



MSCA

Mechanical Service Contractors of America

Industry Intelligence Report

September 2024





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FOREWORD

by Christopher Thornberg, PhD

Modern research on human happiness has finally come around to the wisdom your mother may have preached to you as a child: The key to happiness is to reduce your expectations. Technically, this is because happiness is ultimately driven not by outcomes but by the gap between outcomes and anticipations. That said, the Mechanical Service Contractors space has had a happy couple of years—with a lot of unexpected, upside surprises. But the key to staying happy in the industry means recognizing that these unexpected trends are not going to be sustained and there will be some plateauing in 2025. Beyond that, there are some expected bumps in the road that everyone should be prepared for—so don't get too far out over your skis.

At the start of 2023 the Mechanical Services industry was struggling to meet demand both in terms of labor supply and equipment. Both wages and prices were up dramatically—if you could get what you needed at all. Worse, with aggressive Federal Reserve tightening, and with the sharp rise in interest rates, most economic forecasts (present company excepted) suggested that the U.S. economy was certain to fall into a recession over the course of the year. Instead, the economy did quite well, and the Mechanical Services industry did great. The number of new payroll jobs in the United States grew along with solid consumer spending, and there was a surge in new commercial construction. The net result was that the non-residential plumbing and HVAC industry added over 19,500 jobs from December 2022 to December 2023, the largest increase since 2014.

MANUFACTURERS' UNFULFILLED ORDERS: VENTILATION, HEATING, AIR-CONDITIONING, AND REFRIGERATION EQUIPMENT MANUFACTURING



Source: U.S. Census Bureau; Analysis by Beacon Economics

Better yet, supply chains for equipment and parts have finally caught up with industry needs. Unfilled orders for HVAC equipment in the nation were up 25% between the end of 2021 and the end of 2022; as of June 2024, unfilled orders were at the same level they were in mid-2023. Price growth has also slowed sharply, with the cost of equipment up by only 2.3% as of July, which may not sound good, but is much better than the 25% pace of cost increase experienced in mid-2022. A cooling labor market has also reduced turnover and increased the quality of recruits. In short, more demand and fewer management headaches means a happier industry.

PRODUCER PRICE INDEX BY INDUSTRY: AIR-CONDITIONING, REFRIGERATION, AND FORCED AIR HEATING EQUIPMENT MANUFACTURING



Source: U.S. Census Bureau; Analysis by Beacon Economics

As for the potholes in the road ahead, they are consequences of the Federal Reserve's decision to violently overreact to the pandemic. One of those consequences has been solved, whereas two others haven't. The solved problem is inflation, which has cooled sharply now that the Federal Reserve has stopped the expansion of the nation's money supply. The second and third problems are far more pernicious: the enormous Federal government budget deficit and today's asset price bubble. In the short run, these forces help explain why the Federal Reserve's interest rate hikes did so little to slow growth in the U.S. economy, but longer term, these trends are not sustainable in their own right.

The nation's budget deficit was clearly an issue long before the pandemic or Fed Chairman Jerome Powell were around to blame. But there is little doubt that the Federal Reserve allowed Congress to ratchet it up. At some point our nation's leaders will have to come to grips with the U.S. budget deficit and when they do, it is sure to cause turbulence. As for our enormous asset bubble, consider that equity prices are up 80% to 90% from 2019 levels whereas corporate profits are up less than 25%. Bitcoin, with a fundamental value of \$0, is back to \$60,000. Again, this is not sustainable, albeit the potential turbulence from a deflation depends on a raft of other conditions that are yet to be determined.

This report lays out the trends and changes occurring within the Mechanical Services industry— and it paints a relatively positive picture. In general, the industry is going to continue to grow and prosper. A changing climate and new environmental standards broadly imply that real estate owners will continue to invest in their structures. Still, there are few big upsides to expect over the next couple of years (anticipation should lean more towards unexpected downside risks). Stay preemptive in the meantime. The Mechanical Services industry has strong opportunities to adapt to evolving supply chains and embrace increasing automation in response to a labor-constrained world.



INDUSTRY OVERVIEW

Definition

Operators in this industry install and service heating, ventilation, and air-conditioning (HVAC) equipment, as well as plumbing, refrigeration, and other mechanical systems. Contractors may be either employer or nonemployer firms and may provide both parts and labor. The scope of services offered includes new work, maintenance, repairs, and alterations. This industry does not include electrical contractors.

Examples of Activities

- Air vent installation and air system balancing and testing
- Blower or fan installation for cooling and dry heating
- Central air-conditioning equipment installation
- Central cooling equipment and piping installation
- Central heating equipment and piping installation
- Commercial refrigeration system installation

Industry Hierarchy

Level	NAICS Code	Title
Sector	23	Construction
Subsector	238	Specialty Trade Contractors
Industry Group	2382	Building Equipment Contractors
National Industry	23822	Plumbing, Heating, and Air-Conditioning Contractors

Source: North American Industry Classification System (NAICS) ; Analysis by Beacon Economics

INDUSTRY SNAPSHOT

2024 Key Statistics Snapshots



Revenue
\$280.21B



Annual Growth
2013-2024
3.7%



Annual Growth
2024-2034
3.2%



Operating Profit
\$26.06B



Employees
1,429,615



Establishments
267,033

Opportunities

Industry revenue resilient against headwinds

Revenue Growth (% Change)

2021	6.79	2023	2.37
2022	3.19	2024	3.33

Challenges

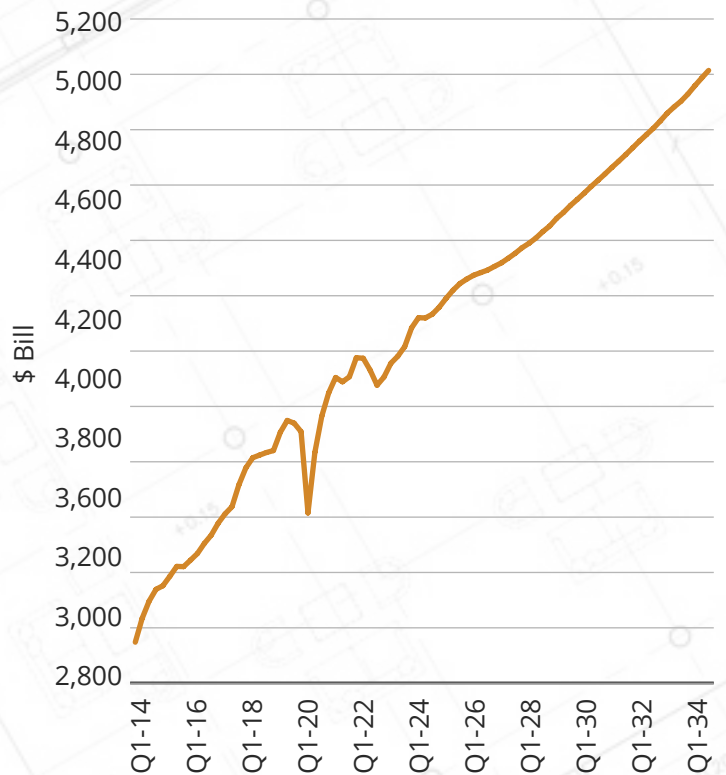
Labor shortages will constrain growth

Employment is expected to increase at an annualized rate of 1.9% over the next 10 years, noticeably slower than the 3.7% annualized growth in employment from 2013 to 2024.

Revenue vs. Employment Growth



Real Fixed Investment



Source: Bureau of Labor Statistics, U.S. Bureau of Economic Analysis. Forecast by Beacon Economics

EXECUTIVE SUMMARY

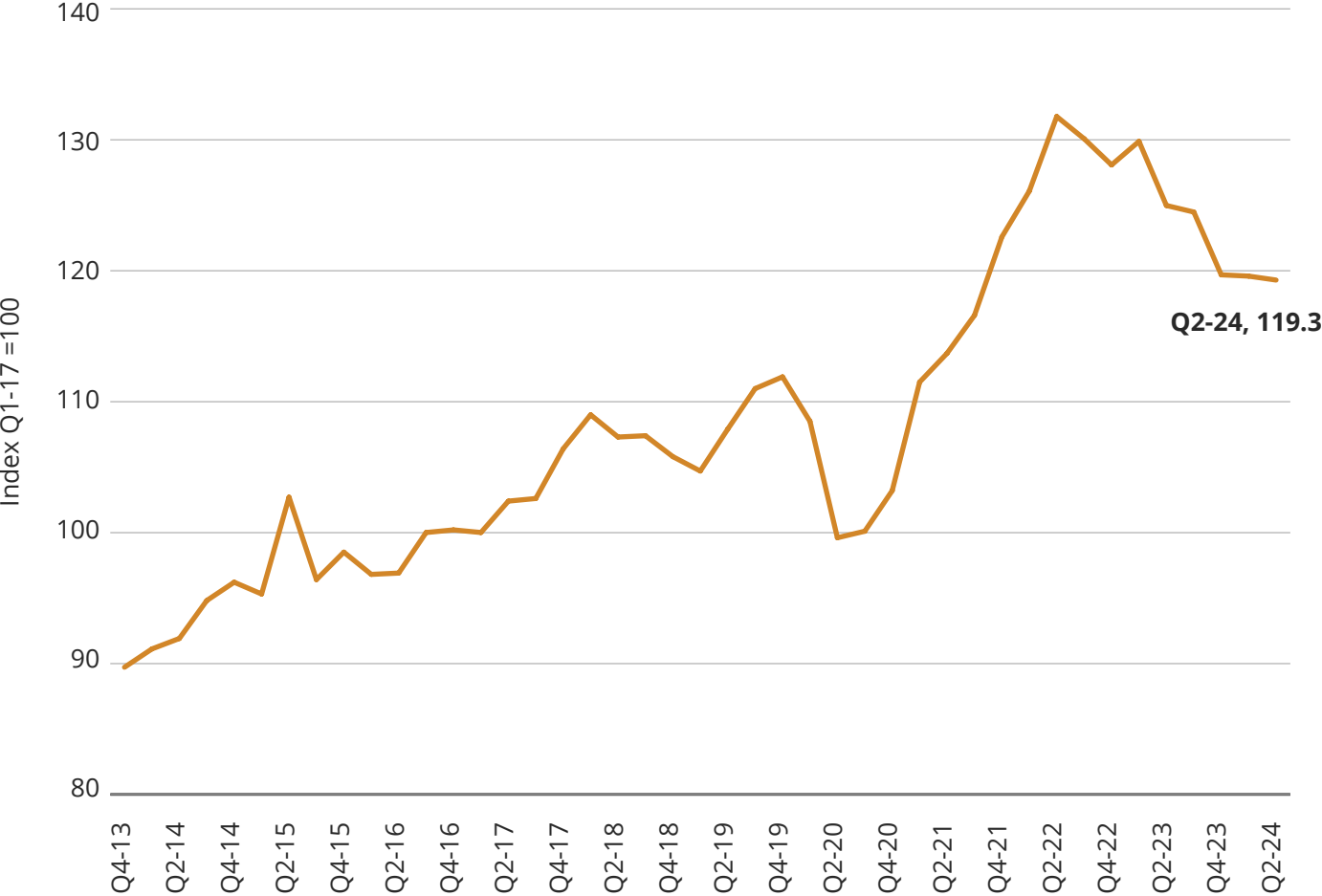
The mechanical service contracting industry plays a key role in the broader construction sector, particularly industrial, commercial, health care, and other nonresidential construction. Additionally, industry contractors install, service, and repair a variety of multifamily developments. The projects worked on by industry operators have long lifecycles from conception to completion, and thus the bulk of mechanical service contracting work tends to occur late in a project's development. This means demand for industry services often lags the business cycle and, in some cases, materializes long after conditions have normalized. For example, the Great Recession lasted from December 2007 to June 2009, but industry revenue did not surpass its pre-recession peak until 2013. In similar fashion, although higher interest rates have cooled investment, current revenue largely reflects past investment activity. With interest rates likely to drop in the coming year, demand for mechanical service contracting should rise after decreasing in the near future. Furthermore, many operators carry substantial backlogs that reflect revenue not yet recognized under contracted or committed installation and replacement project work.

While adjustments to a post-pandemic economy have caused disruptions to major construction projects, including cancellations, it appears the industry has adapted to these broader economic shifts. In 2024, Beacon Economics expects revenue to rise by 3.3%, on par with growth in the previous two years. Elevated levels of total private commercial construction spending, multifamily housing structure permitting, and nonresidential fixed investment will help support near-term revenue growth. Beacon Economics does not expect growth at that high a rate in the coming years, forecasting instead a return to a stabler long-run average.

Despite current headwinds, including elevated producer costs, the underlying fundamentals of the industry are sound. The need for dense, multifamily housing in urban areas will drive demand from the residential sector, and the industry will continue to service a diverse array of nonresidential developments. Additionally, aging buildings across the country will need renovation, retrofitting, expansion, maintenance, repair, and replacement services. Furthermore, broad-scale government subsidies for large industrial capital investments will continue to keep demand high across the construction industry, including mechanical service contracting. In general, mechanical service contractors tend to fare relatively well during periods of economic stress as maintenance spending remains constant. As inflation and interest rates cool, these fundamentals will drive growth over the next decade. From 2024 to 2034, Beacon Economics forecasts annualized revenue growth of 3.2%, with employment and establishments increasing by an average of 1.9% and 1.6% per year, respectively, over the same period. Nonetheless, labor shortages will continue to pose a challenge for mechanical service contractors and constrain revenue growth and profit margins.

LEADING INDICATORS INDEX

INDEX OF LEADING INDICATORS FOR THE MECHANICAL SERVICE CONTRACTING INDUSTRY



Source: Beacon Economics

This index is comprised of seven leading indicators for the mechanical service contracting industry. Leading indicators help provide early signs of turning points in the industry. The individual components of the index are:

Construction Backlog Index: The amount of work, measured in months, under contract but not yet performed by commercial and industrial construction contractors. Backlogs will tend to decline during periods of economic stress as contractors continue to deliver services while gaining fewer new contracts.



Real Private Nonresidential Fixed Investment: This indicator measures spending on nonresidential structures, equipment, and intellectual property products. Plumbing, HVAC, refrigeration, and other mechanical systems are integral to most nonresidential buildings. Thus, fixed nonresidential investment signals future demand for mechanical service contractors.

Multifamily Residential Permits with Five-plus Units: This indicator measures the total number of permits issued to develop and build multifamily residential buildings with five or more units. Thus, when developers acquire permits for multifamily properties, it can indicate future demand for the construction, installation, repair, and maintenance of plumbing, HVAC, refrigeration, and other contracting services provided by industry operators.

Multifamily Residential Permits with Two to Four Units: This indicator measures the total number of permits issued to develop and build multifamily residential buildings with two to four units. Thus, when developers acquire permits for multifamily properties, it can indicate future demand for the construction, installation, repair, and maintenance of plumbing, HVAC, refrigeration, and other contracting services provided by industry operators.

Core Personal Consumption Expenditures (Core PCE): A measure of prices paid for domestic goods and services, excluding food and energy. Core PCE is a better indicator of overall inflation because it excludes volatile food and energy prices. High inflation can hurt mechanical service contractors as it raises construction costs and spurs higher interest rates, which can dampen residential investment.

Total Private Commercial Construction Spending: This indicator measures current spending on buildings and structures used by retail, wholesale, and other service industries. Because this is a nominal measure, it can provide a current snapshot of the impact of interest rates, credit availability, and other factors on the upstream construction sector, which in turn determines demand for mechanical service contractors.



Percentage of Domestic Banks Tightening Standards for Commercial Real Estate Loans with Construction and Land Development Purposes: This indicator measures the extent of credit access and contraction within the building sector. Demand for mechanical contracting services is partly dependent on demand from new development and expansions/renovations to existing developments. In turn, the construction sector is heavily dependent on financing for new developments, and many mechanical service contractors rely on credit to support normal business operations.

After bottoming out in the second quarter of 2020, the Leading Indicators Index grew steadily through the end of 2021. However, the index has declined for four consecutive quarters since the third quarter of 2022. In the second quarter of 2024, it fell 0.3% from the first quarter and 8.1% year-over-year. The primary culprit for the index's recent declines is weaker permit authorizations from multifamily developers, particularly those with five-plus units. In general, residential development has declined significantly in the wake of higher interest rates. Additionally, an increasing number of banks are reporting tightening lending standards, including for construction and land development, which is rooted in the fallout from high-profile bank failures such as Silicon Valley Bank in the first quarter of 2023.

Fewer deposits mean less money to lend and tighter loan conditions on the money that is lent. While tighter credit can weaken demand for mechanical contracting services associated with new development, it also directly impacts small industry contractors who rely on local lines of credit to support normal business operations. A more promising development has been a decline in the net percentage of banks tightening standards for commercial real estate loans with construction and land development purposes. As of the second quarter of 2024, roughly 24% of banks surveyed reported increasing standards for commercial and real estate loans, down 60 percentage points from a year ago. Tighter lending can be seen in many other sectors of the economy. Total private construction spending on commercial properties peaked in September 2023 and has declined nearly 14% from a year ago.

While the pace of inflation has slowed, prices are still rising, putting pressure on industry contractors. Fortunately for the industry, nonresidential investment and spending on commercial construction is still rising, and the construction sector's backlog is holding steady at about nine months.



INDUSTRY PERFORMANCE

Key Industry Drivers

Industrial Production Index

The industrial production index is an economic indicator measuring the real output of establishments within manufacturing, mining, electric, and gas industries. Industrial establishments rely on a variety of plumbing, heating, cooling, and ventilation systems to carry out operations. Additionally, many industrial operators provide raw or intermediate goods that are used as inputs in downstream industries, such as construction. Accordingly, industrial production is positively correlated with demand for mechanical contracting services. After strong post-lockdown growth in 2021 and 2022, industrial production slowed in 2023, particularly manufacturing output, which has decreased due to higher borrowing costs, lower consumer demand, and the need to reduce inventories. Since the start of 2023, industrial production has been effectively stable. Accordingly, industrial production fell 0.1% year-over-year in the fourth quarter of 2023. Industrial production continued to drop in the first quarter of 2024 (by 0.6%) before rebounding slightly by 0.4% in the second quarter. Overall, the industrial production index grew by 3.0% following the final pre-pandemic quarter but has only grown 0.4% since the last quarter of 2022. From 2024 to 2033, industrial production is expected to increase at an annualized rate of 0.8%. Long-term and stable growth in industrial production will provide reliable demand for plumbing and HVAC contracting services over the next 10 years.

Real Nonresidential Fixed Investment

Nonresidential fixed investment is an economic indicator measuring the level of spending on structures, equipment, and intellectual property products. Investment in nonresidential structures encompasses new construction, improvements to existing structures, and purchases of used structures. It is of particular importance to mechanical service contractors because it includes equipment deemed integral to a structure, such as plumbing, heating, cooling, and refrigeration systems.

Nonresidential fixed investment rose by 4.6% year-over-year in the fourth quarter of 2023, driven primarily by strong business investment in equipment. Overall, nonresidential fixed investment grew 7.6% between the start of 2022 and the end of 2023. Through the second quarter of 2024, this investment grew by 3.7% year-over-year, reflecting a slowdown in investment relative to previous years. Growth in nonresidential fixed investment will spur demand for plumbing and HVAC equipment installation, maintenance, and repair work over the next decade.

Real Residential Fixed Investment

This comprises purchases of private residential structures, including single-family housing investment, and multifamily housing and related equipment that is owned by landlords and rented to tenants. As with nonresidential fixed investment, equipment purchased for residential structures includes plumbing, HVAC, plus other equipment and building systems that are installed, maintained, and repaired by mechanical service contractors.

Residential fixed investment increased 5.7% through the first two quarters of 2024 compared with the first two quarters of 2023. However, it is still down 12.1% from the first two quarters of 2022. Higher interest rates have limited what prospective homebuyers can afford and made it more difficult for multifamily developers to find affordable permanent debt for construction loans. Slower rent growth in some areas of the country and higher-than-expected construction and operating costs are putting pressure on project economics, causing builders to scale back in response. Over the next 10 years, residential fixed investment is expected to return to growth since underlying fundamentals remain strong, particularly with respect to multifamily – there are still significant housing shortages in urban areas across the country.

INDUSTRY COMPETITION

Market Share Concentration

Mechanical service contractors operate in a highly fragmented industry comprised of many small enterprises. In fact, the four largest firms generate less than 4% of total industry revenue, and the 50 largest firms account for slightly more than 12% of industry revenue. More than three-quarters of industry firms employ fewer than 10 people, but these firms account for only 21% of industry employment. Less than 1.5% of companies operating in the industry employ more than 100 people, but they account for a third of all industry workers. The median employee works for a company that employs 20-99 people. These figures indicate an industry with low concentration, with no single company or group of companies commanding a dominant share of revenue. Firms employing more than 100 people tend to be large-scale, vertically-integrated companies with operations spanning the entire construction supply chain, including fabrication, procurement, design-build, project management, services, and more. The number of small firms increased significantly between 2020-2021, while the number of larger firms decreased slightly. Some of this change may be attributed to shifts in firms' employment, which move them between categories. Total employment by the largest (500+) category of firms increased but decreased for mid-to-large firms (between 20 and 499). Small firms saw large increases in employment levels.

ENTERPRISE BY EMPLOYMENT SIZE

Number of Employees	Share of Firms (%), 2021	Change in Firms 2020-2021 (#)	Share of Employees (%), 2021	Change in Employment 2020-2021 (#)
1 to 4	59.3	+1,223	9.5	+1,722
5 to 9	19.1	+1,020	11.7	+6,470
10 to 19	11.6	+286	14.6	+4,237
20 to 99	8.7	-55	30.7	-2,462
100 to 499	1.1	-25	17.3	-4,390
500+	0.2	-15	16.2	+2,517

Source: U.S. Census Bureau; Analysis by Beacon Economics



ENTERPRISE BY REVENUE, 2017

Firms	Share (%)
Four Largest Firms	3.5
Eight Largest Firms	5.4
20 Largest Firms	8.8
50 Largest Firms	12.2

Source: U.S. Census Bureau; Analysis by Beacon Economics

NONEMPLOYERS (SHARE OF INDUSTRY)

Number of Establishments	Share of Industry Establishments	Revenue (\$B)	Share of Industry Revenue
166,507	58%	11.96	4.5%

Source: U.S. Census Bureau; Analysis by Beacon Economics

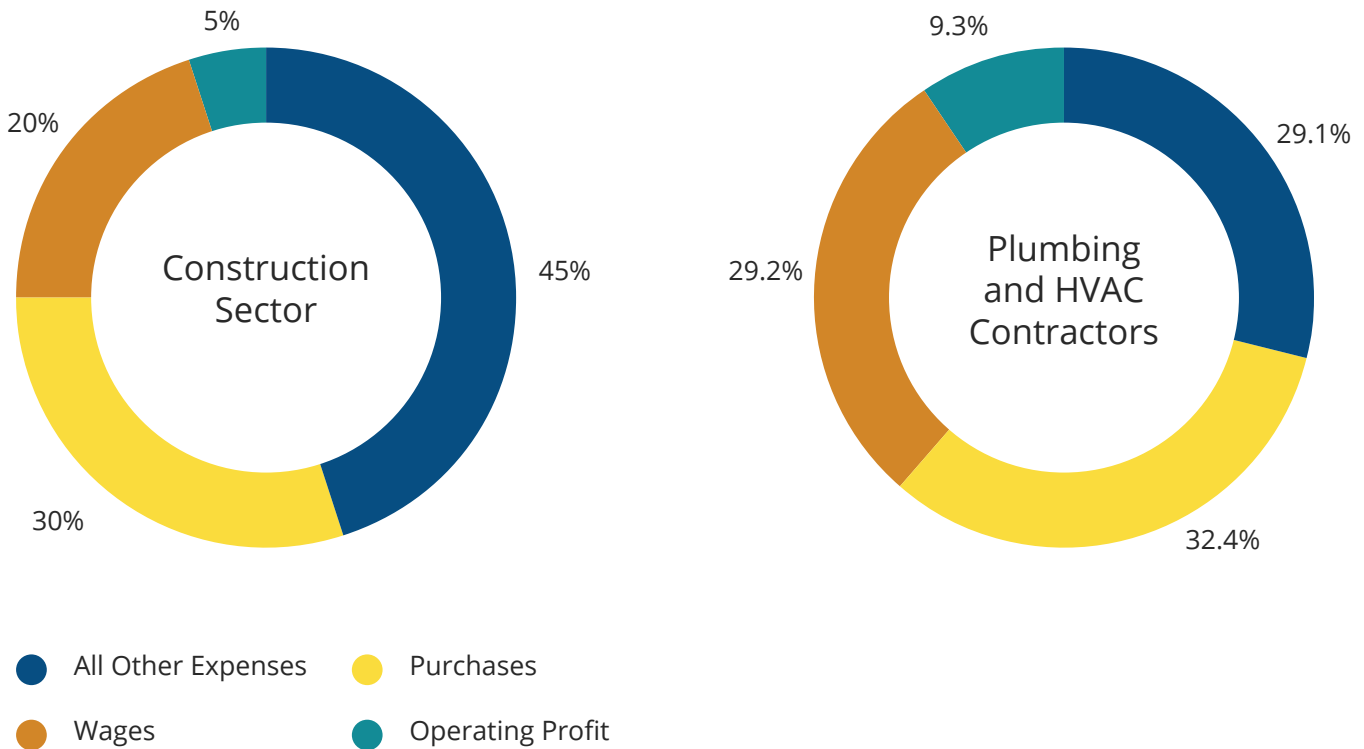
Cost Structure

Operating Profit

Industry profitability is vulnerable to a variety of macroeconomic factors, such as inflation, interest rates, and public and private investment. Moreover, industry contractors establish their prices largely based on assumptions of future macroeconomic conditions, as well as estimates of labor, material, and equipment costs. Given this, and the fact that contractors operate in a fragmented and competitive industry where project guarantees are relatively uncommon, industry profitability fluctuates with the cyclical movement of the construction sector at various stages of the building process. Additionally, profits vary depending on the size of the project and whether or not industry contractors are directly providing HVAC and other mechanical systems.

Operating income is estimated to account for 9.3% of industry revenue in 2023, higher than the sector margin of 4.9%, and reflecting the fact that mechanical contracting is a specialty/service trade. Higher interest rates, weaker demand from residential builders, higher wages, and volatile input costs all took their toll on industry profits in 2023.

SECTOR VS INDUSTRY COST STRUCTURE (% OF TOTAL REVENUE)



Source: U.S. Census Bureau; Analysis by Beacon Economics



Purchases

Non-labor, direct inputs represent the largest component of the industry's cost structure. Beacon Economics estimates that purchases in 2023 constituted 32.4% of industry revenue. Subcontracting fees, which are not classified under wages, are the largest purchase cost for mechanical contractors, accounting for an estimated 7.7% of industry revenue. Nonetheless, subcontracting expenses are much lower as a proportion of revenue than the construction sector overall, reflecting the fact that many mechanical contractors work directly for a company. Power, fuel, lubricants, refrigerants, and other chemicals account for an estimated 6.7% of revenue.

Wages

The level of workmanship that goes into a plumbing or HVAC system can significantly affect quality and durability. Therefore, mechanical service contracting is a relatively labor-intensive industry. Wages are estimated to account for 29.2% of total industry revenue in 2023. Wage costs are significantly higher in mechanical service contracting relative to the overall construction sector because a larger proportion of mechanical contractors work for a company, rather than as independent subcontractors. Among wage costs, contractor wages account for 20.6% of industry revenue, while wages associated with administrative personnel and other employees make up 8.6% of industry revenue.

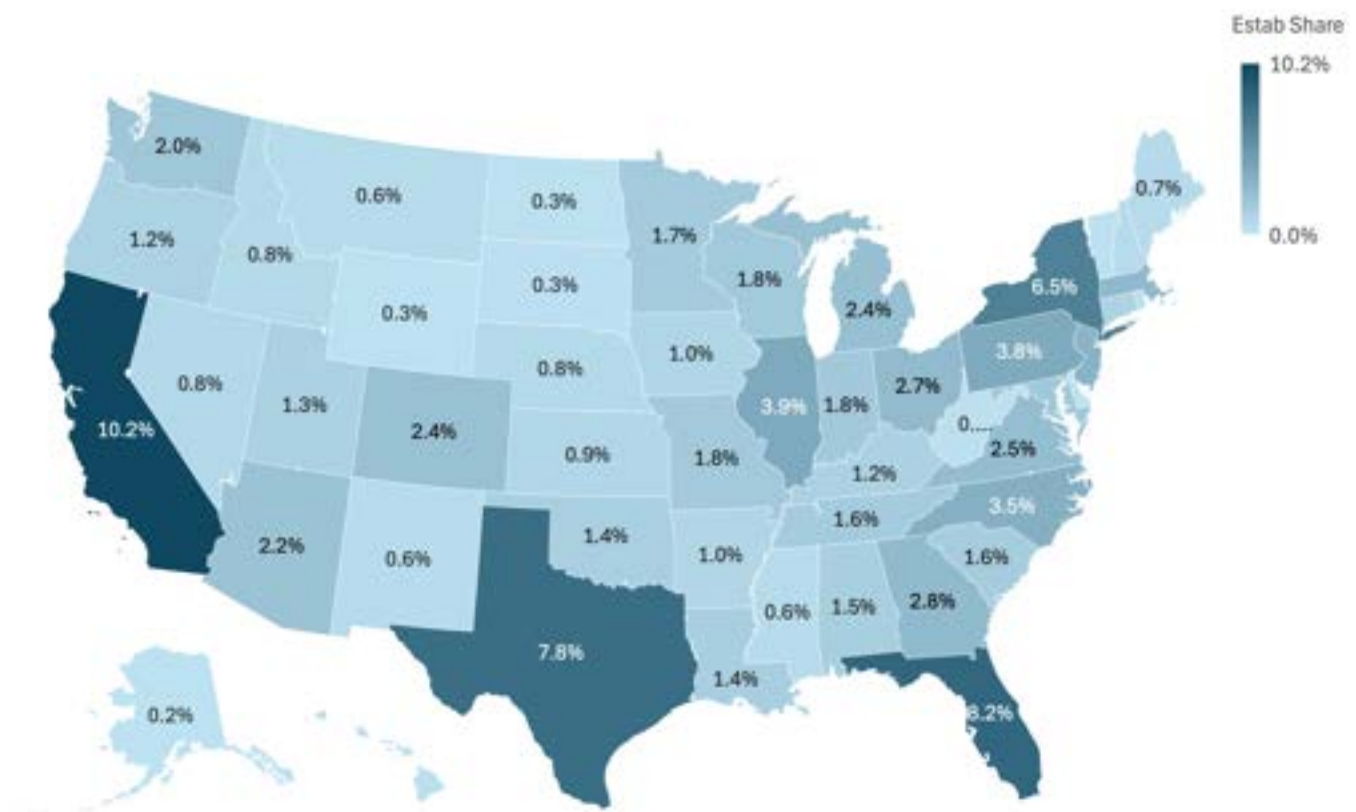
All Other Expenses

Other expenses include rent, utilities, insurance, licensing, marketing, depreciation, and other administrative costs, as well as taxes and other fees and expenses. Collectively, Beacon Economics estimates that these expenses accounted for 29.1% of total industry revenue in 2023.

Geographic Distribution

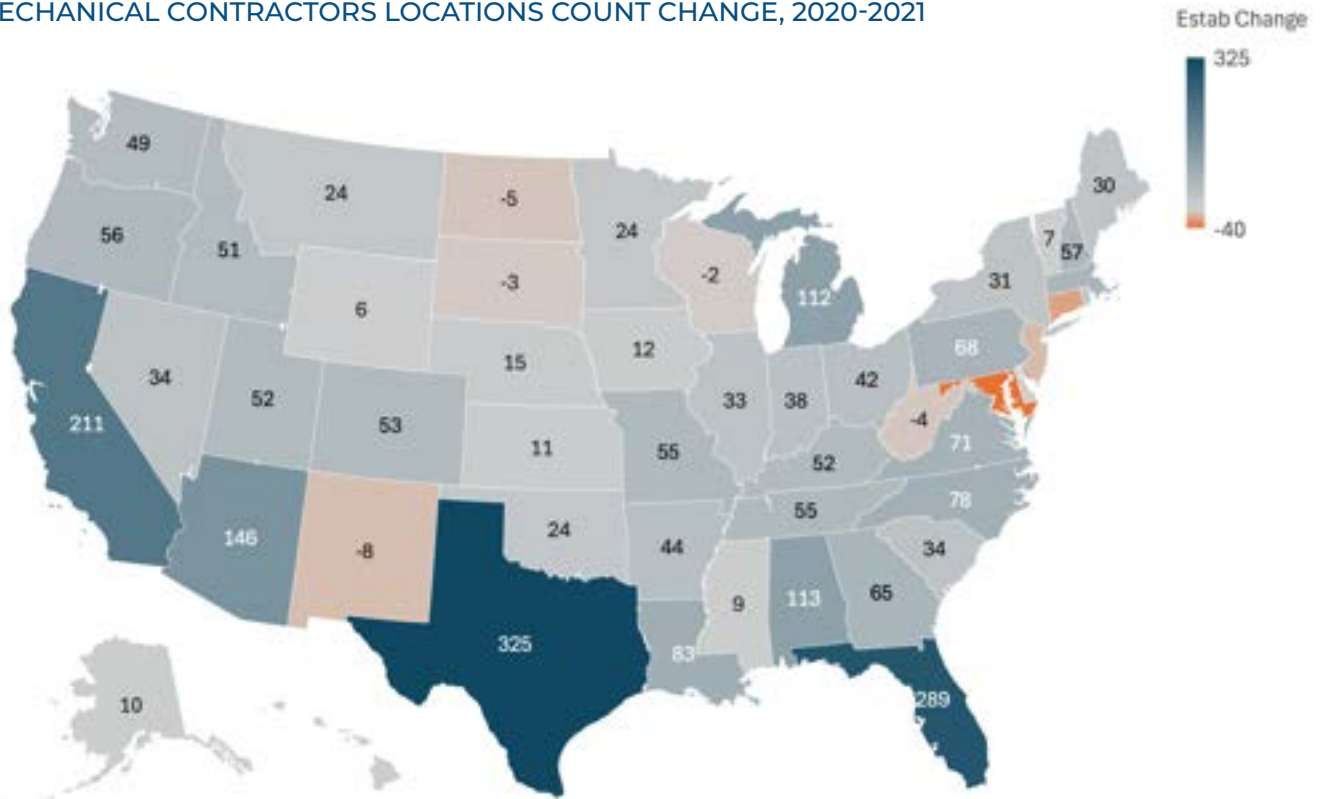
Industry activity broadly corresponds with the distribution of population and economic activity throughout the United States. Mechanical contractors are most heavily concentrated in the Midwest and Mid-Atlantic regions. Apart from California, states in the West and Plains regions have the lowest concentration of industry activity. However, this is due to the population and economic activity of each region rather than any regional preference for mechanical contractors. The presence of economic activity and residential development spurs the need for plumbing, refrigeration, piping, and HVAC systems. Nationwide, the number of mechanical contractor business locations increased by 2,487 between 2020 and 2021, a 2.4% increase. Most states saw a slight rise in the number of business locations, with the largest increases in Texas, Florida, California, and Arizona. Eight states experienced a decrease, with all but two, Maryland (-40) and Connecticut (-19), seeing a single-digit drop.

MECHANICAL CONTRACTORS (SHARE OF TOTAL BUSINESS LOCATIONS), 2021



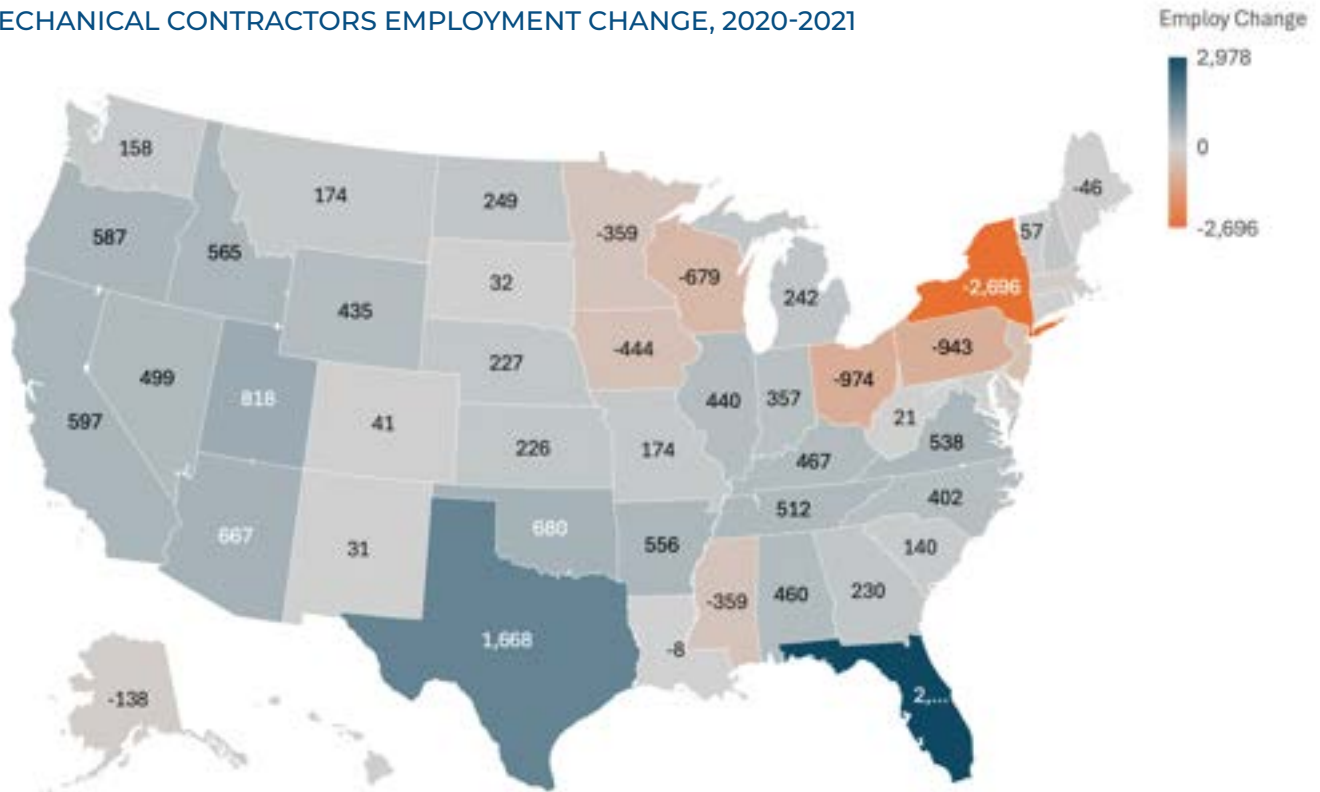
Source: U.S. Census Bureau; Analysis by Beacon Economics

MECHANICAL CONTRACTORS LOCATIONS COUNT CHANGE, 2020-2021



Source: U.S. Census Bureau; Analysis by Beacon Economics

MECHANICAL CONTRACTORS EMPLOYMENT CHANGE, 2020-2021



Source: U.S. Census Bureau; Analysis by Beacon Economics



Revenue, Employment and Establishment Forecast

U.S. MECHANICAL SERVICE CONTRACTORS

Year	Revenue (\$000s)	Employment	Establishments
2013	184,749,326	963,814	214,392
2014	195,282,654	1,020,804	217,817
2015	200,125,788	1,076,169	220,976
2016	206,059,744	1,138,930	224,629
2017	214,544,127	1,182,423	227,360
2018	224,505,432	1,234,154	233,257
2019	233,141,224	1,275,877	238,188
2020	235,225,300	1,253,075	242,216
2021	251,208,400	1,306,687	247,922
2022	259,218,300	1,360,637	255,116

Source: U.S. Census Bureau, Bureau of Labor Statistics. Forecast and estimations by Beacon Economics

U.S. MECHANICAL SERVICE CONTRACTORS (CONTINUED)

Year	Revenue (\$000s)	Employment	Establishments
2023	265,367,400	1,405,095	262,539
2024	274,207,321	1,429,615	267,033
2025	282,505,544	1,452,424	271,012
2026	291,684,830	1,493,329	275,563
2027	301,088,850	1,524,899	280,198
2028	311,057,976	1,558,269	284,714
2029	321,282,874	1,591,724	289,378
2030	331,149,224	1,619,696	293,931
2031	341,106,496	1,645,006	298,389
2032	351,881,802	1,672,220	302,915
2033	363,040,587	1,698,720	307,518
2034	374,276,407	1,724,966	312,139
Annualized Growth (2013 to 2024)	3.7%	3.7%	2.0%
Annualized Growth (2024 to 2034)	3.2%	1.9%	1.6%

Source: U.S. Census Bureau, Bureau of Labor Statistics. Forecast and estimations by Beacon Economics

Revenue, Employment and Establishment Forecast % Change

U.S. MECHANICAL SERVICE CONTRACTORS

Year	Revenue	Employment	Establishments
2014	5.7	5.91	1.6
2015	2.48	5.42	1.45
2016	2.97	5.83	1.65
2017	4.12	3.82	1.22
2018	4.64	4.37	2.59
2019	3.85	3.38	2.11
2020	0.89	-1.79	1.69
2021	6.79	4.28	2.36
2022	3.19	4.13	2.9
2023	2.37	3.27	2.91
2024	3.33	1.75	1.71
2025	3.03	1.6	1.49
2026	3.25	2.82	1.68
2027	3.22	2.11	1.68
2028	3.31	2.19	1.61
2029	3.29	2.15	1.64
2030	3.07	1.76	1.57
2031	3.01	1.56	1.52
2032	3.16	1.65	1.52
2033	3.17	1.58	1.52
2034	3.09	1.55	1.5

Source: U.S. Census Bureau, Bureau of Labor Statistics. Forecast and estimations by Beacon Economics

Leading Indicators Index Raw Data (1 of 2)

	Construction Backlog	NonRes Fixed Investment	Multifamily Permits 5+	Multifamily Permits 2-4	Core PCE	Commercial Construction Spending	CRE Loan Standards
	Months	\$ Billions	(000s Units)	(000s Units)	Index	\$ Millions	%
Q1-14	8.3	2339.4	384.7	27.0	95.1	95.1	95.1
Q2-14	8.1	2406.4	374.3	33.0	95.6	95.6	95.6
Q3-14	8.5	2458.5	383.3	30.0	95.9	95.9	95.9
Q4-14	8.8	2479.9	388.7	28.0	96.2	96.2	96.2
Q1-15	8.7	2481.1	407.0	26.3	96.3	96.3	96.3
Q2-15	8.4	2498.4	542.3	34.7	96.8	96.8	96.8
Q3-15	8.5	2513.6	407.3	32.7	97.1	97.1	97.1
Q4-15	8.5	2502.5	449.0	32.7	97.3	97.3	97.3
Q1-16	8.7	2504.6	392.3	34.7	97.7	97.7	97.7
Q2-16	8.6	2525.9	408.0	32.0	98.3	98.3	98.3
Q3-16	8.5	2564.0	457.0	36.0	98.7	98.7	98.7
Q4-16	8.7	2584.6	423.7	37.7	99.0	99.0	99.0
Q1-17	8.3	2610.4	424.0	36.7	99.5	99.5	99.5
Q2-17	9.0	2639.8	430.7	36.7	99.8	99.8	99.8
Q3-17	8.6	2665.2	423.3	38.0	100.1	100.1	100.1
Q4-17	9.5	2728.9	426.0	38.3	100.6	100.6	100.6
Q1-18	9.7	2805.3	440.7	44.3	101.2	101.2	101.2
Q2-18	8.8	2837.1	452.0	39.0	101.8	101.8	101.8
Q3-18	9.9	2854.6	409.3	37.0	102.1	102.1	102.1
Q4-18	9.0	2880.4	434.3	40.0	102.6	102.6	102.6
Q1-19	8.6	2895.6	442.7	39.7	103.0	103.0	103.0

Source: Associated Builders and Contractors, Inc.; U.S. Census Bureau; U.S. Department of Housing and Urban Development; U.S. Bureau of Economic Analysis; Board of Governors of the Federal Reserve System; Analysis by Beacon Economics

Leading Indicators Index Raw Data (2 of 2)

	Construction Backlog	NonRes Fixed Investment	Multifamily Permits 5+	Multifamily Permits 2-4	Core PCE	Commercial Construction Spending	CRE Loan Standards
	Months	\$ Billions	(000s Units)	(000s Units)	Index	\$ Millions	%
Q2-19	9.0	2951.3	454.0	44.7	103.4	77807.3	14.3
Q3-19	8.8	2982.7	505.0	42.3	103.8	82121.0	5.6
Q4-19	8.9	2970.9	519.7	43.3	104.1	85322.7	16.2
Q1-20	8.5	2912.0	446.7	45.3	104.6	88462.3	7.4
Q2-20	7.9	2676.9	424.3	39.3	104.4	86575.7	52.4
Q3-20	7.7	2791.6	443.0	50.0	105.2	82714.0	80.9
Q4-20	7.4	2862.0	454.3	54.7	105.6	84592.7	56.7
Q1-21	7.9	2923.9	543.7	54.0	106.6	87074.3	26.1
Q2-21	8.1	2992.4	529.7	53.3	108.1	90862.0	14.3
Q3-21	7.9	2982.8	570.7	48.7	109.4	94482.3	-7.0
Q4-21	8.2	3002.7	619.3	56.3	110.8	101973.0	-9.4
Q1-22	8.1	3080.0	632.7	57.0	112.4	113819.0	-10.3
Q2-22	8.9	3120.0	685.7	58.0	113.7	122674.0	4.7
Q3-22	8.8	3156.3	682.3	53.3	115.1	132082.7	48.4
Q4-22	9.0	3170.0	609.3	53.3	116.5	139001.7	57.6
Q1-23	9.0	3214.5	658.3	54.3	117.9	137602.3	69.2
Q2-23	8.9	3272.7	526.3	58.7	118.9	140679.0	73.8
Q3-23	9.2	3284.5	507.7	54.7	119.5	139864.3	71.7
Q4-23	8.5	3314.9	472.7	50.7	120.1	130593.7	64.9
Q1-24	8.2	3351.1	451.3	53.3	121.3	125480.3	39.7
Q2-24	8.4	3393.6	419.7	54.0	122.1	121145.3	24.6

Source: Associated Builders and Contractors, Inc.; U.S. Census Bureau; U.S. Department of Housing and Urban Development; U.S. Bureau of Economic Analysis; Board of Governors of the Federal Reserve System; Analysis by Beacon Economics

GLOSSARY

Annualized Growth Rate: The average annual growth rate over a given number of years. Annualized growth figures better clarify long-term trends since they remove the unevenness of annual growth rates.

Employment: The count of only filled jobs, whether full- or part-time, and temporary or permanent, by place of work. (Note: Beacon Economics has added nonemployer establishments to this count).

Establishment: A single physical location at which business is conducted or services or industrial operations are performed. An establishment is not necessarily equivalent to a company or enterprise, which may consist of one or more establishments. (Note: Beacon Economics has added nonemployer establishments to this count).

Operating Profit: A company's profits after deducting operating expenses, such as wages, depreciation, purchases, and other direct and indirect expenses. Analyzing operating income is helpful because it does not include taxes, interest, or any other one-off items that can skew net profit. As such, operating profit reveals how well expenses are managed, and allows for better comparisons between multiple companies.

NAICS: The North American Industry Classification System (NAICS) is the standard 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.

Nonemployer: A business that has no paid employees.

Purchases: All non-labor, direct expenses associated with the cost of sales.



About Beacon Economics

Founded in 2006, Beacon Economics, an LLC and certified Small Business Enterprise with the state of California, is an independent research and consulting firm dedicated to delivering accurate, insightful, and objectively based economic analysis. Employing unique proprietary models, vast databases, and sophisticated data processing, the company's specialized practice areas include sustainable growth and development, real estate market analysis, economic forecasting, industry analysis, economic policy analysis, and economic impact studies. Beacon Economics equips its clients with the data and analysis they need to understand the significance of on-the-ground realities and to make informed business and policy decisions.

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