

Engineering Services

NAICS: 541330

SIC: 8711

prepared February 18th, 2022

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Coronavirus Update

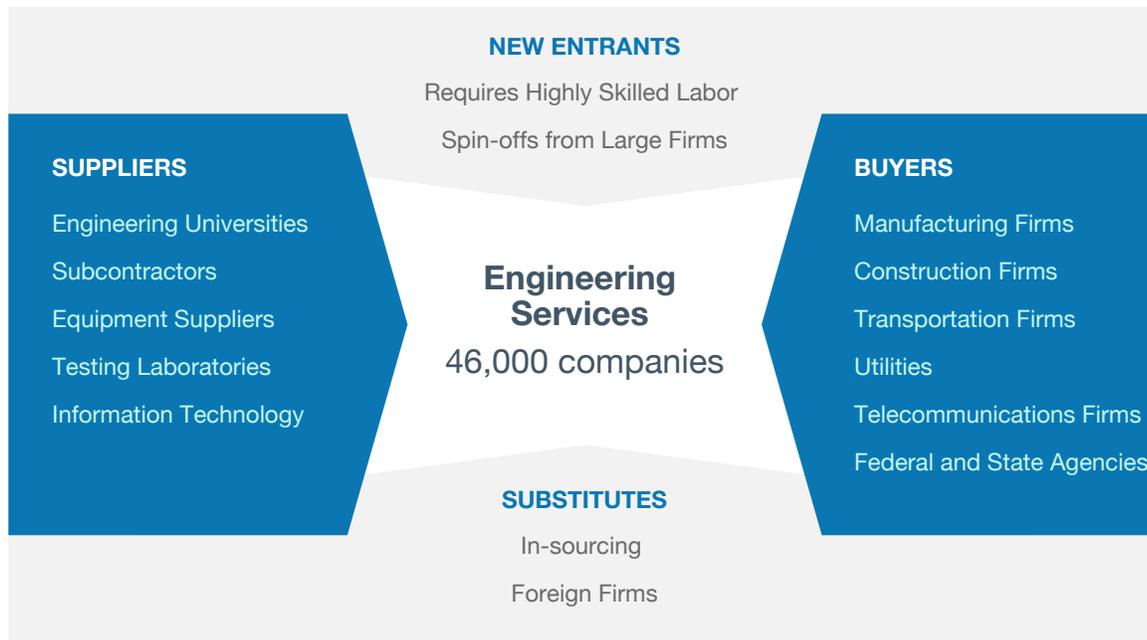
Feb 11, 2022 -- Court Declines To Unblock Vaccine Requirement For Federal Contractors

- A federal appeals court panel declined in early February to block a lower court ruling that President Joe Biden could not require federal employees to be vaccinated against the coronavirus. The lower court decision to block the requirement was issued by Judge R. Stan Baker, who found that the states are likely to succeed in their claim that the president exceeded authorization from Congress when he issued the requirement in September 2021. Appeals court panel member Judge Stephen A. Higginson dissented, noting a dozen district courts rejected requests to block the vaccine rule while a single district judge issued an injunction. "The only court that can now provide timely relief is the Supreme Court," Higginson wrote.
- Federal contractors would have broad leeway to enforce President Biden's COVID-19 vaccine mandate if it is upheld by the US Supreme Court, according to guidance released by the White House. President Biden issued an executive order on September 9 requiring federal contractors to ensure that their employees are vaccinated against COVID-19 and follow masking and social distancing policies. The administration set a December 8 deadline for contractors to implement those requirements. Contractors will have flexibility to determine how they enforce the vaccination requirements for workers who refuse to be vaccinated. Senior administration officials made clear in the guidance that December 8 is not a hard deadline for contractors to have all of their employees fully vaccinated. Instead, contractors must demonstrate they are making a good faith effort to ensure employees are getting vaccinated and have plans in place to ensure masking and social distancing policies are followed in the workplace. Federal contractors won't have to show proof of vaccination rates at the deadline, a senior administration official said. But noncompliance could result in the loss of a federal contract. Federal agencies could bar a contractor employee who refuses to be vaccinated from entering a federal workplace, according to the guidelines.
- Engineering firms with contracts for state infrastructure projects are being told to repay what they say they thought were forgivable federal Paycheck Protection Program (PPP) loans taken during the coronavirus pandemic. The federal agency that oversees many of the contracts says that repayment is necessary to prevent firms from being compensated twice for the same work. Firms with contracts in which expenses are covered to an agreed-upon limit with additional payment for profit must pay back the loans if they were used to pay for contractually covered costs
- The Federal Reserve expects economic growth, as measured by GDP, to remain above trend through at least 2023, at 3.3% in 2022 and 2.2% in 2023, compared to estimated long-term potential growth of just 1.8%.
- Small-business owners who received taxpayer-subsidized Paycheck Protection Program (PPP) loans of \$150,000 or less during the coronavirus pandemic can seek forgiveness directly with the government through an online portal that was opened on August 4, allowing them to sidestep the private financial institutions that ran most aspects of the program for 14 months.
- Some businesses that took PPP loans in 2020 but don't apply for forgiveness soon will need to start making payments on the loan plus interest. The PPP loans will automatically convert to a standard loan at 1% interest if a small business does not apply to the SBA for forgiveness within 10 months of the end of the covered period under which they had to spend the money. For some businesses that received a loan when the PPP launched in April 2020, there was an eight-week covered period, which would put the forgiveness application deadline in the middle of July. For most loans operating under the more popular 24-week covered period, that meant a deadline in September 2021.
- The United States today is producing roughly the same amount of goods and services as before the coronavirus pandemic, but with 8.2 million fewer workers, according to The Washington Post. Analysts cite increasing use of automation for the development. Analysts also note that many companies are struggling to attract enough workers to meet surging demand, and engineering services are likely to benefit if the problem results in even greater reliance on automation.
- Engineering services are playing a major role in the pandemic-driven attempt to increase rural broadband access. Typical steps for bringing broadband to a community that require the participation of engineering services include conducting feasibility studies and determining return on investment (ROI), preparation of funding applications based on feasibility studies and ROI, creating and finalizing deployment plans after funding is approved, and overseeing broadband system deployment.
- Total construction spending increased 0.2% in value month over month on an adjusted basis and 8.83% in value year over year on an unadjusted basis in December 2021, according to the US Census Bureau. Residential construction spending increased 1.1% month over month and 14% year over year in December. Nonresidential construction spending decreased 0.7% month over

month but increased 4.4% year over year in December.

- Engineering industry employment increased 5.5% year over year in December 2021, according to the US Bureau of Labor Statistics.

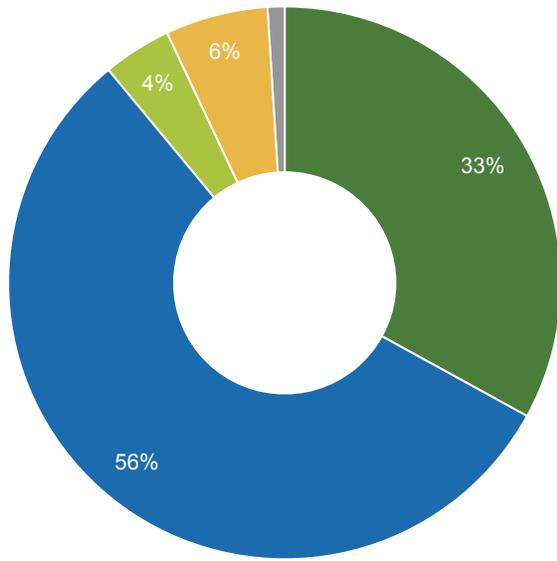
Industry Structure



A typical engineering services firm operates out of a single location, employs 22 workers and generates just over \$5 million in annual revenue.

- The engineering services industry consists of about 46,000 companies that employ over 1 million workers and generate \$241 billion annually.
- Customer industries include general building, transportation, petroleum, power, hazardous waste, water, sewer/waste, industrial, and manufacturing.
- The engineering services industry is fragmented: The 50 largest firms account for only about 35% of industry revenue.
- Large companies include Fluor, Bechtel, and AECOM.

Industry Demographics



- Corporations (33.0%)
- S-Corporations (56.0%)
- Individual Proprietorships (4.0%)
- Partnerships (6.0%)
- Non-profit/Other (1.0%)

Source: US Census Bureau



Female Owned

10.0%



Minority Owned

16.0%



Veteran Owned

14.5%

Source: Census Bureau

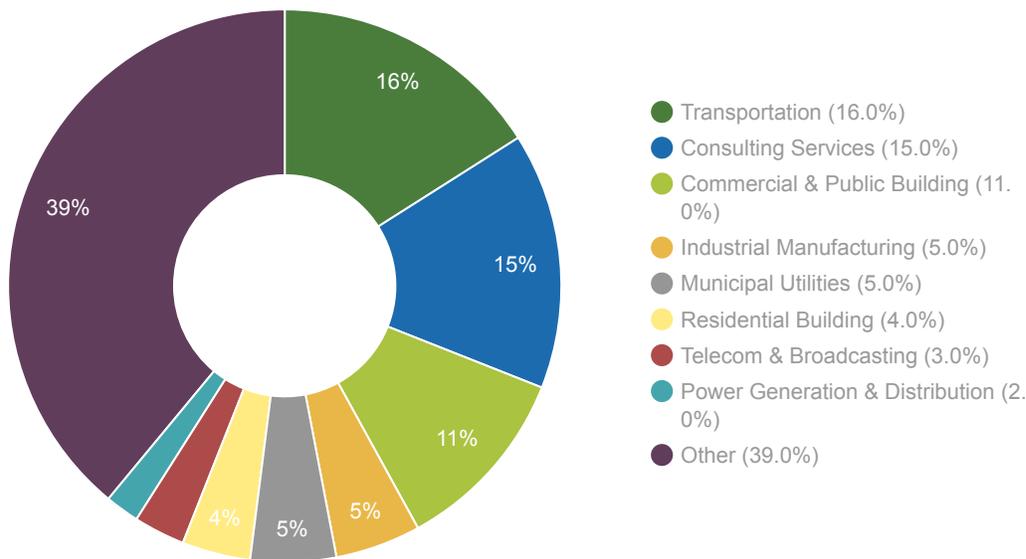
How Firms Operate

Products and Operations

Engineering services include evaluation, investigation, planning, design, and development related to utilities, structures, buildings, machines, equipment, processes, or systems across a variety of industries.

- Major project revenue categories include industrial, manufacturing, and process; construction; transportation; power; utilities; telecommunications; and waste management.
- Specialty areas include civil, mechanical, industrial, electrical, electronics, computer hardware, aerospace, environmental, chemical, health and safety, materials, petroleum, nuclear, and biomedical engineering.
- Companies may also offer procurement, construction, operations and maintenance, and project management services.

Engineering Services Revenue



Source: US Census Bureau

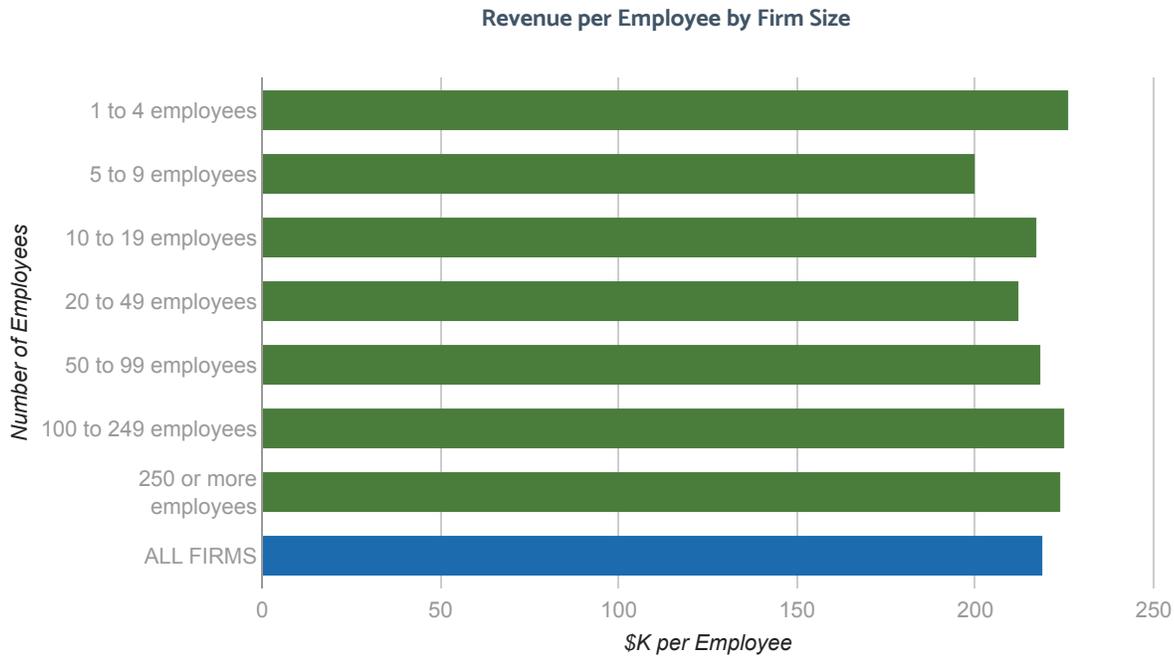
Firms typically submit bids for work based on a request for proposal (RFP), which outlines the requirements for a project. Bids include a definition of the scope of the project, estimates of costs, and timetables. Accurate estimating is critical to maintaining profitability. Clients may solicit multiple bids or invite selected firms to bid based on capabilities or prior experience. A firm that is awarded a project establishes a contract with the client to provide services.

Federal agencies are required by the Brooks Act to use a “qualification-based selection” process for awarding projects. This process prevents federal agencies from soliciting any cost data until they select the most qualified vendor. They then negotiate cost with that vendor. If the agency and the vendor cannot come to an agreement, the agency starts negotiations with the next most qualified vendor. Many state governments use a similar process for awarding projects, especially if any federal funding is being used for the project.

Engineering services firms may focus on providing design or consulting (“front end”) services. Design firms can provide advice, prepare feasibility studies, create plans and designs, evaluate technology, perform risk assessments, complete process designs, provide technical expertise, or inspect and evaluate engineering projects. Design/build firms provide those services plus “back end” services, which may include procurement, construction, operations and maintenance, or project management. Design/build firms often work with subcontractors to execute a project.

Firms may employ a variety of engineers depending on their area of specialization. Engineers that offer services directly to the public

must be state-licensed. Firms typically provide continuing education due to rapid advances in technology. In addition to engineers, companies may employ a wide range of professionals, including architects, biologists, chemists, economists, geologists, oceanographers, project managers, and toxicologists.



Source: US Census Bureau

Profit Drivers

Accurate Project Cost Estimation

Accurate cost estimation is critical for fixed price contracts and for time and material contracts with a “not to exceed” price cap. Even in time and material contracts without caps, accurate estimates of the time and resources required to complete the work is important for efficient staff scheduling and for setting client expectations.

High Billable Hours Rate

Engineering services firms have a fixed capacity based on the size of their staff and strive for a high staff utilization rate. Firms typically establish annual and monthly billable hours goals for each employee. These goals take into account non-billable time for proposal development, company meetings, and education and training.

Developing Unique Expertise

Engineering services firms can increase their project win rate and achieve higher billing rates by developing a reputation for expertise in particular types of projects or engineering disciplines. A strong track record in a specific type of project is particularly valuable for federal or state contracts, in which agencies are required by law to select the most qualified engineering vendor without regard to price. By focusing on particular types of projects, firms also improve their ability to estimate project costs and deliver results efficiently. Firms must balance staying focused to hone their expertise with the need to diversify their service offerings to achieve more consistent demand.

Strong Project Management Skills

Due to the nature of their work, engineering services firms rely heavily on project managers to meet schedule, profit, and client satisfaction goals. Project managers must be adept at monitoring project progress, making adjustments due to weather or other types of delays, resolving issues, and communicating with team members and the client. They must also stay on top of the financial aspects of the project, including the timely submittal of billable hours and the tracking of materials and subcontractor costs versus budget.

Efficiently Managing Overhead Costs

Engineering services firms must operate efficiently to keep their billing rates competitive. Firms use information technology for cost estimating, project management, and project accounting to help streamline operations. By automating back office processes, such as payroll and billing, firms can reduce their non-billable headcount.

Industry Trends

Trends are affected by the COVID-19 pandemic.

Changes in revenue, employment, business practices, trade and forecasts are occurring rapidly and data reporting by the government lags the changes. We are tracking changes in the “Coronavirus Update” chapter.

Growth Halted

The engineering services industry has posted moderate revenue growth in recent years. Industry revenue rose 2% in 2016, 4.2% in 2017, 6.4% in 2018 and 4.9% in 2019. In 2020, revenue dropped 8.9% as clients put projects on hold during the height of the pandemic. As the number of construction projects increases, competition eases and firms can make more profitable bids. While the domestic market strengthens, demand for engineering services outside the US continues to grow as well.

Mergers And Acquisitions

Mergers and acquisitions among engineering services are slowing, but are still an important means of expanding into new geographic markets or technological areas. According to PwC, 2014-2017 were record-setting years for M&A activity in the engineering and construction industry. However, activity has slowed with deal volume down 18% in 2018 and 2% in 2019. Deal volume plummeted 29% in 2020, due to firms postponing purchases to conserve cash while business slowed during the pandemic. As the economy and construction markets strengthen, so do opportunities for organic growth, which typically results in fewer mergers and acquisitions to expand revenue.

Demand For Integrated Services Grows

Clients looking to save time and avoid problems are gravitating towards engineering services firms that offer integrated solutions, also known as design/build (D/B) services. Engineering firms that serve the public sector, utilities, and wind and solar power markets are moving towards an integrated services model. States that had been reluctant to implement D/B for political and cost reasons are now authorizing D/B options for infrastructure projects. Some design firms are expanding their scope of services by acquiring companies that specialize in construction. However, firms that formerly were design-only are discovering that D/B projects require a more extensive (and expensive) bidding process on their part.

Environmental Concern And Regulations Drive Demand

Changes in public policy and growing awareness have driven increased environmental regulation and demand for specialized engineering services. As a result, governments and private sector clients are seeking engineering services related to water quality and energy conservation. Regulatory compliance is creating strong demand for wastewater technologies. Recent droughts and floods have caused growing concern over water supplies, coastal protection, and water infrastructure. Policies to reduce energy consumption are driving upgrades to transmission systems and renewable energy development programs.

Public-Private Partnership Funding

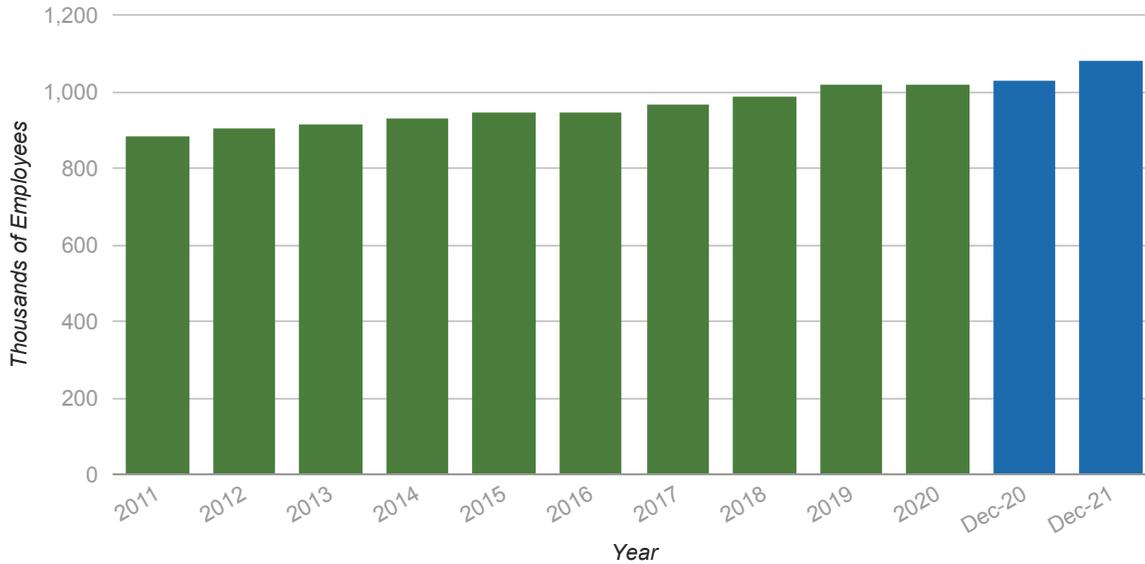
States are using public-private partnerships (P3) to manage the cost of major infrastructure projects. Federal budget debates and state deficits can stall purely publicly funded projects. The massive financing required for infrastructure projects, combined with budget restrictions, have state and local governments examining private funding. Some large engineering services firms are helping clients in the public sector by exploring alternative sources of funding, including equity financing.

Employment and Wage Trends

Employment by engineering services increases

Overall employment by engineering services changed 5.5% in December compared to a year ago, according to the latest data from the Bureau of Labor Statistics.

Engineering Services Employment

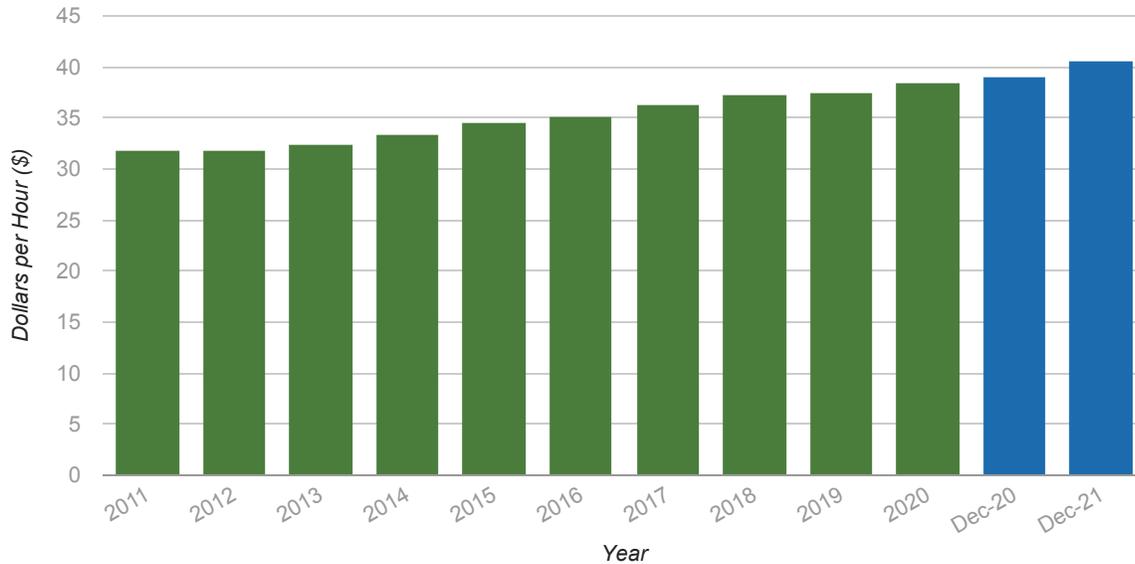


Source: Bureau of Labor Statistics

Wages at engineering services rise

Average wages for nonsupervisory employees at engineering services were \$40.50 per hour in December, a 3.7% change compared to a year ago.

Average Wages for Nonsupervisory Employees



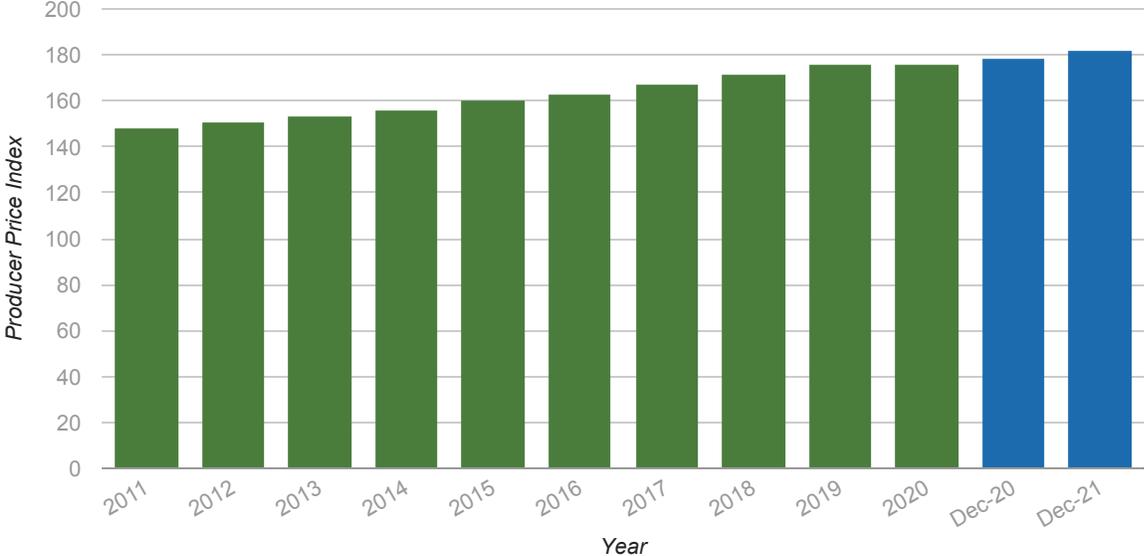
Source: Bureau of Labor Statistics

Price Trends

Producer Prices for engineering services rise

The Producer Price Index for engineering services changed 1.87% in December compared to a year ago, according to the latest data from the Bureau of Labor Statistics.

Producer Price Index for engineering services



Source: Bureau of Labor Statistics

Credit Underwriting and Risks



Business Exit Rates:	5.0	Comparable to US average for all businesses
Cyclical Sensitivity:	5.5	Moderate sensitivity
Barriers to Entry:	5.5	Low initial capital; moderate regulatory/technical barriers; moderate concentration
External Risk:	4.6	Moderate external risk
Industry Outlook:	5.2	Comparable to GDP; some cyclical risk
Financial Summary:	4.3	Average margins; high liquidity; low leverage

Key Metrics

METRIC	VALUE	COMPARISON
Performance During 2007–2009 Recession	-4.7%	0.0% GDP
Business Exit Rate 2019–2020	9.11%	9.0% All Industries
Compound Annual Growth Forecast (2020–2025)	5.99%	6.1% GDP
SBA 7(a) Default Rate by Number of Loans (2010–2019)	2.86%	3.82% All Industries
SBA 7(a) Default Rate by Gross Loan Amount (2010–2019)	1.28%	1.21% All Industries

Underwriting Considerations

- Typical companies have client concentration risk. Does the company/prospect demonstrate this risk?
- How many responsibilities do the owners have? For example, are the owners responsible for new business development and engineering work?
- Typical high fixed costs. Slower periods can chip at margins. What kind of OPM cushion is the company demonstrating? How is DSC?
- Collateral: How does AR Day trends look and compared to the industry average?

Industry Risks

Vulnerability to Economic Conditions

Demand for engineering services is generally influenced by the strength of the US economy. During tough economic times, businesses and government organizations reduce spending and cut back on major projects. In addition, a restrictive credit market can limit funding and jeopardize new projects. The manufacturing, industrial, and construction sectors account for a sizable percentage of the engineering services industry revenue and are especially vulnerable to a weak economy.

Liability

Work site hazards and the complexity and scale of engineering projects expose engineering services firms to liability. Because engineering work requires professional judgment and technical expertise, companies are liable for damages resulting from design, construction, or system failures. Project sites may have hazardous materials, equipment, processes, or conditions that put workers at risk. Firms that offer environmental engineering services face extensive regulations to control pollution and harmful waste. Non-compliance can result in significant financial penalties. Firms typically carry professional liability or errors and omissions insurance to

protect themselves, but this coverage can be expensive.

Dependence on Highly Skilled Personnel

Engineering service firms rely on a highly-educated, professional workforce. Experienced engineers typically hold advanced degrees and command high wages. Workers in specialized fields, such as biomedical or environmental engineering, are in high demand, and competition among firms can be intense. Companies must maintain an expensive workforce to retain expertise, regardless of project timing and cash flow.

Outsourcing to Foreign Countries

Companies face increasing competition from foreign engineering services firms, which are able to deliver quality work at lower costs. India, with its large population of English-speaking engineers, has become a major supplier of outsourced engineering research and development for US companies in the automotive, energy, infrastructure, consumer electronics, and medical industries. Outsourced work has become more sophisticated and focused on innovation, further infringing on the domain of US engineering firms. China and Brazil are developing engineering workforces and are projected to become major players in the outsourcing sector.

Company Risks

Dependence on Key Customers

Engineering services companies, including large firms, often rely on a few key customers for a significant percentage of sales. Some companies are extremely dependent on government contracts and face risks associated with variability in public financing. Loss of a single large client or project cancellation can severely reduce cash flow. A key customer's change in management or shift in strategic direction can jeopardize long-standing business.

Staying Current with Technology

Advances in technology have resulted in rapid evolution in the fields of engineering and science. Firms must stay current with the latest developments because they are often called upon to evaluate or implement new technology. Providing continuing training and education for staff may be costly and result in time away from active projects.

New Business Development

Small engineering services firms typically rely on their owners for both new business development and completion of existing projects. When owners get busy delivering services to clients, developing new business is often neglected. This neglect may ultimately lead to a decrease in client projects and a corresponding cash flow shortfall. Firm owners must then scramble to secure new projects to keep employees billable, but this effort may cause delays in completion and payment for existing projects.

Professional Reputation

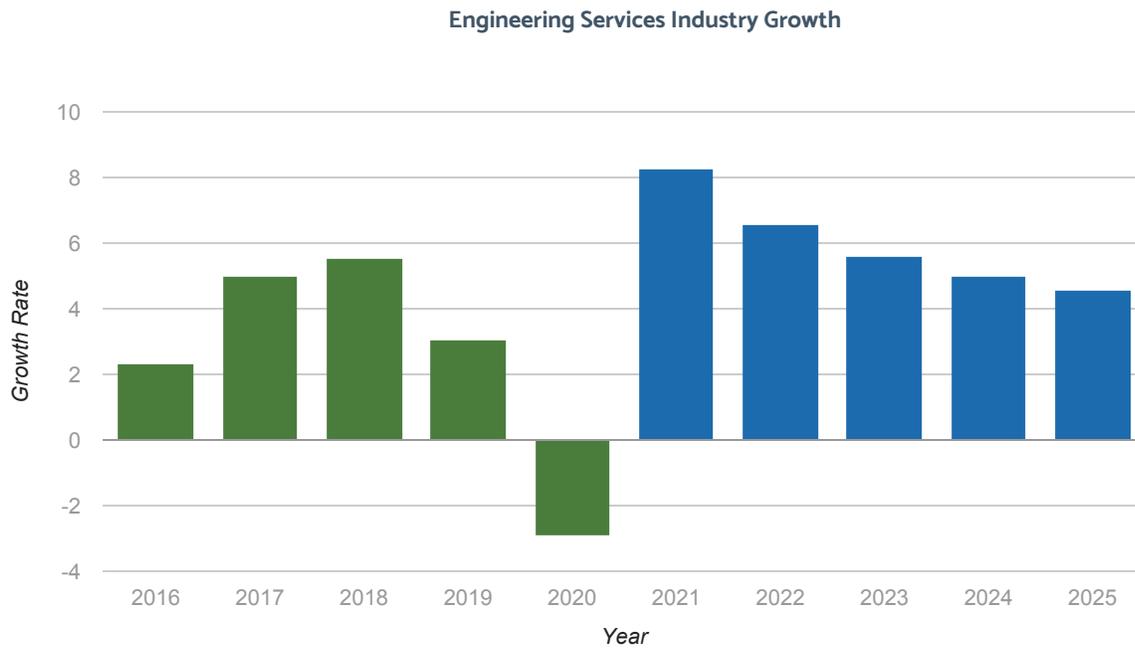
An engineering services firm's professional reputation is critical to referral work and profitability. Both the reputation of the firm and of its key principals affect its success rate in securing new contracts. Licensing boards maintain files on firms and the professionals within the firms, and record any reprimands received due to negligence or unauthorized practice. These records should be checked for all states in which the firm does business when making a credit decision.

Industry Forecast

Sales for the US engineering services firms industry are forecast to grow at a 5.99% compounded annual rate from 2020 to 2025, comparable to the growth of the overall economy.

Vertical IQ forecasts are based on the Inforum inter-industry economic model of the US economy. Inforum forecasts were prepared by the Interindustry Economic Research Fund, Inc.

Last Update: August 2021



Source: Interindustry Economic Research Fund, Inc.

Working Capital

Sell and invoice

Engineering services firms generate revenue by providing engineering and technical expertise to clients for specific projects. Most projects involve one of three types of contracts: fixed-price, time-and-materials, or cost-plus. Fixed price contracts pay a set price, with firms absorbing the risk of cost overruns or project delays. Payment for time-and-materials contracts is based on an hourly billing rate and may include a maximum contract value. Cost-plus contracts reimburse for costs and award a fee, which may be fixed, or may be based on performance. Large contracts often run for multiple years, and failure to meet critical milestones can result in financial penalties. Government contracts may require legislative funding approval and generally have additional restrictions.

Some firms are design/build firms that also manage construction projects. Design/build services may include procurement, construction, operations and maintenance, or project management. Design/build firms often work with subcontractors to execute a project and have more extensive and complicated cost estimation needs for project bids.

Collect

Engineering services firms typically carry high receivables. Collections periods average 68 to 70 days and receivables account for 40-42% of total assets. Companies receive periodic payments that are roughly based on costs incurred as a project progresses. Typically, engineering firms bill monthly for the hours spent on the project. Firms that service government accounts may experience delays in payment due to the nature of the public funding process. Some government projects begin with only partial funding and require additional appropriations to complete.

When engineering services firms act as subcontractors to another firm, payments may be delayed due to "pay when paid" clauses in their contract. Even if the engineering services firm has completed their portion of the work, they don't get paid until the contractor gets paid, which may be tied to the completion of other work. The engineering firm also is subject to any "holdbacks" in payments to the contractor.

Manage Cash

A company's backlog of projects, which includes the unbilled portion of signed contracts, is an indicator of future cash flow. Firms that offer services related to construction may experience seasonal sales or irregular cash flow from project disruptions due to extreme weather. Year-end spending for federal government projects typically increases during the fourth quarter.

Engineering services firms may experience a temporary cash shortfall at year-end due to employee bonus payments and dividend payments they may make to shareholders in order to minimize corporate income taxes.

Firms that provide design/build and procurement services may have significant working capital requirements for large projects. In these cases, firms may commit resources well in advance of receiving payments from clients and may use lines of credit to maintain liquidity.

Pay

Gross margins average 45-46% of sales. Because engineering services firms require a highly educated workforce, labor is a major expense and averages 19-21% of sales. Rent averages about 2% of sales. Annual insurance costs for engineering firms average \$1,875 for professional liability, \$475 for general liability, and \$600 for workers' compensation. Accounts payable averages about 27 to 30 days.

Report

Accurate estimates of time and costs needed to complete a project are critical to maintaining profitability. Firms typically use project

management systems to schedule resources and track progress. They may also use project-based cost accounting systems to monitor and report results. After-tax net profit averages 7-8%. Key metrics tracked monthly include what one firm refers to as the "Killer B's" - bookings, billings, and backlog. Firms also track billable hours (referred to as utilization) per employee.

Cash Management Challenges

Profitable Bids And Proposals

Companies that perform a high percentage of fixed-price projects must be able to accurately estimate project costs in order to ensure profitability. Underestimating costs can lead to unprofitable projects or lost revenue opportunities. Project-based cost accounting systems can help firms properly estimate overhead and other costs when bidding on new projects. Project specifications must also be tightly defined to avoid "scope creep" that can lead to cost overruns. Firms typically use an "engineering change request" process to deal with new requirements beyond the original scope and price these changes as an addition to the original contract.

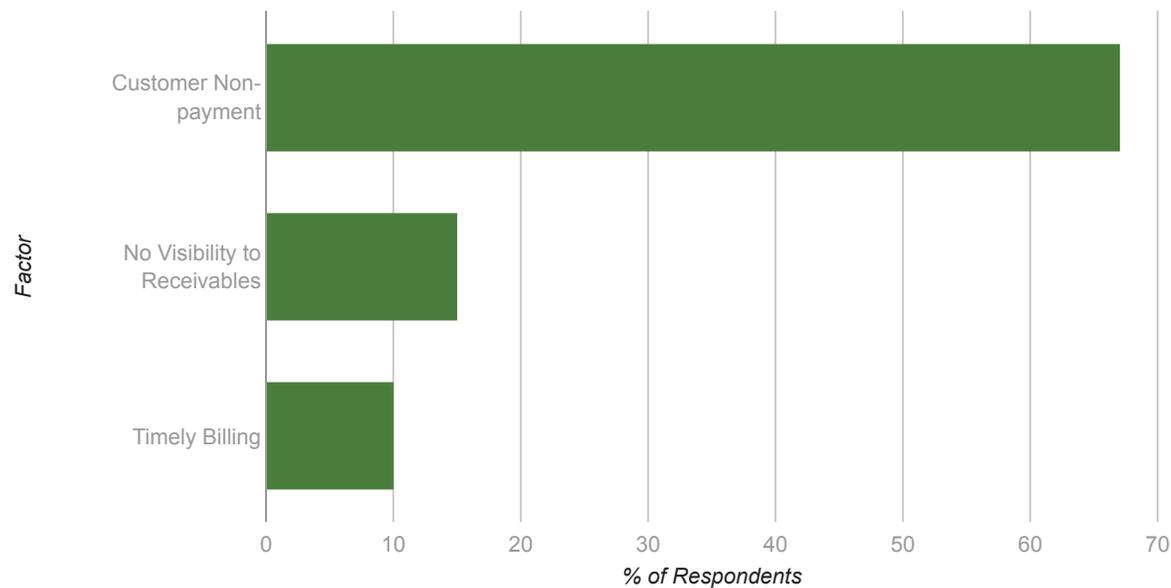
Timely Cost Tracking And Billing

Engineering services firms usually receive progress payments for large projects, based on either specific project milestones or the percentage of the total project cost incurred. However, busy project managers tend to focus on tasks to be performed for the client and may neglect their administrative duties to track and report costs. As a result, cost data may be reported late or incompletely, causing delays in billing clients.

Seasonal Demand And Cash Flow

Engineering services firms involved in construction projects and outdoor services may experience seasonality in demand due to weather conditions. Adverse weather can cause project delays and slow incoming cash. Firms may also see some seasonal spending due to government budgets and procurement cycles.

Factors Causing Cash Flow Stress: Engineering Services



Source: Barlow Research Associates

Capital Financing

Engineering services firms that focus on the front end (design, planning, and evaluation) of projects generally have minimal capital requirements. They may purchase low-cost equipment, such as surveying instruments, and vehicles for field work.

Design and build firms may invest in construction equipment or may choose to rent equipment as needed for projects. Common equipment buys include bulldozers, backhoes, dump trucks, graders, and excavators. Tasks requiring specialized equipment, such as pile drivers, are typically subcontracted out.

Many firms invest in high-end computer systems, such as computer-aided design/manufacturing (CAD/CAM) and building information modeling (BIM) systems. Firms also invest in cost estimation systems and project-based accounting systems.

Examples of Equipment Purchases



Backhoe

\$55,000 - \$110,000

A digger consisting of a digging bucket on the end of a two-part articulated arm. Typically mounted on the back of a tractor or a front loader.



Bulldozer

\$75,000

A tracked vehicle equipped with a substantial metal blade for pushing large quantities of soil, sand, rubble, etc.; usually with a claw-like ripper on the rear to loosen densely-compacted materials.



Dump Truck

\$125,000 - \$150,000

A truck used for transporting loose material for construction. Equipped with a hydraulically-operated open-box bed that is hinged at the rear.



Excavator

\$100,000 - \$150,000

Heavy construction equipment that consists of a boom, stick, bucket and cab on a rotating platform that sits atop an undercarriage with tracks or wheels.



Grader

\$100,000 - \$200,000

Construction vehicle with a long blade used to create a flat surface.

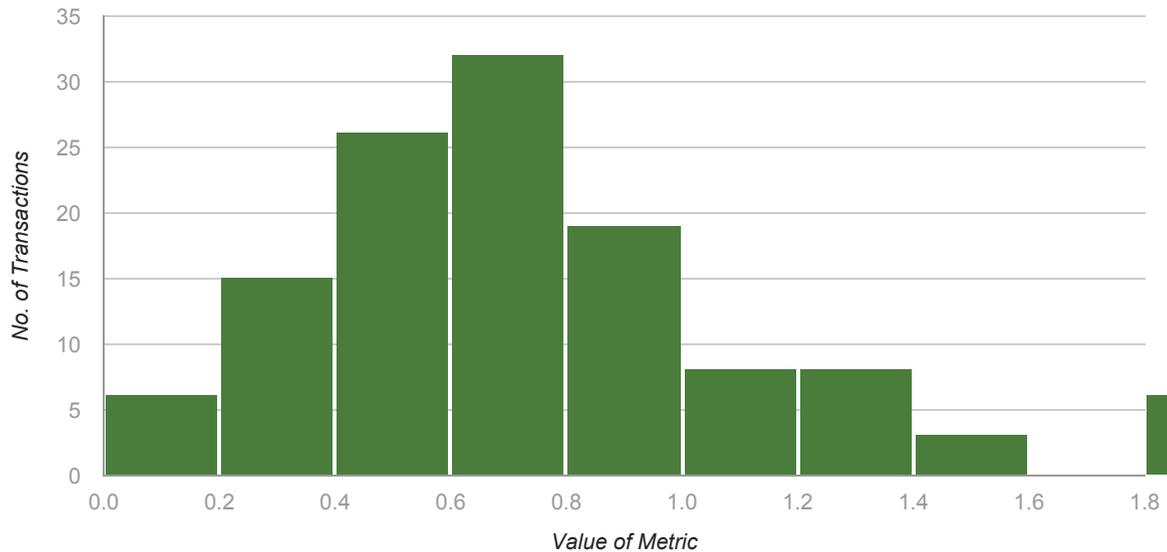
Business Valuation

This data on business valuations is supplied by DealStats, an online database with the most complete financial details on nearly 36,000 acquired companies. These companies are mostly small and medium-sized private firms.

Summary Valuation Data for Engineering Services

	MEDIAN	MEAN	# TRANSACTIONS	DATES
Price to Net Sales	0.67	1.5	123	07/29/1996–05/27/2021
Price to Gross Profits	1.25	2.92	115	07/29/1996–05/27/2021
Price to EBITDA	5.98	13.0	88	07/29/1996–05/27/2021
Price to EBIT	6.34	11.47	106	07/29/1996–05/27/2021

Click on the metric below to see a distribution of transactions for the industry:



Source: DealStats

Count: 123

Min: 0.08

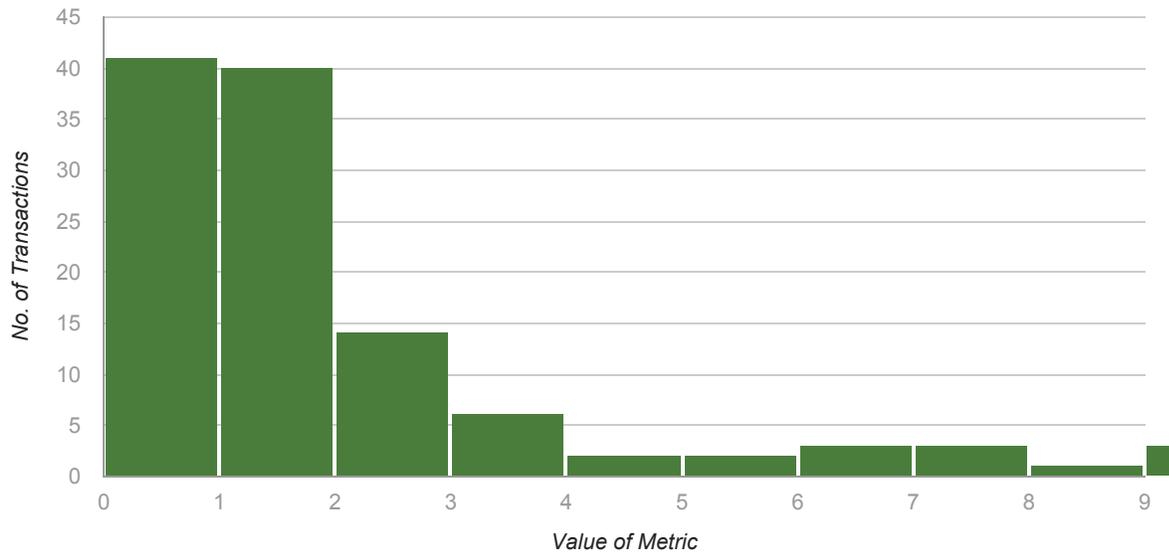
Max: 87.43

Mean: 1.5

Median: 0.67

Price to Sales = Selling Price/Net Sales

Date range: 07/29/1996 - 05/27/2021



Source: DealStats

Count: 115

Min: 0.09

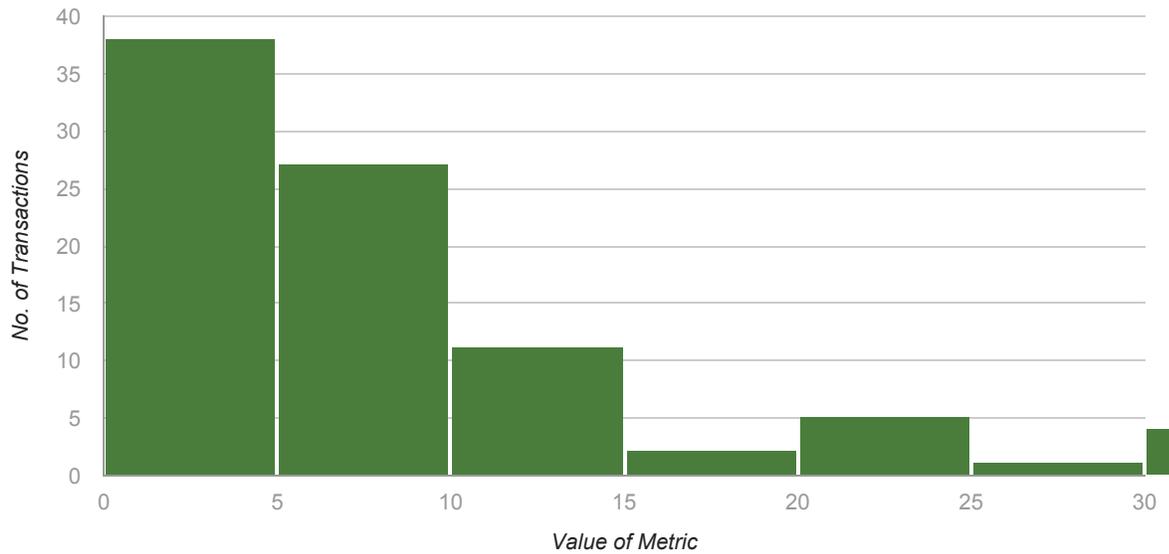
Max: 87.43

Mean: 2.92

Median: 1.25

Price to Gross Profit = Selling Price/Gross Profit

Date range: 07/29/1996 - 05/27/2021



Source: DealStats

Count: 88

Min: 0.83

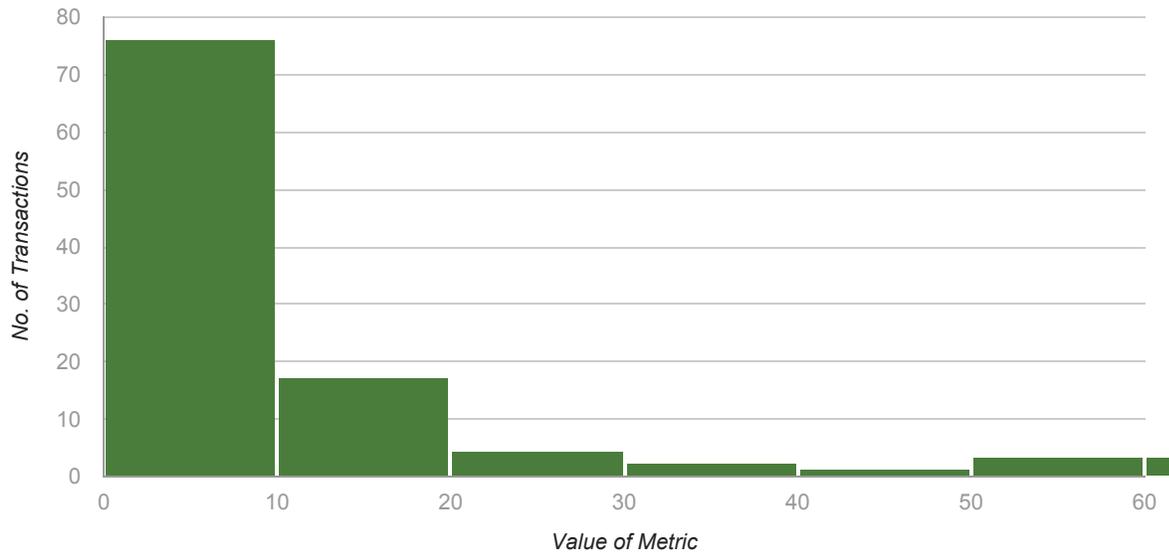
Max: 311.72

Mean: 13.0

Median: 5.98

Price to EBITDA = Selling Price/Operating Profit + Depreciation & Amortization

Date range: 07/29/1996 - 05/27/2021



Source: DealStats

Count: 106

Min: 0.83

Max: 100.0

Mean: 11.47

Median: 6.34

Price to EBIT = Selling Price/Operating Profit

Date range: 07/29/1996 - 05/27/2021

Selling Price, also known as MVIC (Market Value of Invested Capital) is the total consideration paid to the seller and includes any cash, notes and/or securities that were used as a form of payment plus any interest-bearing liabilities assumed by the buyer. The MVIC price includes the noncomplete value and the assumption of interest-bearing liabilities and excludes (1) the real estate value and (2) any earnouts (because they have not yet been earned, and they may not be earned) and (3) the employment/consulting agreement values. In an Asset Sale, the assumption is that all or substantially all operating assets are transferred in the sale. In an Asset Sale, the MVIC may or may not include all current assets, non-current assets and current liabilities (liabilities are typically not transferred in an asset sale).

Source: DealStats 2019 (Portland, OR; Business Valuation Resources LLC). Used with permission. DealStats is available at <https://www.bvresources.com/learn/dealstats>

Financial Benchmarks

The following financial benchmark data is based on annual financial statements submitted by member institutions of the Risk Management Association from Q2 of the first year listed through Q1 of the following year.

Financial Ratios (Engineering Services, Industry-wide)

MEASURE	2018-19	2019-20	2020-21
Current Ratio [?]	1.71	1.74	2.05
Quick Ratio [?]	1.37	1.39	1.72
Days Inventory [?]	7.26	7.74	8.93
Days Receivables [?]	69	70	68
Days Payables [?]	30.21	29.27	25.45
Pre-tax Return on Revenue [?]	5.23%	5.45%	6.21%
Pre-tax Return on Assets [?]	10.99%	11.50%	11.21%
Pre-tax Return on Net Worth [?]	26.68%	27.25%	26.96%
Interest Coverage [?]	14.78	15.01	14.70
Current Liabilities to Net Worth [?]	.92	.92	.78
Long Term Liabilities to Net Worth [?]	0.5	0.45	0.63
Total Liabilities to Net Worth [?]	1.43	1.37	1.41
<i>Number of Firms Analyzed</i>	<i>1,536</i>	<i>1,149</i>	<i>769</i>

Income Statement (Engineering Services, Industry-wide)

ITEM	2018-19	2019-20	2020-21
Revenue	100.0%	100.0%	100.0%
Cost of Sales	54.03%	53.84%	53.01%
Gross Margin	45.97%	46.16%	46.99%
Officers Compensation	2.33%	2.15%	2.59%
Salaries-Wages	15.9%	16.1%	16.96%
Rent	1.95%	2.02%	1.75%
Taxes Paid	1.98%	1.98%	1.81%
Advertising	0.24%	0.25%	1.03%
Benefits-Pensions	2.81%	2.76%	2.23%
<i>Number of Firms Analyzed</i>	<i>1,536</i>	<i>1,149</i>	<i>769</i>

ITEM	2018-19	2019-20	2020-21
Repairs	0.39%	0.38%	0.32%
Bad Debt	0.12%	0.13%	0.12%
Other SG&A Expenses	8.64%	8.96%	9.66%
EBITDA	11.61%	11.43%	10.52%
Amortization-Depreciation	2.13%	2.13%	2.04%
Operating Expenses	36.49%	36.86%	38.51%
Operating Income	9.48%	9.3%	8.48%
Interest Expense	1.14%	1.32%	1.33%
Other Income	0.12%	-0.01%	-1.36%
Pre-tax Net Profit	8.22%	7.99%	8.51%
Income Tax	0.3%	0.27%	-0.1%
After Tax Net Profit	7.92%	7.72%	8.61%
<i>Number of Firms Analyzed</i>	1,536	1,149	769

Balance Sheet (Engineering Services, Industry-wide)

ASSETS	2018-19	2019-20	2020-21
Cash	18.56%	18.43%	28.66%
Receivables	40.46%	40.92%	33.57%
Inventory	3.85%	4.11%	4.09%
Other Current Assets	6.88%	7.16%	5.51%
Total Current Assets	69.75%	70.62%	71.84%
Net Fixed Assets	16.74%	15.79%	14.65%
Net Intangible Assets	5.64%	4.99%	5.71%
Other Non-Current Assets	7.87%	8.61%	7.8%
<i>Total Assets</i>	100.0%	100.0%	100.0%
LIABILITIES			
Accounts Payable	10.71%	9.76%	8.07%
Loans/Notes Payable	12.62%	11.68%	10.39%
Other Current Liabilities	17.63%	17.93%	15.99%
<i>Number of Firms Analyzed</i>	1,536	1,149	769

LIABILITIES

Total Current Liabilities	40.96%	39.37%	34.45%
Total Long Term Liabilities	19.24%	19.94%	26.5%
Total Liabilities	60.2%	59.31%	60.95%
Net Worth	39.8%	40.7%	39.04%
Total Liabilities & Net Worth	100.0%	100.0%	100.0%
<i>Number of Firms Analyzed</i>	1,536	1,149	769

Vertical IQ financial benchmark data is based on data provided by the Risk Management Association (RMA) and Powerlytics, Inc. RMA's Annual Statement Studies provide comparative industry financial benchmarks based on financial statements of small and medium business clients of RMA's member institutions. Additional detail on income statement line items is provided using Powerlytics financial benchmarks, which are based on reporting submitted to the IRS. Additional detail on these data sources can be found at [RMA](#) and [Powerlytics](#).

Bank Product Usage

Top Bank Products Used by Engineering Services

The following table provides the frequency of bank product usage by Engineering Services with less than \$10 million in annual revenue. It is provided by Barlow Research Associates, Inc., the premier market research firm in the financial services industry.

BANK PRODUCT	% OF FIRMS
Business checking account services	100.0
Overdraft protection for business checking	75.0
Business savings or money market account	68.0
Automated clearing house services (ACH)	63.0
Wire transfer services	58.0
Electronic payments initiated through the Internet (Bill Payment)	57.0
Business debit card or business check card	52.0
Business credit card issued in your company's name (Visa, MasterCard, Amex, etc.)	51.0
Point-of-sale credit card processing	37.0
Company sponsored 401(k), SEP, pension or profit sharing plan	31.0
Remote deposit capture (scanning checks at your office or by mobile device for electronic deposit)	28.0
Payroll processing	27.0
Credit lines secured by receivables, inventory, property or other assets	27.0
Money market mutual funds or short-term investments	26.0
SBA loans	26.0
Account reconciliation processing (ARP)	22.0
Unsecured short-term loans or working capital line of credit (less than one year)	21.0
International (foreign exchange, import/export letters of credit)	20.0
Certificates of deposit	14.0
Term loans or equipment financing (one year +)	12.0
Commercial real estate mortgage	11.0
Commercial real estate mortgage (company occupied building)	10.0
Equipment leasing	9.0
Overnight investment or sweep accounts	9.0
Commercial real estate mortgage (investment property)	8.0
Accounts receivable collection (lockbox)	6.0

Barlow's Small Business Banking program is a multi-client research program sponsored by leading banks. Each quarter, a stratified random sample of businesses throughout the United States with sales between \$100,000 to \$10 million compiled from an independent list provider are invited to participate in a comprehensive banking survey of over 100 questions. The results measure channel adoption, bank satisfaction, brand power, account management, service quality, business product usage and the selling abilities of leading providers. The results in this chapter are calculated directly from the business product usage section and represent usage for the average small business (\$100K-\$10MM).

For more information on Barlow's banking research, go to <http://www.barlowresearch.com/>

Quarterly Insight

1st Quarter 2022

Infrastructure Projects Will Need Engineering

Engineering services will be among the beneficiaries of a federal infrastructure spending bill signed into law in late 2021. The infrastructure bill will cost \$1.2 trillion over eight years and offers more than \$550 billion in new spending. The top five sectors, by amount of money allocated, includes \$110 billion for roads, bridges and other transportation infrastructure; \$73 billion for the country's electric grid and power structures; \$66 billion for rail services; \$65 billion for broadband; \$55 billion for water infrastructure.

4th Quarter 2021

Civil Sector Needs More Safety Training

The civil engineering curriculum in colleges and universities across the United States needs to include information on workplace safety, argued expert panelists during a recent roundtable discussion. The construction industry is the setting in which civil engineers are most involved and in which there is clearly room for improvement. In 2019, for example, the construction industry experienced more than 1,000 deaths and approximately 200,000 recordable injuries, more than any other large industry in the US. Steve Murphy, a retired Boeing engineering leader who participated in the discussion, said that large companies often "place a higher degree of importance on safety, often through professional safety staff, while middle- to smaller-sized companies that make up the majority of our industry are less likely to promote and support safety to a high degree." Continued growth in the construction and civil engineering industry "will make this even worse if we don't start to do something different now."

3rd Quarter 2021

IRS Reverses Position On Tax Credit

Internal Revenue Service (IRS) audit denials for architecture and engineering research claims are increasing because the IRS now argues that "services" do not qualify for the R&D tax credit, according to the Accounting Today news site. The break in precedent has an outsized impact on small businesses that lack the resources to fight IRS denials. While the service's stated reason for disallowances has varied from case to case, a consistent theme from IRS examiners in the Small Business/Self-Employed Division argues that services provided by architecture and engineering firms cannot meet the "qualified purpose" portion of the four-part test because their research lacks an identifiable "business component."

2nd Quarter 2021

Visa Ban Allowed to Expire

President Biden has allowed a ban on H-1B and other kinds of foreign work visas to expire. H-1B visas are heavily relied upon by some engineering services, as they are a source of skilled foreign workers. The White House also revoked policies that blocked entry for family members of US citizens, winners of the diversity lottery program, and some immigrants with employment-based green cards. Former President Trump blocked the entry of H-1B visa holders in June 2020.

1st Quarter 2021

Air Force Pushes Its Product Development Technology

The US Air Force wants the private sector to use its technology-development stack as the department tries to use digital engineering for as many projects as possible. The goal is to be able to fully build, test and optimize all Air Force systems in virtual environments before they are physically made. Everything from aircraft to weapons systems would be designed within the service's computing environments. Industry experts say that the Air Force needs to get companies to change the way they think about how they work with

the military, but even the most military-friendly companies are strangers to doing it wholly on government systems. Air Force leaders say that the transition is necessary to enable the enterprise-wide reach they envision for digital engineering.

4th Quarter 2020

Trump Administration Makes H-1B Visa Program Changes

The US Department of Labor (DOL) announced in early October a significant revision to the wage scale used by employers to price the salaries of high-skilled foreign workers. Meanwhile, the Department of Homeland Security (DHS) indicated it would boost degree requirements among those applying for the H-1B visa program and amplify enforcement efforts to ensure compliance. The new rules are meant to discourage employers from paying foreign workers less than what US citizens in the same role might earn.

3rd Quarter 2020

President Trump Adds New Visa Restrictions

President Donald Trump signed an executive order in early August barring workers on H-1B visas from replacing American workers on federal contracts. The executive order requires employers to prove they are not replacing qualified American workers with people from other countries and prevents federal contractors from shifting H-1B workers to other job sites in a manner that would "displace American workers." The order follows a June 22 executive order aimed at restraining the number of "foreign nationals" working in the US by suspending new visas, including the H-1B, H-2B, J, and L programs. "U.S. firms seek more H-1B visa holders not because they are looking to displace American workers, but because doing so is essential to fill the desperate shortage of engineering talent in this country," said Jeff Urbanchuk, vice president of the American Council of Engineering Companies.

2nd Quarter 2020

Pessimism Increases

About 27% of engineering firm leaders surveyed by the American Council of Engineering Companies between May 5 and 6 said they expected a "return to normal" within six months, down from 37% a month earlier. More respondents to the ACEC survey now believe it will take 12 to 18 months for a return to normal (36% in May versus 27% in April). About 90% of respondents to the ACEC survey applied for the Small Business Administration (SBA) Paycheck Protection Program (PPP), and nearly all (94%) say they were approved. Among firms whose PPP application was approved, 84% have already actually received funds.

Industry Terms

Brooks Bill Act

Legislation that requires federal agencies to use a “qualification-based selection” process for procurement contracts. The most qualified vendor is selected without any submission of cost and then cost negotiations begin. If agreement on cost can't be reached, then negotiations begin with the next most qualified vendor.

Building Information Modeling System (BIM)

Integrated building development system that uses project data to generate designs, cost estimates, energy projections and other simulations.

CM at Risk

Project delivery method in which the construction manager is involved in the design and development phases and must complete the project within a Guaranteed Maximum Price.

Computer-aided design/computer-aided manufacture (CAD/CAM)

Computer systems that are used for engineering design work.

Cost Plus Contract

A contract for services that reimburses for costs and awards an additional fee, which may be fixed or based on performance.

Design/Bid/Build (DBB)

Project in which the design and construction phases are bid out to different firms.

Design/Build (D/B)

Project in which the design and construction phases are contracted by a single firm.

Fixed Price Contract

A contract for services that pays a set price, with firms absorbing the risk of cost overruns or project delays.

GMP

Guaranteed Maximum Price.

Indefinite Delivery/Indefinite Quantity (IDQ/IDIQ)

Term used in government contracts that allows firms to be awarded additional work without going through a competitive bid process.

Public Private Partnership (P3)

Venture funded by a government organization and one or more private sector companies.

Web Links

[Engineering News Record](#)

News, trends, and statistics, including company rankings.

[American Council of Engineering Companies](#)

News, trends, and legislative issues from trade association, and the site for Engineering Inc. magazine.

[Design-Build Institute of America](#)

News, studies, and educational information for design/build firms.

[National Academy of Engineering](#)

News, trends, and reports from educational society for engineers.

Related Profiles

Architectural Services

NAICS: 541310 SIC: 8712

Commercial Building Contractors

NAICS: 2362 SIC: 1541, 1542

Highway, Street & Bridge Construction

NAICS: 237310 SIC: 1611, 1622

Testing Laboratories

NAICS: 541380 SIC: 8734

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