ACEC Private Industry Brief

Economic Outlook

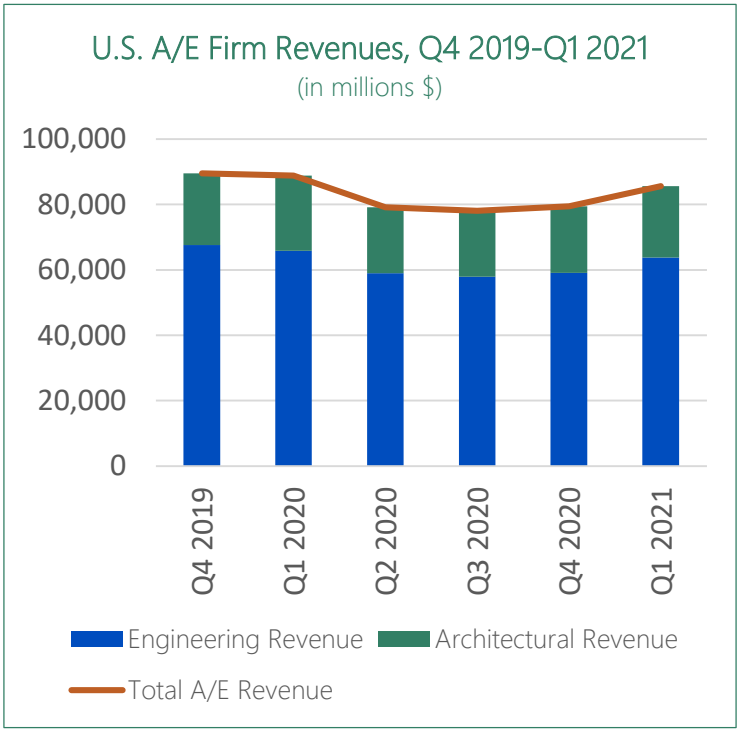
2021 Mid-Year Update; Q2 Review

Introduction

In this issue of ACEC's *Private Industry Briefs* series we provide a summary of the five macroeconomic trends for the second half (H2) of 2021, as well as forecast design and construction spending by market. Also featured is an analysis of the booming single-family residential market, as well as a close look at how alternative and high-frequency economic data is proving essential in tracking the economic recovery from the pandemic-caused recession.

Sources for the 2021 Mid-Year Updated Outlook & Q2 Review include:

U.S. Census Bureau, National Association for Business Economics, FMI, ACEC Research Institute, Rockport Analytics, National Association of Home Builders/Wells Fargo, U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, U.S. Department of Housing and Urban Development, American Institute of Architects, Associated Builders and Contractors, and *Engineering News-Record*



Source: U.S. Census Bureau

5 Macroeconomic Trends for H2 2021

1. Economy and Engineering Revenues are Beginning to Rebound:

Total A/E revenues are beginning to rise, buoyed by optimism from the largely successful vaccine rollout, ongoing federal fiscal stimulus, and increased consumer spending. The U.S. Census Bureau's 'preliminary estimate' of total A/E revenues for Q1 2021 is $85.6 B, a 7.8% increase from Q4 2020 *(see table, below left)*. This is the first substantial increase since the COVID-19 recession began in Q2 2020. A/E revenues were flat in Q3 and Q4 of last year, having declined about 11% during the recession. This may signal the beginning of growth back up to peak 2019 levels.

Optimism is shared by the 49 professional forecasters who make up the National Association for Business Economics (NABE) regular outlook panel. "NABE panelists have grown more optimistic about prospects for economic growth in 2021" said NABE President Manuel Balmaseda, CBE, chief economist at CEMEX,

Continued on next page

Top 3 markets forecasted to be *hot*, and those that will *not*, through 2025.

Hot:

1. **Communication +50 %**
2. **Water Supply +46 %**
3. **Sewage & Waste Disposal +39 %** (tie)
3. **Transportation +39 %** (tie)

Not:

1. **Public Safety -14 %**
2. **Lodging -6 %**
3. **Amusement & Recreation 0 %**

Source: FMI

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5 Macroeconomic Trends for H2 2021

continued

a building materials company. "The median forecast calls for an 8.5% annualized growth rate in the second quarter of 2021… The panel has become significantly more bullish about 2021 as a whole." The panelists predicted a median real GDP growth estimate for 2021 at 6.7% in the May 2021 outlook survey, up from the 4.8% GDP growth predicted in the March 2021 survey.

2. Proposed Infrastructure Bill Impact:

One major reason for such optimism is the expected positive impact of the infrastructure bill being debated by President Biden's Administration and Congress. The ACEC Research Institute, working with economic forecasters from Rockport Analytics, took a close look at how different versions of an infrastructure bill would impact A/E output.

Each of the three plans (President Biden's The American Jobs Plan, the Republican-led Roadmap Plan, and the Bipartisan Plan) would of course have a positive impact on our industry. The table below details how what many think is the most likely version of the three—the Bipartisan Plan—will increase A/E output. The Bipartisan Plan proposal would lead to a 6% average increase in A/E output over the period from 2021-2026, totaling $125.8 billion. This includes a 2% increase in 2021, a 7% annual increase from 2022 to 2025 and another 5% increase in 2026 *(see table below)*.

This sort of stimulus may prove very necessary and timely, as recent data from the U.S. Census Bureau shows that public spending on design and construction ("construction put-in-place") has been on a four-month decline when comparing year-over-year data *(see table on right)*. This shift was predicted in our 2020 economic briefs, where we forecast that private markets would decline first, followed by public markets that would have to grapple with the effects of declining revenues from sales, income, gas and other taxes due to the recession.

Forecasted Rise in A/E Output if Bipartisan Infrastructure Plan is Enacted

Year	$ Increase (billions)	% Increase
2021	$5.9	2%
2022	$24.0	7%
2023	$24.7	7%
2024	$25.4	7%
2025	$25.9	7%
2026	$19.9	5%
Total	$125.8	6%

Source: ACEC Research Institute, Rockport Analytics

3. Residential Market Booms:

One surprise during the recession was the boom in the single-family residential market, which began in mid-2020. In 2020 total residential design and construction spending (which includes single- and multi-family as well as improvements) was up almost 12% compared to 2019. The growth continued to surge in 2021—particularly for single-family housing. The most recent monthly data, from May, shows a whopping 46.1% growth in single-family design and construction spending compared to May 2020. ***See more on the single-family residential market on the following page***.

4. Inflation & Construction Material Price Concerns:

Inflation concerns—which haven't been an issue since the 1970s—are being debated, but many economists think this will be a short-term problem. NABE panelists in the May Outlook Survey expect inflation to ease in the second half of 2021, with no resurgence in 2022. However the price pressure is real; core inflation rates rose to 3.8% in May from 3.0% in April and 1.6% in March. When considering just materials and components of construction, the Producer Price Index showed a 17% rise in May 2021 compared to May 2020. While lumber prices have reportedly begun to stabilize, steel prices continue to rise.

5. The Human Factor: Labor

For engineering firms, labor costs and availability remain a high concern. A tight labor market is expected to continue, and the impact the recession had on women and others with significant home and child-care responsibilities, as well as those who strongly prefer remote work arrangements, will have an impact on the labor market.

Public Spending Trends Down

Month	2021	2020	YOY % Change
May	$342.0 B	$374.4 B	-8.7%
April	$343.5 B	$351.3 B	-2.2%
March	$343.9 B	$360.4 B	-4.6%
February	$351.3 B	$352.4 B	-0.3%
January	$361.5 B	$351.3 B	+2.9%
Month	**2020**	**2019**	**YOY % Change**
December	$352.8 B	$342.6 B	+3.0%
November	$347.6 B	$337.1 B	+3.1%
October	$344.8 B	$332.6 B	+3.7%
September	$339.1 B	$343.7 B	-1.3%
August	$351.4 B	$333.2 B	+5.5%
July	$351.1 B	$334.2 B	+5.1%
June	$353.3 B	$332.6 B	+6.2%

Source: U.S. Census Bureau

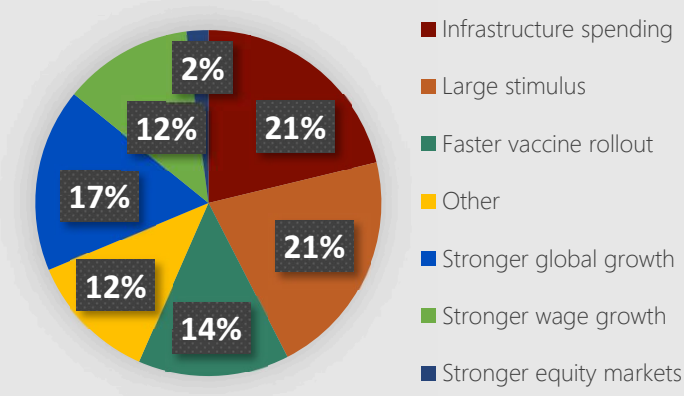
Single-Family Residential Surges

The single-family housing market emerged as a star during the economic recovery from the COVID-19 pandemic. This is good news for ACEC member firms that engage in land development services, as well as firms that design infrastructure which supports neighborhoods—such as water/wastewater, K-12 schools and roadways. As detailed in our 5 Trends, the most recent monthly data from May 2021 shows a whopping 46.1% growth in single-family design and construction spending compared to May 2020. What is the reason for this? There are several factors, including low-interest rates and the desire for different housing for households engaged in remote-working and learning. However, a big part of the surge is about demographics. In 2019 Millennials became the largest living adult generation; this year the oldest Millennials turn 40 and this generation is marrying, having kids, and buying homes in large numbers.

Defining Generations & Current Age:

Generation Z: Born 1997-2012 (age 9-24)
Millennials: Born 1981 to 1996 (age 25-40)
Generation X: Born 1965 to 1980 (age 41-56)
Baby Boomers: Born 1946 to 1964 (age 57-75)
Silent Generation: Born 1928 to 1945 (age 76-93)

Macroeconomic Forecasters were asked: *What is the greatest upside risk to the economy?*

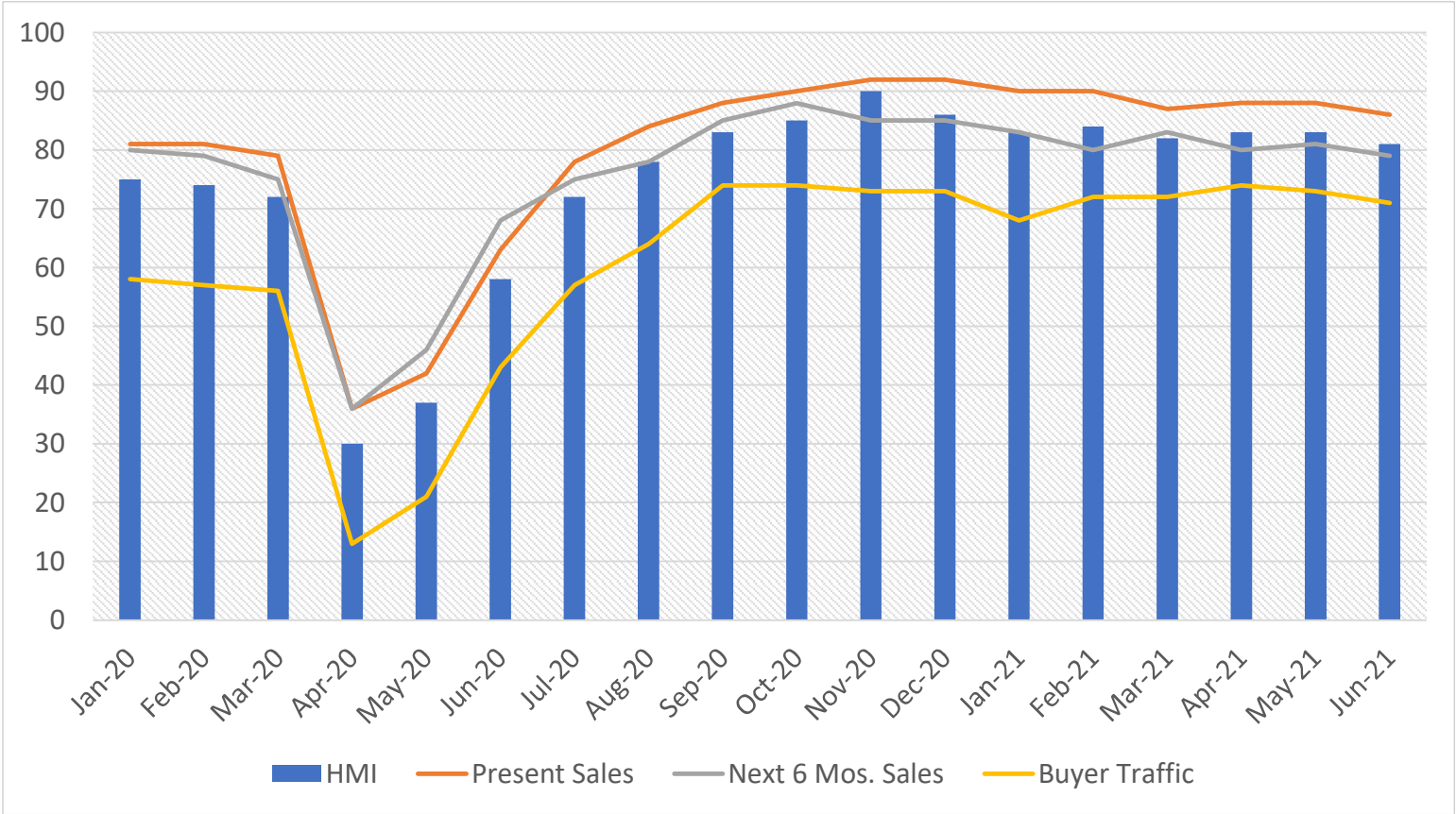


Source: National Association for Business Economics, May 2021

Infrastructure Spending Leads in Economic Upside Ranking

Infrastructure spending has the attention of macro-economic forecasters. Usually getting under 5% of the vote for 'greatest upside', economists recently ranked infrastructure spending as #1 (tied with a large stimulus package) when considering what will most positively move the U.S. economy.

Housing Market Index for Single-Family Residential



Source: National Association of Home Builders/Wells Fargo

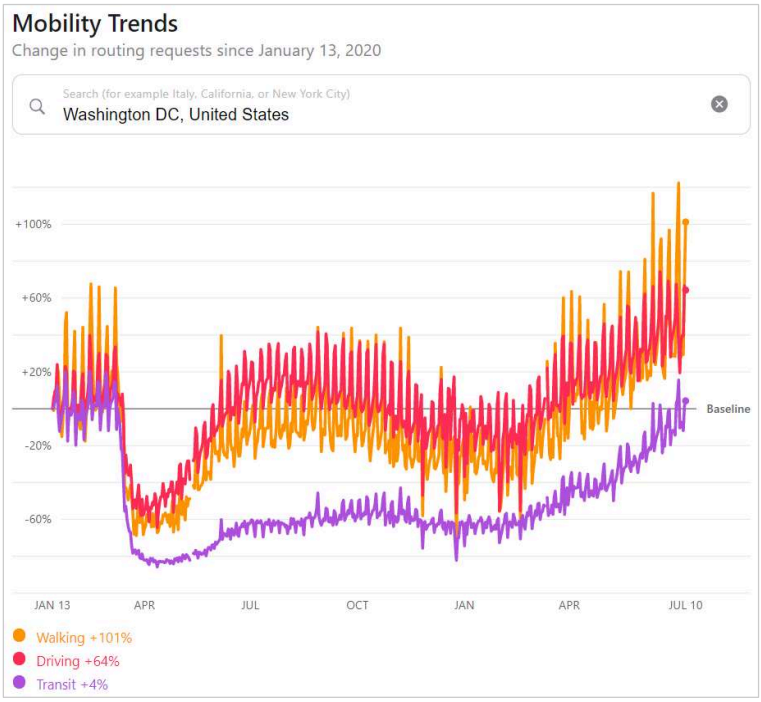
Alternative and High-Frequency Data Proves Critical in Tracking Economic Recovery

It's no longer necessary to wait until a monthly jobs report to see how the economy is recovering. Emerging from this unusual recession there are new metrics—resulting from the common use of high-frequency and "alternative" data.

The pandemic-caused recession, which included the worst ever U.S. GDP drop, was unique in many ways—but particularly regarding how human (i.e., consumer) behavior was impacted. Economic shifts in the economy were caused by the course of the virus and people's reaction to it, often due to government restrictions on business activities.

Now that we are recovering, economists and other analysts are tracking data to see if behavioral changes we made during the pandemic will be long lasting. Human behavior and patterns inform consumer spending, tax collection, infrastructure needs, and capital spending. The course of the virus predicated the path of the economy. The question now is, post-pandemic will there be lasting behavioral and consumer changes that will result in changes to the built environment?

To answer this and other questions, analysts are looking increasingly at data resulting from high-frequency and alternative metrics. Data is generally considered highly frequent if it comes out more than monthly; and sources can come from both the public or private sectors. In previous recessions there was not the proliferation of smart phones, sensors, and connectivity. This time around economists have additional indices to inform analysis, investment, and even public policy. Sources of such data include: internet searches, remote sensors, phone location and app usage—including map directions, social media posts, satellites, and credit card transactions. Specific examples of high-frequent data include:



Source: https://covid19.apple.com/mobility

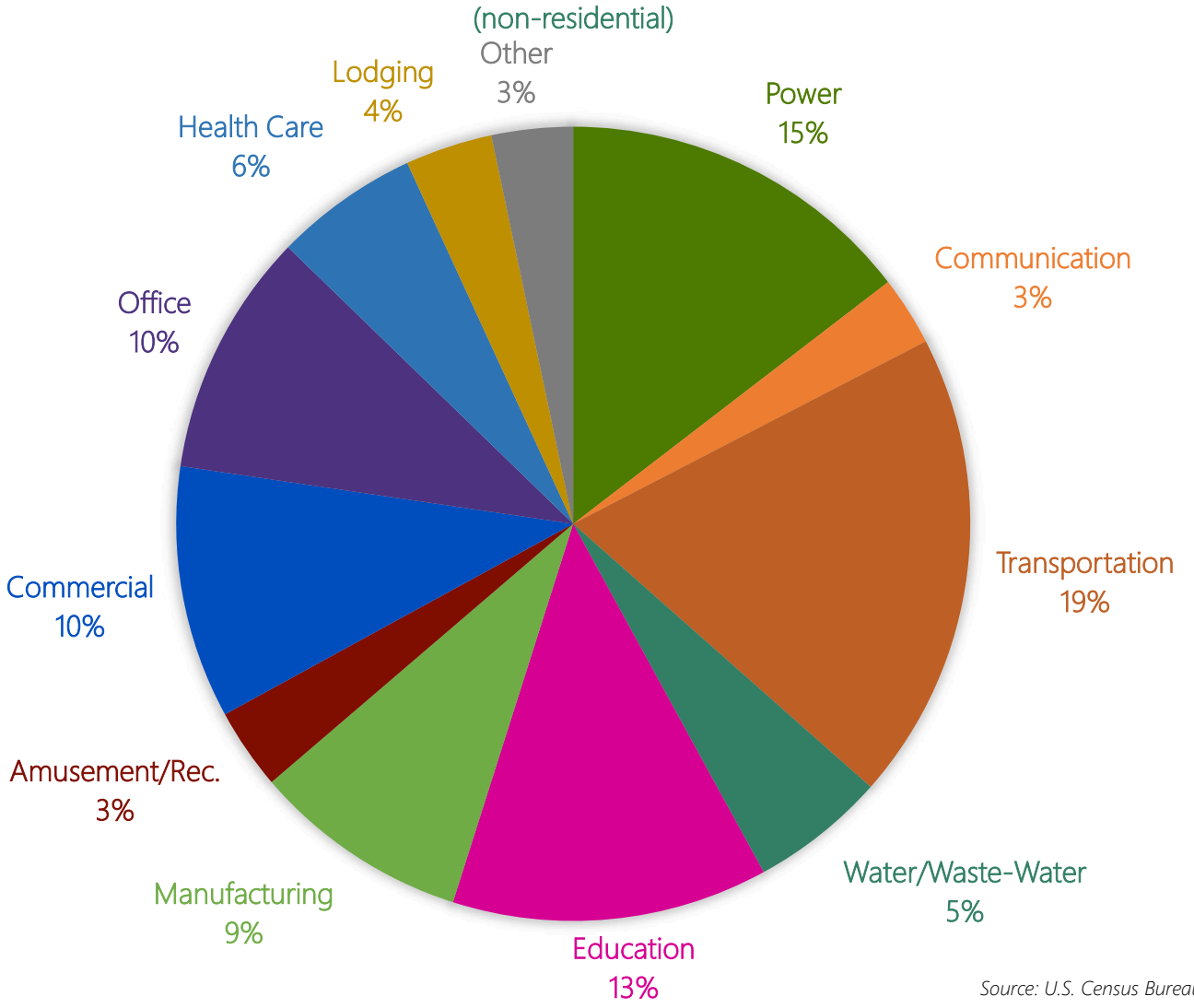
- Mobility indices by Google and Apple that show how people are getting around in cities, regions and even countries (example above showing Washington, DC activity since Jan. 2020);
- The Open Table index, which monitors restaurant activity, including what types and locations are rebounding;
- Credit card transaction data, which can be segmented by what money is being spent on (such as food vs. gas, etc.);
- Box office receipts;
- Hotel occupancy data; and
- TSA checkpoint data.

Macro & Industry Indicators	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021
Gross Domestic Product (GDP)	-5.0 %	-31.4 %	+33.4 %	+4.3 %	+6.4 %	Avail. 7/29
Core Inflation Rate (2% is target, average of mos.)	2.3 %	1.3 %	1.7 %	1.6 %	1.4 %	3.4 %**
Unemployment Rate (average of mos.)	3.8 %	13.0 %	8.8 %	6.8 %	6.2 %	5.9 %
New Housing Units Authorized (seasonally adjusted annual rate, average of mos. in quarter)	1.44 M	1.18 M	1.55 M	1.68 M	1.79 M	1.71 M**
A/E/C Industry Indicators						
Architecture Billings Index (AIA)* (average of mos.)	46.3	33.8	42.3	45.5	51.3	58.2**
ABC Construction Backlog Indicator (average of mos.)	8.4 mos.	7.9 mos.	7.8 mos.	7.4 mos.	7.8 mos.	8.0 mos.**
FMI Construction Industry Round Table (CIRT) Sentiment Index*	63.6	21.6	52.1	54.2	55.5	79.1
FMI Design Index*	62.7	39.8	49.3	64.8	64.8	83.9

**Index scores over 50 indicate expansion; below 50 indicate contraction.*
***Average of April & May data; June not yet available.*

Sources: U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, U.S. Census Bureau, U.S. Department of Housing and Urban Development, AIA, ABC & FMI

2020 U.S. Construction Put in Place by Project Type



Source: U.S. Census Bureau

2020: Residential Kept Design, Construction Spending Up Overall

Despite wide-spread shutdowns and a rapid slowing of consumer spending (which makes up nearly 70% of the U.S. economy) design and construction spending ended "up" in 2020 compared to 2019, due to the strong residential market, and moderate growth in the currently declining public market.

Construction Put in Place	2020	2019	Change
Total Construction	$1.430 T	$1.365 T	+4.8%
Residential (private)	$607.9 B	$544.4 B	+11.7%
Private (non-residential)	$471.5 B	$486.3 B	-3.0%
Public	$351.0 B	$334.4 B	+5.0%

Source: U.S. Census Bureau

Outlook by Market Sector

The following three pages detail the expected growth and decline of market sectors through 2025, updated with Q3 information from FMI.

Nearly every market is expected to see growth over the coming years, with exceptions for the lodging, amusement and recreation, and public safety markets. This is not a surprise giving the tight revenues experienced by the hospitality and entertainment industries over the last 16 months, as well as the decline in state and local tax revenues.

The market sector expected to grow the most is communication, followed by services in the water/waste-water market. The pandemic shined a light on the country's need for widespread high-speed broadband—which seems to garner bipartisan support and is included in the various infrastructure package proposals. And certainly with robust single-family housing development and the need to replace aging pipes, the water/waste-water market will continue to be strong.

Commercial & Residential Real Estate

Key drivers/trends:

- Office growth expected to be slow due to unknowns regarding remote-work future
- Strong growth of the industrial/distribution market due to e-commerce, often in increasingly urban locations
- 'Retail apocalypse' with stores closing and adaptive reuse of properties expected to continue
- Expected growth of close-in suburbs and second-tier cities as Millennials approach middle-age and expand families

Market Scope: The commercial and residential real estate market is 'vertical' in nature and contains a variety of commercial and residential real estate property types, including: office; industrial; retail; multi-family residential, including student and senior housing; and hospitality. Clients are typically developers and owner-users, such as large retailers. A wide range of engineering services is provided to these clients, including mechanical/electrical/plumbing (MEP), structural, site-civil, surveying, geotechnical, and environmental services. Land development-focused firms also include residential home builders as major clients.

Key: a=actual, e=estimate, f=forecast

Construction Put in Place *Forecast by market segment*	2020a	2021e	2022f	2023f	2024f	2025f	Change 2020-2025f
Commercial	$83.71 B	$83 B	$81 B	$81 B	$85 B	$90 B	+8 %
Office	$81.16 B	$77 B	$76 B	$80 B	$84 B	$89 B	+10 %
Lodging	$28.59 B	$24 B	$22 B	$23 B	$25 B	$27 B	-6 %
Amusement & Recreation	$26.90 B	$23 B	$22 B	$24 B	$25 B	$27 B	0 %
Residential (single, multi & improvements)	$617.89 B	$660 B	$654 B	$681 B	$723 B	$769 B	+24 %

Sources: U.S. Census Bureau & FMI

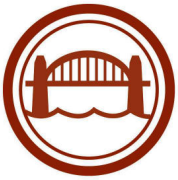
Intermodal & Logistics

Key drivers/trends:

- Infrastructure challenges related to urban locations and 'last mile' delivery needs
- E-commerce continues to be a strong driver
- Continued growth of Southeastern U.S. ports
- Inland port growth
- Manufacturing sector a focus of Biden Administration

Market Scope: The intermodal and logistics market is a dynamic one, with various types of facilities, including marine terminals, rail terminals, depots and container yards, inland ports, freight airport terminals, and industrial real estate located adjacent to intermodal facilities. Many facilities are like mini-cities, and a wide range of engineering design services are required for their creation and expansion, including land development, transportation, mechanical/electrical/plumbing, structural, environmental, geotechnical, and water-related design. With more than 2,200 facilities, the North American intermodal market is the largest in the world.

Key: a=actual, e=estimate, f=forecast



Construction Put in Place *Forecast by market segment*	2020a	2021e	2022f	2023f	2024f	2025f	Change 2020-2025f
Manufacturing	$71.84 B	$72 B	$78 B	$86 B	$91 B	$96 B	+34 %
Transportation (buildings)	$56.64 B	$55 B	$56 B	$61 B	$69 B	$79 B	+39 %

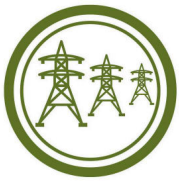
Sources: U.S. Census Bureau & FMI

Energy & Utilities

Key drivers/trends:

- Increasing demand for energy due to economic activity resuming
- Focus on cybersecurity and resiliency after recent occurrences to pipelines, grids
- Focus on energy efficiency goals driven by both public and private 2030/2050 commitments for carbon neutrality
- Solar and wind continue strong growth in renewable energy sector

Market Scope: The energy and utilities market was estimated to be $34 billion, resulting in 32% of A/E revenues for *Engineering News-Record (ENR)* Top 500 firms in 2020. Many firms count oil and gas companies, as well as utilities, as major clients. Typically working under a Master Services Agreement or similar type of contract, a wide range of engineering services are provided to these clients, including: civil, mechanical/electrical, structural, environmental, geotechnical, and water-related design. Energy and utility clients are also significant buyers of surveying and mapping services because their projects often span large geographies.



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Construction Put in Place *Forecast by market segment*	2020a	2021e	2022f	2023f	2024f	2025f	Change 2020-2025f
Power	$119.24 B	$115 B	$117 B	$126 B	$138 B	$150 B	+26 %
Communication	$22.69 B	$23 B	$25 B	$27 B	$30 B	$34 B	+50 %
Sewage & Waste Disposal	$26.70 B	$27 B	$28 B	$30 B	$33 B	$37 B	+39 %
Water Supply	$18.53 B	$19 B	$21 B	$23 B	$25 B	$27 B	+46 %

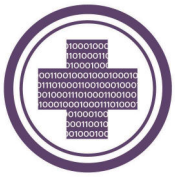
Sources: U.S. Census Bureau & FMI

Health Care & Science+Technology

Key drivers/trends:

- Worldwide focus on vaccines shines a light on the biopharma and science and technology (S+T) industries
- Demographic drivers with growth of 65+ population due to aging baby boomers
- Increase of telehealth
- 'Retailing' of health care through CVS Minute Clinics and adaptive reuse of mall space to healthcare space
- Expected demand for design changes due to pandemic

Market Scope: The health care (HC) and science+technology (S+T) markets are generally considered 'recession-proof' due to an aging population, and this is a theory that will be put to the test in the coming years. Health care construction grew to about $48B in 2020 with major clients for firms being more than 600 health care systems and 6,000 hospitals are in the United States. Besides hospitals, facility types include outpatient centers and medical office buildings (MOBs) as well as laboratory, production and administrative space for pharmaceutical, biotechnology, and university clients. A wide range of engineering services are provided to these clients, often with specialized needs related to mechanical/electrical, HVAC and commissioning.



Key: a=actual, e=estimate, f=forecast

Construction Put in Place *Forecast by market segment*	2020a	2021e	2022f	2023f	2024f	2025f	Change 2020-2025f
Health Care	$47.62 B	$48 B	$51 B	$55 B	$60 B	$63 B	+35 %

Sources: U.S. Census Bureau & FMI

Public Sector & P3s

Key drivers/trends:

- Tax revenues from gas, sales, and income taxes dropped sharply due to shutdowns and recession
- Continued need for federal stimulus directed to state and local governments
- Highway and street funding expected to grow substantially in the coming years, due to the anticipated 2021 infrastructure package
- The education market (which is the second largest overall by annual construction-put-in-place value) may transform due to financial constraints and focus on virtual classrooms

Market Scope: The public market is significant for engineering firms and involves federal, state, and municipal clients. Projects are of course both 'horizontal' and 'vertical' in nature, ranging from K-12 schools and public universities; roadways, bridges, airports and transit facilities; civic and public safety buildings, which includes police and fire stations; as well as water/wastewater facilities and dams. Environmental, stormwater management and flood mitigation services are also increasingly in-demand by public clients.

Key: a=actual, e=estimate, f=forecast

Construction Put in Place *Forecast by market segment*	2020a	2021e	2022f	2023f	2024f	2025f	Change 2020-2025f
Educational	$104.53 B	$102 B	$106 B	$113 B	$121 B	$129 B	+23 %
Highway & Street	$99.70 B	$101 B	$106 B	$114 B	$124 B	$132 B	+32 %
Public Safety	$15.09 B	$13 B	$11 B	$12 B	$12 B	$13 B	-14 %
Conservation & Development	$8.38 B	$8 B	$9 B	$9 B	$10 B	$11 B	+31 %

Sources: U.S. Census Bureau & FMI

Private Industry Briefs

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ACEC's Private Industry Briefs include updates of four key markets, as well as economic reviews.