]National Education Association (NEA) -Fall 2019 average cost per student
[7]National Education Association (NEA) -Fall 2019 average teacher salaries
[8] Source: Bureau of Labor Statistics

Economic Data: Engineering and Architectural Industry Vs. Construction Activity

It is important to make the distinction between the Engineering and Architectural Services industry (NAICS 5413) and the Construction Sector (NAICS 23), the latter being the principal end-market for the former. Total revenue, or output, for the Engineering and Architectural sector was $386 billion in 2019. This emanates from the activity of firms and their employees engaged in engineering and architectural services, selling those services in all end-markets, including and especially to construction. Engineering and Architectural Services is a significant component of the construction industry's supply chain. Engineering and Architectural Services revenue comes from the purchases of construction firms, governments, businesses, households, foreign countries (exports) and other economic actors.

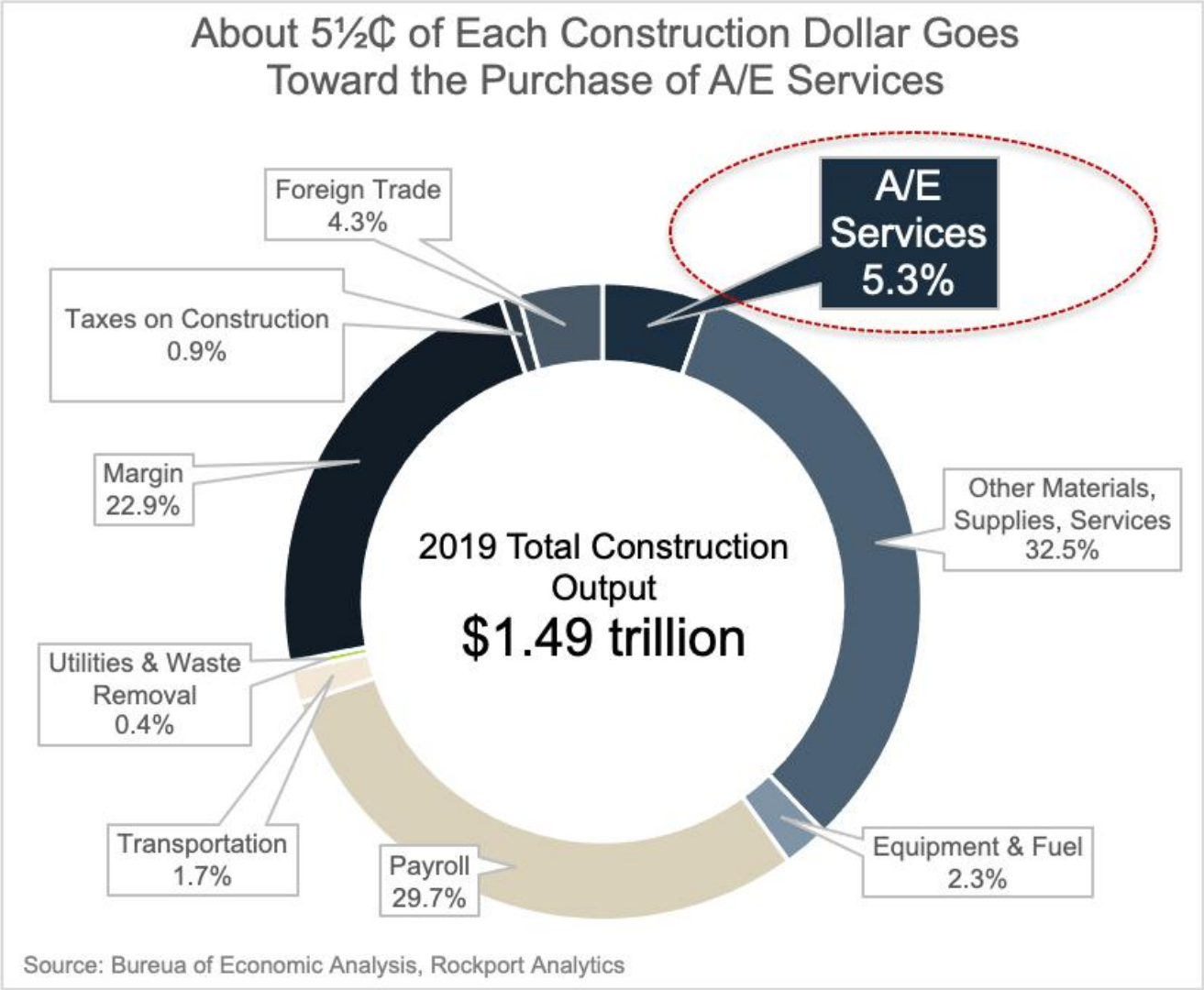
The Bureau of Economic Analysis (BEA) reported that Construction revenue registered $1.5 trillion in 2019. Some of this revenue was new construction, about $850 billion, and the remainder classified as maintenance and repair. Of the $850 billion in new construction, about $330B was for residential projects, $312B for commercial, and $208B for infrastructure (see chart below).



- We can also examine Construction industry revenue from the perspective of the value of inputs purchased such as materials, labor, services, equipment, utilities, and other input costs, along with margin (see chart below). This data comes from the ongoing efforts of the Industry Economic Accounts of the Bureau of Economic Analysis (BEA) and is supplemented by the IMPLAN model of the U.S. economy. Basically, this model traces the sales of each industry (500+) to its customers whether they are households, government, international trade, or to other industries as intermediate inputs.

- We estimate about $79 billion of 2019 firm sales went to public and private construction activity, or 5.3¢ of every construction dollar, including both new and maintenance construction. (See graphic on next page.)

- Meanwhile, payroll absorbs about 30% of construction value and materials & supplies comprises another 33%. Construction dedicates about 2% of revenue for equipment & fuel, nearly a half of one percent to utilities & waste removal, and 1% to paying transaction-oriented taxes (i.e., sales, excise, etc.). The Bureau of Economic Analysis estimates that about 23% of construction revenue goes toward profit margins.



Economic Contribution: Engineering and Architectural Industry Vs. Construction

With the distinction made between the Engineering and Architectural sector and all of construction activity, we turn our attention to contrasting the size of their respective economic footprints. Generally, the contribution of any industry is measured in terms of value-added, or Gross Domestic Product (GDP). This essentially subtracts from total revenue the value of all intermediate inputs purchased by that industry, a value that would already be accounted in other industries. This avoids double counting and facilitates the measurement of each sector's unique economic contribution. The sum of value-added across all industries is equal to total GDP.

The direct economic contribution or value-added of an industry emanates from the firms in that sector and, by definition, is smaller than industry revenue. More on this later. There are other ways in which an industry contributes to the overall economy, however. These include indirect and induced value-added contributions made by an industry. Indirect economic contributions refer to the value of an industry's supply chain, a contribution that would not exist if the industry did not operate in the first place. The induced economic contribution refers to the economic benefit derived when industry employees and owners spend the income made while working in the industry. This is sometimes referred to as the "ripple effect" of an industry. The sum of the direct, indirect, and induced contribution of an industry is generally higher than industry revenue.

- The chart below provides a comparison between the total economic contribution and industry revenue for both Engineering and Architectural Services and Construction. As noted earlier, A/E Services' 2019 revenue totaled $386 billion. With intermediate input purchases removed and their respective indirect and induced contributions added, the total economic contribution of A/E Services reached nearly $600 billion. Meanwhile, the Construction Sector's analogous contribution was $2.2 trillion in total value-added (GDP) that same year.

- Another way to measure economic contribution is by the number of jobs supported by an industry. For Engineering and Architectural Services, more than 4.5 million American workers[9] were supported by industry activity. This includes the 1.5 million direct jobs in the industry, as well as 1.1 million more supply chain jobs and 1.9 million induced/ripple effect jobs.

- Meanwhile, construction activity supported more than 23.5 million jobs in 2019. This includes management, skilled trade workers, laborers, and other inside and on-site jobs. It even includes some A/E Services jobs by virtue of A/E's outsized contribution to construction's supply chain.

Economic Contribution: Construction vs Engineering and Architectural Services in Perspective

2019 A/E Services Output
$386 billion

Includes revenues from Construction, Real Estate, Oil & Gas, Government, and other sectors, as well as foreign exports

A/E-Supported GDP
$600 billion

A/E Services activity alone supported about 3% of the U.S. economy

A/E-Supported Jobs
4.5 million

Each A/E Service job supports two more U.S. jobs across an array of industries

2019 Construction Output
$1.49 trillion

About $79 billion of Construction Output went towards the purchase of A/E Services

Construction-Supported GDP
$2.2 trillion

Construction supported nearly 11% of U.S. nominal GDP in 2019

Construction-Supported Jobs
23.5 million

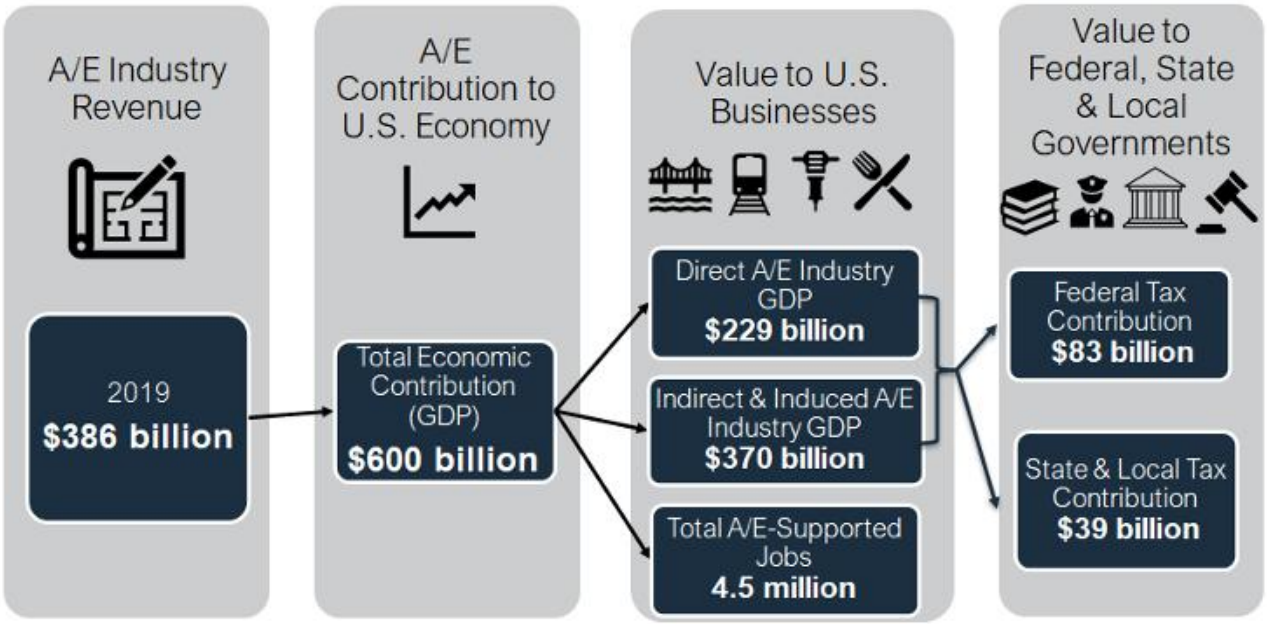
1 in every 8 Americans owes their job to construction activity

[9]Includes both full and part-time workers

Engineering and Architectural Services Economic Contribution is Significant

Having defined the way in which an industry's economic contribution is measured, as well as the differences between Engineering and Architectural Services and Construction, we can explore in detail the results of the Engineering and Architectural Sector's considerable contribution.

Economic Contribution Bottom Line



- In 2019, firms engaged in Engineering and Architectural Services produced $386 billion in revenue. This included sales to public & private construction, business services, mining, manufacturing, exports, and other end-markets.
- Eliminating the value of purchased intermediate materials and services (e.g., office supplies, communications services, utilities, travel expenses, etc.), the Engineering and Architectural sector directly generated $229 billion in GDP that same year. These purchased materials are essential to firm operations, but their value is accounted in other industries' value-added (e.g., Paper Manufacturing, Electric Utilities, Airlines, etc.). A/E's $229 billion is essentially equal to the value of A/E labor, depreciated capital, and profit margins, or its "value-added". Value-added is what an industry incrementally contributes to U.S. GDP.
- Yet, the total economic contribution of an industry is generally larger than its direct contribution. Why? The value-added of the A/E firm's supply chain is also included since, if it were not for the operations of those A/E firms, that indirect value-added would not exist. The value-added of A/E's indirect, or supply chain, contribution reached nearly $135 billion in 2019.

- Another component of the total contribution made by the Engineering and Architectural industry stems from the downstream value-added created by the spending of wages paid to A/E (and its supply chains') workers. Again, if it were not for the operations of Engineering and Architectural Services firms, $169 billion (2019) in wages would not have been paid to American workers. These workers will spend most of these wages on housing, groceries, health care, recreation, and other goods and services. The remainder will be used to pay taxes or be saved. In turn, the workers of these impacted industries will spend their wages on similar things, creating a virtuous cycle of economic contribution that begins with A/E firm operations and paid wages. The induced contribution of an industry is sometimes referred to as its "ripple effect", a reference to the metaphor of throwing a stone in a pond. In 2019, the Engineering and Architectural Services industry contributed $235 billion in induced value-added. Note that the A/E sector has a larger induced impact than many other industries due to the fact that it employs workers who are relatively highly paid.

- Adding together Engineering and Architectural's direct, indirect, and induced contribution during 2019, the industry contributed a total of nearly $600 billion to U.S. GDP, about 3% of total.

- Of course, many jobs are created or supported by the ongoing operations of the Engineering and Architectural industry, a total of 4.5 million in 2019. Those working directly for A/E firms made up more than 1.5 million of that total. The rest, about 3 million, worked for supply chain companies or the many industries supporting downstream spending.

- Another way to measure the economic contribution made by the Engineering and Architectural sector is by totaling the taxes initiated by the industry. Federal, state, and local income, sales, excise, property, and other taxes are routinely paid by the firms and workers as they engage in Engineering and Architectural activity. For 2019, total taxes initiated by the Engineering and Architectural industry is estimated to have reached $122 billion, of which $83 billion went to federal collections and $39 billion to state and local governments.

2019 Engineering & Architectural Services Industry Bottom Line

For the U.S. Economy in billions of $ unless otherwise noted	Direct	Indirect (Supply Chain)	Induced (Ripple Effect)	Total
Total Industry Revenue				$385.7
Total Economic Contribution				
Total Economic Output/Sales	$385.7	$241.6	$421.4	$1,048.7
Total Contribution to GDP	$229.1	$134.8	$235.4	$599.3
Jobs Supported (Full & Part-Time, in thousands)	1,514.4	1,110.9	1,919.9	4,545.2
Contribution to Payrolls	$142.1	$69.3	$99.9	$311.3
Total Tax Receipts	$44.7	$26.8	$50.4	$121.9
Federal	$36.2	$18.2	$28.3	$82.7
State & Local	$8.5	$8.6	$22.2	$39.2

Source: Bureau of Economic Analysis, Bureau of Labor Statistics, IMPLAN, Rockport Analytics

Direct: These contributions represent the value added (GDP) of A/E industry interactions with clients and customers

Indirect: These contributions represent the upstream benefit to Engineering and Architectural industry supply chain businesses.

Induced: These contributions stem from the downstream spending of Engineering and Architectural (and supply chain) employee wages. Sometimes referred to as the "ripple effect".

The Engineering and Architectural industry's **total output or revenue reached nearly $386 billion** in 2019 and directly employed more than 1.5 million Americans.

The total contribution of the Engineering and Architectural industry is even greater once support of the Engineering ar Architectural supply chain and wage/income ripple effect is included. **The total economic contribution of Engineerin and Architectural activities reached nearly $600 billion last year.**

The industry's **direct contribution** to the U.S. economy (GDP), after removing imports and double counting, was **$230 billion in 2019**.

Add in supply chain & induced employees and **the Engineering and Architectural industry supported jobs for 4.5 million+** Americans in 2019. That was 3% of all U.S. employment in 2019.

Engineering and Architectural industry wages totaled $311 billion in 2019.

Engineering and Architectural industry activity **generated almost $122 billion in federal, state, and local taxes** across the U.S.

Source: Rockport Analytics, IMPLAN, Bureau of Economic Analysis, Bureau of Labor Statistics, US Census Bureau

Engineering and Architectural Services Economic Contribution by Industry and State

Assessing the economic contribution of the Engineering and Architectural Industry is an exercise in tracking the interindustry relationships between A/E activity and its upstream and downstream industry partners. This can be done at both the national and state levels. The exhibits that follow will track the contributions of the A/E industry through to other impacted industries and out to all 50 states and the District of Columbia.

Engineering and Architectural Services Contribution to U.S. GDP by Industry

Industry (NAICS)[1]	Direct[2]	Indirect	Induced	Total
54 Professional- Scientific & Tech Services	$229,100.4	$37,302.0	$14,042.6	$280,445.0
53 Real Estate & Rental	$0.0	$10,544.7	$43,508.9	$54,053.6
52 Finance & Insurance	$0.0	$8,688.4	$24,357.8	$33,046.2
62 Health & Social Services	$0.0	$1.4	$30,235.5	$30,236.9
56 Administrative & Waste Services	$0.0	$22,335.0	$7,677.6	$30,012.6
31-33 Manufacturing	$0.0	$10,539.4	$16,421.0	$26,960.4
51 Information	$0.0	$11,176.5	$13,503.8	$24,680.3
42 Wholesale Trade	$0.0	$6,826.6	$12,429.6	$19,256.3
72 Accommodation & Food Services	$0.0	$6,200.1	$12,657.2	$18,857.3
44-45 Retail Trade	$0.0	$482.8	$17,502.0	$17,984.8
81 Personal & Other Services	$0.0	$2,356.0	$11,187.6	$13,543.7
48-49 Transportation & Warehousing	$0.0	$4,952.3	$8,131.7	$13,084.0
55 Management of Companies	$0.0	$6,866.3	$4,482.2	$11,348.5
22 Utilities	$0.0	$2,609.4	$4,689.3	$7,298.7
71 Arts, Entertainment & Recreation	$0.0	$954.8	$3,875.1	$4,829.8
61 Educational Services	$0.0	$81.6	$3,453.2	$3,534.8
21 Mining	$0.0	$1,400.4	$1,467.6	$2,868.0
92 Government	$0.0	$554.5	$2,192.6	$2,747.1
23 Construction	$0.0	$654.8	$1,617.0	$2,271.8
11 Ag, Forestry, Fish & Hunting	$0.0	$274.3	$1,986.6	$2,260.9
Total	$229,100.4	$134,801.3	$235,418.9	$599,320.6

Sources: Rockport Analytics, IMPLAN

[1]North American Industrial Classification System (NAICS). For specific industry definitions, see www.census.gov

Direct

Businesses that are identified within the 5413 NAICS code.

Indirect

Businesses that are part of Engineering and Architectural's supply chain receive knock-on benefits from industry activity.

Induced

Engineering and Architectural workers spend much of their wages locally creating benefits to businesses in virtually all other industries.

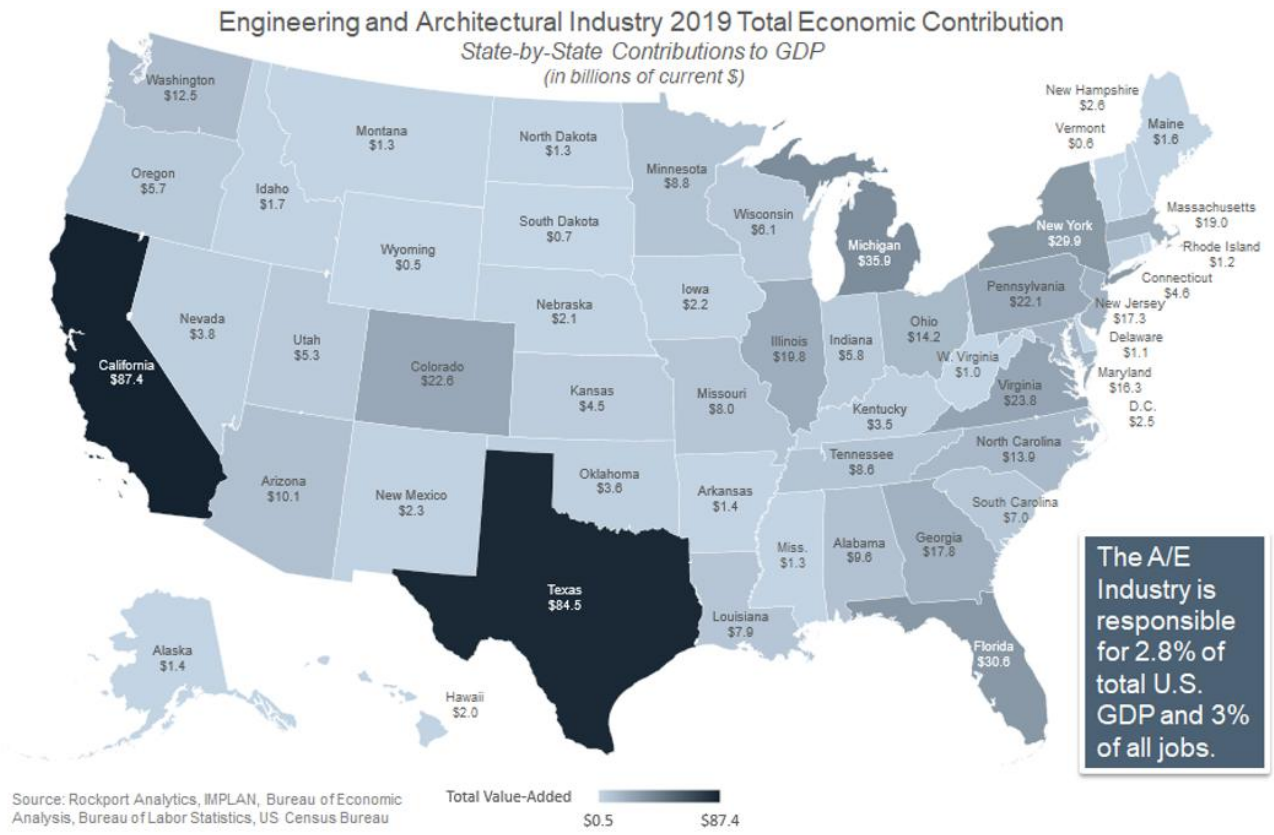
[2] For the Direct column in the Industry 54-Professional, Scientific, Tech Services, all value-added pertains to only the subsector 5413 Engineering and Architectural Services. For the Indirect and Induced columns, value added pertains to the entire 2-digit 54 category.

- Thirty-eight percent (38%) of the total contribution to U.S. GDP made by the Engineering and Architectural sector is found in the "Direct" column of the table above. The $229 billion shown in the first row for the industry, "54 - Professional, Scientific, & Tech Services" represents the value-added (GDP) produced by the operations of the A/E sector itself. It is shown in this industry row because A/E (NAICS 5413) is part of this broader NAICS (54).

- The "Indirect" column measures the supply chain impact of Engineering and Architectural operations and lists how each supply chain sector benefits. For example, if the A/E sector suddenly shut down, the Real Estate & Rental (NAICS 53) industry would experience a $10.5 billion loss in its GDP. Likewise, the Administrative & Waste Services (NAICS 56) sector would lose $22.3 billion, the Information industry (NAICS 51) would fall by $11.2 billion, and so on.

- Note that the indirect contribution made by the Engineering and Architectural industry to NAICS 54 (first row) includes supply chain purchases to all subsectors within this broad category including legal, accounting, advertising, and management consulting services. It also includes some outsourcing to A/E firms, in fact about $20 billion of the total $37.3 billion.

- The induced economic contribution of the Engineering and Architectural industry originates from the spending of employee wages and owners' income. The "Induced" column shows just how much firms in each industry benefit. The benefits are broadly distributed across sectors because employees buy a variety of consumer goods and services with their wages. For example, health care providers (NAICS 62) derive more than $30.2 billion in GDP from A/E industry operations.



- The Engineering and Architectural industry makes far and away its largest contributions to the GDP of California and Texas, $87.4 billion and $84.5 billion, respectively. It is no surprise given that these two states contain the most A/E firm locations and, given that most A/E activity is regional, most industry revenue. The second-tier states of Michigan, Florida, and New York show A/E sector GDP contributions registering between $30 and $36 billion. Why is Michigan so high? Digging deeper into the data reveals that, in addition to A/E operations dedicated to construction activity, a heavy concentration of Engineering and Architectural firm's revenue that is dedicated to the automotive industry, a staple of the Michigan economy.

- For the most part, the distribution of Engineering and Architectural GDP contributions across states tracks the allocation of population, infrastructure, and construction activity in the U.S., albeit with the occasional anomaly associated with other large A/E end-markets. Michigan (automotive), Washington (aerospace), and Louisiana (oil & gas) provide examples.

- The table on the next page summarizes the Engineering and Architectural sector economic contribution made to the top 20 states. Contribution metrics include impact on state GDP, total jobs supported, and total paid wages. It also lists the percentage of total U.S. for value-added and jobs. While California and Texas top this list, the smallest state contributions (not shown) include Wyoming ($483 million in value-added), Vermont ($636 million), and South Dakota ($667 million). The median state A/E industry GDP contribution in 2019 was $5.7 billion.

- Detailed tables showing Engineering and Architectural industry contribution for each state across all metrics are available in Appendix II of this study.

Engineering and Architectural Industry Total Economic Contribution

Top 20 States in 2019

Rank	State	Total Value-Added (GDP, in mils $S)	% of U.S.	Total Jobs Supported (x1000)	% of U.S.	Total Paid Wages (in mil$)
1	California	$87,433.3	14.6%	562.0	12.4%	$44,624.8
2	Texas	$84,452.5	14.1%	562.2	12.4%	$40,056.3
3	Michigan	$35,902.4	6.0%	276.9	6.1%	$19,040.6
4	Florida	$30,598.5	5.1%	261.5	5.8%	$15,419.0
5	New York	$29,869.6	5.0%	219.1	4.8%	$16,770.6
6	Virginia	$23,817.0	4.0%	175.0	3.9%	$12,995.6
7	Colorado	$22,604.1	3.8%	159.3	3.5%	$11,219.6
8	Pennsylvania	$22,077.2	3.7%	176.2	3.9%	$11,503.7
9	Illinois	$19,800.2	3.3%	150.6	3.3%	$9,702.9
10	Massachusetts	$18,987.5	3.2%	121.5	2.7%	$10,064.8
11	Georgia	$17,751.3	3.0%	137.1	3.0%	$8,719.0
12	New Jersey	$17,334.0	2.9%	122.8	2.7%	$8,940.9
13	Maryland	$16,304.2	2.7%	124.9	2.7%	$8,802.1
14	Ohio	$14,234.6	2.4%	127.3	2.8%	$7,417.4
15	North Carolina	$13,936.6	2.3%	119.1	2.6%	$7,103.0
16	Washington	$12,513.5	2.1%	95.7	2.1%	$6,729.0
17	Arizona	$10,076.3	1.7%	79.9	1.8%	$5,085.9
18	Alabama	$9,644.1	1.6%	80.5	1.8%	$5,327.0
19	Minnesota	$8,842.1	1.5%	68.1	1.5%	$4,670.4
20	Tennessee	$8,636.4	1.4%	69.9	1.5%	$4,340.3
	Total U.S.	**$599,320.6**	**100.0%**	**4,545.2**	**100.00%**	**$311,325.7**

Source: Rockport Analytics, IMPLAN, Bureau of Economic Analysis, Bureau of Labor Statistics, US Census Bureau

Engineering and Architectural Services Support More than 4.5 million American Workers

One of the most important metrics used to measure an industry's contribution to the economy is jobs. More than others, this metric clearly illustrates the contribution made to households across the United States. Jobs and the wages paid to those workers sit at the very foundation of our economy. This section of the report will present the jobs supported by the Engineering and Architectural Services industry in 2019 by industry, by state, and by occupation. Paid wages are likewise presented.

- The first table on the next page shows total U.S. jobs supported by the Engineering and Architectural industry. The Direct column reports the 1.5 million workers that are employed by firms categorized in NAICS 5413, Engineering, Architectural, and Related Services. This constituted about 1% of all U.S. jobs in 2019.

- The Indirect column illustrates industry-supported jobs among Engineering and Architectural supply chain firms. A total of 1.1 million jobs are supported by A/E firm operations scattered across supplier industries such as Administrative Services (307,480 jobs supported), Transportation & Warehousing (54,020), Accommodation & Food (105,360), Information (25,670), and so on.

- Note that the nearly 6,000 jobs supported in the Construction sector (NAICS 23) refer to construction activity sponsored and paid for by Engineering and Architectural firms (e.g., office renovation). This is in sharp contrast with the Construction sector that is A/E's largest end-market and responsible for the majority of the 1.5 million jobs listed in the Direct column.

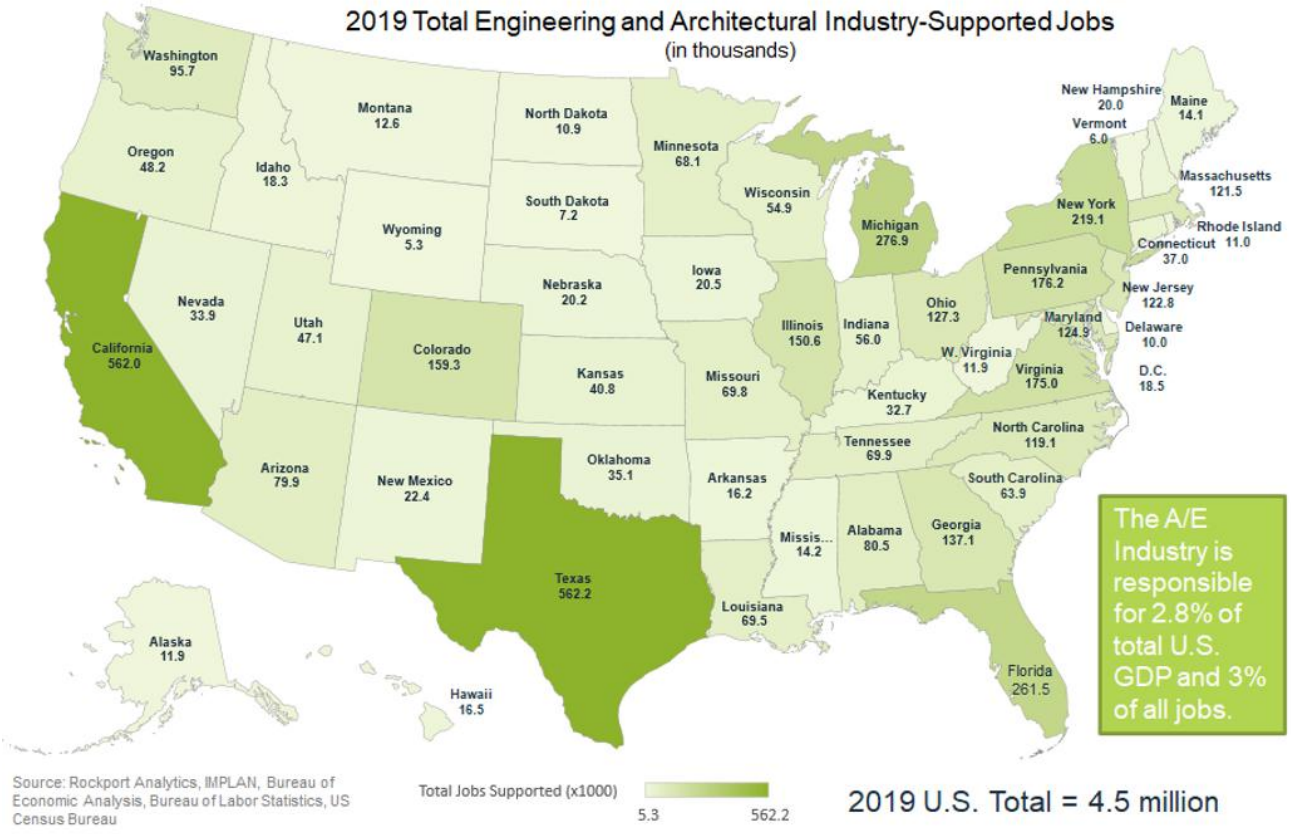
- The jobs shown in the Induced column are those supported by the spending of A/E industry workers. During 2019, 1.9 million American workers were supported by this downstream spending. These jobs spanned virtually every industry in the economy. For example, Engineering and Architectural industry activity supported more than 230,000 workers in the Hotel and Restaurant sector (NAICS 72), 245,000 in Retail, and 343,000 in Healthcare.

Engineering & Architectural Contribution to U.S. Employment[1]

Industry (NAICS)[2]	Direct	Indirect	Induced	Total
54 Professional- scientific & tech services	1,514,390	303,250	102,510	1,920,140
56 Administrative services	-	307,480	114,810	422,290
62 Health & social services	-	20	342,690	342,710
72 Accommodation & food services	-	105,360	230,070	335,430
44-45 Retail trade	-	5,790	245,420	251,200
81 Other services	-	27,910	188,360	216,270
53 Real estate & rental	-	80,760	94,870	175,630
52 Finance & insurance	-	36,350	136,630	172,980
31-33 Manufacturing	-	57,530	83,500	141,030
48-49 Transportation & Warehousing	-	54,020	84,310	138,330
42 Wholesale Trade	-	28,560	50,910	79,480
71 Arts- entertainment & recreation	-	16,970	57,700	74,670
55 Management of companies	-	37,740	24,630	62,370
51 Information	-	25,670	33,410	59,080
61 Educational services	-	1,200	56,630	57,830
11 Ag, Forestry, Fish & Hunting	-	4,390	34,630	39,020
23 Construction	-	5,960	14,460	20,430
92 Government	-	2,820	11,190	14,010
22 Utilities	-	4,350	8,240	12,590
21 Mining	-	4,870	4,890	9,760
Total	1,514,390	1,110,990	1,919,870	4,545,250

[1]Total employment includes both part-time and full-time workers
[2]North American Industrial Classification System (NAICS). For specific industry definitions, see www.census.gov

- In total, Engineering and Architectural firm activity supported more than 4.5 million American workers in 2019. This includes both full and part-time jobs and constitutes about 3% of total U.S. employment.
- With 2019 Direct Engineering and Architectural jobs of 1.5 million leading to total jobs supported of 4.5 million, essentially each new job in the A/E industry will generate 2 more jobs across the U.S. economy.
- The state-by-state distribution of the 4.5 million Engineering and Architectural industry-supported jobs is illustrated in the map and table below. Not surprising, A/E-supported jobs are distributed in much the same manner as population, infrastructure, and construction activity.
- As was the case with the A/E-initiated contributions to GDP, total jobs supported by the industry in 2019 were highest in Texas and California with 562,230 and 561,970 American workers supported, respectively. Each of these states comprises about 12.4% of total A/E-supported jobs. About 1 of every 24 Texan jobs is supported by Engineering and Architectural sector activity. For California, it is 1 in every 33 workers who owe their jobs to the Engineering and Architectural industry.
- Even states with smaller total A/E job footprints can show large relative contributions. For example, the smallest three states based upon total A/E-supported jobs -Wyoming, Vermont, and South Dakota- show overall employment contributions of 1 in 56, 1 in 55, and 1 in every 64 citizens who owe their jobs to Engineering and Architectural activity, respectively.



States Ranked by 2019 Total Engineering & Architectural-Supported Jobs

State	Direct Jobs	Indirect Jobs	Induced Jobs	Total Employment	% of U.S.
Texas	164,740	149,270	248,220	**562,230**	12.4%
California	185,970	139,660	236,340	**561,970**	12.4%
Michigan	88,150	72,120	116,600	**276,870**	6.1%
Florida	88,250	61,380	111,830	**261,470**	5.8%
New York	77,720	54,100	87,230	**219,060**	4.8%
Pennsylvania	59,770	41,500	74,910	**176,170**	3.9%
Virginia	56,940	44,960	73,110	**175,010**	3.9%
Colorado	49,960	39,590	69,780	**159,330**	3.5%
Illinois	47,790	38,540	64,280	**150,610**	3.3%
Georgia	42,760	35,550	58,750	**137,060**	3.0%
Ohio	43,230	29,670	54,400	**127,290**	2.8%
Maryland	42,390	31,180	51,280	**124,850**	2.7%
New Jersey	40,240	31,700	50,870	**122,810**	2.7%
Massachusetts	42,110	29,300	50,080	**121,500**	2.7%
North Carolina	40,800	28,120	50,190	**119,110**	2.6%
Washington	34,340	20,840	40,530	**95,710**	2.1%
Alabama	27,380	19,440	33,720	**80,540**	1.8%
Arizona	26,570	19,080	34,210	**79,870**	1.8%
Tennessee	22,550	17,960	29,340	**69,850**	1.5%
Missouri	22,630	18,170	29,000	**69,800**	1.5%
Louisiana	23,970	16,170	29,360	**69,500**	1.5%
Minnesota	23,670	15,430	28,980	**68,080**	1.5%
South Carolina	20,840	16,360	26,720	**63,920**	1.4%
Indiana	20,570	12,110	23,330	**56,010**	1.2%
Wisconsin	20,350	11,380	23,160	**54,890**	1.2%
Oregon	17,290	11,000	19,870	**48,150**	1.1%

State	Direct Jobs	Indirect Jobs	Induced Jobs	Total Employment	% of U.S.
Utah	15,760	11,480	19,840	**47,080**	1.0%
Kansas	13,920	10,410	16,450	**40,790**	0.9%
Connecticut	13,320	8,310	15,370	**37,010**	0.8%
Oklahoma	12,670	7,670	14,710	**35,050**	0.8%
Nevada	12,270	7,440	14,210	**33,920**	0.7%
Kentucky	12,010	7,280	13,350	**32,650**	0.7%
New Mexico	8,660	4,240	9,460	**22,370**	0.5%
Iowa	8,040	3,780	8,670	**20,480**	0.5%
Nebraska	7,590	4,170	8,470	**20,230**	0.4%
New Hampshire	7,010	4,860	8,120	**19,990**	0.4%
District of Columbia	8,010	4,600	5,870	**18,480**	0.4%
Idaho	6,940	3,730	7,660	**18,340**	0.4%
Arkansas	6,390	3,060	6,740	**16,190**	0.4%
Hawaii	5,770	3,500	6,800	**16,070**	0.4%
Mississippi	5,470	2,800	5,900	**14,170**	0.3%
Maine	5,300	2,740	6,050	**14,100**	0.3%
Montana	4,960	2,310	5,370	**12,630**	0.3%
West Virginia	4,820	2,200	4,860	**11,880**	0.3%
Alaska	4,710	2,000	5,150	**11,860**	0.3%
Rhode Island	4,140	2,410	4,430	**10,980**	0.2%
North Dakota	4,260	2,050	4,580	**10,880**	0.2%
Delaware	3,670	2,410	3,890	**9,970**	0.2%
South Dakota	3,010	1,070	3,070	**7,160**	0.2%
Vermont	2,390	1,110	2,530	**6,020**	0.1%
Wyoming	2,280	790	2,230	**5,300**	0.1%
Grand Total	1,514,390	1,110,990	1,919,870	4,545,250	100.0%

Bringing in occupational employment data published by the BLS' Occupational Employment Survey[10] can help to examine the specific skill sets and annual salaries of the U.S. jobs that are supported by the Engineering and Architectural sector. The table below lists the top 20 occupational categories (based on direct A/E jobs) supported by the A/E sector in 2019. Direct A/E workers are distinguished from those supported by the A/E supply chain (Indirect) or downstream (Induced) spending.

Skill Sets: What Types of Jobs are Supported by the Engineering & Architectural Industry?

			2019 Engineering and Architectural Industry-Supported Jobs				
	Occ Code	Occupation Name	A/E Services Direct	Indirect/ Supply Chain	Induced/ Ripple Effect	Total Jobs	U.S. Avg Annual Salary
1	17-20	Engineers	372,950	24,400	14,130	411,480	$96,608
2	17-30	Drafters, Engineering Technicians, & Mapping Technicians	218,790	10,990	5,720	235,500	$57,684
3	17-10	Architects, Surveyors, and Cartographers	139,740	4,970	1,840	146,550	$80,844
4	13-10	Business Operations Specialists	88,800	62,820	67,830	219,450	$72,232
5	15-12	Computer Occupations	86,520	75,340	50,480	212,340	$85,638
6	11-90	Other Management Occupations	70,250	20,020	33,420	123,690	$110,626
7	43-60	Secretaries and Administrative Assistants	49,160	30,040	44,930	124,130	$43,948
8	43-90	Other Office and Administrative Support Workers	40,890	36,690	50,950	128,530	$37,175
9	11-10	Top Executives	40,720	26,980	37,050	104,750	$126,916
10	47-40	Other Construction and Related Workers	36,870	3,960	2,250	43,080	$54,950
11	51-90	Other Production Occupations	32,650	23,510	23,820	79,980	$41,550
12	19-20	Physical Scientists	30,930	3,650	1,920	36,500	$94,481
13	19-40	Life, Physical, and Social Science Technicians	30,140	4,670	3,050	37,860	$54,137
14	11-30	Operations Specialties Managers	24,120	23,060	24,670	71,850	$126,678
15	27-10	Art and Design Workers	23,710	8,970	7,550	40,230	$58,895
16	13-20	Financial Specialists	20,810	35,410	42,140	98,360	$78,049
17	43-30	Financial Clerks	20,060	30,950	44,590	95,600	$42,199
18	47-20	Construction Trades Workers	15,840	12,760	15,440	44,040	$53,561
19	49-90	Other Installation, Maintenance, and Repair Occs	11,710	27,790	44,130	83,630	$47,647
20	43-40	Information and Record Clerks	11,470	56,900	87,410	155,780	$37,212
...	...						
	All	Total All Occupations	1,514,387	1,110,994	1,919,866	4,545,247	$64,500

- No surprise that Engineers top the list of A/E-supported skill sets with more than 411,000 jobs supported in 2019. Note that 373,000 of those workers are employed directly by Engineering and Architectural firms. Meanwhile, A/E's supply chain and downstream spending activity supported another 38,500 Engineers.

- According to the Bureau of Labor Statistics' Occupational Employment Survey, there were 1.7 million engineers working in the U.S. during 2019. These engineers were employed in virtually every industry in the economy. It is notable that the Engineering and Architectural Services industry directly employed or otherwise supported nearly 24% of those engineers.

[10]The Occupational Employment Statistics (OES) program produces employment and wage estimates annually for nearly 800 occupations. These estimates are available for the nation, for individual states, and for metropolitan and nonmetropolitan areas; national occupational estimates for specific industries are also available. https://www.bls.gov/oes/home.htm

- Together, (1) Engineers, (2) Architects, and (3) Engineering Technicians comprise almost half of the direct jobs in the industry. Meanwhile, the industry supports many more of these jobs through its supply chain network and from the downstream spending of its relatively highly compensated employees.

- Engineering and Architectural Services industry top executive, middle management, and engineering categories each had average annual salaries that approached or exceeded $100,000 per year.

- The table below illustrates the paid wages generated by A/E industry activity in 2019. In total, the Engineering and Architectural sector was responsible for $311.3 billion in wages paid to American workers, or about 3.5% of all U.S. wages. This includes $142 billion in direct wages paid to workers employed by Engineering and Architectural firms, $69 billion in wages paid to A/E supply chain employees, and $100 billion to workers employed because of the spending of the wages shown in the Direct and Indirect columns.

- With $142 billion paid in direct wages generating a total of $311 billion in total labor income, the Engineering and Architectural industry's wage multiplier is 2.19. Essentially, every dollar of wages paid to an A/E firm worker results in $2.19 in total wage income for all American workers.

Engineering & Architectural Contribution to U.S. Labor Income

(Millions USD)

Industry (NAICS)[1]	Direct	Indirect	Induced	Total
54 Professional- scientific & tech svcs	$142,062.1	$24,652.3	$8,344.0	$175,058.4
62 Health & social services	$0.0	$0.9	$20,285.5	$20,286.4
56 Administrative & waste services	$0.0	$13,796.5	$4,741.2	$18,537.6
52 Finance & insurance	$0.0	$3,118.5	$10,524.9	$13,643.4
31-33 Manufacturing	$0.0	$4,277.7	$5,772.8	$10,050.5
72 Accommodation & food services	$0.0	$3,034.3	$6,219.3	$9,253.6
81 Other services	$0.0	$1,491.6	$7,474.8	$8,966.5
44-45 Retail trade	$0.0	$207.3	$8,295.2	$8,502.5
48-49 Transportation & Warehousing	$0.0	$3,051.4	$4,960.2	$8,011.6
51 Information	$0.0	$3,595.5	$4,286.0	$7,881.5
55 Management of companies	$0.0	$4,469.9	$2,917.8	$7,387.7
42 Wholesale Trade	$0.0	$2,553.9	$4,437.6	$6,991.5
53 Real estate & rental	$0.0	$2,811.9	$3,236.8	$6,048.7
71 Arts- entertainment & recreation	$0.0	$561.3	$1,912.8	$2,474.1
61 Educational svcs	$0.0	$49.7	$2,329.8	$2,379.5
22 Utilities	$0.0	$586.2	$1,079.6	$1,665.9
23 Construction	$0.0	$363.3	$858.7	$1,222.1
92 Government	$0.0	$233.9	$925.2	$1,159.1
11 Ag, Forestry, Fish & Hunting	$0.0	$147.0	$985.1	$1,132.1
21 Mining	$0.0	$335.5	$337.5	$673.0
Total	$142,062.1	$69,338.8	$99,924.8	$311,325.7

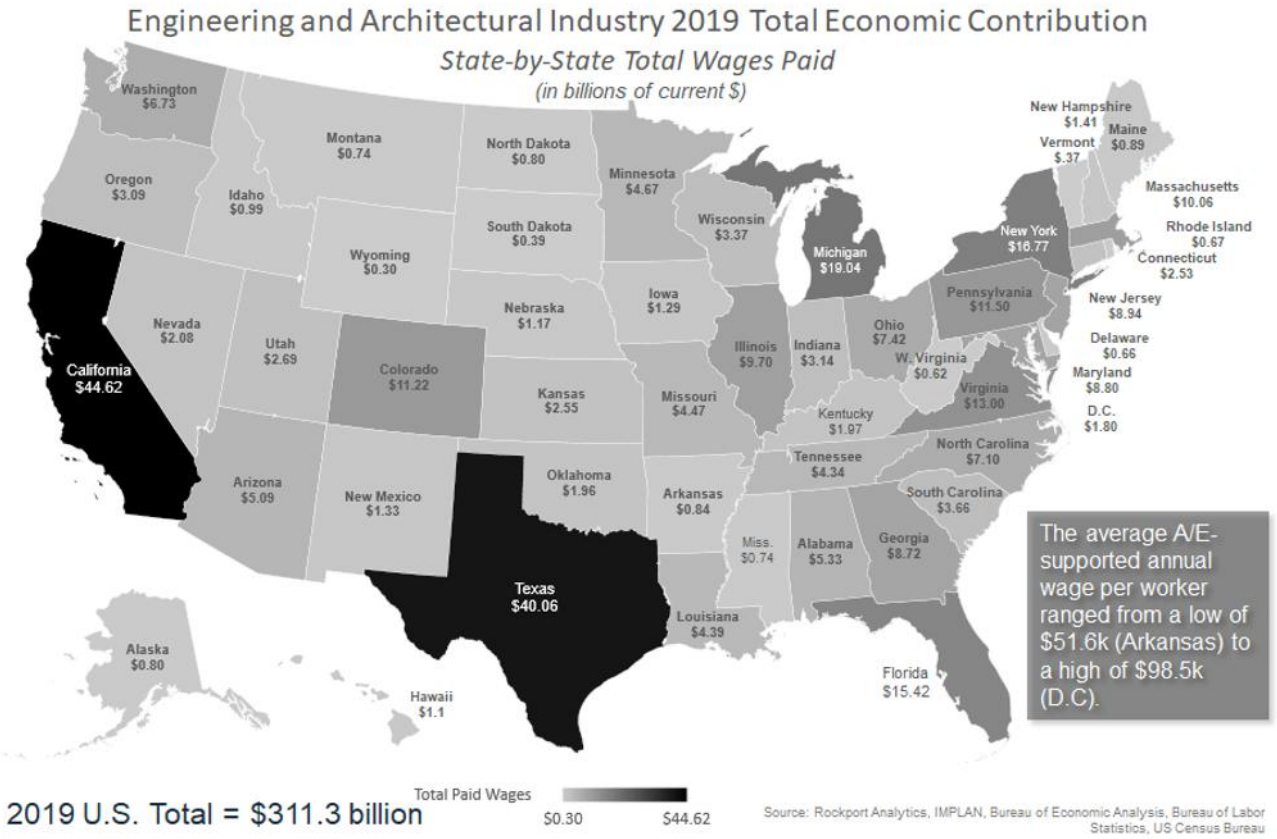
Sources: Rockport Analytics, IMPLAN

[1]North American Industrial Classification System (NAICS). For specific industry definitions, see www.census.gov

- Engineering and Architectural supply chain firms operating in the Professional, Scientific, and Technical Services industry (NAICS 54) were paid about 36%, or $24.7 billion, of Indirect wages. Approximately, $5 billion of that amount comes from outsourcing to other A/E firms and the remaining $20 billion to other types of professional and business service sectors (e.g., legal services).

- Total A/E-supported wages can be tracked across states as well (see map below). Once again, California and Texas dominate the Engineering and Architectural landscape, with $44.5 billion and $40 billion in total A/E-supported wages, respectively.

- The distribution of wages across the country reflects both the number of workers in each state and their average salaries. State average A/E-supported salaries range from a high of $98,500 in Washington, D.C. to a low of $51,600 in Arkansas. In California, the average A/E-supported wage was $79,400 and for Texas, the average reached $71,250 in 2019.



Engineering and Architectural Services Contribution to Federal, State, and Local Taxes

One final way in which to assess an industry's economic contribution is to estimate the level of annual tax receipts generated on behalf of federal, state, and local government. Engineering and Architectural firms pay taxes on income, material purchases, and property during normal operations. There are also excise taxes, licenses, and other fees to pay. Meanwhile, firm workers also pay income, Medicare, and Social Security taxes on their earned income. Moreover, when these employees spend that income, they incur sales, excise, and other types of taxes.

- The table at right summarizes all the tax receipts initiated by Engineering and Architectural sector operations. In total, nearly $122 billion in taxes were generated by the industry in 2019. About $83 billion went to federal coffers and $39 billion to state and local governments across the country.
- The largest federal tax category was Personal Income, at nearly $32 billion or 26% of total in 2019. This reflects both the high labor content of A/E Services and the relatively higher salaries of their employees. The Social Security tax row, at $44 billion (36.2%), reflects these same factors, plus adds in the employer-paid side of the tax.
- Corporate Income taxes appear relatively low at only $3.4 billion (2.8%). This, in part, reflects the large proportion of Engineering and Architectural firms that are registered as LLCs and tend to pay their business taxes as a pass-through to personal income.

Engineering & Architectural-Initiated Taxes in 2019

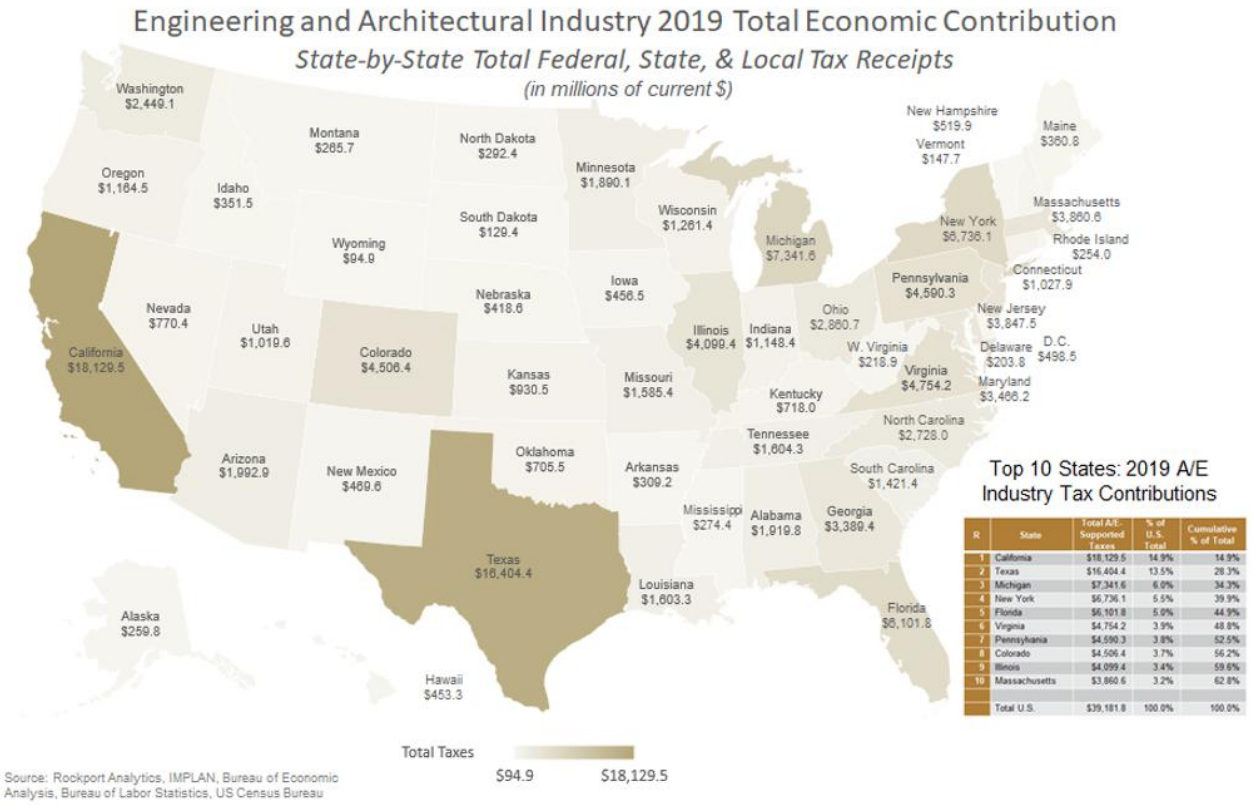
	2019 Tax Collections *(Millions $)*	2019 % of Total
Federal – U.S.		
Corporate Income	$3,406	2.8%
Personal Income	$31,698	26.0%
Excise & Fees	$3,491	2.9%
Social Security & Other Taxes	$44,152	36.2%
Federal Tax Total	**$82,747**	**67.9%**
State & Local		
Corporate Income	$1,491	1.2%
Personal Income	$8,235	6.8%
Social Insurance Taxes	$736	0.6%
Business Taxes	$14,840	12.1%
Household Taxes	$2,082	1.7%
Property Taxes	$11,797	9.7%
State & Local Tax Total	**$39,182**	**32.1%**
Total A/E - Supported Taxes	**$121,929**	**100%**

Source: IMPLAN, Rockport Analytics, Bureau of Census

- State and local taxes are dominated by sales, excise, and income taxes at the state level and property and, to a lesser extent, income taxes at the local level. Business taxes (sales and excise taxes plus licenses/fees) comprise 12% of total at nearly $15 billion in 2019.
- Property taxes initiated by Engineering and Architectural sector operations in 2019 totaled $12 billion (10%) and reflect both business and household property levies. They are estimated by associating A/E industry revenue (business) and wages (household) with total revenue/wages and then allocating total reported commercial and residential property taxes using those proportions.
- State & local personal income taxes initiated by the Engineering and Architectural sector reached $8.2 billion in 2019, about 7% of total. These collections reflect state and or local income tax levies in those states and localities that have them.

- Engineering and Architectural industry-initiated taxes can also be estimated across states. The map below itemizes the 2019 state-by-state total tax contributions made by the industry in 2019. All federal, state, and local collections are included, incorporating the different tax types and rates that exist across the country. A table highlighting the top ten states is also presented at bottom right.

- California and Texas once again lead the pack at $18.1 and $16.4 billion, respectively. The two states together account for nearly 30% of the U.S. total. Add in the remaining states in the top 10 and nearly two-thirds of all A/E-initiated taxes are accounted for.



Source: Rockport Analytics, IMPLAN, Bureau of Economic Analysis, Bureau of Labor Statistics, US Census Bureau

Study Appendix

Appendix I: Glossary & Definitions

Glossary of Economic Contribution Terms

Built Environment: The human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks.

Direct Contribution: Benefits that accrues to those businesses directly engaged in A/E Services in support of construction, mining, oil & gas, manufacturing, government, and other industries, as well as exports.

End Market: The term end market is used to indicate where the final transaction takes place in a value chain. Typically, it is where the end-user is located, meaning the individual or organization for whom the product or service has been created, and who is not expected to resell that product or service. For a business-related product or service, the end market is where the sale occurs to the organization that will use the product or service in its own operations.

Employment: Total employment is an annual average of the number of jobs that exist in an industry. It smooths through monthly or quarterly seasonality and refers to full-time, part-time, seasonal, and self-employed jobs.

Establishment: An economic unit–business or industrial–at a single geographic location, where business is conducted or where services or industrial operations are performed. An establishment is not necessarily identical to an enterprise or company, which may consist of one or more establishments.

Firm: A firm is a commercial enterprise, a company that buys and sells products and/or services to consumers with the aim of making a profit. In the world of commerce, the term is usually synonymous with 'company', or 'business'. A firm can be any of the following entity types, corporation, limited liability company, public limited company, sole proprietorship, or partnership.

Gross Domestic Product: The market value of goods and services produced by labor and property in the United States, regardless of nationality. Refers to the total spending in an economy net of any leakages outside the country and the double counting of intermediate inputs.

Gross Output: Gross output (GO) is the value of the goods and services produced by the nation's economy. It is principally measured using industry sales or receipts, including sales to final users (GDP) and sales to other industries (intermediate inputs). It is also referred to as "value-added".

Indirect Contribution: Benefits to the upstream businesses engaged in supplying A/E services firms with everything from technical services to computer equipment, insurance, and office supplies.

Induced Contribution: Both direct and supply chain businesses pay wages to their workers. Most of these wages paid will be spent on a broad array of consumer goods and services, although a small proportion will be saved or used to pay taxes. The spending of these wages creates benefits to many other businesses in an economy and initiates a virtuous cycle of downstream spending. This contribution is sometimes referred to as the "ripple effect" of an industry.

Leakages: The portion of gross spending that is either saved, used for debt reduction, or spent on imports. Leakages are interruptions to the virtuous cycle of spending and re-spending mentioned above.

NAICS: The standard classification system used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. This system was developed jointly by the U.S., Canada, and Mexico to provide improved comparability in industrial statistics across North America.

Occupation: A set of activities or tasks that employees are paid to perform. Employees that perform essentially the same tasks are in the same occupation, whether they work in the same industry or not. Some occupations are concentrated in a few industries; other occupations are found in many industries.

Standard Occupational Classification System: This system is being adopted by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into 1 of more than 800 occupations according to their occupational definition. To facilitate classification, occupations are combined to form 23 major groups, 96 minor groups, and 449 broad occupations. Each broad occupation includes detailed occupations requiring similar job duties, skills, education, or experience.

Value Added: The gross output of an industry or a sector less its intermediate inputs; the contribution of an industry or sector to gross domestic product (GDP). Value added by industry can also be measured as the sum of compensation of employees, taxes on production and imports less subsidies, and gross operating surplus.

Wages: Wages reflect the combined cost of total payroll paid to employees (e.g., wages, salaries, benefits, payroll taxes) and payments received by self-employed individuals and/or unincorporated business owners.

Engineering and Architectural Industry NAICS Definitions

541310 Architectural Services: This industry comprises establishments primarily engaged in planning and designing residential, institutional, leisure, commercial, and industrial buildings and structures by applying knowledge of design, construction procedures, zoning regulations, building codes, and building materials.

541320 Landscape Architectural Services: This industry comprises establishments primarily engaged in planning and designing the development of land areas for projects, such as parks and other recreational areas; airports; highways; hospitals; schools; land subdivisions; and commercial, industrial, and residential areas, by applying knowledge of land characteristics, location of buildings and structures, use of land areas, and design of landscape projects.

541330 Engineering Services: This industry comprises establishments primarily engaged in applying physical laws and principles of engineering in the design, development, and utilization of machines, materials, instruments, structures, processes, and systems. The assignments undertaken by these establishments may involve any of the following activities: provision of advice, preparation of feasibility studies, preparation of preliminary and final plans and designs, provision of technical services during the construction or installation phase, inspection and evaluation of engineering projects, and related services.

541340 Drafting Services: This industry comprises establishments primarily engaged in drawing detailed layouts, plans, and illustrations of buildings, structures, systems, or components from engineering and architectural specifications.

541350 Building Inspection Services: This industry comprises establishments primarily engaged in providing building inspection services. These establishments typically evaluate all aspects of the building structure and component systems and prepare a report on the physical condition of the property, generally for buyers or others involved in real estate transactions. Building inspection bureaus and establishments providing home inspection services are included in this industry.

541360 Geophysical Surveying and Mapping Services: This industry comprises establishments primarily engaged in gathering, interpreting, and mapping geophysical data. Establishments in this industry often specialize in locating and measuring the extent of subsurface resources, such as oil, gas, and minerals, but they may also conduct surveys for engineering purposes. Establishments in this industry use a variety of surveying techniques depending on the purpose of the survey, including magnetic surveys, gravity surveys, seismic surveys, or electrical and electromagnetic surveys.

541370 Surveying and Mapping (except Geophysical) Services: This industry comprises establishments primarily engaged in performing surveying and mapping services of the surface of the earth, including the sea floor. These services may include surveying and mapping of areas above or below the surface of the earth, such as the creation of view easements or segregating rights in parcels of land by creating underground utility easements.

541380 Testing Laboratories: This industry comprises establishments primarily engaged in performing physical, chemical, and other analytical testing services, such as acoustics or vibration testing, assaying, biological testing (except medical and veterinary), calibration testing, electrical and electronic testing, geotechnical testing, mechanical testing, nondestructive testing, or thermal testing. The testing may occur in a laboratory or on-site.

Engineering and Architectural Industry Standard Occupational Classification System (SOC) Definitions

17-1011 Architects, Except Landscape and Naval Occupation: Plan and design structures, such as private residences, office buildings, theaters, factories, and other structural property.

17-1012 Landscape Architects: Plan and design land areas for projects such as parks and other recreational facilities, airports, highways, hospitals, schools, land subdivisions, and commercial, industrial, and residential sites.

17-1021 Cartographers and Photogrammetrists: Research, study, and prepare maps and other spatial data in digital or graphic form for one or more purposes, such as legal, social, political, educational, and design purposes. May work with Geographic Information Systems (GIS). May design and evaluate algorithms, data structures, and user interfaces for GIS and mapping systems. May collect, analyze, and interpret geographic information provided by geodetic surveys, aerial photographs, and satellite data.

17-1022 Surveyors: Make exact measurements and determine property boundaries. Provide data relevant to the shape, contour, gravitation, location, elevation, or dimension of land or land features on or near the earth's surface for engineering, mapmaking, mining, land evaluation, construction, and other purposes.

17-2011 Aerospace Engineers: Perform engineering duties in designing, constructing, and testing aircraft, missiles, and spacecraft. May conduct basic and applied research to evaluate adaptability of materials and equipment to aircraft design and manufacture. May recommend improvements in testing equipment and techniques.

17-2021 Agricultural Engineers: Apply knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing of agricultural products.

17-2031 Bioengineers and Biomedical Engineers: Apply knowledge of engineering, biology, chemistry, computer science, and biomechanical principles to the design, development, and evaluation of biological, agricultural, and health systems and products, such as artificial organs, prostheses, instrumentation, medical information systems, and health management and care delivery systems.

17-2041 Chemical Engineers: Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering.

17-2051 Civil Engineers: Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems. Includes architectural, structural, traffic, and geotechnical engineers. Excludes "Hydrologists"

17-2061 Computer Hardware Engineers: Research, design, develop, or test computer or computer-related equipment for commercial, industrial, military, or scientific use. May supervise the manufacturing and installation of computer or computer-related equipment and components. Excludes "Software Developers" (15-1252) and "Web Developers" (15-1254).

17-2071 Electrical Engineers: Research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military, or scientific use.

17-2072 Electronics Engineers, Except Computer: Research, design, develop, or test electronic components and systems for commercial, industrial, military, or scientific use employing knowledge of electronic theory and materials properties. Design electronic circuits and components for use in fields such as telecommunications, aerospace guidance and propulsion control, acoustics, or instruments and controls.

17-2081 Environmental Engineers: Research, design, plan, or perform engineering duties in the prevention, control, and remediation of environmental hazards using various engineering disciplines. Work may include waste treatment, site remediation, or pollution control technology

17-2111 Health and Safety Engineers, Except Mining Safety Engineers and Inspectors: Promote worksite or product safety by applying knowledge of industrial processes, mechanics, chemistry, psychology, and industrial health and safety laws. Includes industrial product safety engineers.

17-2112 Industrial Engineers: Design, develop, test, and evaluate integrated systems for managing industrial production processes, including human work factors, quality control, inventory control, logistics and material flow, cost analysis, and production coordination.

17-2121 Marine Engineers and Naval Architects: Design, develop, and evaluate the operation of marine vessels, ship machinery, and related equipment, such as power supply and propulsion systems.

17-2131 Materials Engineers: Evaluate materials and develop machinery and processes to manufacture materials for use in products that must meet specialized design and performance specifications. Develop new uses for known materials. Includes those engineers working with composite materials or specializing in one type of material, such as graphite, metal and metal alloys, ceramics and glass, plastics and polymers, and naturally occurring materials. Includes metallurgists and metallurgical engineers, ceramic engineers, and welding engineers.

17-2141 Mechanical Engineers: Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as centralized heat, gas, water, and steam systems.

17-2151 Mining and Geological Engineers, Including Mining Safety Engineers: Conduct subsurface surveys to identify the characteristics of potential land or mining development sites. May specify the ground support systems, processes, and equipment for safe, economical, and environmentally sound extraction or underground construction activities. May inspect areas for unsafe geological conditions, equipment, and working conditions. May design, implement, and coordinate mine safety programs.

17-2161 Nuclear Engineers: Conduct research on nuclear engineering projects or apply principles and theory of nuclear science to problems concerned with release, control, and use of nuclear energy and nuclear waste disposal.

17-2171 Petroleum Engineers: Devise methods to improve oil and gas extraction and production and determine the need for new or modified tool designs. Oversee drilling and offer technical advice.

17-3011 Architectural and Civil Drafters: Prepare detailed drawings of architectural and structural features of buildings or drawings and topographical relief maps used in civil engineering projects, such as highways, bridges, and public works. Use knowledge of building materials, engineering practices, and mathematics to complete drawings.

17-3012 Electrical and Electronics Drafters: Prepare wiring diagrams, circuit board assembly diagrams, and layout drawings used for the manufacture, installation, or repair of electrical equipment.

17-3013 Mechanical Drafters: Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.

17-3021 Aerospace Engineering and Operations Technologists and Technicians: Operate, install, adjust, and maintain integrated computer/communications systems, consoles, simulators, and other data acquisition, test, and measurement instruments and equipment, which are used to launch, track, position, and evaluate air and space vehicles. May record and interpret test data.

17-3022 Civil Engineering Technologists and Technicians: Apply theory and principles of civil engineering in planning, designing, and overseeing construction and maintenance of structures and facilities under the direction of engineering staff or physical scientists.

17-3023 Electrical and Electronic Engineering Technologists and Technicians: Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, adjust, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions

17-3024 Electro-Mechanical and Mechatronics Technologists and Technicians: Operate, test, maintain, or adjust unmanned, automated, servomechanical, or electromechanical equipment. May operate unmanned submarines, aircraft, or other equipment to observe or record visual information at sites such as oil rigs, crop fields, buildings, or for similar infrastructure, deep ocean exploration, or hazardous waste removal. May assist engineers in testing and designing robotics equipment.

17-3025 Environmental Engineering Technologists and Technicians: Apply theory and principles of environmental engineering to modify, test, and operate equipment and devices used in the prevention, control, and remediation of environmental problems, including waste treatment and site remediation, under the direction of engineering staff or scientists. May assist in the development of environmental remediation devices.

17-3026 Industrial Engineering Technologists and Technicians: Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency.

17-3027 Mechanical Engineering Technologists and Technicians: Apply theory and principles of mechanical engineering to modify, develop, test, or adjust machinery and equipment under direction of engineering staff or physical scientists.

17-3028 Calibration Technologists and Technicians: Execute or adapt procedures and techniques for calibrating measurement devices, by applying knowledge of measurement science, mathematics, physics, chemistry, and electronics, sometimes under the direction of engineering staff. Determine measurement standard suitability for calibrating measurement devices. May perform preventive maintenance on equipment. May perform corrective actions to address identified calibration problems. Excludes "Medical Equipment Preparers" (31-9093) and "Timing Device Assemblers and Adjusters" (51-2061).

17-3031 Surveying and Mapping Technicians: Perform surveying and mapping duties, usually under the direction of an engineer, surveyor, cartographer, or photogrammetrist, to obtain data used for construction, mapmaking, boundary location, mining, or other purposes. May calculate mapmaking information and create maps from source data, such as surveying notes, aerial photography, satellite data, or other maps to show topographical features, political boundaries, and other features. May verify accuracy and completeness of maps. Excludes "Cartographers and Photogrammetrists" (17-1021), "Surveyors"" (17-1022), and "Geoscientists, Except Hydrologists and Geographers" (19-2042).

Appendix II: State by State Economic Contribution Results

2019 Engineering & Architectural Services Economic Contribution by State *in millions USD

State	A/E Industry Direct Contribution				A/E Industry Indirect Contribution				A/E Induced Contribution				A/E Total Contribution					
	Direct Jobs	Direct Wages	Direct Value-Added	Direct Output	Indirect Jobs	Indirect Wages	Indirect Value-Added	Indirect Output	Induced Jobs	Induced Wages	Induced Value-Added	Induced Output	Total Jobs	Total Wages	Total Value-Added	Total Output	Total Federal Taxes	Total State & Local Taxes
Alabama	27.4	$2,579.9	$4,097.6	$7,064.4	19.4	$1,033.2	$2,086.4	$3,796.3	33.7	$1,713.9	$3,460.1	$7,109.0	80.5	$5,327.0	$9,644.1	$17,969.7	$1,331.5	$588.2
Alaska	4.7	$420.2	$679.0	$1,140.7	2.0	$113.9	$229.1	$409.7	5.1	$262.7	$454.5	$1,063.2	11.9	$796.8	$1,362.7	$2,613.6	$188.1	$71.6
Arizona	28.6	$2,337.3	$3,798.7	$6,345.8	19.1	$1,079.8	$2,097.3	$3,729.3	34.2	$1,688.7	$4,180.3	$7,047.9	79.9	$5,085.9	$10,076.3	$17,123.1	$1,391.2	$601.6
Arkansas	6.4	$427.8	$676.4	$1,161.4	3.1	$137.0	$286.5	$522.1	6.7	$271.2	$474.5	$1,111.4	16.2	$835.9	$1,439.4	$2,794.8	$198.7	$110.4
California	186.0	$19,971.5	$32,421.7	$54,222.6	139.7	$10,390.8	$19,719.2	$35,103.7	236.3	$14,262.4	$35,292.3	$60,973.5	562.0	$44,624.8	$87,433.3	$150,299.8	$12,071.8	$6,057.7
Colorado	50.0	$4,997.9	$8,136.7	$13,569.4	39.6	$2,560.4	$4,939.8	$8,766.8	69.8	$3,661.3	$9,527.5	$15,655.8	159.3	$11,219.6	$22,604.1	$37,993.9	$3,120.9	$1,385.5
Connecticut	13.3	$1,210.6	$1,958.0	$3,286.8	8.3	$521.8	$1,030.3	$1,841.0	15.4	$795.7	$1,617.8	$3,256.2	37.0	$2,528.1	$4,606.1	$8,384.0	$636.0	$392.0
Delaware	3.7	$323.8	$522.1	$879.1	2.4	$134.6	$240.3	$430.7	3.9	$200.1	$288.4	$774.2	10.0	$658.5	$1,050.8	$2,083.9	$145.1	$58.7
District of Columbia	8.0	$966.0	$1,590.0	$2,620.0	4.6	$370.9	$653.0	$1,145.3	5.9	$485.2	$207.9	$1,823.6	18.5	$1,821.1	$2,450.9	$5,588.9	$338.4	$109.5
Florida	88.3	$7,022.1	$11,434.1	$19,065.0	61.4	$3,365.2	$6,466.5	$11,476.9	111.8	$5,031.7	$12,697.9	$21,283.4	261.5	$15,419.0	$30,598.5	$51,825.3	$4,224.7	$1,877.1
Georgia	42.8	$3,833.2	$6,196.6	$10,407.0	35.6	$2,063.1	$4,051.2	$7,242.3	58.7	$2,822.7	$7,503.5	$12,154.7	137.1	$8,719.0	$17,751.3	$29,804.1	$2,450.9	$938.5
Hawaii	5.8	$534.1	$869.4	$1,450.2	3.5	$195.9	$371.3	$659.2	6.8	$356.3	$766.1	$1,486.7	16.1	$1,086.3	$2,006.8	$3,596.0	$277.1	$176.3
Idaho	6.9	$498.4	$806.9	$1,353.2	3.7	$166.6	$324.4	$579.2	7.7	$320.3	$697.7	$1,315.1	18.3	$985.3	$1,729.0	$3,247.5	$238.7	$112.7
Illinois	47.8	$4,233.7	$6,756.0	$11,494.5	36.5	$2,311.9	$4,658.3	$8,438.0	64.3	$3,157.3	$8,364.9	$13,682.9	150.6	$9,702.9	$19,800.2	$33,615.3	$2,733.8	$1,365.6
Indiana	20.6	$1,506.7	$2,389.5	$4,090.6	12.1	$603.8	$1,236.2	$2,252.6	23.3	$1,025.7	$2,224.3	$4,344.3	56.0	$3,136.1	$5,849.9	$10,687.4	$807.7	$340.7
Iowa	8.0	$671.1	$1,067.8	$1,822.2	3.8	$197.5	$422.3	$767.0	8.7	$421.9	$731.7	$1,723.5	20.5	$1,290.6	$2,221.8	$4,312.6	$306.8	$149.7
Kansas	13.9	$1,201.3	$1,917.1	$3,261.4	10.4	$555.8	$1,088.8	$1,971.5	16.5	$792.1	$1,486.6	$3,219.5	40.8	$2,549.1	$4,492.5	$8,452.4	$620.3	$310.2
Kentucky	12.0	$961.5	$1,524.8	$2,610.5	7.3	$375.0	$759.5	$1,384.1	13.4	$633.8	$1,226.4	$2,642.3	32.7	$1,970.3	$3,510.6	$6,636.9	$484.7	$233.2
Louisiana	24.0	$2,117.0	$3,376.8	$5,747.7	16.2	$858.8	$1,718.0	$3,112.6	29.4	$1,415.1	$2,835.9	$5,839.0	69.5	$4,390.9	$7,930.7	$14,699.4	$1,095.0	$508.3
Maine	5.3	$441.5	$715.6	$1,198.7	2.7	$152.6	$290.6	$518.2	6.1	$293.5	$586.8	$1,193.0	14.1	$887.6	$1,593.0	$2,909.8	$219.9	$140.9
Maryland	42.4	$4,087.6	$6,667.9	$11,097.9	31.2	$1,946.3	$3,861.1	$6,486.1	51.3	$2,788.2	$5,975.2	$11,402.4	124.9	$8,802.1	$16,304.2	$28,986.3	$2,251.1	$1,215.1
Massachusetts	42.1	$4,636.2	$7,544.2	$12,587.3	29.3	$2,274.4	$4,393.1	$7,802.0	50.1	$3,154.2	$7,050.2	$13,096.6	121.5	$10,064.8	$18,987.5	$33,485.8	$2,621.6	$1,239.0
Michigan	88.2	$8,748.2	$14,058.9	$23,751.2	72.1	$4,209.5	$8,176.9	$14,704.2	116.6	$6,083.0	$13,666.6	$25,507.6	276.9	$19,040.6	$35,902.4	$63,963.0	$4,957.0	$2,384.6
Minnesota	23.7	$2,165.7	$3,462.5	$5,879.8	15.4	$1,002.6	$2,003.3	$3,621.1	29.0	$1,502.1	$3,376.3	$6,344.4	68.1	$4,670.4	$8,842.1	$15,845.3	$1,220.8	$569.2
Mississippi	5.5	$376.4	$602.6	$1,021.9	2.8	$120.0	$239.3	$431.9	5.9	$240.8	$427.1	$884.2	14.2	$737.2	$1,269.0	$2,438.0	$175.2	$99.2
Missouri	22.6	$2,055.6	$3,294.8	$5,581.0	18.2	$1,005.0	$1,887.1	$3,402.5	29.0	$1,411.8	$2,832.4	$5,699.8	69.8	$4,472.4	$8,014.3	$14,683.3	$1,106.5	$478.8

2019 Engineering & Architectural Services Economic Contribution by State

*in millions USD

State	A/E Industry Direct Contribution				A/E Industry Indirect Contribution				A/E Induced Contribution				A/E Total Contribution					
	Direct Jobs	Direct Wages	Direct Value-Added	Direct Output	Indirect Jobs	Indirect Wages	Indirect Value-Added	Indirect Output	Induced Jobs	Induced Wages	Induced Value-Added	Induced Output	Total Jobs	Total Wages	Total Value-Added	Total Output	Total Federal Taxes	Total State & Local Taxes
Montana	5.0	$384.4	$620.8	$1,043.6	2.3	$115.1	$226.2	$404.8	5.4	$244.3	$436.5	$991.2	12.6	$743.8	$1,283.5	$2,439.6	$177.2	$88.5
Nebraska	7.6	$576.7	$925.9	$1,565.6	4.2	$219.3	$439.6	$791.3	8.5	$373.0	$704.8	$1,522.5	20.2	$1,169.0	$2,070.3	$3,879.4	$285.8	$132.8
Nevada	12.3	$1,037.4	$1,685.6	$2,816.7	7.4	$371.1	$741.5	$1,318.9	14.2	$675.2	$1,377.2	$2,777.0	33.9	$2,083.8	$3,804.3	$6,912.6	$525.3	$245.1
New Hampshire	7.0	$664.8	$1,080.5	$1,805.0	4.9	$308.1	$582.0	$1,035.0	8.1	$438.7	$888.5	$1,792.0	20.0	$1,411.6	$2,551.0	$4,632.1	$352.2	$167.7
New Jersey	40.2	$3,970.3	$6,394.4	$10,779.4	31.7	$2,165.3	$4,264.7	$7,652.4	50.9	$2,805.3	$6,675.0	$11,802.7	122.8	$8,940.9	$17,334.0	$30,234.5	$2,393.3	$1,454.2
New Mexico	8.7	$681.4	$1,101.9	$1,850.1	4.2	$215.9	$410.4	$733.5	9.5	$435.5	$784.2	$1,772.1	22.4	$1,332.8	$2,296.5	$4,355.6	$317.1	$152.5
New York	77.7	$7,878.3	$12,867.9	$21,389.4	54.1	$3,731.3	$6,928.1	$12,258.1	87.2	$5,161.0	$10,073.6	$20,892.3	219.1	$16,770.6	$29,869.6	$54,539.8	$4,124.1	$2,612.1
North Carolina	40.8	$3,217.8	$5,166.9	$8,736.2	28.1	$1,594.8	$3,164.0	$5,694.5	50.2	$2,290.5	$5,605.8	$9,715.2	119.1	$7,103.0	$13,936.6	$24,145.9	$1,924.2	$803.8
North Dakota	4.3	$414.8	$664.5	$1,126.3	2.0	$126.0	$257.4	$464.3	4.6	$255.4	$410.0	$1,028.1	10.9	$796.3	$1,331.8	$2,618.7	$183.9	$108.5
Ohio	43.2	$3,403.9	$5,405.0	$9,241.5	29.7	$1,597.4	$3,197.5	$5,819.4	54.4	$2,416.2	$5,632.0	$10,252.8	127.3	$7,417.4	$14,234.6	$25,313.7	$1,965.3	$895.3
Oklahoma	12.7	$944.9	$1,525.6	$2,565.4	7.7	$376.4	$720.4	$1,289.4	14.7	$635.8	$1,305.0	$2,629.4	35.1	$1,957.1	$3,550.9	$6,484.2	$490.3	$215.3
Oregon	17.3	$1,465.8	$2,366.7	$3,979.7	11.0	$639.6	$1,258.2	$2,252.0	19.9	$980.1	$2,081.2	$4,069.3	48.2	$3,085.6	$5,706.1	$10,301.0	$787.8	$376.7
Pennsylvania	59.8	$5,206.9	$8,332.0	$14,136.7	41.5	$2,587.2	$5,094.2	$9,200.0	74.9	$3,709.6	$8,651.0	$15,574.8	176.2	$11,503.7	$22,077.2	$38,911.5	$3,048.2	$1,542.1
Rhode Island	4.1	$329.9	$535.8	$895.6	2.4	$130.3	$247.2	$439.8	4.4	$211.6	$382.3	$848.1	11.0	$671.8	$1,165.3	$2,183.5	$160.9	$93.1
South Carolina	20.8	$1,684.2	$2,687.5	$4,572.6	16.4	$805.5	$1,608.9	$2,913.8	26.7	$1,170.5	$2,690.2	$4,913.1	63.9	$3,660.2	$6,986.5	$12,399.4	$964.6	$429.2
South Dakota	3.0	$211.2	$337.9	$573.5	1.1	$52.5	$112.5	$203.2	3.1	$131.2	$216.6	$529.0	7.2	$394.8	$667.0	$1,305.7	$92.1	$37.3
Tennessee	22.6	$1,955.0	$3,128.5	$5,307.7	18.0	$965.1	$1,924.0	$3,474.5	29.3	$1,420.3	$3,584.0	$6,099.3	69.9	$4,340.3	$8,636.4	$14,881.5	$1,192.4	$411.9
Texas	164.7	$17,033.1	$27,243.3	$46,244.8	149.3	$9,780.9	$19,448.9	$35,141.2	248.2	$13,242.2	$37,760.4	$57,909.4	562.2	$40,056.3	$84,452.5	$139,295.3	$11,660.3	$4,744.1
Utah	15.8	$1,214.9	$1,966.1	$3,298.4	11.5	$604.0	$1,168.3	$2,086.3	19.8	$868.5	$2,150.8	$3,718.6	47.1	$2,687.4	$5,285.2	$9,103.2	$729.7	$289.9
Vermont	2.4	$189.8	$307.5	$515.4	1.1	$59.0	$114.4	$204.0	2.5	$119.6	$214.2	$486.0	6.0	$368.4	$636.1	$1,205.4	$87.8	$59.9
Virginia	56.9	$5,899.5	$9,547.4	$16,017.0	45.0	$3,067.7	$5,719.6	$10,213.6	73.1	$4,028.4	$8,550.0	$16,487.3	175.0	$12,995.6	$23,817.0	$42,717.9	$3,288.4	$1,465.8
Washington	34.3	$3,249.5	$5,247.5	$8,822.4	20.8	$1,312.7	$2,585.4	$4,626.8	40.5	$2,166.8	$4,680.6	$9,111.5	95.7	$6,729.0	$12,513.5	$22,560.7	$1,727.7	$721.3
West Virginia	4.8	$320.2	$510.0	$869.2	2.2	$101.2	$205.5	$372.8	4.9	$195.3	$302.6	$783.1	11.9	$616.7	$1,018.1	$2,025.1	$140.6	$78.3
Wisconsin	20.3	$1,640.0	$2,621.0	$4,452.7	11.4	$628.3	$1,273.5	$2,303.0	23.2	$1,100.7	$2,247.2	$4,553.7	54.9	$3,369.0	$6,141.7	$11,309.4	$848.0	$413.4
Wyoming	2.3	$162.9	$262.5	$442.3	0.8	$37.7	$78.2	$140.2	2.2	$97.4	$142.5	$389.6	5.3	$298.1	$483.1	$972.2	$66.7	$28.2

2019 Engineering & Architectural Services Economic Contribution by State

*in millions USD

State	A/E Industry Direct Contribution				A/E Industry Indirect Contribution				A/E Induced Contribution				A/E Total Contribution					
	Direct Jobs	Direct Wages	Direct Value-Added	Direct Output	Indirect Jobs	Indirect Wages	Indirect Value-Added	Indirect Output	Induced Jobs	Induced Wages	Induced Value-Added	Induced Output	Total Jobs	Total Wages	Total Value-Added	Total Output	Total Federal Taxes	Total State & Local Taxes
U.S. TOTAL	1,514.4	$142,062.1	$229,100.4	$385,697.6	1,111.0	$69,338.8	$134,801.3	$241,628.9	1,919.9	$99,924.8	$235,418.9	$421,381.8	4,545.2	$311,325.7	$599,320.6	$1,048,708.3	$82,747.4	$39,181.8

About ACEC Research Institute

The ACEC Research Institute is the research arm of the American Council of Engineering Companies – the business association of the nation's engineering industry. The ACEC Research Institute's mission is to deliver knowledge and business strategies that guide and elevate the engineering industry and to be the leading source of knowledge and thought leadership for creating a more sustainable, safe, secure and technically advanced built environment.

About Rockport Analytics

Rockport Analytics is a research and analytical consulting firm providing high quality quantitative and qualitative research solutions to business, government, and non-profit organization clients across the globe. We provide fast, nimble service in a completely transparent environment.

Capabilities include:

- Industry/Market Analysis and Forecasting
- Economic Impact Assessment and Economic Development
- Market Modeling and Decision Support Tools
- Project Feasibility Assessment
- Primary and Secondary Research Synthesis
- Recent client examples include: American Express, Boeing, Carson Wagonlit, Cushman Wakefield, Visit Florida, Minnesota Super Bowl Host Committee, Global Business Travel Association, LaSalle Investment Management, Delaware Economic Development Office, Capital Improvement Board of Indiana, U.S. Travel Association, Indiana Destination Development Corporation, Visa, IHG, Marriott.