



**DBIA |  
Design-Build Utilization Study  
Key Findings Report**

**January 2025**

[fmiconsulting.com](http://fmiconsulting.com)

**DBIA**



## Project Background

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DBIA partnered with FMI to conduct an update of the 2023 Design-Build Utilization Study. To that end, the research provided in this report aims to provide updated information related to the following areas:

1. Design-Build Market Sizing and Growth
2. Design-Build Trends and Drivers

Key elements in the development of this information include:

- Market Modeling and Sizing – FMI developed custom market models based on the research, proprietary internal databases and industry experience.
- Secondary Research – Experienced researchers conducted an extensive search of existing industry data and information, including both print and electronic media.
- Primary Market Research – Forty-four interviews were scheduled and conducted with industry stakeholders. Additionally, 316 industry stakeholders participated in a related electronic survey.
- Analysis and Documentation – Market observations have been developed based on analysis of the research findings together with the experience of FMI’s research team.

Our research and interpretations are only valid under the assumptions stated in this report and based on the investigations described therein, especially regarding the accuracy of the information based on publicly available sources and interviews/surveys conducted with qualified industry stakeholders and subject matter experts.

## Forecast Methodology

To derive a market forecast, FMI uses a triangulation method that utilizes multiple sources to develop and validate the market's size and direction. The following diagram represents the methodology used for each element of the custom forecasts in this report.

### Quantitative Market Model:

Utilizing multiple historical and forward sources, FMI generated a baseline forecast for construction and put in place spending at the market level for each of the segments examined in this study. This has its foundation in construction spending reported by the Census Bureau and is then forecasted using economic indicators, such as population growth, GDP, unemployment rate, etc. Total construction spending was then segmented to the target markets utilizing survey data, interview commentary, and project-level capital costs.

### Anticipated Activity Examination:

Utilizing FMI's proprietary project database, CMD Reed, Dodge, Industrial Info Resources and other secondary sources, FMI adjusts the baseline, quantitative market model to reflect planned projects over the term of the forecast and the potential for activity. This is vetted on likelihood of occurrence based upon the known and anticipated market conditions.

### Market-Driven Interviews:

FMI conducted interviews with key market participants to understand spending activity, establish a current base of spending and to understand future spending drivers. This was utilized to both build the initial model and to project future activity.



Market Size  
and Forecast

# DBIA | Executive Summary

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## Executive Summary

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**Design-build is rapidly becoming a preferred project delivery method across various project types and sizes and is expected to reach over \$500 billion by 2028.**

- It is especially favored by public, private owners, and owners' advisors, using Competitive Best-Value.

**Collaboration and early contractor involvement are essential for success in design-build projects.**

- Moving away from adversarial attitudes fosters trust and efficiency, while early contractor involvement mitigates risks and accelerates timelines.
- Progressive design-build offers flexibility, but challenges around risk allocation and pricing transparency remain.

**Building Information Modeling (BIM) is widely adopted in design-build.**

- Many survey respondents (53%) reported using BIM on 60% or more of their design/build projects for trade coordination, clash detection, and constructability reviews, which are seen as critical for improving project outcomes.

**Owners' Advisors are perceived by some interviewees to provide mixed value, with communication being their most valued contribution, though their impact on project costs is minimal. Projects that engage owners' advisors vary widely in scope.**

- While their role in streamlining communication is frequently cited, their ability to significantly reduce costs is seen as limited by survey respondents.
- Interviewees highlighted the importance of owners' advisors in shepherding owners through unfamiliar processes, such as design-build or progressive design-build.

**Challenges remain in integrating underutilized business enterprises (UBE) in design-build projects due to market saturation and capacity issues, especially in smaller projects.**

- Despite public and private owners seeking to increase UBE involvement, many struggle with scaling their operations or competing effectively in larger projects without additional support.



**Consulting**

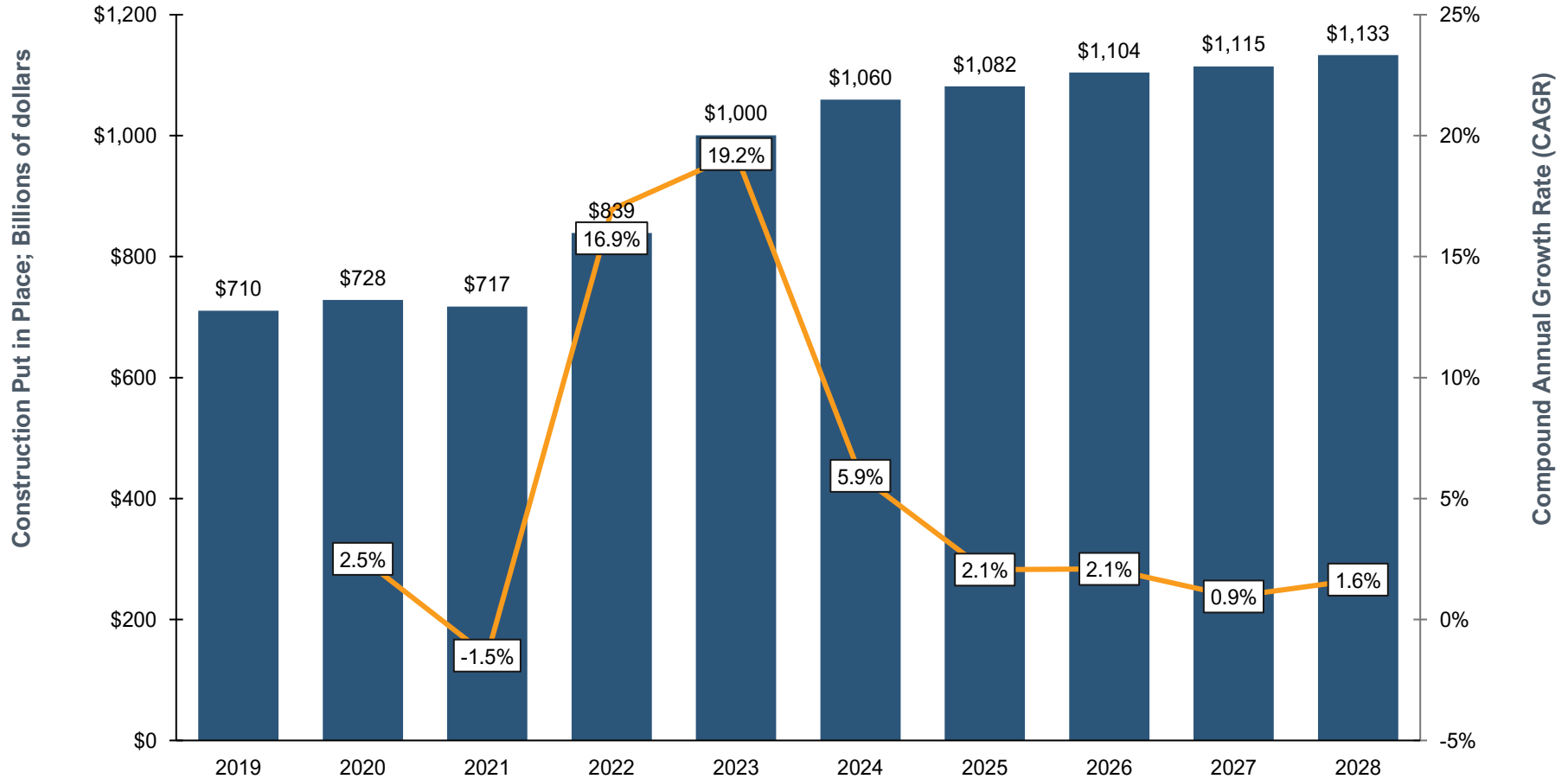
**Market Sizing**

# DBIA | Market Sizing

U.S. construction spending in the assessed segments is anticipated to reach over \$1.1 trillion in 2028.

## US Construction Put in Place (Assessed Segments);

Source(s): FMI



# DBIA | Market Sizing

Overall, design-build is anticipated to account for \$2.6 trillion of construction spending in the assessed segments over the 2024 – 2028 forecast period.

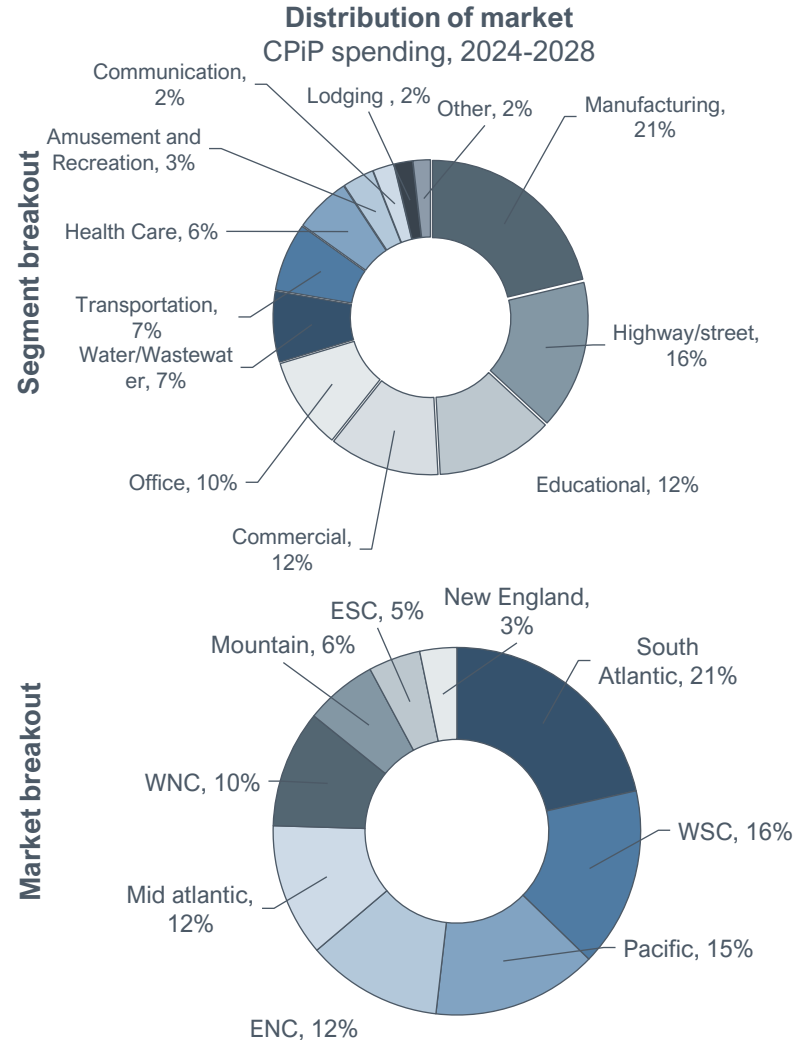
## Market Size Comparison

Source(s): FMI

**Total U.S. Construction Put in Place (CPIP)**  
\$11.1 Trillion

**U.S. Construction Put in Place (CPIP)**  
Assessed Segments - \$5.5 Trillion

**Design-Build CPIP**  
Assessed Segments - \$2.6 Trillion



\*Other includes: Public safety and religious

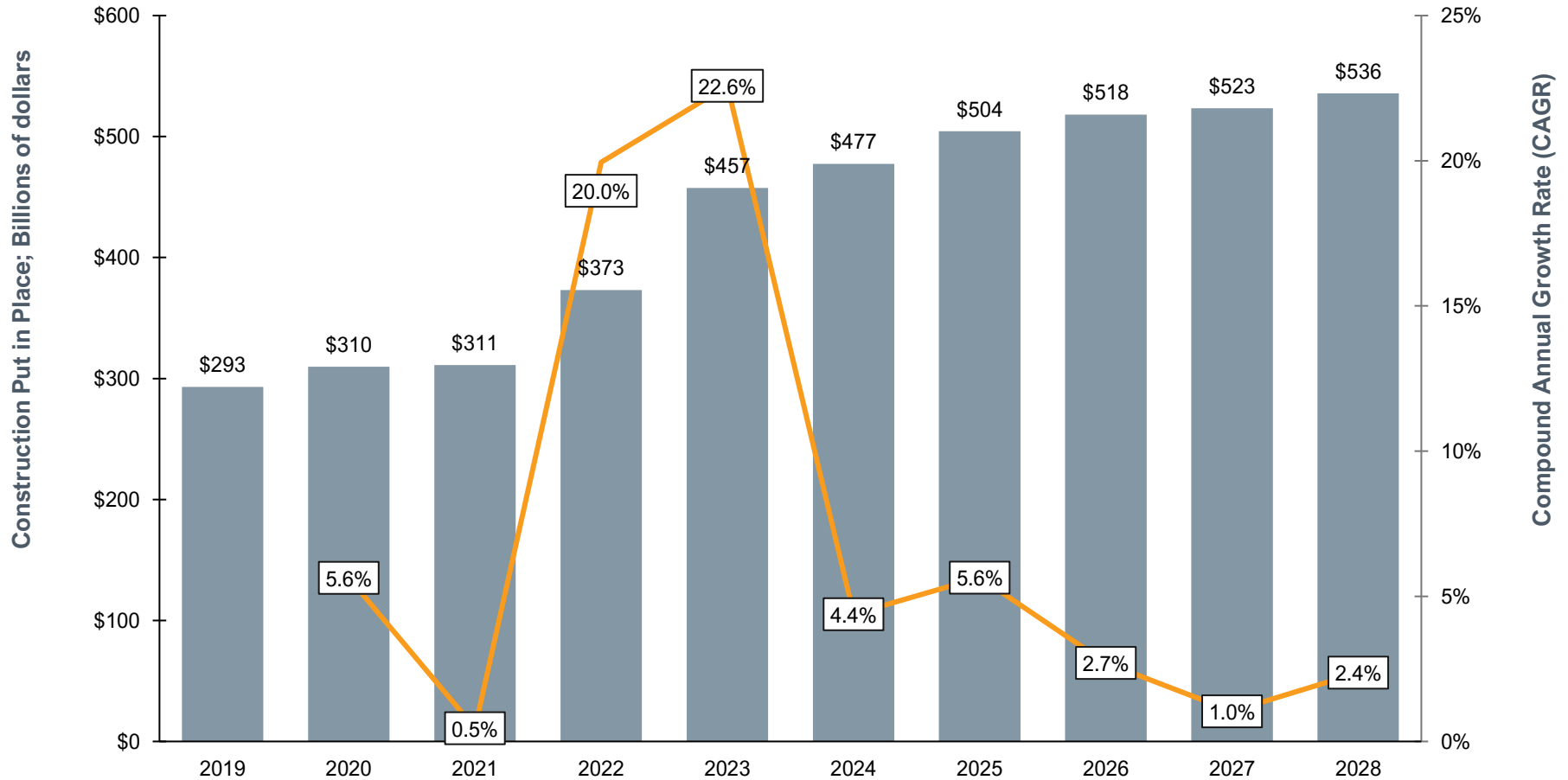


# DBIA | Market Sizing

Design-build construction spending in the assessed segments is anticipated to yield a 2.9% Compound Annual Growth Rate from 2024 to 2028.

## Design-Build Construction Put in Place (Assessed Segments)

Source(s): FMI

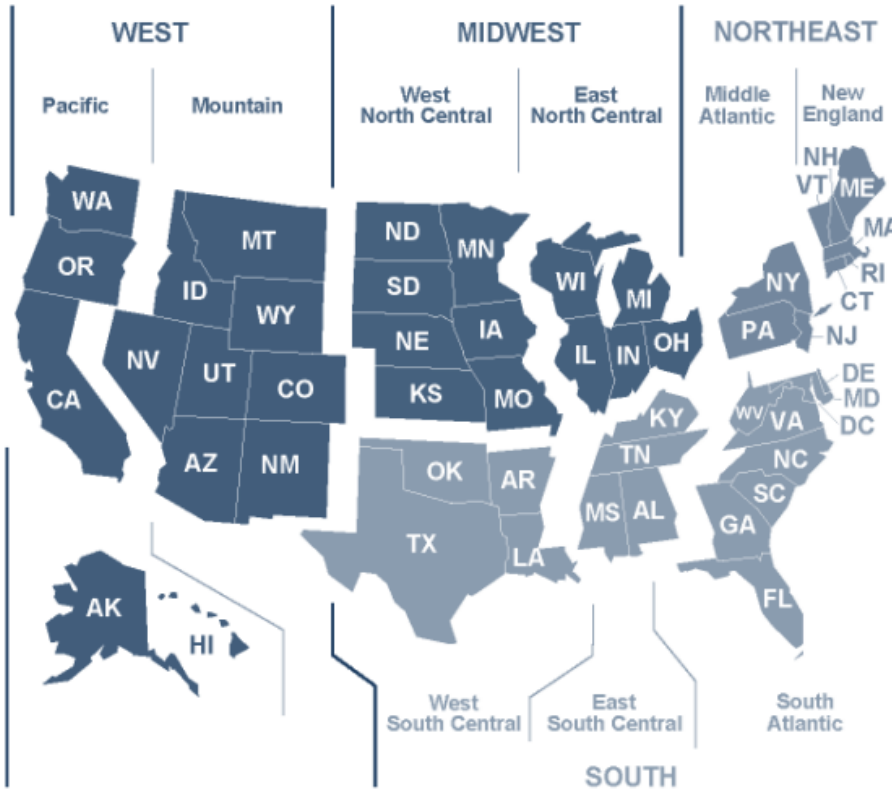


# DBIA | Market Sizing

The South Atlantic, West South Central, and Pacific census divisions are anticipated to represent the largest volume of design-build spending over the 2024 – 2028 period.

## Design-Build Construction Put In Place by Census Division (Assessed Segments)

Source(s): FMI



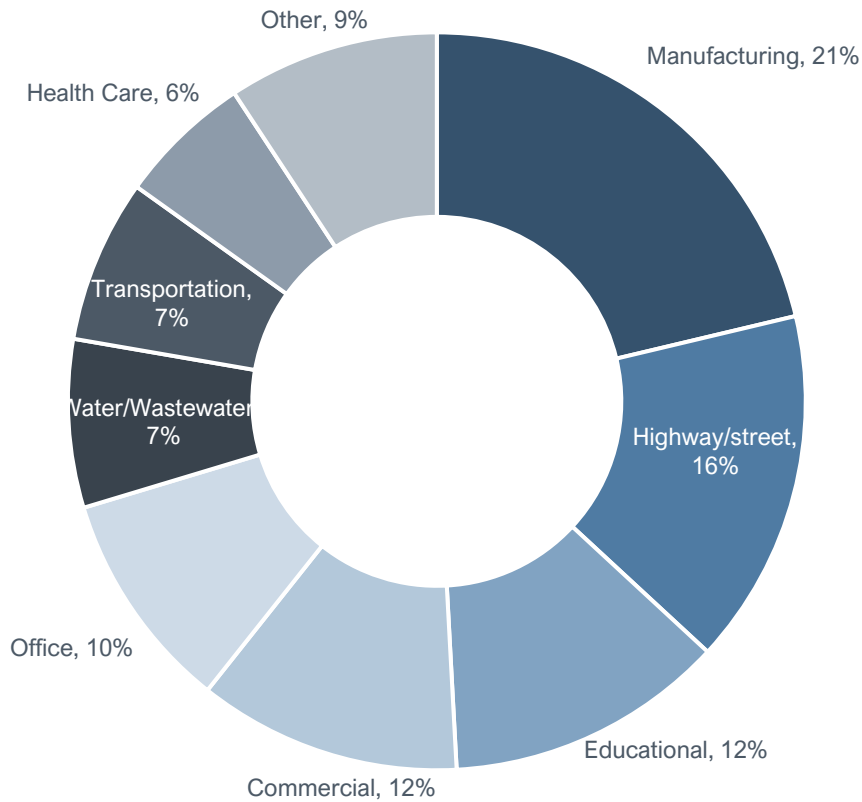
		2024e (\$B)	2024e % of Total	2028f (\$B)	2028f % of Total	CAGR (24-28)
WEST	Mountain	\$58.4	12.2%	\$62.8	11.7%	1.8%
	Pacific	\$68.9	14.4%	\$81.5	15.2%	4.3%
MIDWEST	East North Central	\$60.1	12.6%	\$59.8	11.2%	-0.1%
	West North Central	\$30.1	6.3%	\$34.4	6.4%	3.4%
NORTHEAST	New England	\$14.8	3.1%	\$17.7	3.3%	4.6%
	Middle Atlantic	\$46.7	9.8%	\$58.8	11.0%	5.9%
SOUTH	South Atlantic	\$103.5	21.7%	\$112.0	20.9%	2.0%
	East South Central	\$21.8	4.6%	\$23.8	4.4%	2.2%
	West South Central	\$73.2	15.3%	\$85.1	15.9%	3.8%
<b>U.S. Total</b>		<b>\$477.5</b>	<b>100%</b>	<b>\$535.9</b>	<b>100%</b>	<b>2.9%</b>

# DBIA | Market Sizing

**Manufacturing, highway and street, and educational are anticipated to hold the largest share of design-build spending through 2028.**

## Distribution of Forecast Spending by Segment

Source(s): FMI

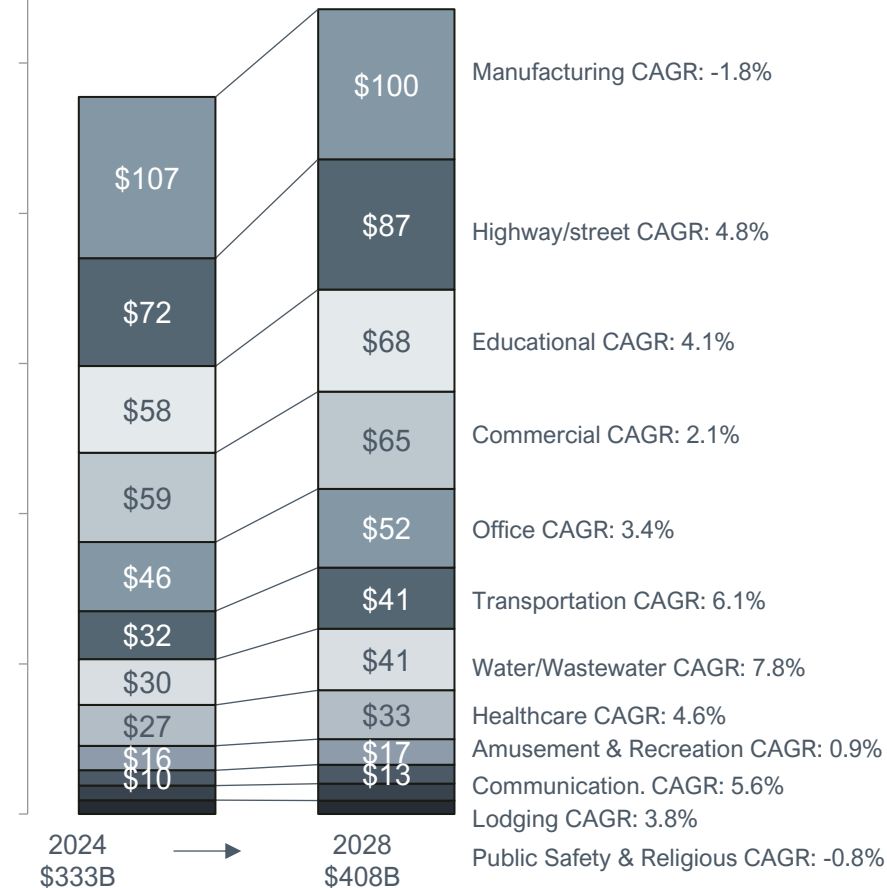


\*Other includes: Public safety, religious, A&R, and lodging

## Distribution of forecast spending by segment

CPI spending, 2024, 2028

Source(s): FMI

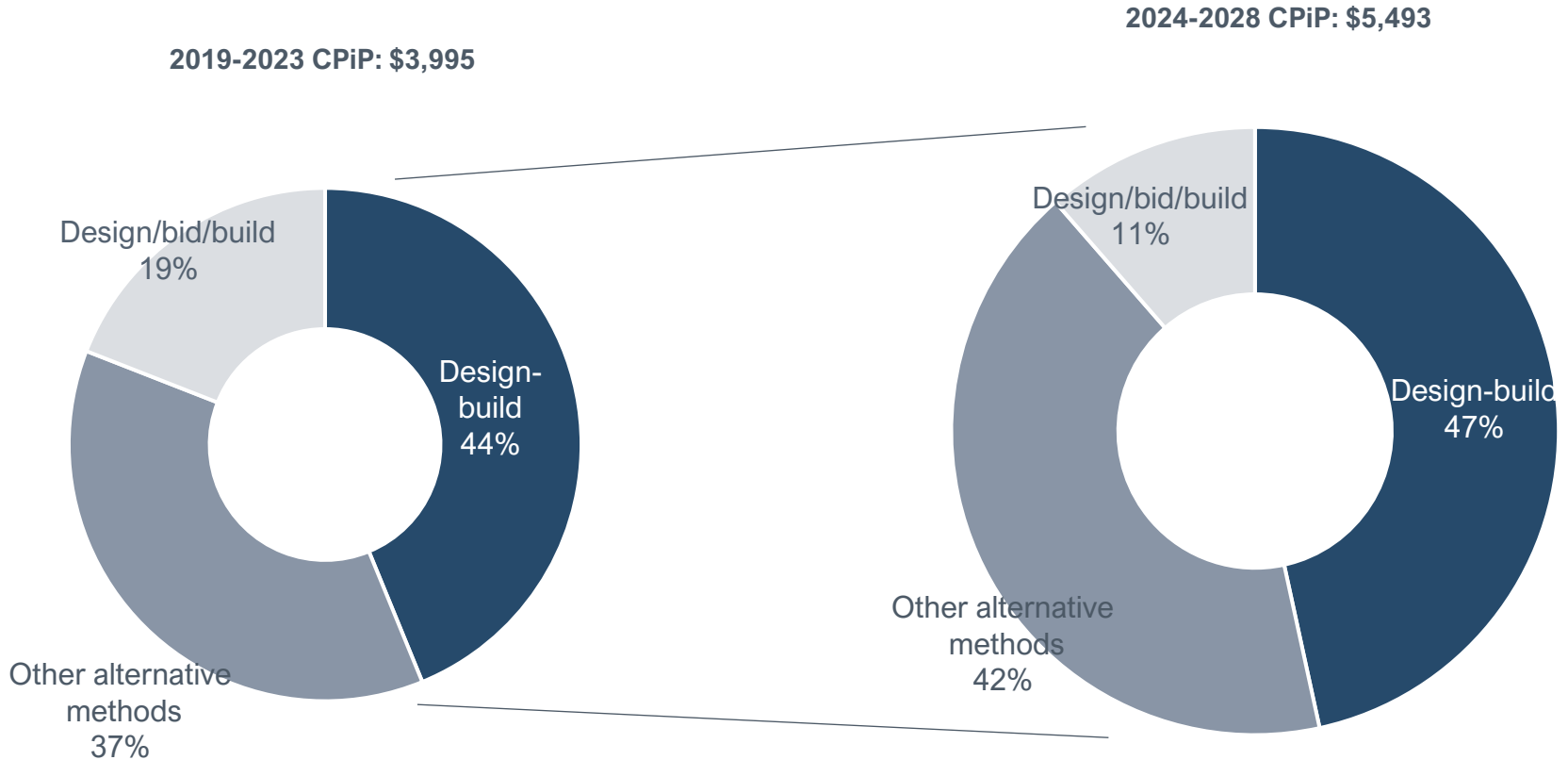


# DBIA | Market Sizing

Design-build is anticipated to continue to hold share over the forecast period and representing over 47% of spending in 2028.

## Distribution of Delivery Method Utilization

Source(s): FMI



\*Other alternative methods includes CM/GC, CMAR, EPC and IPD

\*\*Percentages are based on estimated utilization across construction spending.

# DBIA | Market Sizing

Total growth in design-build construction spending is anticipated to be 12% from 2024 to 2028.

## Total Growth Comparison

Source(s): FMI

Forecast CPiP by Geography	CPiP 2024 - 2028		
	\$B	CAGR	% of Total
South Atlantic	\$549	2.0%	21.5%
West South Central	\$404	3.8%	15.8%
Pacific	\$373	4.3%	14.6%
East North Central	\$306	-0.1%	12.0%
Mountain	\$299	1.8%	11.7%
Mid Atlantic	\$264	5.9%	10.3%
West North Central	\$163	3.4%	6.4%
East South Central	\$117	2.2%	4.6%
New England	\$83	4.6%	3.2%
<b>Total</b>	<b>\$2,559</b>	<b>2.9%</b>	<b>100%</b>

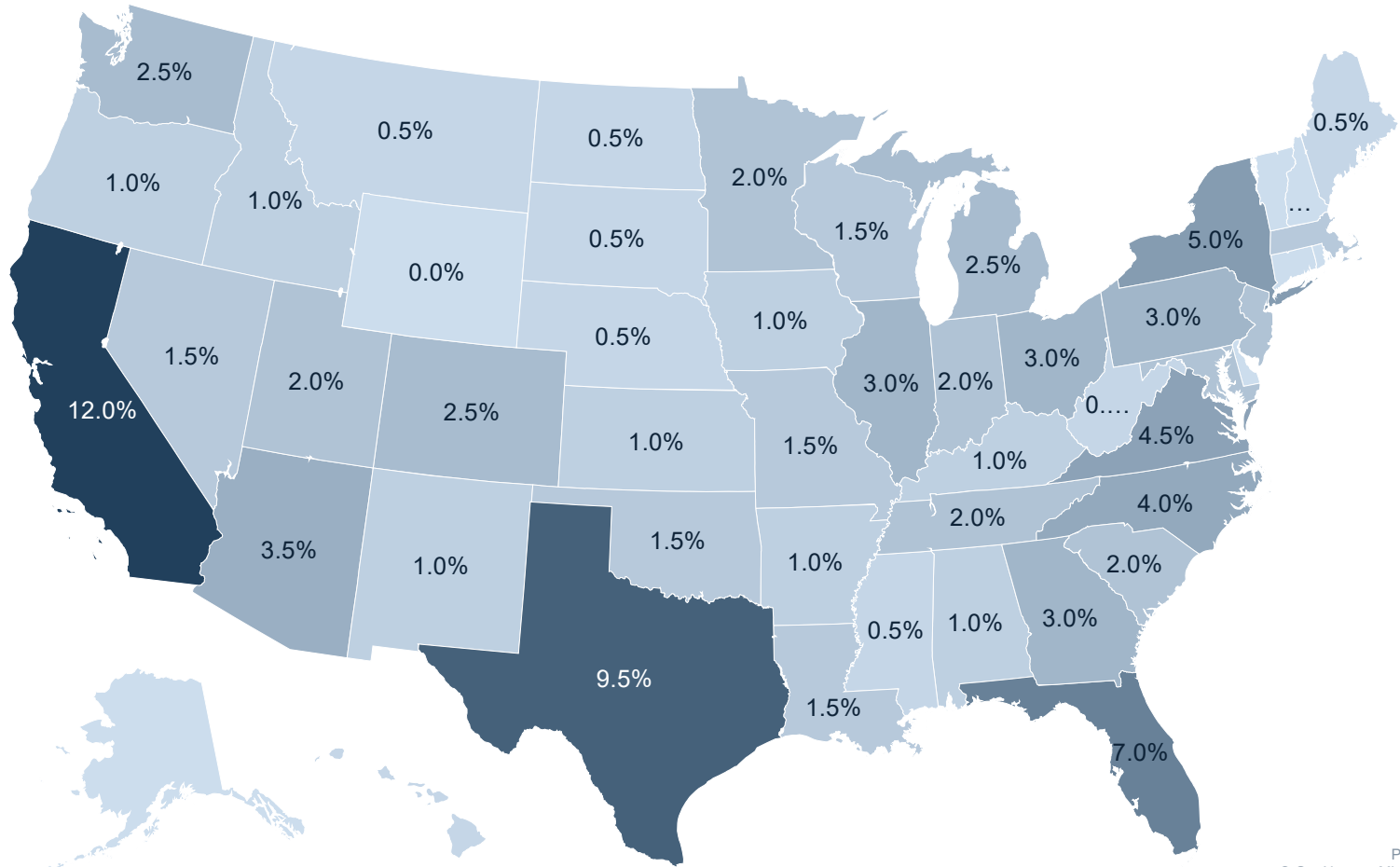
Forecast CPiP by Segment	CPiP 2024 - 2028		
	\$B	CAGR	% of Total
Manufacturing	\$545	-1.8%	21.3%
Highway/street	\$399	4.8%	15.6%
Educational	\$314	4.1%	12.3%
Commercial	\$295	2.1%	11.5%
Office	\$247	3.4%	9.7%
Water/Wastewater	\$189	7.8%	7.4%
Transportation	\$183	6.1%	7.2%
Health Care	\$150	4.6%	5.9%
Amusement and Recreation	\$84	0.9%	3.3%
Communication	\$57	5.6%	2.2%
Lodging	\$49	3.8%	1.9%
Public Safety	\$40	-0.7%	1.6%
Religious	\$6	-0.9%	0.2%
<b>Total</b>	<b>\$2,559</b>	<b>2.9%</b>	<b>100%</b>

# DBIA | Market Sizing

Texas, California, and Florida account for nearly 30% of anticipated design-build spending.

## Total Growth Comparison

Source(s): FMI



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**Consulting**

**Key Findings**

# DBIA | Key Findings

Interviewees highlighted that design-build is most advantageous for projects with high complexity or critical schedules. They emphasized that the ideal team for such projects is engaged early, open to new ideas, and highly collaborative.

## Why Design-Build Works – Ideal Project Use Cases

Source(s): FMI



**Size and complexity:** Although well suited for all types and sizes of projects, Design-Build shines on large, complex projects where managing multiple contractors and trades is challenging. It streamlines communication and accountability by integrating the design and construction teams early, allowing for better handling of complex coordination, risk management, and decision-making.



**Schedule Compression:** By allowing design and construction to proceed in parallel, design-build has shown a reduction in overall project timelines. This method is particularly useful for projects with tight schedules, as it eliminates the traditional wait between design finalization and the start of construction.



**Long-Term Projects (1-year +):** Design-build excels in long-term projects by providing flexibility to address evolving challenges like market shifts or site complexities. Continuous collaboration ensures quicker responses to market fluctuations, while keeping the same team throughout reduces miscommunication and delays.



**Risk Sharing:** When executed properly, design-build can equitably allocate risk between the owner, designer and contractor. This approach encourages early collaboration, allowing risks to be identified and mitigated collectively. By aligning interests, design-build reduces disputes and change orders, leading to smoother execution and more predictable outcomes.



**Role Definitions and Guidelines:** Design-build works best when owners have clearly defined role expectations and best practices identified. Owners who empower their design-build partners benefit from the streamlined decision-making and reduced administrative burden.



**Engaged Owners:** Design-build works best for experienced owners or those with a desire to learn. Organizations with limited experience can succeed with an engaged mindset and support from owners' advisors. For public projects, securing funding agency buy-in, like from FHWA, is often crucial.



**Collaboration and Early Involvement:** Early involvement of key stakeholders, including owners, designers, and contractors, ensures that everyone is aligned from the start. This collaborative approach reduces potential rework, enhances problem-solving, and fosters innovation by leveraging the expertise of all team members.



# DBIA | Key Findings

**Respondents identified the lack of in-house education and understanding regarding fundamental principles, and bureaucratic overhead as two of the largest challenges to utilization.**

## Limitations and Gaps in Design-Build

Source(s): FMI

- 1 Limited Understanding**

Several interviews indicated that owners, especially in public sectors, are not well-versed in the best practices of design-build projects. Many owners may be hesitant or inexperienced in managing design-build projects, leading to challenges with collaboration and decision-making. This lack of familiarity often results in owners viewing contractors as adversaries rather than partners, a mindset that can derail collaboration-based delivery methods.
- 2 Project Scope Uncertainty**

When utilizing Best Value Procurement, there is significant uncertainty in the scope of the project and some interviewees expressed hesitancy in utilizing design-build for projects. Several participants highlighted that design-build works best in projects with clear goals or where contractors can provide early input, which ensures contractors can help guide the project to meet those goals. However, in cases where the project scope is still evolving, owners are wary of perceived risks in cost overruns or scope gaps that could be attributed to design-build delivery methods.
- 3 Perceived Loss of Control**

One of the most significant challenges highlighted is that design-build is perceived to ask owners to relinquish a level of control to contractors, which some owners are reluctant to do. Further, architects and other stakeholders may feel uncomfortable with design-build, fearing a loss of design control. This apprehension is particularly prevalent among smaller or less experienced owners. Architects sometimes see design-build as a threat to their creative authority, where they become subordinates to contractors rather than having full control over design outcomes.
- 4 Collaboration Challenges**

Several participants cited instances where teams formed for design-build projects did not collaborate effectively, leading to friction and delays. There were cases where the design and construction components operated in silos. This lack of true integration undermines the core value of design-build—collaboration. Teams that were assembled simply to meet the requirements of a design-build proposal but had no true partnering mindset were prone to this issue.
- 5 Procurement Costs**

Several contractors indicated that the cost of preparing for best value procurement can be prohibitively high, especially in instances where stipends offered to compensate for the bid effort are insufficient. Contractors noted that, without adequate financial incentives, it becomes difficult to justify the significant upfront investment needed to pursue design-build projects, especially if they are highly competitive or have a high risk of failure in the bidding process.
- 6 Regulatory Complexities**

The legal and regulatory framework for design-build varies significantly by region. In some areas, progressive design-build is not allowed, and there are unclear rules around what forms of design-build can be employed. These regulatory inconsistencies can create barriers to the adoption of design-build. Even when design-build is allowed, some entities have yet to fully adopt it due to legislative restrictions or internal resistance to change.

# DBIA | Key Findings

**Design-build is likely not used when factors like public sector practices, high upfront costs, and legal barriers are present, making it difficult for agencies to transition from Design/Bid/Build in budget-constrained or regulated environments.**

## Why Design-Build is Not Used

Source(s): FMI

### Public Sector Use Challenges

Public sector agencies often face challenges with adopting design-build due to entrenched practices and slow bureaucratic decision-making. Many public agencies are accustomed to traditional design/bid/build methods, where they maintain strict control over each phase. This shift in mindset can be difficult for agencies that prefer clear-cut boundaries between design and construction.

Additionally, public sector projects often involve multiple stakeholders, leading to lengthy approval processes. These delays undermine design-build's key advantages—speed and efficiency—by slowing down decisions that need broad consensus.

Cultural resistance is another issue, as some agencies view design-build as a loss of oversight, making it harder to embrace the integrated approach. As a result, these factors prevent public agencies from fully capitalizing on the benefits of design-build, including improved collaboration, and more streamlined project outcomes.

### Budgetary Limitations

While design-build offers long-term cost savings and improved efficiency, it often requires a larger financial commitment early in the project lifecycle compared to traditional methods, where design and construction phases are staggered. This can create cash flow challenges for organizations that prefer the predictability of design/bid/build.

As a result, entities may struggle to justify higher stipends or payments to attract qualified design-build teams, particularly in markets where budgets are tight. Smaller organizations, such as local municipalities or private developers, may lack the resources to fully support a design-build process, limiting their ability to leverage its potential benefits in efficiency and project quality.

### Legal/Regulatory Constraints

Legal and regulatory barriers in some regions (e.g., Iowa or North Dakota) restrict the use of design-build, or they limit its application to specific sectors, such as healthcare or transportation. These restrictions, often tied to procurement laws, prevent many sectors from fully benefiting from the speed and flexibility that design-build provides.

Without legal reforms, many organizations remain confined to more traditional delivery methods, limiting potential improvements in efficiency, innovation, and flexibility.

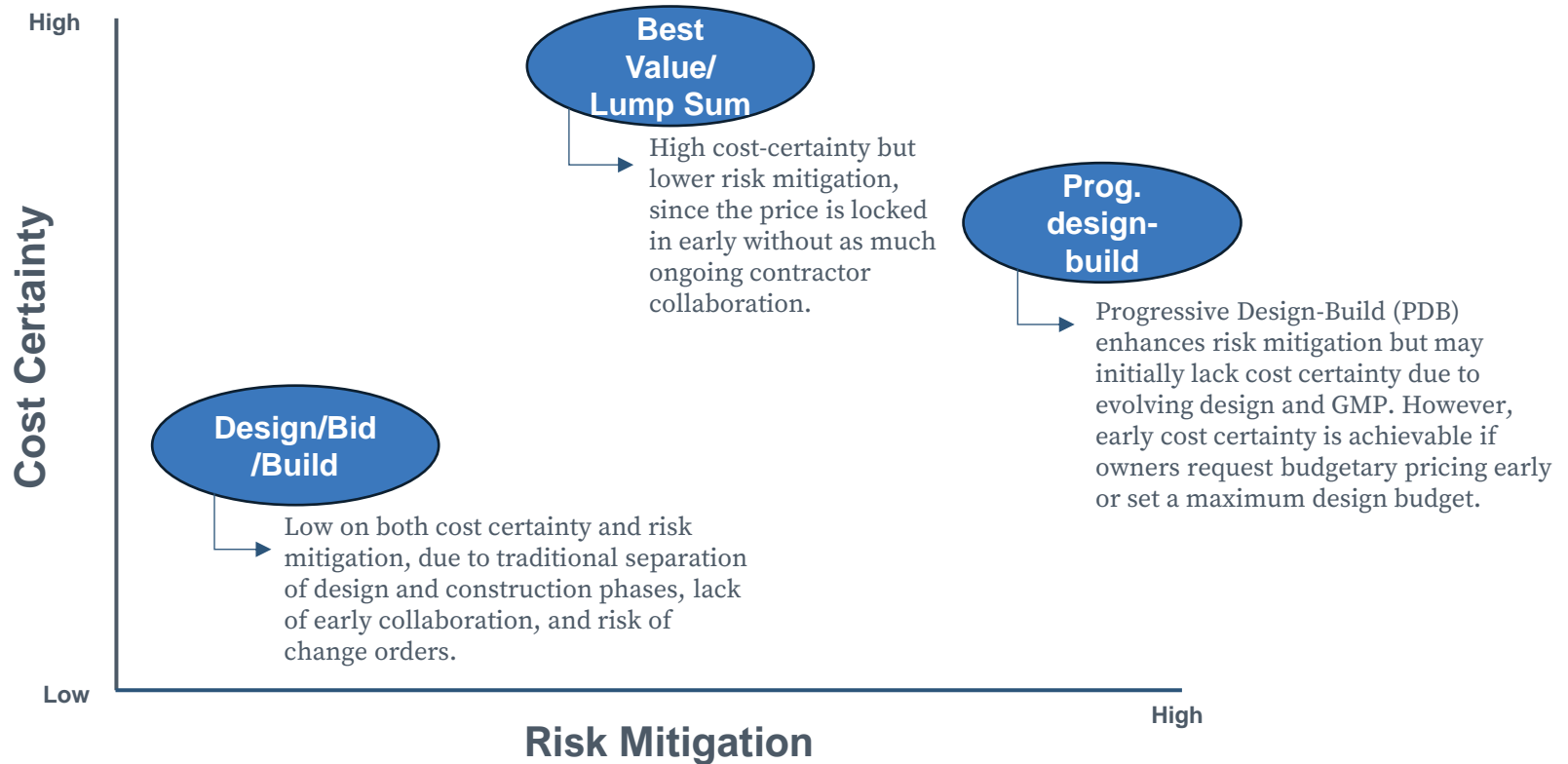
The legal landscape continues to change as agencies advocate for greater autonomy/flexibility in decision-making and for fewer grey areas.

# DBIA | Key Findings

Interviewees noted that progressive design-build provides higher levels of flexibility and fewer risks due to early collaboration.

## Progressive vs. Best Value/Lump Sum Utilization

Source(s): FMI (Percent of total)



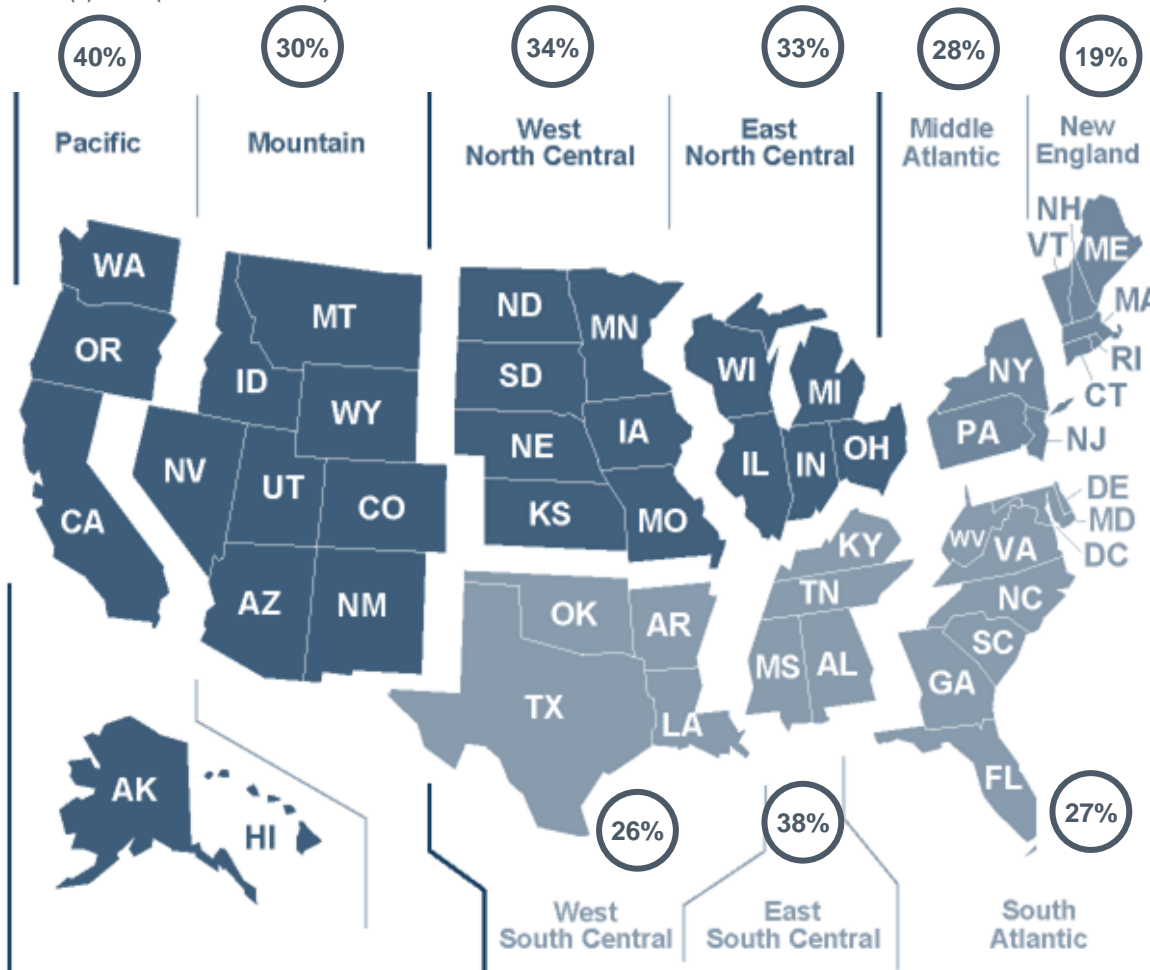
*"In traditional Design/Bid/Build, you aren't sure of the project cost until it is done. These days especially, you're going to be over budget most likely. The cost of disputes and litigation on more traditional delivery methods is higher in general. With more use of progressive design-build, you can have some of the cost certainty early in the project and fewer disputes, which results in overall lower costs."*

# DBIA | Key Findings

Respondents in the Pacific Division indicate the highest percentage of utilization of progressive design-build.

## Percentage of Progressive Design-Build Procurement by Survey Response; Geography

Source(s): FMI (Percent of total)



Across geographies, survey respondents in the Pacific region indicated the highest percentage of projects that are being procured via a progressive design-build approach. Stakeholders operating in the region consistently noted that owners are employing progressive design-build at a continually increasing rate, especially in the public building space.

A potential hesitation in adopting progressive design-build was the lack of familiarity and trust in the process. One participant noted that in their state (MA), owners are “unwilling to give up control of the design,” and others pointed a hesitancy to lock in a team before having more detailed designs. Some interviewees also pointed to concerns of fair risk allocation and complexity of managing the process.

*“California is leading adoption of progressive design-build. The ability to adjust design based on market changes, like material lead times, makes it appealing.”*

*“We think progressive design-build will be a tough sell among our contracting community – they are weary of a perceived lack of competition.”*

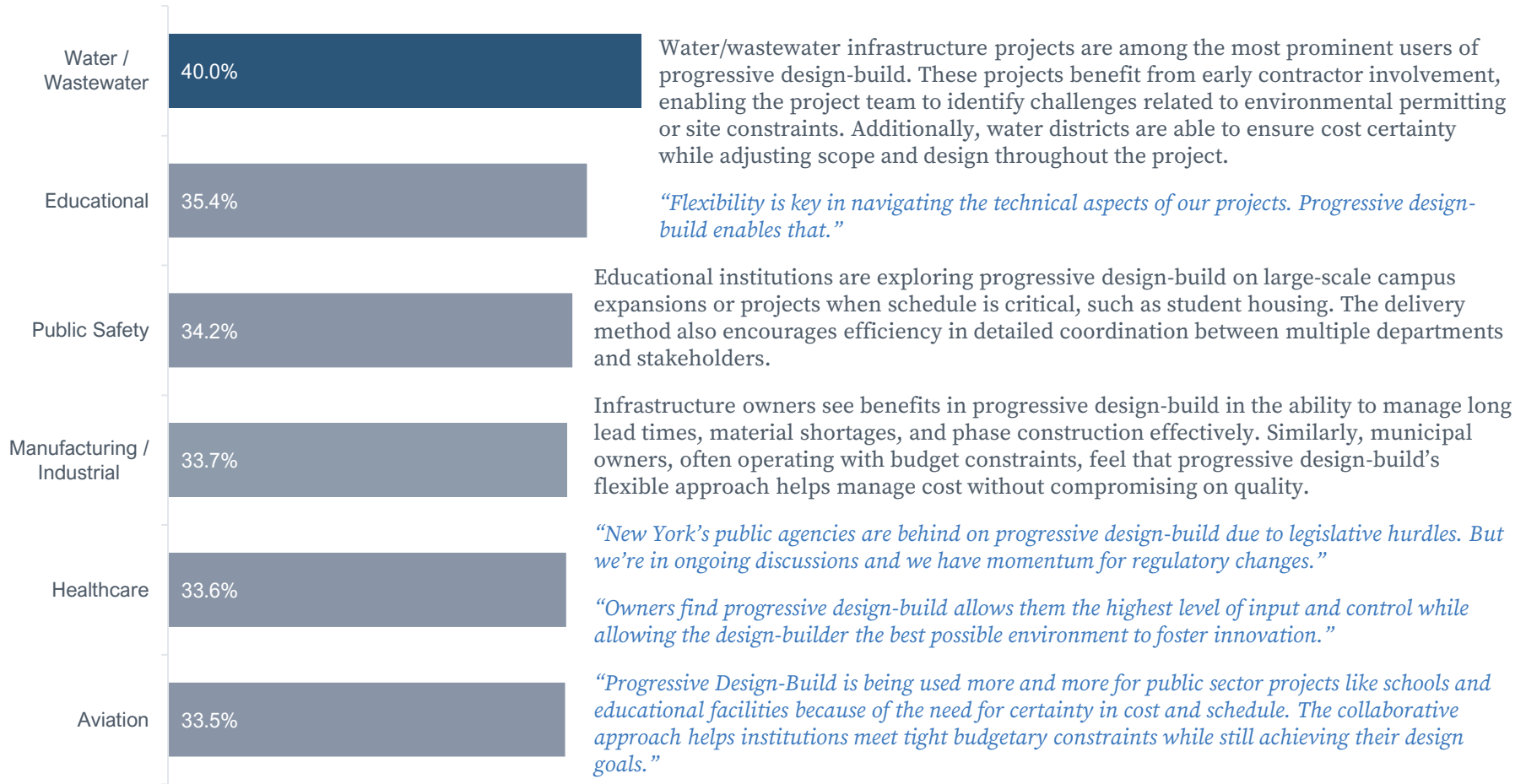
*“Infrastructure owners in Virginia are moving away from lump sum contracts, and are either using progressive design-build or CMAR.”*

# DBIA | Key Findings

## Water/wastewater, education, and public safety projects utilize progressive design-build when compared to other segments.

### Percentage of Progressive Design-Build Procurements; Leading Segments

Source(s): FMI (Average)

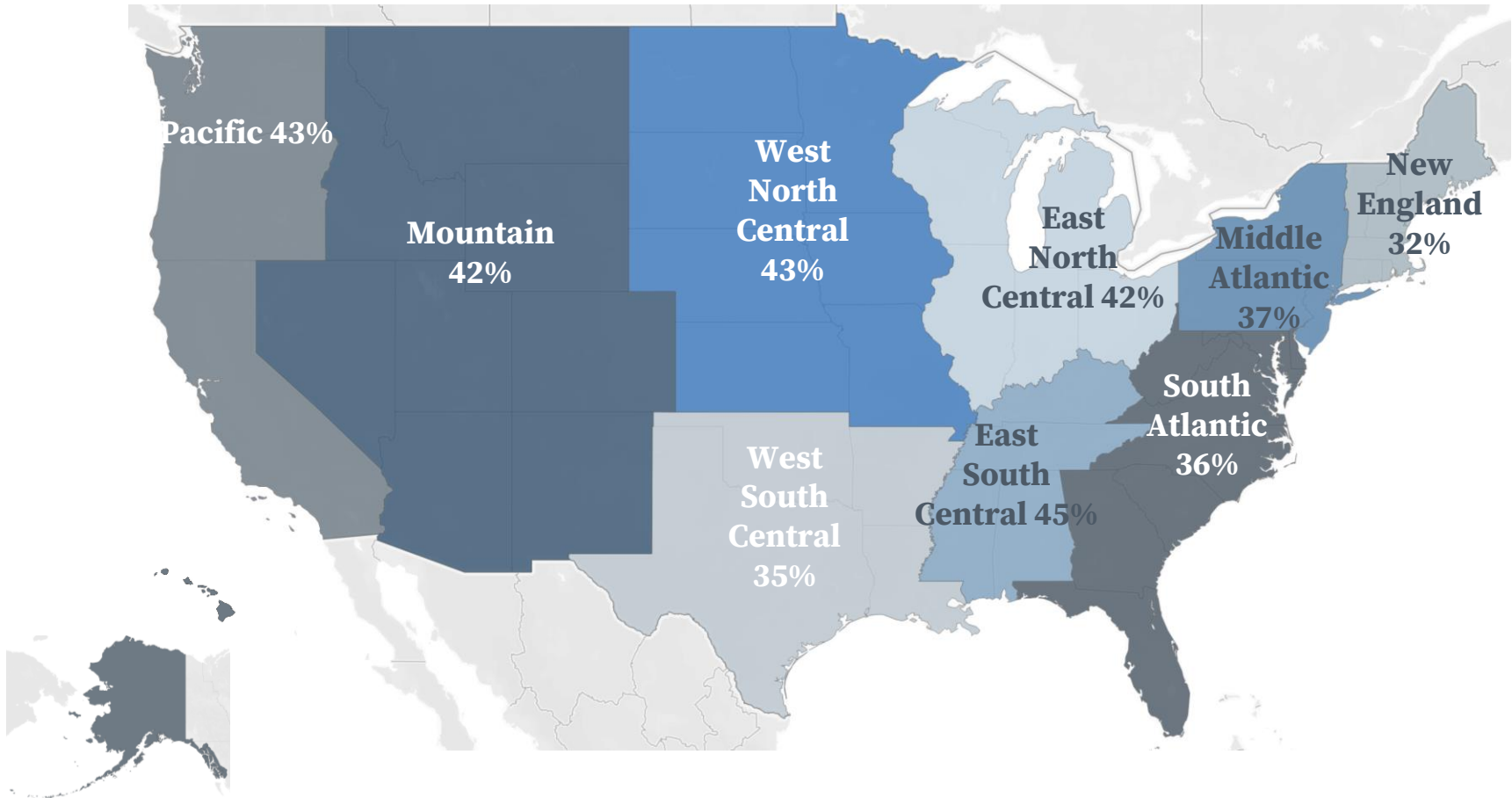


# DBIA | Key Findings

Within the Water/Wastewater sector, East South Central respondents indicated the highest utilization of progressive design-build.

Percentage of Progressive Design-Build Procurements by Survey Response; Water/Wastewater

Source(s): FMI (Average)

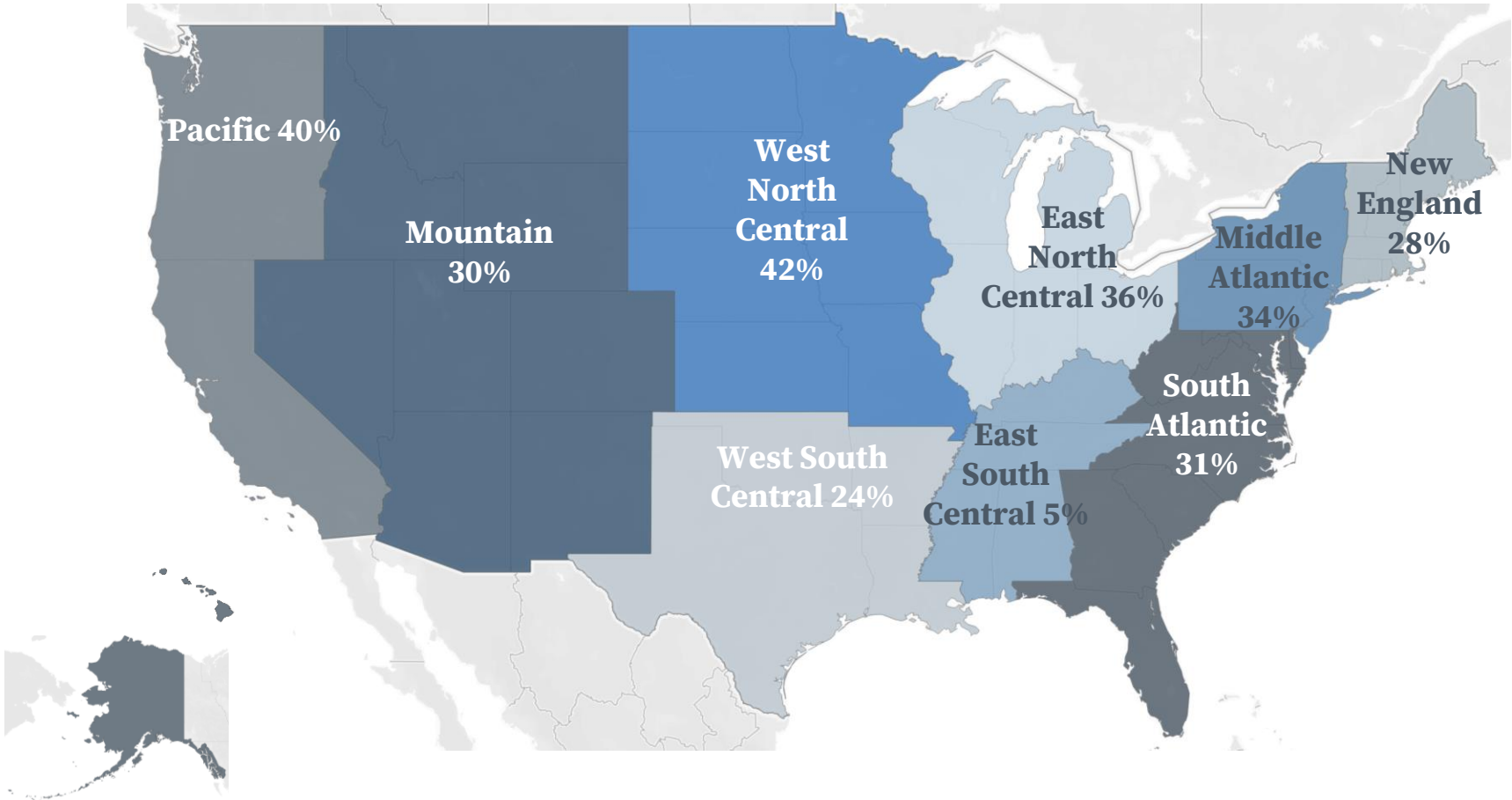


# DBIA | Key Findings

In the Education and Healthcare sectors, Progressive Design-Build is most frequently used in the Pacific region.

Percentage of Progressive Design-Build Procurements; Educational/Healthcare

Source(s): FMI (Average)



# DBIA | Key Findings

**Owner Advisors are most valuable to design-build projects when providing expertise and oversight, particularly when owners lack experience with design-build.**

## Feedback and Use Cases for Owner/Advisors

Source(s): FMI

### Role, Benefits, and Limitations

- **Role and Function:** Act as intermediaries between the owner and project team, providing expertise, oversight, and risk management.
- **Perceived Benefits:** Helpful for inexperienced owners, streamlining communication and aiding decision-making in complex projects.
- **Challenges and Limitations:** Can add complexity, create communication barriers, or lead to inefficiencies if their role is unclear.
- **Mixed Feedback:** Seen as essential in high-risk projects but may be cumbersome and less necessary in smaller or simpler ones.

### Survey Responses

Value	Overall project cost	Compliance	Communication	Efficiency	Project Schedule	Project Quality
Extremely Valuable	9%	11%	15%	7%	7%	7%
Very Valuable	18%	27%	36%	20%	23%	25%
Neutral	32%	32%	28%	36%	35%	35%
Slightly Valuable	21%	23%	14%	20%	19%	21%
Not at all Valuable	19%	7%	7%	17%	17%	11%

### Commentary

*"Often, depending on the nature of the project, they may hire an independent firm that would act as an onsite rep that would look over quality assurance."*

*"We see it both ways... It adds value for the owner, especially the owners that are not familiar with building construction... I would say we see it as an extension of our staff and just a direct partner to help us deliver those important projects"*

*"In our survey, we heard some feedback that they were cumbersome, didn't add value, were challenging the communication or creating communication barriers with owners... where we got a lot of negative feedback was when the contracts weren't clear, or the owner wasn't clear about what they expected the owner advisor to cover."*

*"I would say when they are acting in their current project, this is their interview for the next project that they're trying to get for that owner. They're trying to make their money's worth that the owner needs to hire them the next time... It usually means a lot more backup and evidence and proof that we're doing the things that we're supposed to be doing.. but a lot of these people are well versed in design-build."*



# DBIA | Key Findings

Early integration and mentorship can create meaningful opportunities for these businesses to grow, though engaging Underutilized Business Enterprises (UBEs) in design-build projects faces challenges like limited availability.

Design-build and UBEs

Source(s): FMI



## Advantages

- **Diversity of Thought and Innovation:** UBEs often bring unique perspectives and creative problem-solving approaches that stem from their experiences. This diversity of thought can lead to more innovative design and construction solutions. Incorporating UBEs can enhance overall project quality by introducing new ideas that improve efficiency, sustainability, or cost-effectiveness.
- **Local Community Engagement:** Hiring UBEs can help engage local communities and boost local economies. Many of these businesses are deeply rooted in the communities they serve, which helps foster stronger relationships with local stakeholders, residents, and governments. This can be particularly beneficial in large infrastructure or public projects, where local buy-in is essential.
- **Flexibility and Adaptability:** Due to their operational models, UBEs often have greater flexibility and agility than larger firms. They can quickly adapt to changing project requirements and respond swiftly to unexpected challenges. Their streamlined structures often allow for faster decision-making, which can keep the project on schedule and within budget, especially when unexpected changes occur.
- **Enhanced Collaboration and Team Dynamics:** UBEs can contribute to more inclusive team dynamics and foster stronger relationships within the project team. These businesses tend to prioritize relationships and open communication, which are critical to the success of design-build. When UBEs are brought in early and empowered to contribute fully, the project benefits from enhanced teamwork, better communication, and a shared commitment to project success.



## Challenges

- **Lack of Available Firms:** There are often not enough qualified DBE and UBE contractors to meet project requirements, particularly in areas where government regulations require high percentages of participation. This mismatch between the requirements and availability makes it difficult to comply with the rules.
- **Late Involvement in the Process:** Another significant issue raised was the challenge of involving UBEs early enough in the design-build process. Small and disadvantaged businesses are challenged if they receive project details too late to prepare competitive bids. These businesses have limited staff capacity, which makes last-minute pricing efforts difficult. The process puts a lot of pressure on these small businesses, limiting their ability to participate effectively.
- **Involvement as a “Checkbox” Exercise:** Some interviewees expressed concern that UBEs are sometimes used to satisfy contract requirements without being meaningfully engaged in the project. This leads to situations where UBEs are included only superficially, with limited scopes of work, or used as intermediaries rather than for their actual services.
- **Difficulty in Mentorship and Growth:** While there is potential for design-build to help UBEs grow and gain experience, there is still a significant gap in providing adequate mentorship and business development opportunities. Several interviewees emphasized that without deliberate efforts to provide training and involve these businesses earlier in the process, many of them remain underutilized.

# DBIA | Key Findings

As owners across the country face ever-increasing project needs, contractors are given greater choice in which projects and owners they work with.

## Choice in a Competitive Market Place

Source(s): FMI

### Contractor Perspective

Contractors are becoming increasingly selective in pursuits of projects and in owners they chose to work with. Contractors favor owners who demonstrate collaboration, flexibility, fair risk assessments, and value-based selection.

Contractors avoid lump-sum design-build or price-based selection to reduce the risk of unforeseen price/design changes. This is particularly true for companies that pursue highly complex, technical, or large-scale projects.

*“We no longer pursue lump-sum design-build unless it’s a market we’re very familiar with. The collaborative nature of PDB and CMAR is what we look for because it allows us to share risk, get involved early, and influence project success.”*

*“We’ve stopped chasing lump-sum design-build projects in most cases. It’s too risky because we’re locked into a price without enough design input. The owner isn’t always transparent, and we end up facing issues we didn’t foresee.”*

### Owner Perspective

An owner who wants to be seen as the preferred partner must work collaboratively with contractors rather than taking an adversarial approach. Owners who felt they were behind noted they received fewer bids and saw higher project costs.

Organizations are feeling pressure to adapt their policies or procedures in order to keep projects attractive for the industry.

*“Our last big design-build project, which was procurement last year, was \$700 million. We only got two proposers. And I consider us an owner of choice... Either owners have less work, or more contractors are needed. But, the design-builders that we talked to have a couple of years of backlog. So, our projects or contracts just aren’t attractive.”*

*“We prefer to work with contractors who have a strong background in CMAR or PDB because they can handle the complexities of our projects. They bring value by providing cost certainty and managing risks better than traditional Design/Bid/Build contractors. This has taken work on our end to embrace this.”*

### Key Considerations

The supply and demand imbalance in the market is creating significant challenges for owners, as many contractors have significant backlogs. This allows contractors to be more selective about the projects they pursue. To create an attractive pursuit and project environment, owners and contractors pointed to several themes to consider:

**Cultural Alignment:** Organizations must be bought-in to collaborative delivery utilization, stemming from leadership through all levels of the organization

**Consistent Commitment:** Provide clear guidance and consistent practices. Try on more than one project and continue to refine processes.

**Remain a Partner:** Be open to feedback from all project stakeholders, and respond accordingly.

**Risk Sharing:** Adequately distribute risk and fairly compensate the stakeholders that have disproportionate risk.

# DBIA | Key Findings

Technologies like BIM, prefabrication, and innovative systems are often better able to be incorporated into collaborative delivery by driving both efficiency and innovation, according to industry experts.

## Technological Innovation

Source(s): FMI

Existing Tech

**Building Information Modeling**



- Building Information Modeling (BIM) is used extensively on design-build projects, with trade coordination, clash detection, and design/constructability review seen as the most valuable applications. These functions improve coordination, reduce errors, and streamline design and construction.

*“People don't know how to understand the tool [BIM] and they don't know how to use it properly to take full advantage of creative thinking, timeline economy, and financial economy.”*

**Prefabrication**



- Prefabrication, widely used in sectors like healthcare and manufacturing, improves efficiency and reduces worker risk onsite. Over 80% of respondents find design-build effective in facilitating prefabrication, with usage ranging from 10-15%, accelerating project delivery and enhancing coordination.

*“For us, it's a fully integrated workflow, streamlining the process and controlling the workflow more effectively.”*

New Technology

**Trenchless Technology**



- Trenchless technology, which involves minimal digging for pipeline installation and rehabilitation, reduces environmental disruption, cuts costs, shortens project timelines, and is particularly valuable in urban settings where minimizing surface disruption is crucial.

*“Trenchless technology offers solutions for water and sewer markets that aren't easily solved through traditional methods. Collaborative delivery helps us use this earlier on projects.”*

**Advanced Treatment**



- Interviewees highlighted the growing use of advanced water and wastewater treatment technologies, such as membrane filtration, UV disinfection, and biological nutrient removal (BNR), which not only improve water quality but also enhance energy efficiency, reduce chemical usage, and support sustainability and cost-saving efforts. The ability to adjust scope during preconstruction enables greater flexibility for trialing new technologies.

*“The technology is changing daily, and water treatment is going to explode as new solutions emerge.”*

**Smart Water Systems**



- The adoption of smart water systems is increasing, utilizing sensors, data analytics, and automation to monitor flow, detect leaks, and optimize performance in real-time. This improves decision-making, minimizes water loss, and speeds up responses to issues like pipe bursts or contamination.

*“Smart water systems allow real-time monitoring, improving decision-making, reducing water loss, and response times.”*



**Consulting**

**Survey Results**

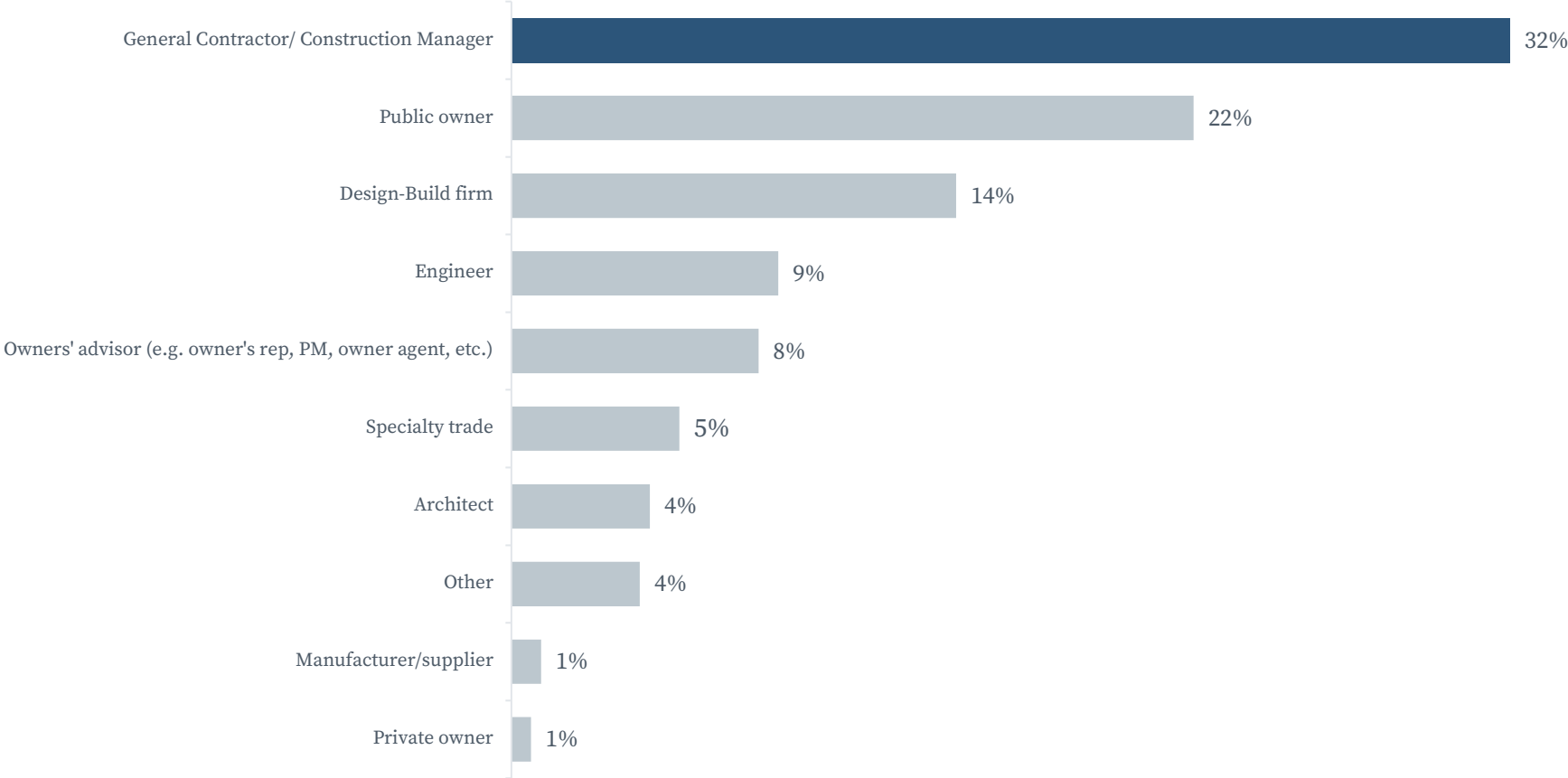
# DBIA | Design-Build Survey Findings

316 respondents participated in the survey.

## Respondent Demographics

Source(s): FMI (Percent of total)

### Organization Type



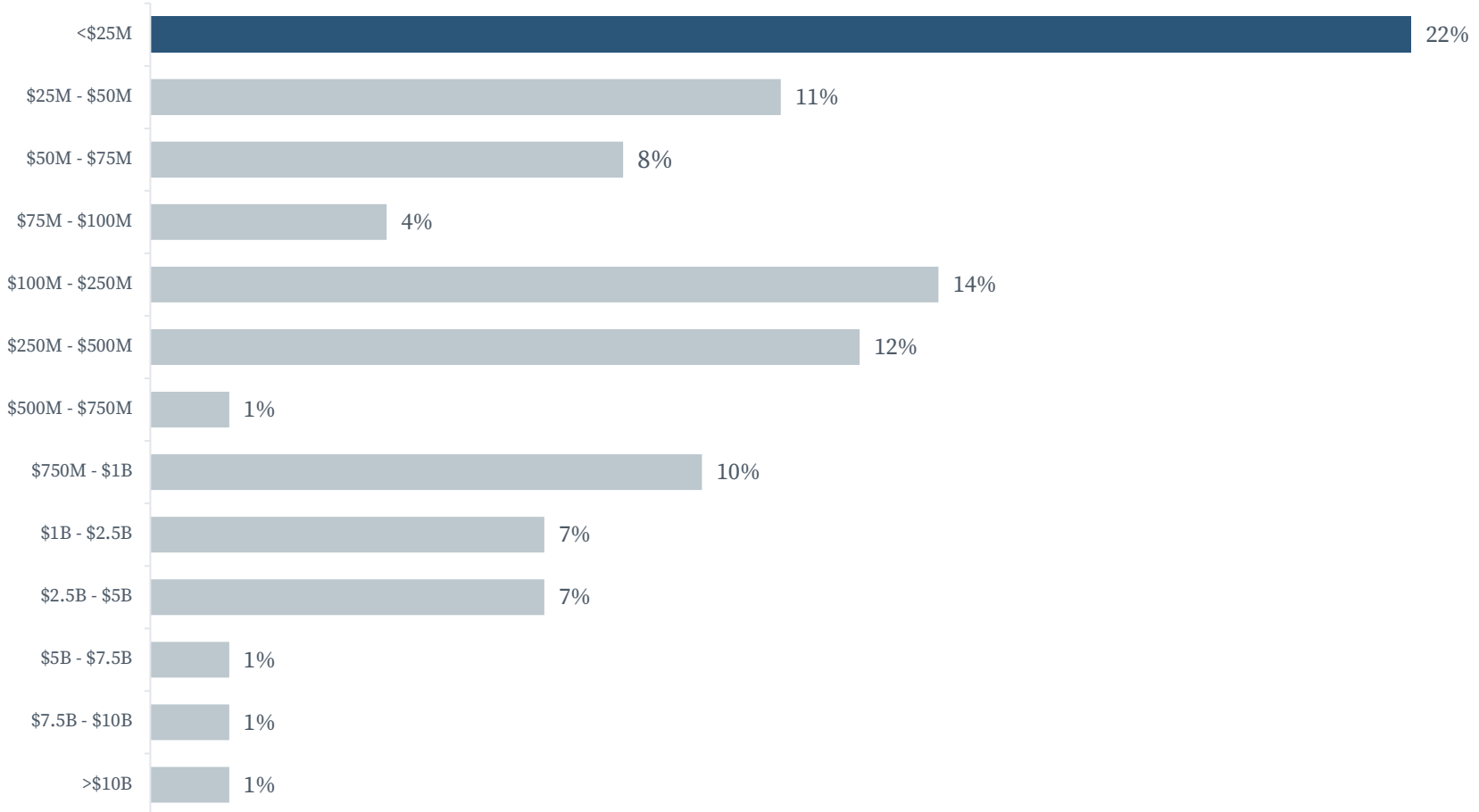
# DBIA | Design-Build Survey Findings

The majority of survey respondents represent organizations with annual revenue of under \$25 million.

What is the volume of your firm's annual revenue? Please enter the dollar amount (EX: 5,000,000)

Source(s): FMI (Percent of total)

## Annual Volume of Spend

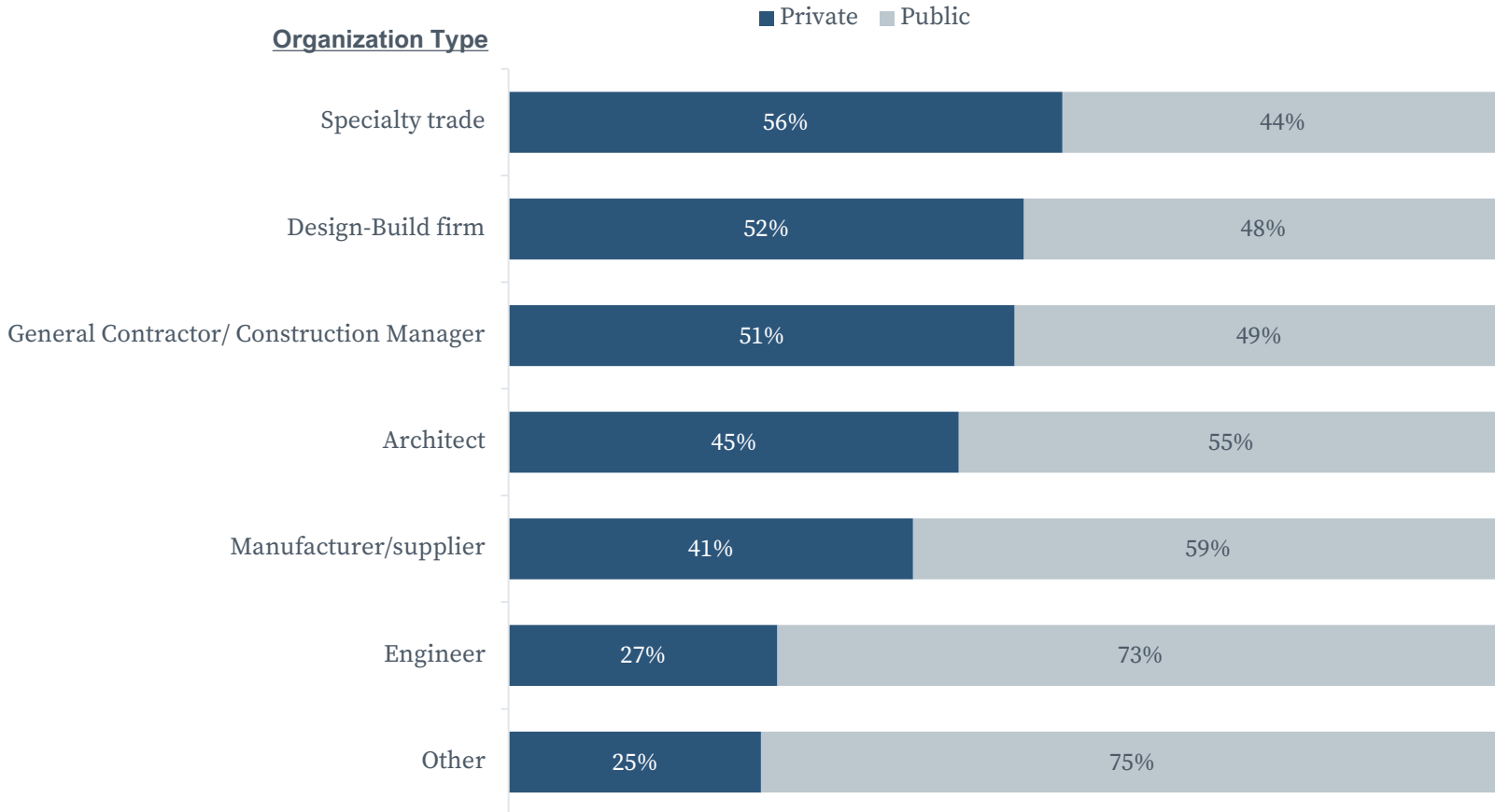


# DBIA | Design-Build Survey Findings

On average, nearly 60% of respondents participate in projects that are in the public sector.

What percentage of your organizations projects are in the following sectors?

Source(s): FMI (Average Response)

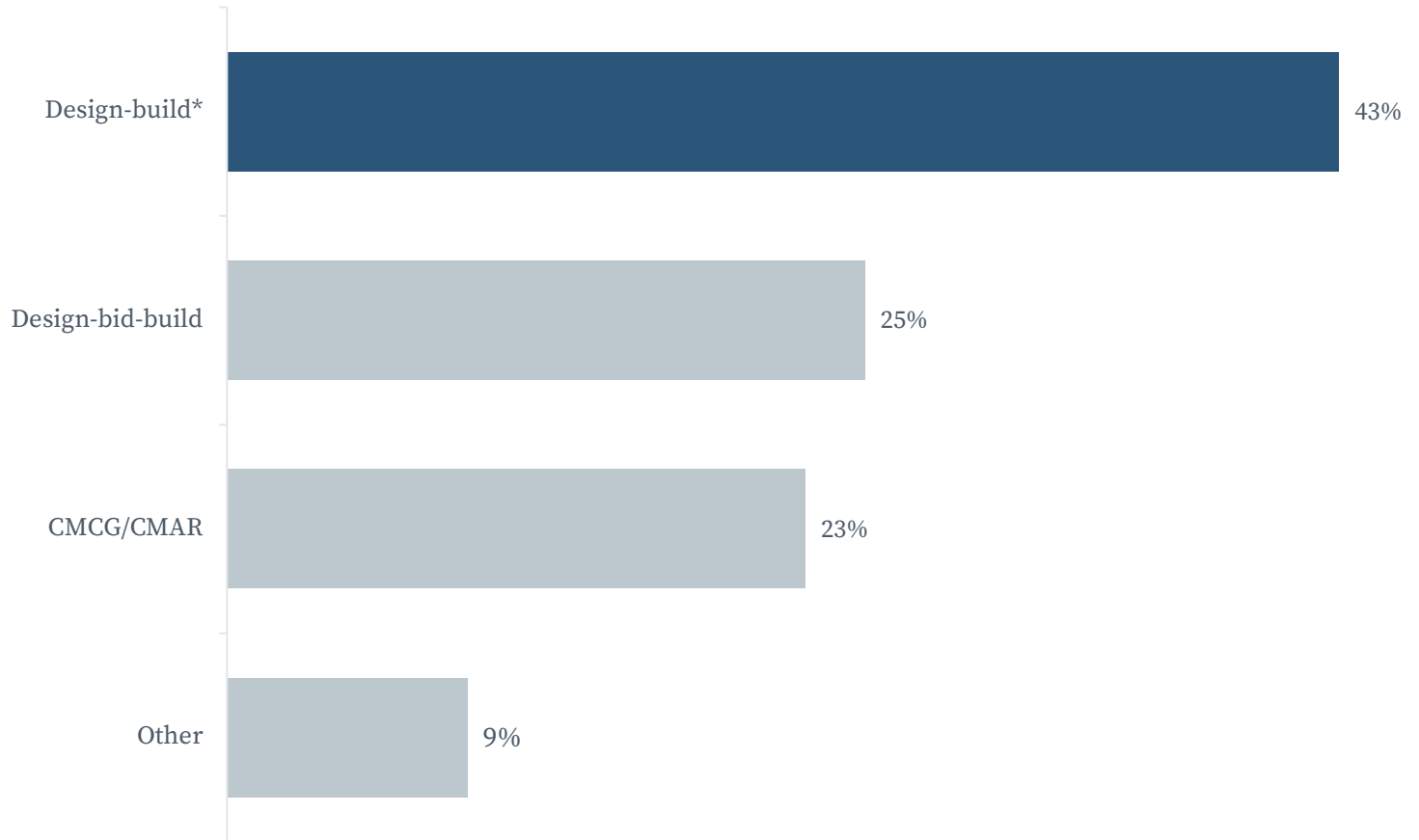


# DBIA | Design-Build Survey Findings

Respondents perceive design-build to be the most prevalent delivery method over the next five years, followed by design/bid/build.

Which of the following project delivery methods does your organization use or anticipates using in the next five years? Select all that apply.

Source(s): FMI (Percent of total)



\*design-build includes procurement approaches Progressive design-build and Competitive-Based Value Selection; includes Design-Build+



# DBIA | Design-Build Survey Findings

Over the next five years, owners' advisors anticipate a large amount of design-build opportunities, and design-build most utilized by public and private owners.

Which of the following project delivery methods does your organization pursue or anticipate pursuing in the next five years? Select all that apply.  
Source(s): FMI (Percent of total)

Organization Type	CMCG/CMAR	Design/Bid/Build	Design-Build	Other
Architect	25%	25%	42%	8%
Design-Build firm	22%	19%	46%	13%
Engineer	21%	30%	42%	8%
General Contractor/ Construction Manager	26%	24%	42%	8%
Manufacturer/supplier	22%	22%	33%	22%
Owners' advisor	19%	24%	47%	10%
Private owner	33%	17%	50%	0%
Public owner	21%	30%	42%	7%
Specialty trade	18%	24%	45%	13%
Other (please describe)	16%	18%	47%	18%

\*design-build includes procurement approaches Progressive design-build and Competitive-Based Value Selection; includes Design-Build+

# DBIA | Design-Build Survey Findings

Respondents across all regions indicate a favorable trajectory in design-build utilization over the next five years.

Which of the following project delivery methods does your organization pursue or anticipate pursuing in the next five years? Select all that apply.

Source(s): FMI (Percent of total)

Census Division	CMCG/CMAR	Design/Bid/Build	Design-Build	Other
East North Central	22%	23%	41%	14%
East South Central	25%	31%	44%	0%
Middle Atlantic	22%	28%	42%	8%
Mountain	25%	22%	43%	10%
New England	23%	29%	42%	6%
Pacific	23%	25%	43%	9%
South Atlantic	22%	26%	44%	8%
West North Central	18%	29%	44%	9%
West South Central	23%	21%	46%	10%

\*design-build includes procurement approaches Progressive design-build and Competitive-Based Value Selection; includes Design-Build+

# DBIA | Design-Build Survey Findings

Design-build is projected to see nearly equal usage across all segments over the next five years.

Which of the following project delivery methods does your organization pursue or anticipate pursuing in the next five years? Select all that apply.

Source(s): FMI (Percent of total)

Segment	CMCG/CMAR	Design/Bid/Build	Design-Build*	Other
Amusement and recreation	24%	24%	43%	9%
Aviation	24%	21%	44%	11%
Commercial (e.g., retail, warehouse, distribution)	24%	23%	43%	10%
Educational	24%	22%	43%	11%
Healthcare	23%	22%	44%	11%
Highway / Street / Bridge	22%	26%	43%	8%
Hospitality / Lodging	23%	22%	44%	11%
Manufacturing / Industrial	23%	22%	44%	11%
Marine work / Port	22%	24%	43%	11%
Office (includes data centers)	23%	22%	44%	10%
Public Safety	19%	23%	43%	14%
Transit / Rail / Light Rail	24%	26%	42%	9%
Water / Wastewater	22%	24%	43%	11%
Other (please describe)**	23%	24%	42%	11%

\*design-build includes procurement approaches Progressive design-build and Competitive-Based Value Selection; includes Design-Build+

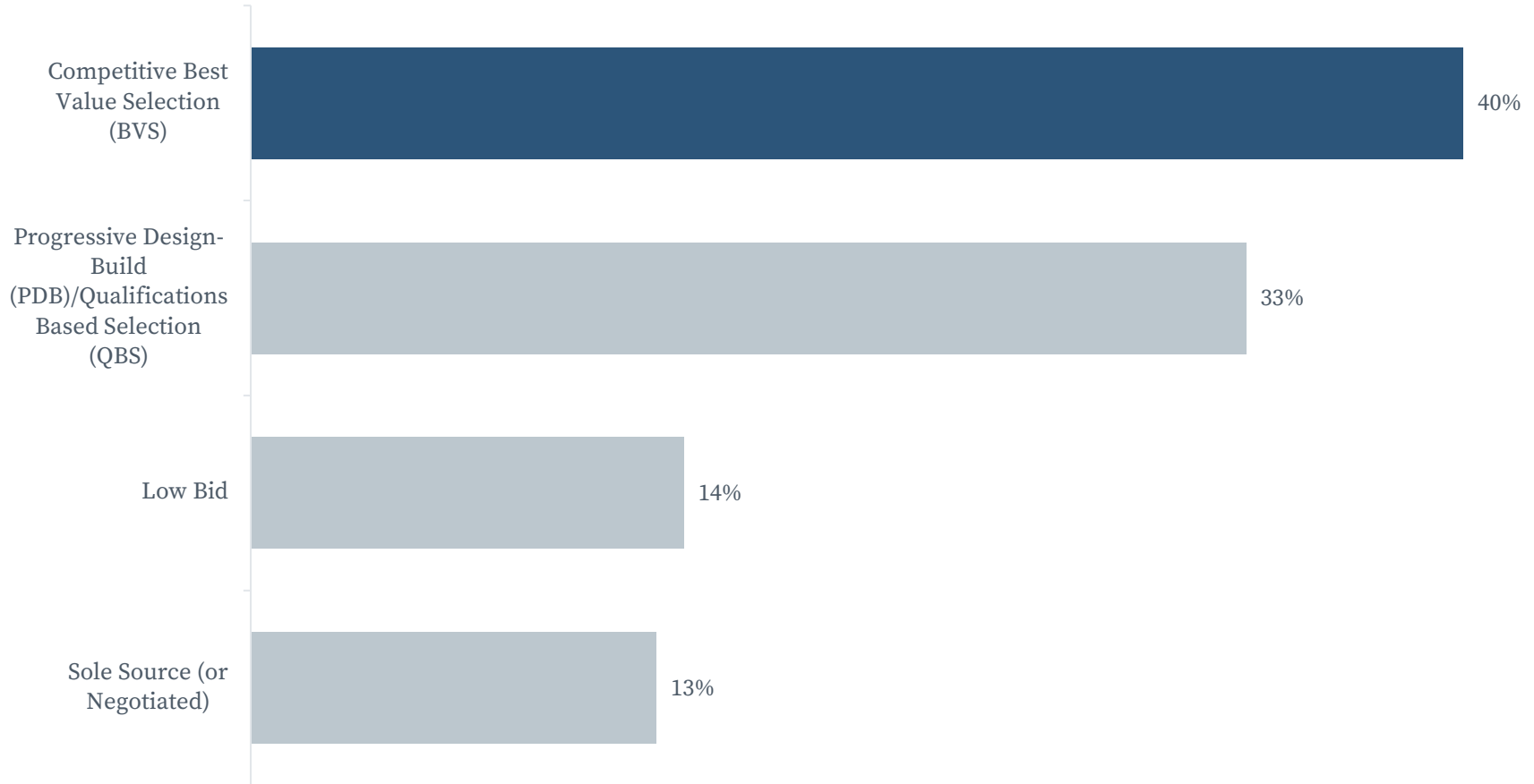
\*\*Other includes: Housing, Lab, Life Sciences, Power, Religious

# DBIA | Design-Build Survey Findings

## Most design-build projects employ competitive best-value selection or Progressive Design-Build/Qualifications-Based Selection.

What percentage of your design-build projects utilize the following procurement approaches?

Source(s): FMI (Average Response)



# DBIA | Design-Build Survey Findings

**Private owners tend to utilize Competitive Best-Value Selection most frequently, while architects most often pursue Progressive Design-Build/Qualifications-Based Selection.**

**What percentage of design-build projects, that your organization is involved in, utilize the following procurement approaches?**

Source(s): FMI (Average Response)

Organization Type	Competitive Best-Value Selection (BVS)	Low Bid	Progressive design-build (PDB)/Qualifications Based Selection (QBS)	Sole Source (or Negotiated)
Architect	26%	13%	49%	12%
Design-Build firm	30%	11%	35%	25%
Engineer	41%	12%	34%	13%
General Contractor/ Construction Manager	37%	15%	34%	14%
Manufacturer/supplier	15%	40%	25%	20%
Owners' advisor	47%	7%	35%	11%
Private owner	80%	5%	8%	8%
Public owner	51%	18%	30%	1%
Specialty trade	31%	18%	17%	34%
Other	43%	18%	27%	13%

# DBIA | Design-Build Survey Findings

Respondents from all regions report a greater use of Competitive Best-Value Selection, except in the East North Central and Pacific divisions, where Progressive Design-Build/Qualifications-Based Selection is more commonly utilized.

What percentage of design-build projects, that your organization is involved in, utilize the following procurement approaches?

Source(s): FMI (Average Response)

Census Division	Competitive Best-Value Selection (BVS)	Low Bid	Progressive design-build (PDB)/Qualifications Based Selection (QBS)	Sole Source (or Negotiated)
East North Central	32%	22%	33%	13%
East South Central	47%	9%	38%	6%
Middle Atlantic	40%	14%	28%	18%
Mountain	44%	8%	30%	18%
New England	34%	15%	19%	32%
Pacific	37%	12%	40%	10%
South Atlantic	45%	17%	27%	11%
West North Central	35%	17%	34%	15%
West South Central	44%	13%	26%	16%

# DBIA | Design-Build Survey Findings

**Competitive Best-Value selection is widely used across most segments, except for educational, manufacturing/industrial, and water/wastewater, where Progressive design-build or Qualifications-Based Selection are more common.**

**What percentage of design-build projects, that your organization is involved in, utilize the following procurement approaches?**

Source(s): FMI (Average Response)

Segment	Competitive Best-Value Selection (BVS)	Low Bid	Progressive design-build (PDB)/Qualifications Based Selection (QBS)	Sole Source (or Negotiated)
Amusement and recreation	39%	16%	31%	14%
Aviation	40%	14%	33%	13%
Commercial (e.g., retail, warehouse, distribution)	35%	14%	31%	20%
Educational	35%	12%	35%	18%
Healthcare	38%	12%	33%	17%
Highway / Street / Bridge	44%	21%	27%	8%
Hospitality / Lodging	40%	13%	31%	16%
Manufacturing / Industrial	32%	13%	33%	21%
Marine work / Port	37%	22%	28%	13%
Office (includes data centers)	36%	13%	32%	18%
Public Safety	40%	15%	34%	12%
Transit / Rail / Light Rail	41%	16%	33%	10%
Water / Wastewater	35%	16%	40%	9%
Other (please describe)*	39%	11%	34%	16%

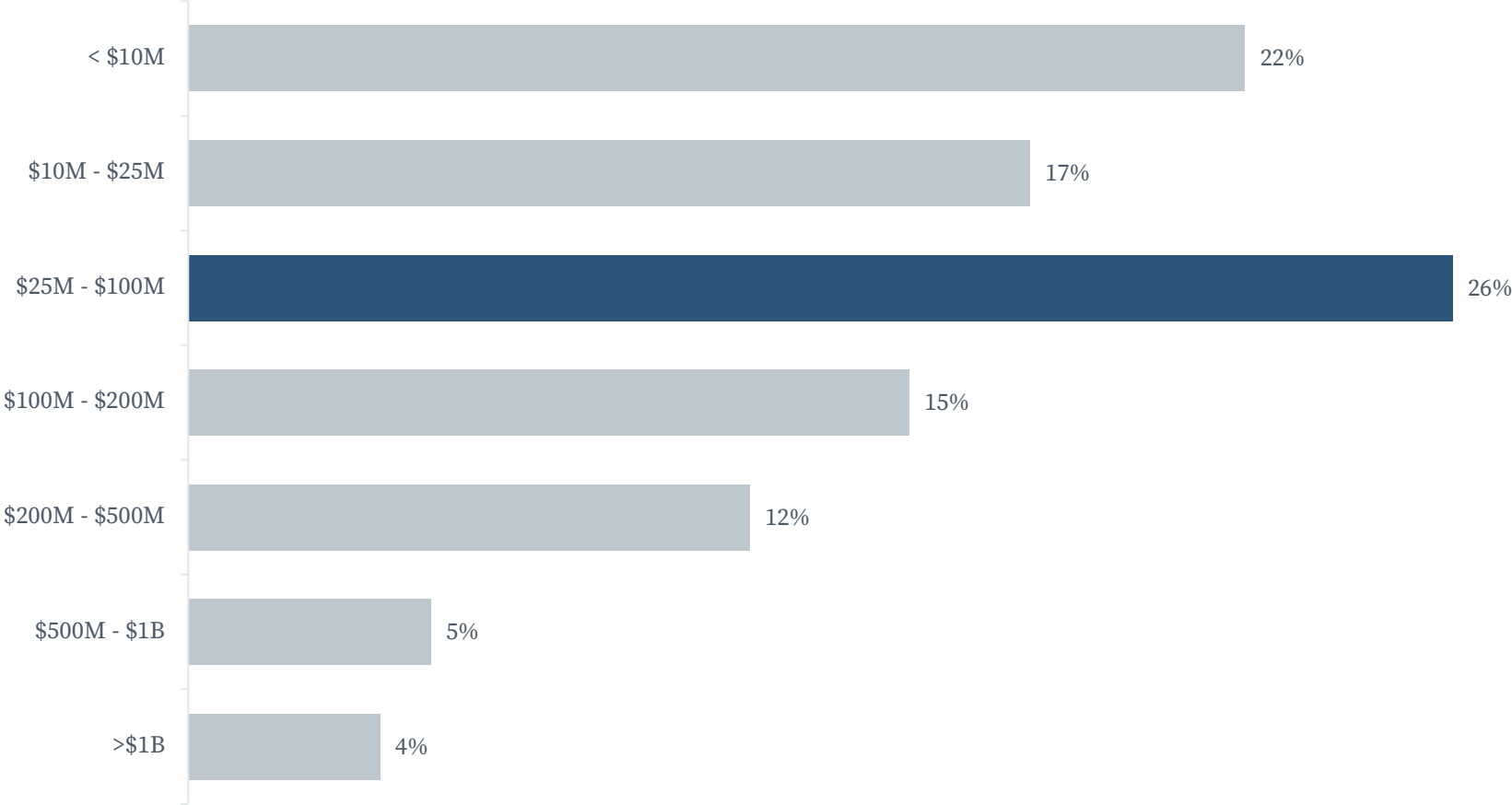
\*Other includes: Housing, Lab, Life Sciences, Power, Religious

# DBIA | Design-Build Survey Findings

Although design-build is employed across projects of various sizes, it is primarily used for projects from \$0 to \$100 million.

On projects utilizing design-build, what percentage of design-build projects were in the following size ranges?

Source(s): FMI (Average Response)





## DBIA | Design-Build Survey Findings

Across different organization types, specialty trade contractors most frequently engage in design-build for projects under \$10 million, while private owners more commonly use it for projects ranging from \$200 to \$500 million.

On projects utilizing design-build, what percentage of design-build projects were in the following size ranges?

Source(s): FMI (Average Response)

Organization Type	<\$10M	\$10M - \$25M	\$25M - \$100M	\$100M - \$200M	\$200M - \$500M	\$500 M - \$1B	>\$1B
Architect	20%	24%	29%	10%	8%	4%	6%
Design-Build firm	31%	13%	26%	14%	13%	3%	1%
Engineer	12%	12%	20%	17%	20%	11%	9%
General Contractor/ Construction Manager	21%	20%	28%	14%	10%	4%	3%
Manufacturer/supplier	28%	23%	25%	5%	13%	5%	3%
Owners' advisor	16%	19%	18%	22%	8%	9%	7%
Private owner	25%	25%	0%	0%	50%	0%	0%
Public owner	17%	15%	32%	16%	12%	4%	4%
Specialty trade	46%	21%	16%	10%	4%	1%	1%
Other	19%	12%	15%	19%	16%	10%	10%

# DBIA | Design-Build Survey Findings

**Design-build projects are most commonly in the mid-size range (\$25M - \$100M), particularly in the East South Central and New England divisions, while projects over \$500M are less frequently utilized across all regions.**

**On projects utilizing design-build, what percentage of design-build projects were in the following size ranges?**

Source(s): FMI (Average Response)

Census Division	<\$10M	\$10M - \$25M	\$25M - \$100M	\$100M - \$200M	\$200M - \$500M	\$500 M - \$1B	>\$1B
East North Central	30%	18%	25%	13%	11%	2%	2%
East South Central	12%	19%	31%	15%	23%	0%	0%
Middle Atlantic	18%	17%	24%	16%	13%	6%	8%
Mountain	25%	22%	24%	12%	11%	4%	1%
New England	19%	24%	35%	10%	7%	3%	2%
Pacific	22%	17%	27%	16%	9%	4%	4%
South Atlantic	24%	14%	24%	16%	12%	7%	3%
West North Central	22%	18%	30%	8%	14%	2%	7%
West South Central	11%	19%	26%	11%	16%	12%	5%

# DBIA | Design-Build Survey Findings

**Design-build is most used for projects in the \$25M to \$100M range, with the exception of Commercial, Manufacturing/Industrial, and Other sectors where it tends to be more prevalent in projects under \$10M.**

**On projects utilizing design-build, what percentage of design-build projects were in the following size ranges?**

Source(s): FMI (Average Response)

Segment	<\$10M	\$10M - \$25M	\$25M - \$100M	\$100M - \$200M	\$200M - \$500M	\$500 M - \$1B	>\$1B
Amusement and recreation	21%	20%	26%	12%	11%	6%	3%
Aviation	15%	16%	26%	16%	14%	7%	6%
Commercial (e.g., retail, warehouse, distribution)	27%	18%	25%	12%	9%	4%	3%
Educational	24%	19%	27%	13%	9%	5%	3%
Healthcare	21%	19%	27%	14%	11%	5%	4%
Highway / Street / Bridge	14%	14%	25%	15%	18%	9%	5%
Hospitality / Lodging	22%	19%	27%	14%	11%	5%	3%
Manufacturing / Industrial	29%	18%	26%	12%	10%	4%	2%
Marine work / Port	12%	15%	29%	17%	17%	6%	5%
Office (includes data centers)	25%	19%	25%	13%	10%	4%	3%
Public Safety	25%	22%	28%	11%	8%	4%	2%
Transit / Rail / Light Rail	11%	15%	23%	16%	18%	10%	7%
Water / Wastewater	19%	16%	26%	16%	14%	6%	4%
Other (please describe)	28%	19%	24%	15%	9%	2%	3%

\*Other includes: Housing, Lab, Life Sciences, Power, Religious

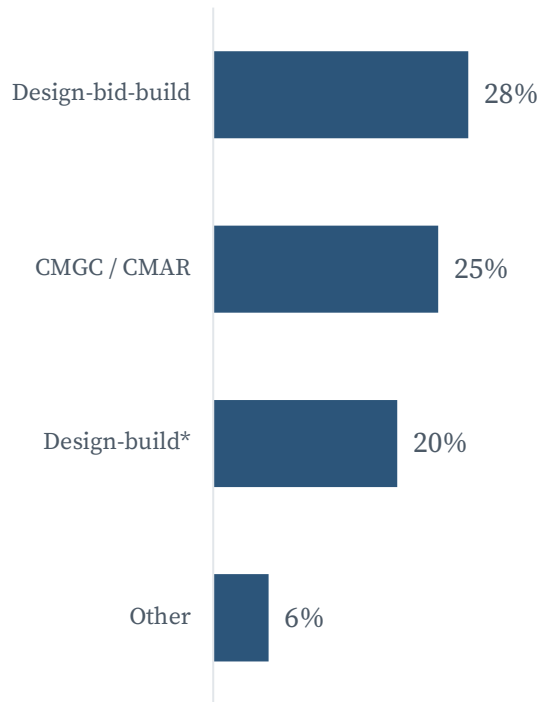
# DBIA | Design-Build Survey Findings

Surveyed organizations expect Design/Bid/Build projects to generate the most revenue and foresee a larger portion of their capital spending going toward these projects.

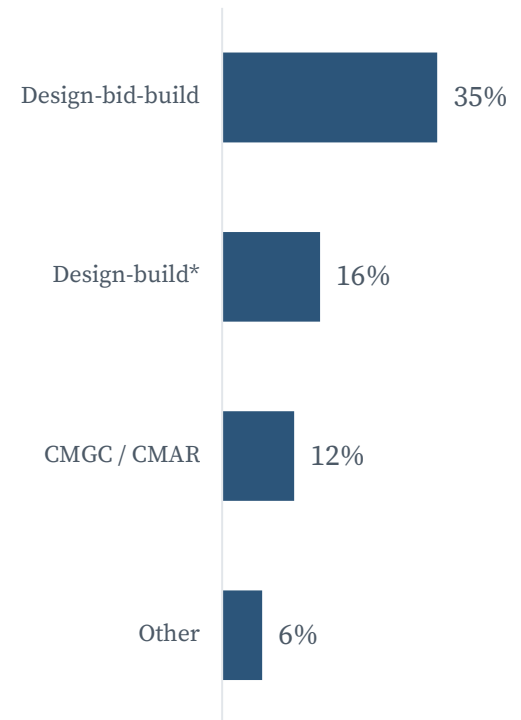
## Future Revenue & Future Spend (Based on survey responses)

Source(s): FMI (Average Response)

In the next 3-5 years, please indicate the percentage of revenue you anticipate each of the following delivery methods to represent for your organization.



In the next 3-5 years, please indicate the percentage of your organization's capital construction spending (by volume) you anticipate each of the following delivery methods to represent for your organization.



\*design-build includes procurement approaches Progressive design-build and Competitive-Based Value Selection; includes Design-Build+

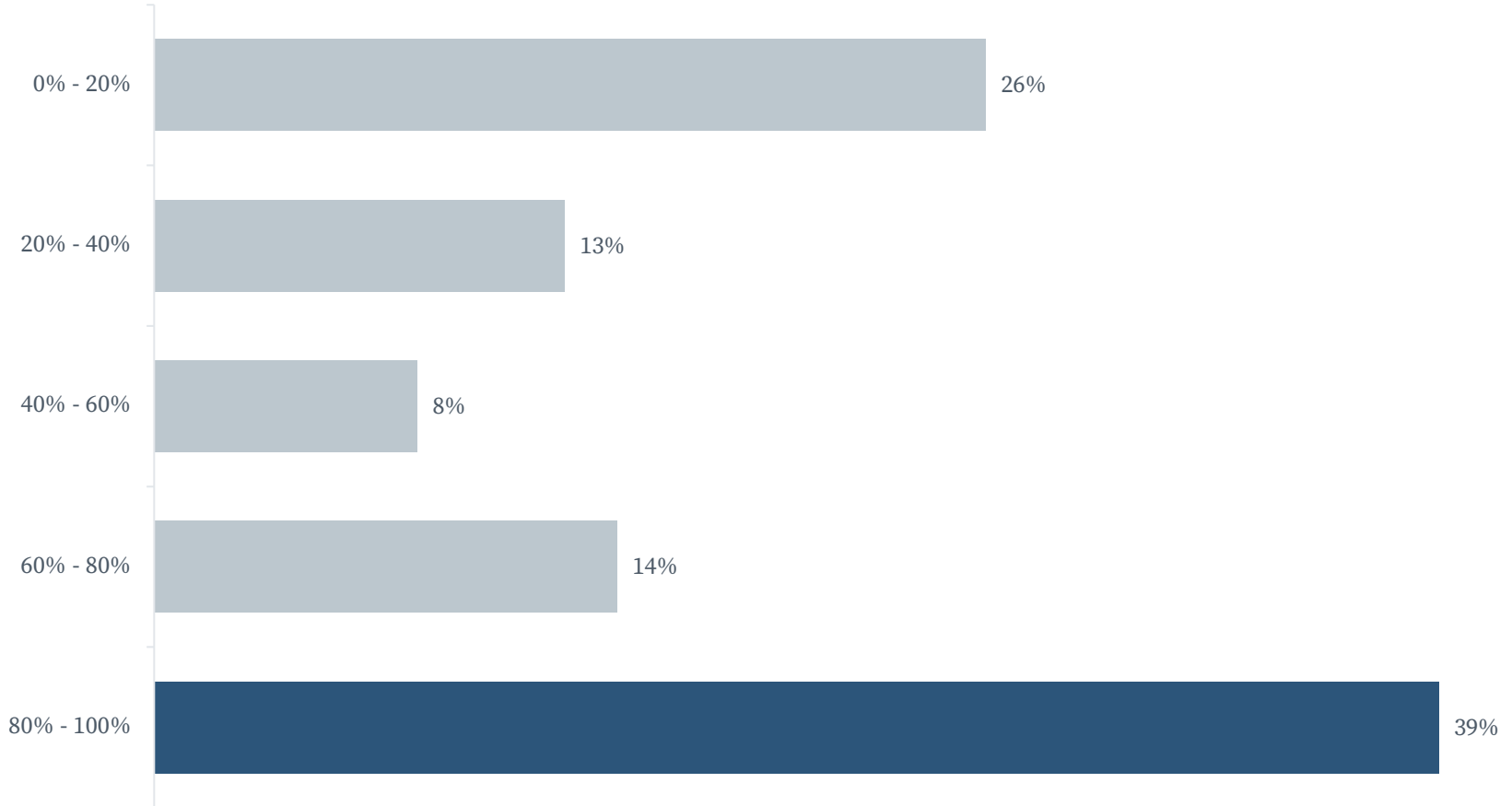
\*Percentages represent survey responses, not FMI's construction forecasts.

# DBIA | Design-Build Survey Findings

The majority of survey respondents (53%) reported using building information models on 60% or more of their design-build projects.

What percentage of your design-build projects are leveraging building information models during either design, construction, or operations phases of its life cycle?

Source(s): FMI (Percent of total)

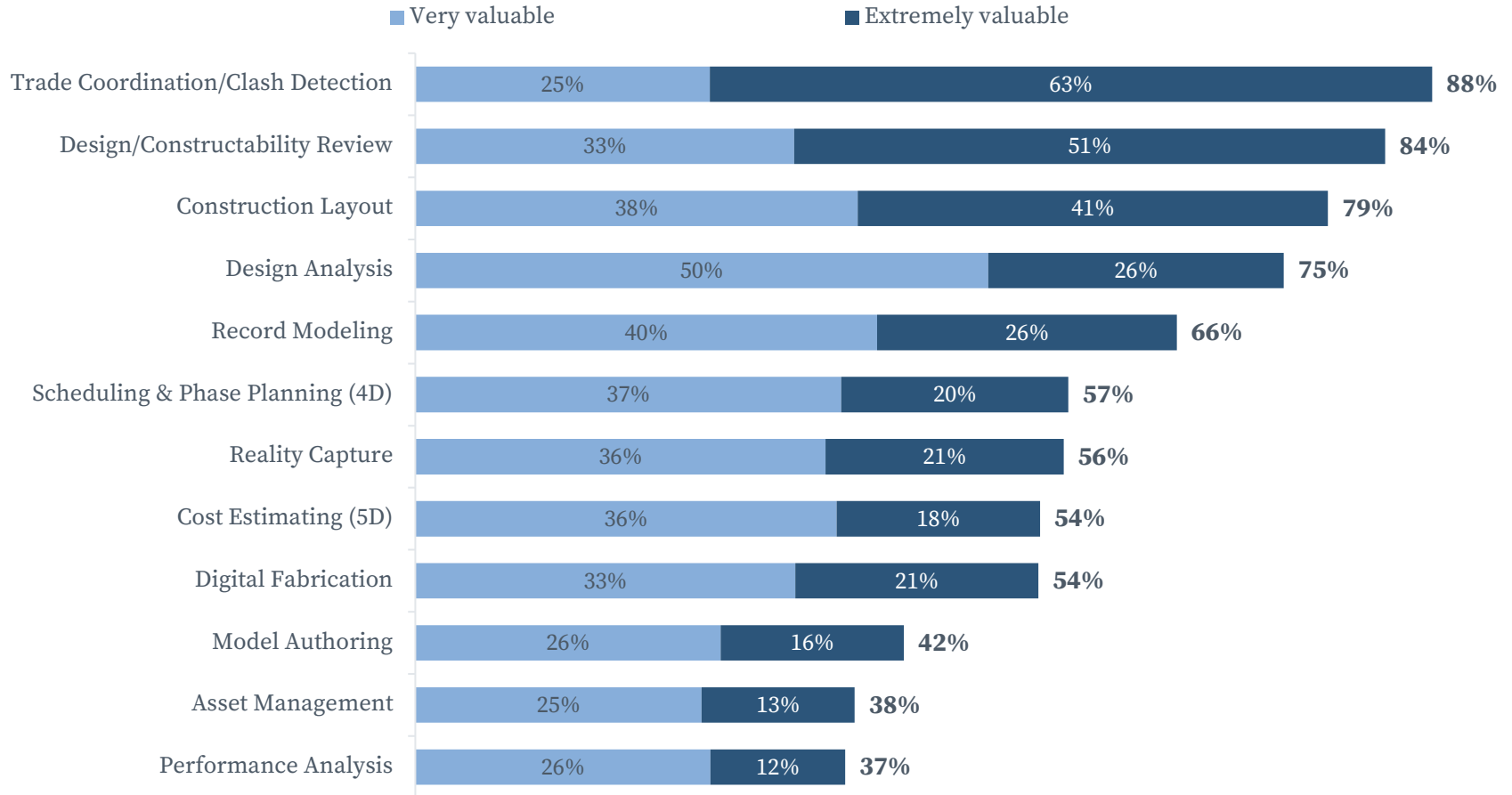


# DBIA | Design-Build Survey Findings

Trade coordination/clash detection and design/constructability review were identified as the most valuable use cases for enhancing the design, construction, and operation of respondents' design-build projects.

Which of the following BIM use cases provide value to the design, construction, and operation of your design-build projects?

Source(s): FMI (Percent of total)

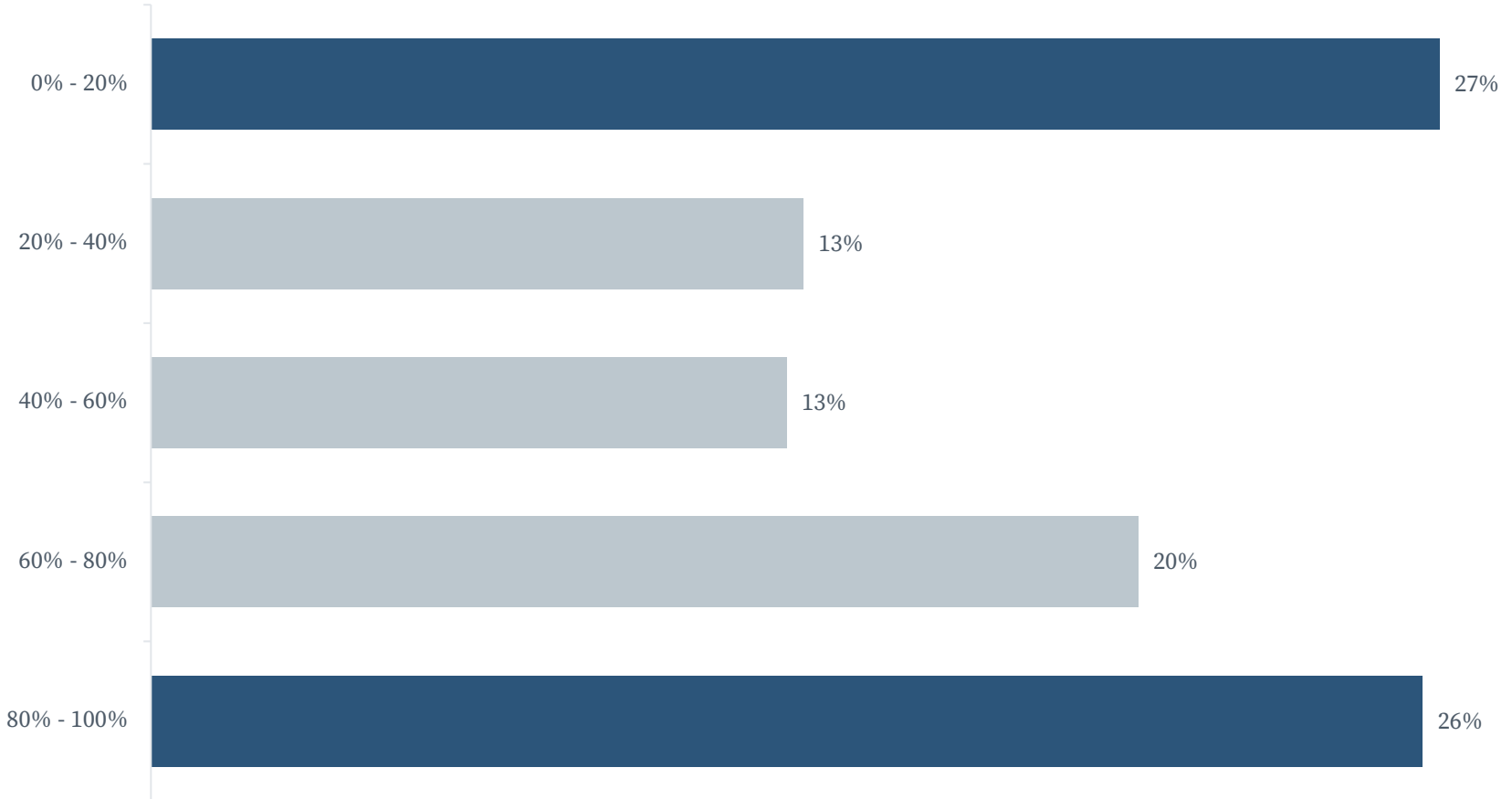


# DBIA | Design-Build Survey Findings

There is a notable split in the utilization of owner advisors in design-build projects, indicating that while some design-build projects rarely involve owner advisors, others consistently rely on them.

What percentage of your design-build projects are utilizing Owners' Advisors?

Source(s): FMI (Average Response)

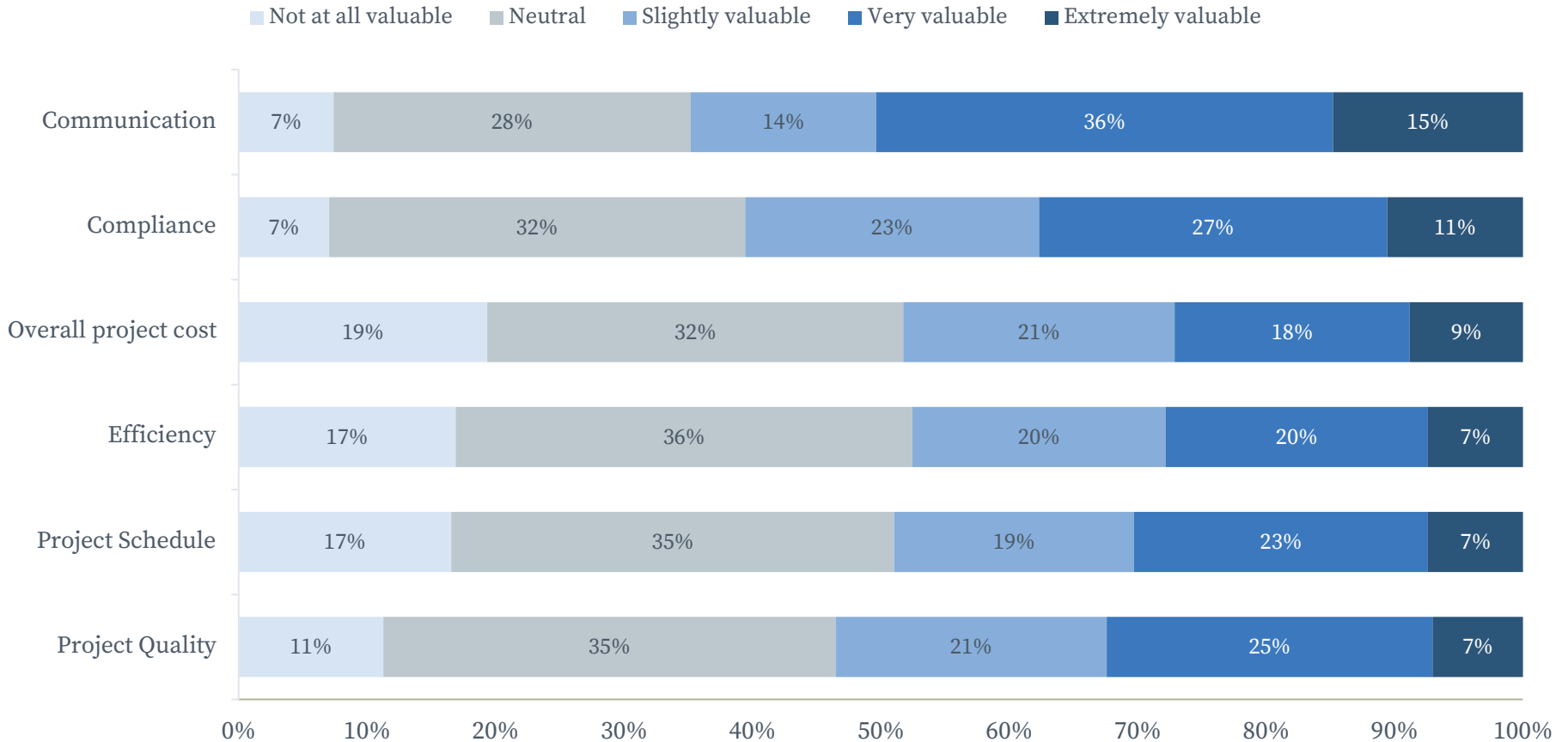


# DBIA | Design-Build Survey Findings

Survey respondents frequently find that Owners' Advisors provide the greatest impact in the area of communication.

When used, what was the Owner's Advisor impact on the following?

Source(s): FMI (Average Response)



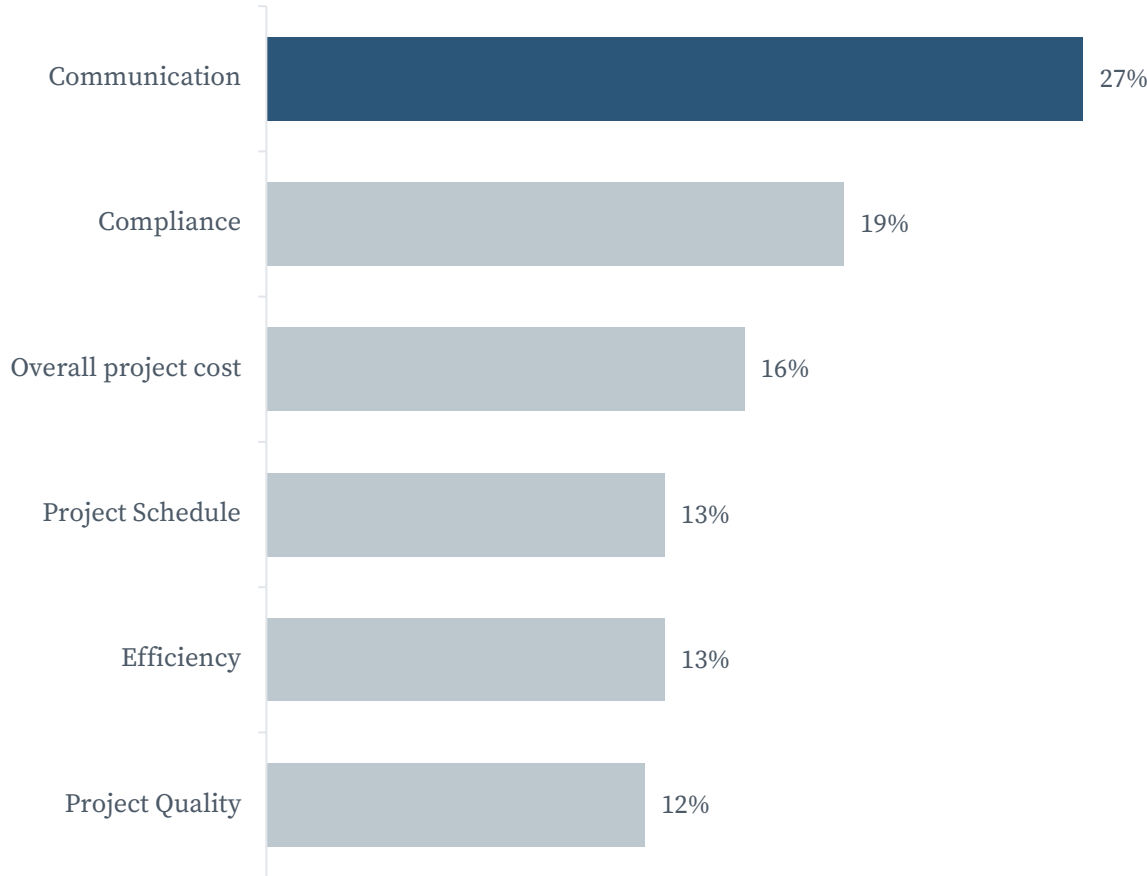


# DBIA | Design-Build Survey Findings

Communication is widely recognized as one of the most impactful owner's advisor's impact, demonstrating the importance of the knowledge that Owners' Advisors bring to project execution.

## Why were the following Owner's Advisor's impacts EXTREMELY VALUABLE?

Source(s): FMI (Percent of total)



*"Communication is based on trust and relationships that are greatly facilitated by an OA with experience in DB."*

*"These advisors typically are industry or process-specific with a working knowledge of that industry or process."*

*"Acts on the best interest of the Owner and bridges communication gaps."*

*"Provides a holistic view of portfolio, sector, and industry to inform multiple aspects of the project development, improving quality."*

*"Helps enhance communication/facilitation between Owner and Design-Builder teams. Able to convey and articulate decision-making and needs between parties."*

*"Holding owner and stakeholders accountable to make decisions to allow the D/B team to be efficient with the process and outcomes."*

# DBIA | Design-Build Survey Findings

Respondents from the Pacific division, as well as those in the Educational and Office segments, tend to view the impact of Owners' Advisors as the most valuable.

## Why were the following Owner's Advisor's impacts EXTREMELY VALUABLE?

Source(s): FMI (Percent of total)

Census Division	Extremely valuable
East North Central	5%
East South Central	4%
Middle Atlantic	4%
Mountain	12%
Pacific	33%
South Atlantic	25%
West North Central	8%
West South Central	9%

Segment	Extremely valuable
Amusement and recreation	11%
Aviation	38%
Commercial (e.g., retail, warehouse, distribution)	36%
Educational	41%
Healthcare	30%
Highway / Street / Bridge	32%
Hospitality / Lodging	26%
Manufacturing / Industrial	25%
Marine work / Port	8%
Office (includes data centers)	40%
Other (please describe)	13%
Public Safety	27%
Transit / Rail / Light Rail	28%
Water / Wastewater	38%

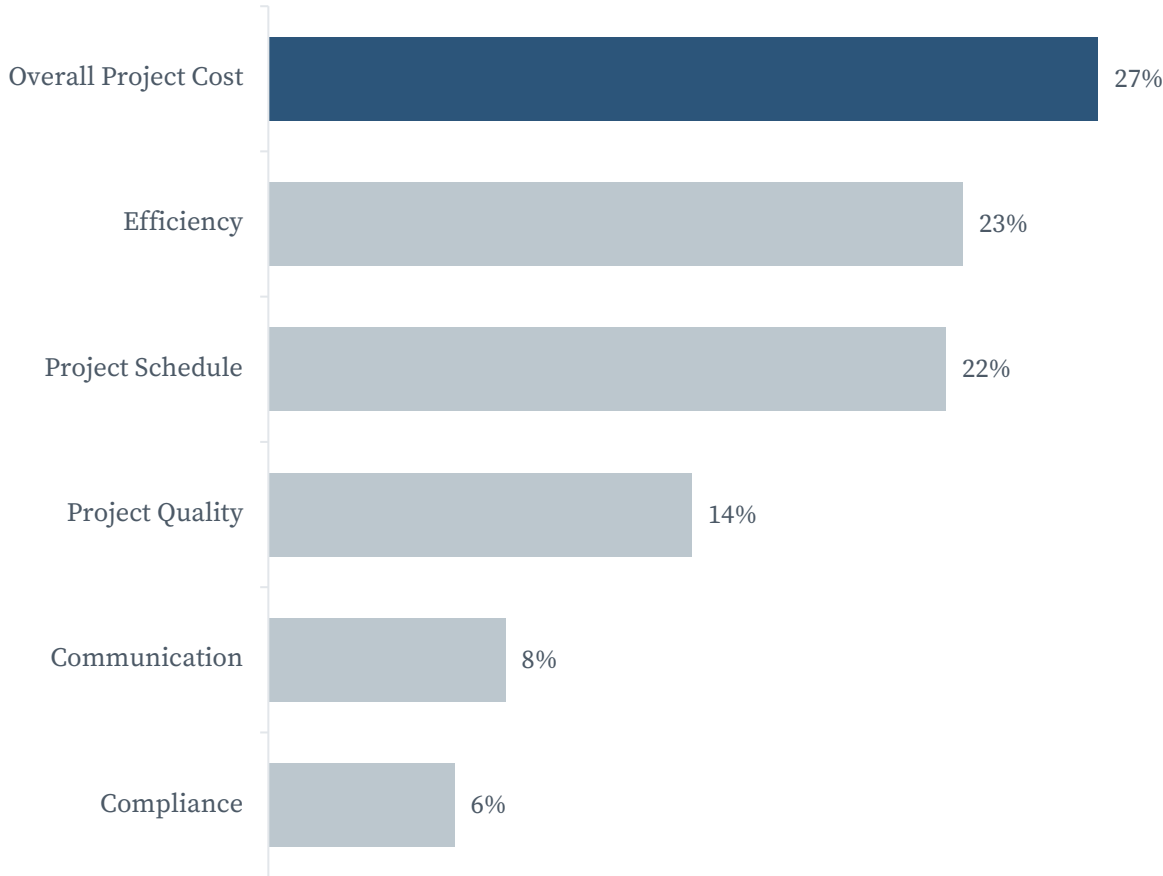
\*Other includes: Housing, Lab, Life Sciences, Power, Religious

# DBIA | Design-Build Survey Findings

Overall project cost was seen as the least valuable benefit of utilizing an Owner's Advisor.

When used, why were the following Owners' Advisor's impacts NOT valuable?

Source(s): FMI (Percent of total)



*"OA was an extra cost and they did not contribute much to managing the construction cost."*

*"Their involvement often leads to higher project costs."*

*"They rarely control decisions, and only serve to act as an intermediary, frequently muddying decisions."*

*"Owner advisor created inefficiency for the project by being another individual to have to coordinate with, yet couldn't really make any decisions."*

*"The additional reviews required only added to prolonged review periods and can delay the start of construction."*

*"Created additional 'red tape' for the approval process rather than helping to streamline decision making."*

*"They did not possess construction knowledge to yield practical cost-effective solutions during design."*

# DBIA | Design-Build Survey Findings

**Design-build is recognized as an effective approach for enhancing the use of prefabrication, particularly in healthcare and industrial projects, where the adoption of design-build is highest.**

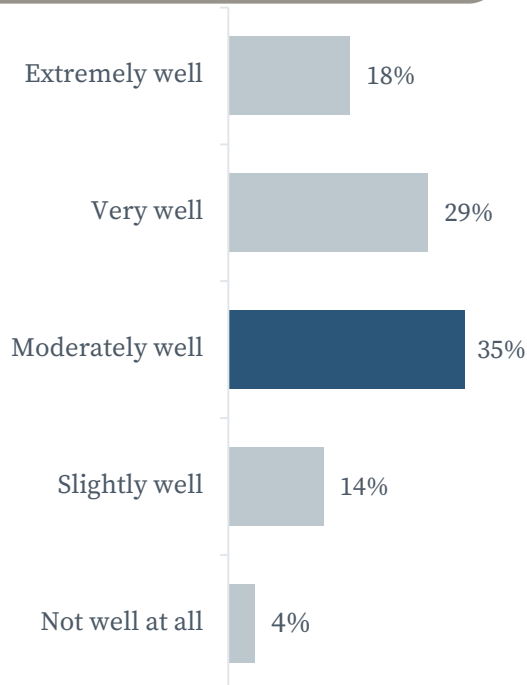
## design-build Prefabrication

Source(s): FMI (Percent of total and Average Response)

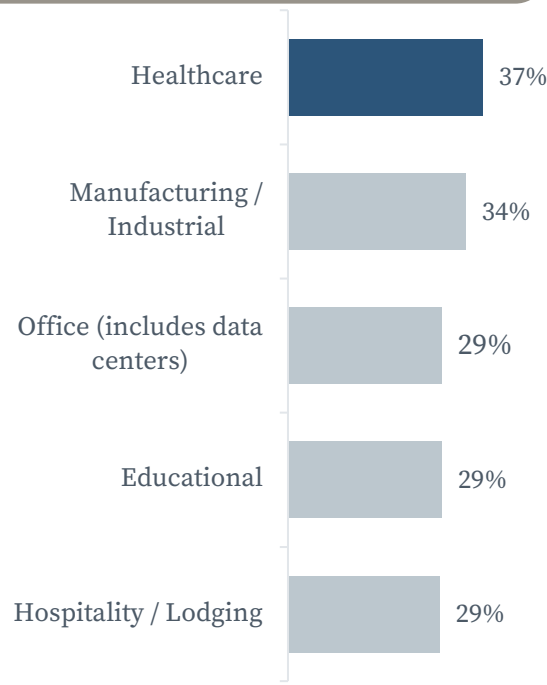
A significant portion of respondents indicated that design-build is effective in facilitating the use of prefabrication, with over 80% of participants rating it as moderately well or better. Healthcare projects lead in the adoption of design-build use on prefabrication projects, and manufacturing and industrial projects follow closely. Across sectors such as manufacturing and industrial, healthcare, education, commercial, and water/wastewater, there is a similar utilization of prefabrication, ranging anywhere from 10% to 15%.

*\*Note: Only top 5 results were shown for percentage of projects and percent of prefabrication*

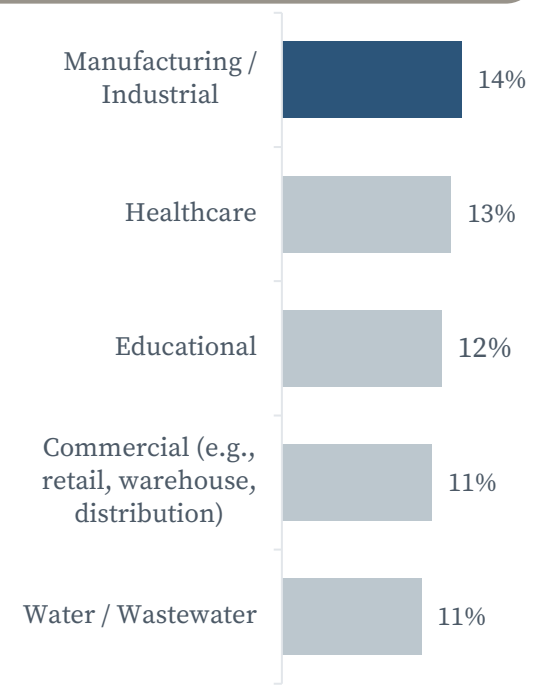
### How well does design-build facilitate greater prefabrication on projects?



### What percentage of your design-build projects are utilizing prefabrication?



### Of projects that utilize prefabrication, what percentage of the project is prefabricated?

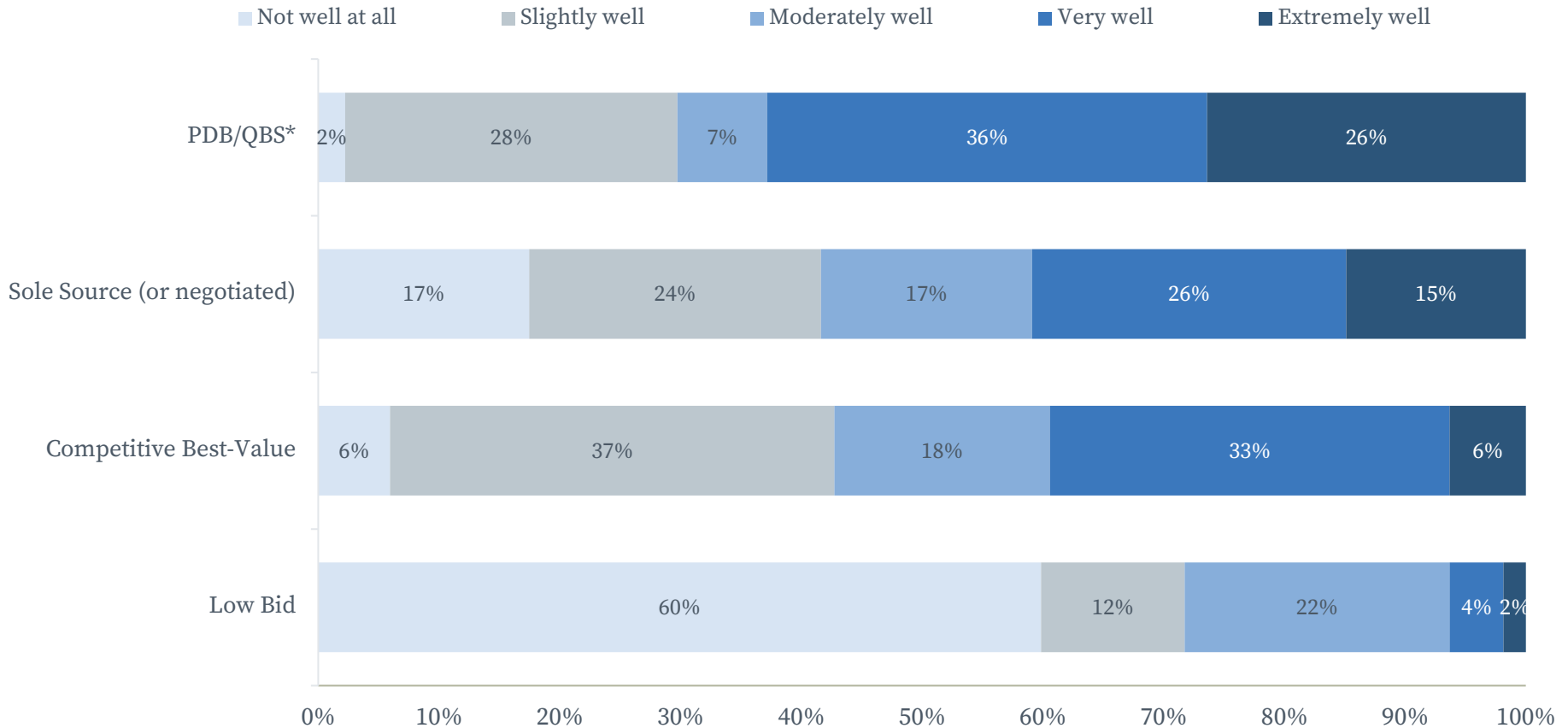


# DBIA | Design-Build Survey Findings

Progressive design-build and qualification-based selection were identified as the most effective procurement methods for managing costs, while low bid was regarded as the least effective approach for cost control.

How do the following procurement approaches address the ability to manage cost certainty in a volatile market environment?

Source(s): FMI (Percent of total)



\*PDB- Progressive design-build, QBS – Qualifications Based Selection



**Consulting**

**Appendix: Open-Ended  
Responses**

## Survey Open-Ended Responses

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When used, why were the following Owner's Advisor's impacts EXTREMELY valuable?

### Enhancing Communication and Coordination

- *"Owner Advisor can facilitate and enhance communication."*
- *"Facilitates conversations between all stakeholders, not just those with a financial interest."*
- *"Helps enhance communication/facilitation between Owner and Design-Builder teams."*
- *"Provides confirmation on compliance with project technical requirements, thereby reducing disputes between DB and Owner."*
- *"Owner Advisor helps bridge communication gaps between the DB team and the Owner."*
- *"A neutral party helping."*
- *"They help to validate what is being explained to them by the design-build team."*
- *"OA teams' principal role is validating substantiation compliance."*
- *"Helps facilitate communication with the design-builder."*
- *"Communication is based on trust and relationships that are greatly facilitated by an OA with experience in DB."*
- *"Having an expert on our team who can push back on the contract team is nice."*
- *"The terminology frequently used by contractors is not well understood by many owners. The Owner's Advisor helps bridge that communication gap."*
- *"Communicating the needs of the project to the owner and managing information flow. Also, very helpful to act between the DB and Owner on the roles and expectations."*
- *"In implementing efforts for coordination and documentation and more so overall program governance."*
- *"Another set of eyes to provide oversight and material integrity."*

### Expertise and Industry Knowledge

- *"Provides a realistic view."*
- *"Understanding of cost structure."*
- *"Awareness of requirements."*
- *"Reasonably neutral and better able to address difficult situations."*

## Survey Open-Ended Responses

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When used, why were the following Owner's Advisor's impacts EXTREMELY valuable?

### Expertise and Industry Knowledge (cont.)

- *"Awareness of process."*
- *"Experience utilizing centralized team location/office."*
- *"Knowledge of utilizing centralized team location/office."*
- *"Understanding of market rates."*
- *"Evaluating risk."*
- *"Experience and technical knowledge."*
- *"Retaining subject matter experts to ensure compliance."*
- *"These advisors typically are industry or process-specific with a working knowledge of that industry or process."*
- *"Experience on similar projects."*
- *"Estimate validation."*
- *"Facilitator."*
- *"Prior experience."*
- *"Expertise."*

### Ensuring Compliance and Accountability

- *"Keeping the client in compliance with internal and external controls."*
- *"Provides oversight and material integrity."*
- *"Provides accountability for the process."*
- *"Independently verifies the project quality on behalf of the Owner."*
- *"Acts on the best interest of the Owner and bridges communication gaps."*
- *"Ensures that the project stays on track on behalf of the Owner."*
- *"Prevents unrealistic schedules."*



## Survey Open-Ended Responses

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When used, why were the following Owner's Advisor's impacts **EXTREMELY** valuable?

### Ensuring Compliance and Accountability (cont.)

- *"A 3rd party able to validate the DB team's measurement of quality."*
- *"Review contract documents for compliance with project requirements."*
- *"Advisors take an active role in ensuring design and construction quality."*
- *"Owner Advisors watch costs with a different interest than others."*
- *"OA teams properly utilized stay out of the weeds."*
- *"On-time, on budget."*
- *"Less change orders."*

### Decision Support and Strategic Guidance

- *"Provides feedback for decisions before they go to construction."*
- *"Able to provide 3rd party feedback, protects owner from poor solutions by DBC."*
- *"Provides a holistic view of portfolio, sector, and industry to inform multiple aspects of the project development, improving quality."*
- *"Helped with procurement and evaluation of proposals; helped evaluate change orders and other cost-related items."*
- *"Provided the owner with input based on extensive DB experience, improving efficiencies at every stage of the project."*
- *"OA leads and coordinates this."*
- *"Helps enhance communication/facilitation between Owner and Design-Builder teams. Able to convey and articulate decision-making and needs between parties."*
- *"OAs help define an achievable budget upfront."*
- *"They also help the Owners make timely decisions to maintain the schedule."*
- *"OAs help the entire team engage in open communication."*
- *"This person can ensure our voice is heard, even if we are in a meeting or not there."*

## Survey Open-Ended Responses

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When used, why were the following Owner's Advisor's impacts **EXTREMELY** valuable?

### **Decision Support and Strategic Guidance (cont.)**

- *Especially with owners new to the DB procurement, the OA really helped facilitate the communication with the owner and keep them informed of the process.*“
- *"OA's help 'translate' the cost of owner's decisions to them.*“

### **Project Efficiency and Quality Improvement**

- *"Facilitates conversations between all stakeholders, not just those with a financial interest.*“
- *"Experience and technical knowledge help improve the efficiency of the project.*“
- *"OA helps put the team back on the DB process because they have no local political pressure.*“
- *"OA teams are a fully engaged member of the team and mentors Design-Build best practices.*“
- *"Review contract documents for compliance with project requirements.*“
- *"Holding owner and stakeholders accountable to make decisions to allow the D/B team to be efficient with the process and outcomes.*“
- *"OA can help 'balance' the desire of the AE team to please the client by explaining the cost/ramifications of their requests.*“
- *"They help keep the project moving to support efficiency."*

## Survey Open-Ended Responses

### When used, why were the following Owner's Advisor's impacts NOT valuable?

#### Cost Implications

- *"OA was an extra cost and they did not contribute much to managing the construction cost."*
- *"Divert dollars away from the project/building budget."*
- *"They increase the costs. A third party that has no skin in the game."*
- *"Cost of the owner advisor exceeds the value they provide."*
- *"Their involvement often leads to higher project costs."*
- *"The cost of owner advisor was more than realized cost savings/efficiency."*
- *"Cost of owner's engineers exceeded any savings potentially realized."*
- *"They drove costs higher."*
- *"Cost more to the client than they were able to provide in tangible benefits."*

#### Limited Value Addition

- *"No need for an intermediate."*
- *"No benefit."*
- *"They provided very little input on cost and were more focused on meeting minutes."*
- *"They provided no input on schedule and we dealt directly with our owners."*
- *"No added benefit."*
- *"They rarely control decisions, and only serve to act as an intermediary, frequently muddying decisions."*
- *"They add limited value, and just create confusion and friction the vast majority of the time."*
- *"Often acted as a barrier rather than facilitating smooth communication."*
- *"Made the project less efficient due to OR mostly trying to justify their role."*
- *"Owner advisor created inefficiency for the project by being another individual to have to coordinate with, yet couldn't really make any decisions."*
- *"They add time to the decision-making process."*

## Survey Open-Ended Responses

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When used, why were the following Owner's Advisor's impacts NOT valuable?

### Limited Value Addition (cont.)

- *"No meaningful contribution."*

### Impact on Project Schedule

- *"No impact on schedule, expect delay."*
- *"Increased the overall cost because their fees needed to be factored into funding requests etc."*
- *"Their involvement often extended the time needed to make decisions."*
- *"The additional reviews required only added to prolonged review periods and can delay the start of construction."*
- *"Schedule was driven by supply chain in the marketplace. OA had no idea about supply chain and logistics."*
- *"Schedule took precedence over quality."*
- *"Often drives up total project cost, either through dictating scope, or through their contract itself (excess reviews, onsite observation, etc.)."*

### Inefficiency and Redundancy

- *"Created additional 'red tape' for the approval process rather than helping to streamline decision making."*
- *"Too many preferential comments."*
- *"Time wasted resolving preferential comments."*
- *"Often only identifying 'potential' non-compliance vs. actively helping the team proactively/creatively comply."*
- *"Often an extra layer of non-decision making communication."*
- *"Added a layer of non-decision makers to the process."*
- *"Increased cost. Multiple review processes that slowed the project. Redundant efforts."*
- *"Added time to reviews and administrative processes."*
- *"Creates bottlenecks."*
- *"Added unnecessary process."*
- *"They slowed the process with decisions and intent and owner needs."*

## Survey Open-Ended Responses

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When used, why were the following Owner's Advisor's impacts NOT valuable?

### Inefficiency and Redundancy (cont.)

- *"Added layers to coordination, introduced potential barriers to streamlined conflict resolution."*
- *"Disengaged from real-time communication."*
- *"OA not generally looking for the best solution."*
- *"Duplicative to what the DB firm provides."*

### Lack of Knowledge and Expertise

- *"Not knowledgeable."*
- *"Inaccurate budgets."*
- *"Lack of scheduling experience."*
- *"Poor knowledge of construction costs."*
- *"Inferior to DB firm knowledge of quality control and evaluation."*
- *"Lack of owner advisor understanding of project costs."*
- *"They did not possess construction knowledge to yield practical cost-effective solutions during design."*
- *"The advisor's knowledge is limited or myopic."*
- *"Poor concept budgeting."*
- *"Lack of awareness, lack of ownership of the finished product or lifespan of the facility."*

### Communication Barriers

- *"Often acted as a barrier rather than facilitating smooth communication."*
- *"Often an added layer of review that is not always proactively constructive."*
- *"Added another layer of conversation."*
- *"Turned into barriers and the Owner Advisor having to prove their value for compensation. It often turns into problem finding, not problem solving."*
- *"The consultants have delayed the project by not getting their work done on the schedule they committed to."*

## Survey Open-Ended Responses

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When used, why were the following Owner's Advisor's impacts NOT valuable?

### Communication Barriers (cont.)

- *"Broken communication."*
- *"Owner advisors tend to work on a public entity schedule."*
- *"Confusing lines of authority."*
- *"Lack of experience and expertise."*

### Decision Making Issues

- *"OA does not control project cost."*
- *"OA does not control project schedule."*
- *"Decision impact."*
- *"OA causing delays more often than facilitating progress."*
- *"Obstructive, not collaborative."*
- *"Slow decision-making."*
- *"Tends to cause miscommunication or gaps in communication."*
- *"Owner advisor assumed a classic standard role of 'consultant' rather than watching out for the owner's interests."*
- *"They add another player, and unless the role is very defined, this can be a communication barrier."*

## Survey Open-Ended Responses

### Why or why not does design-build facilitate greater prefabrication on projects?

#### Integration and Collaboration

- *"Prefabrication requires integration of design, construction, and materials supply. Design-Build is all about integration."*
- *"You can get the trade partners on at the very beginning and work with the final fabricators and installers to creatively develop and complete the project."*
- *"PDB allows you to develop project development milestones specific to the project schedule (i.e., points of fabrication and delivery vs. traditional SD, DD, CD, etc.)."*
- *"Through the use of BIM, coordinated design teams guarantee dimensions for off-site and long-lead fabrications."*
- *"Engaging the Key Trades / Suppliers / Manufacturers much earlier in the process allows for the Designer-of-Record to consider means & methods 'DURING THE DESIGN.'"*
- *"Team can share models and updates, then provide 3D construction models that can be used for prefabrication."*
- *"Design-builder has the perspective and the authority to develop a comprehensive prefabrication approach, both by careful selection of team members and by greater early collaboration."*
- *"The design can be developed with prefabrication in mind from the beginning."*
- *"Schedule benefits, construction site organization, and space utilization."*
- *"Collaborative design is done early to resolve conflicts, allowing for faster installation with less rework."*
- *"The contractor often controls the DB and is always able to provide constructability input, which provides incentive for designers to explore all options."*
- *"Early design decisions and the leveraging of VDC resources help to facilitate early design in prefabrication, which is necessary for the fabrication of assemblies to provide necessary positive schedule impact."*

#### Early Engagement

- *"To get the most out of prefab, it has to start in the SD phase of design."*
- *"It enables the ability to foster greater team collaboration and to engage and release critical trade partners earlier to provide input in the design process to coordinate work scopes that enable prefabrication of components leveraging detailed VDC models."*
- *"Early builder involvement helps stress the need and allows the prefab to actually be constructible."*

## Survey Open-Ended Responses

### Why or why not does design-build facilitate greater prefabrication on projects?

#### Early Engagement (cont.)

- *"We need design and trades to be on-board early to make prefab work at its best; DB allows this to happen."*
- *"Can get started on prefabrication concepts much earlier."*
- *"Design-build allows for early involvement of trades."*
- *"Early coordination between design and construction provides the best opportunities for prefabrication solutions."*

#### Efficiency and Cost Management

- *"Prefabrication is an integral part of the design/build process and is extremely efficient through DB clash detection."*
- *"It allows for full integration of the design team, fabrication team, and establishing control over tolerances and expectations much earlier in the project."*
- *"It allows for the ability to prefabricate components of the building, saving time and labor in a very tight labor market. As a result, it reduces schedule duration and labor costs."*
- *"It allows trade partners to be onboarded early in design while they can still impact the design to allow for the most efficient pre-fab."*
- *"Allows teams to determine areas where prefabrication can bring the best value and incorporate the prefabricated systems into the design."*
- *"Because you can get so detailed and actually incorporate the pre-fab into the means and methods of the build, not just a note on the drawings. You can see it in a 3D format."*
- *"DB allows for better coordination and planning, which enables greater opportunities for prefabrication."*
- *"It allows the design-builder the important opportunity to steer the design toward facilitating prefabrication, then the flexibility of how to engage trade partners early to make sure the pre-fabrication is possible, practical, and effective."*

#### Flexibility and Innovation

- *"DB offers exceptional innovative solutions otherwise not specified."*
- *"Creative designer types are directly connected for material fabrication types."*
- *"DB build enables the team to create a design that facilitates the desire to prefabricate project components."*
- *"Allows teams to determine areas where prefabrication can bring the best value and incorporate the prefabricated systems into the design."*



## Survey Open-Ended Responses

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### Why or why not does design-build facilitate greater prefabrication on projects?

#### **Flexibility and Innovation (cont.)**

- *"It allows to ensure the performance requirements while optimizing what is prefabrication for efficiency, schedule, and cost."*
- *"The DB contractor will introduce prefabrication in many cases where schedule, cost, and quality approach will benefit."*

#### **Disagreement or Uncertainty**

- *"Neutral/same effect as any other delivery method."*
- *"I see nowhere that it makes a difference. Vendors will start on pre-Fab design whenever they are brought in, regardless of whether there is a BIM or not."*
- *"I am not sure."*
- *"It does not apply to FHC products."*
- *"We don't use prefabrication."*
- *"We haven't needed this on our projects."*
- *"We have only done UG projects, not a lot of Fab on them."*

## Survey Open-Ended Responses

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### How does design-build enhance the value/use of VDC?

#### Integration and Collaboration

- *"Design-Build integrates design and construction, and VDC is the best platform to document the integration."*
- *"Integrated teams communicated together across the model space."*
- *"All team members can contribute to the model development from early in the process to have a better chance of accurately modeled elements, coordination, and collaboration."*
- *"Collaboration of the models between designer, contractor, and owner."*
- *"Collaborative creation of the models between designer, contractor, and owner."*
- *"Collaborative relationship between contractor and designer enhances feasibility of VDC."*
- *"Forces the use of VDC to adequately engage stakeholders who may not be used to looking at traditional plans and visualizing the end result."*
- *"Greater collaboration with designer, crews, and subs; risk mitigation, clash detection solving issues before construction starts."*
- *"Collaborative synergies; early understanding of cost."*
- *"Team integration and collaboration can enhance this."*
- *"Increased collaboration between team members."*
- *"Collaboration during design using VDC results in better projects!"*
- *"The integrated team lends itself to facilitating effective use of VDC."*
- *"Early engagement of trade partners. Allowing the Design-Builder to coordinate, monitor, and manage one model for the project from day one in lieu of a 'design model' and a 'construction model.'"*
- *"Collaboration between designer, design consultants, subcontractors, and contractor."*
- *"Natural collaboration feeds the use and value of VDC by all parties."*
- *"Collaborative team approach."*

## Survey Open-Ended Responses

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### How does design-build enhance the value/use of VDC?

#### Early Engagement

- *"Probably gets the conversation started much earlier."*
- *"Early contractor/designer interaction."*
- *"Getting the Trades involved earlier in the Design Phase provides for true modeling of what will actually be built."*
- *"Early and concurrent collaboration amongst the team members."*
- *"Early collaboration between Designer and Contractor with Owner/Stakeholder presence."*
- *"Earlier builder involvement."*
- *"Early collaboration and integration between designer and builder and facilities team."*
- *"Earlier engagement of trade subcontractors drives more accurate models earlier in design."*
- *"Early engagement."*

#### Risk Mitigation and Conflict Resolution

- *"Clash and Conflict resolution."*
- *"Minimize potential conflicts."*
- *"Reduces risk (cost) through more accurate depictions."*
- *"Minimizes potential conflicts."*
- *"Enhanced Conflict Detection and Resolution / Improved Coordination and Communication / Optimization of Designs and Processes."*
- *"Solving problems before we get in the field in a collaborative manner."*
- *"VDC allows for the contractor to use more fully the capabilities of VDC."*
- *"Allows for the DB team to leverage all of the benefits since it is usually easier to share information between team members (design-fabrication-construction) under a single DB contract."*
- *"Provides tools for internal and external stakeholders to understand design intent, alternative analysis, functionality, and aesthetics."*
- *"Breaks down barriers between design model and fabrication model creating team efficiency with a single tool."*

## Survey Open-Ended Responses

### How does design-build enhance the value/use of VDC?

#### Efficiency and Cost Management

- *"Another tool to use to minimize risk."*
- *"Allows for scenario comparison."*
- *"It provides more opportunity to leverage this technology to drive innovation and efficiency in both design and construction."*
- *"It makes the life-cycle longer which gets more bang for the buck."*
- *"Expedited project delivery."*
- *"It allows more collaboration and integration with all stakeholders working out of the same model from early in design through project closeout."*
- *"Cost saving measures can be identified much earlier."*
- *"Cost estimation."*

#### Technology Utilization

- *"Design and construction collaboration thrives in the context of VDC."*
- *"The Project Team is 'integrated' much earlier in the process versus the traditional linear silo approach to design & then construction."*
- *"Single contract or subcontract for support on both the design and construction."*
- *"The Design-Builder can specify (via subcontracts) how each partner will participate in the BIM/VDC and can use the BIM as the key design-to-permit-to-construction tool on the project."*
- *"VDC becomes a practical and valuable asset when designer and builder are on the same team."*
- *"It promotes collaboration across all team members."*
- *"DB is the best project delivery method to maximize the positive impact of VDC and BIM."*
- *"Allows the integration of Design and Construction in a single entity."*
- *"VDC is of a higher quality and completed much earlier than traditional delivery methods."*

## Survey Open-Ended Responses

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### Which factors do you believe contribute to the increased engagement of UBEs in design-build projects compared to other project delivery methods?

#### Early Engagement and Collaboration

- *"Ability for Design-Build Teams to engage all partners early - often prior to procurement."*
- *"Earlier opportunities for engagement."*
- *"Early engagement and direct selection of trade partners."*
- *"The ability to selectively solicit UBE trade partners and assist to ensure scopes of work are appropriately accounted for within their proposals and subcontract agreements."*
- *"Early engagement of subcontractors and subconsultants and owner-driven UBE goals."*
- *"The flexibility of design-build and the design-builder's ability to structure deals that meet the unique needs of UBEs is critical to the success of inclusion."*
- *"More time to plan, collaborate, and communicate with the UDBE firms to find the best value approach to achieve goals with the owner at the table."*
- *"Early engagement of these Enterprises led to increased knowledge and therefore success."*
- *"Earlier engagement with subcontractors and increased ability to provide smaller segments of work to subcontractors."*
- *"Early involvement in the design and procurement process."*

#### Owner and Government Requirements

- *"Contracts have UBE goals or minimums."*
- *"Government enforcement participation goals."*
- *"Government mandates."*
- *"Participation Requirements mandated by the Contract."*
- *"Local, State and Federal Requirements."*
- *"Owner requirements."*
- *"Owner UBE requirements."*
- *"Federal Government's requirement to engage with SB on eligible projects."*

## Survey Open-Ended Responses

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Which factors do you believe contribute to the increased engagement of UBEs in design-build projects compared to other project delivery methods?

### Owner and Government Requirements (cont.)

- *"Purchasing requirements or legal statutes."*
- *"Public sector contract requirements."*
- *"Funding requirements to use UBEs."*
- *"Specific project goals typically mandated by public entities."*
- *"Owner RFP and Contracts requiring increased utilization."*
- *"Municipal/state contract minimum participation requirements."*
- *"Including mandatory targets for UBEs."*
- *"Program requirements."*

### Flexibility and Selection Criteria

- *"Ability to select trade partners based on other than price."*
- *"Ability to look beyond the 'low bid' when choosing a vendor/subcontractor."*
- *"DB entity is better equipped than the owner to succeed. More flexible in the distribution of work."*
- *"QBS scoring with weighted UBE participation."*
- *"Transparency with owner on value and selection."*
- *"Selection criteria for the design-builder solicitation can be tailored to evaluate approach and actual metrics tied to this as part of the selection."*
- *"The design-build process allows UBEs to have better-defined scopes of work; they are given more time to be engaged in the procurement, and cost is not the only factor considered in the award by owners."*
- *"DB allows for more time to plan and strategize during procurement phases of the project, which allows more time to be allocated to UBE engagement/planning."*
- *"There is more flexibility on selecting subcontractors in DB procurement. We are able to choose subcontractors based on qualifications rather than just low price."*

## Survey Open-Ended Responses

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Which factors do you believe contribute to the increased engagement of UBEs in design-build projects compared to other project delivery methods?

### Mentorship and Capacity Building

- *"Better oversight of small businesses and the ability to assist them to grow."*
- *"Mentorship and capacity building: Design-build projects often include provisions for mentorship and capacity-building initiatives."*
- *"Ability to mentor, exposure to public works, DEI."*

### Disagreement with the Premise

- *"I don't necessarily agree that UBE engagement is higher with DB. Factors though include a willingness by the contracting entity. A desire to improve this interaction."*
- *"I don't believe they increase engagement by UBE's."*
- *"I don't believe DB facilitates increased engagement. The owner's 'goals' is what drives engagement."*
- *"I don't see it."*
- *"I don't necessarily agree with the premise."*
- *"I don't have data supporting that design-build encourages UBE participation."*
- *"I can't think of a reason a DB would necessarily be more engaged by a UBE than another delivery method. I'd be interested to see the data that corroborates this."*

### Additional Factors

- *"Increased awareness and performance-based selection."*
- *"Ability to develop and select UBEs outside a strict low-bid environment."*
- *"More relationship-based selection."*
- *"More choice of team and typically bigger projects."*
- *"Owner's established goals part of scoring criteria."*
- *"Owner requirements, smaller packages, evaluation criteria."*
- *"Design-Build allows us to partner with UBE's and pre-qualify these firms."*

## Survey Open-Ended Responses

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Which factors do you believe contribute to the increased engagement of UBEs in design-build projects compared to other project delivery methods?

### Additional Factors (cont.)

- *"Ability to select based on value not price."*
- *"Allows more competition on ideas than on \$s."*
- *"The flexibility in procurement requirements associated with DB delivery, Owners ability to be part of team formation process in Progressive DB."*
- *"True buy-in by prime firms to support inclusive contracting + contractually binding obligations for genuine collaboration, in particular shared decision-making and equitable risk transfer."*

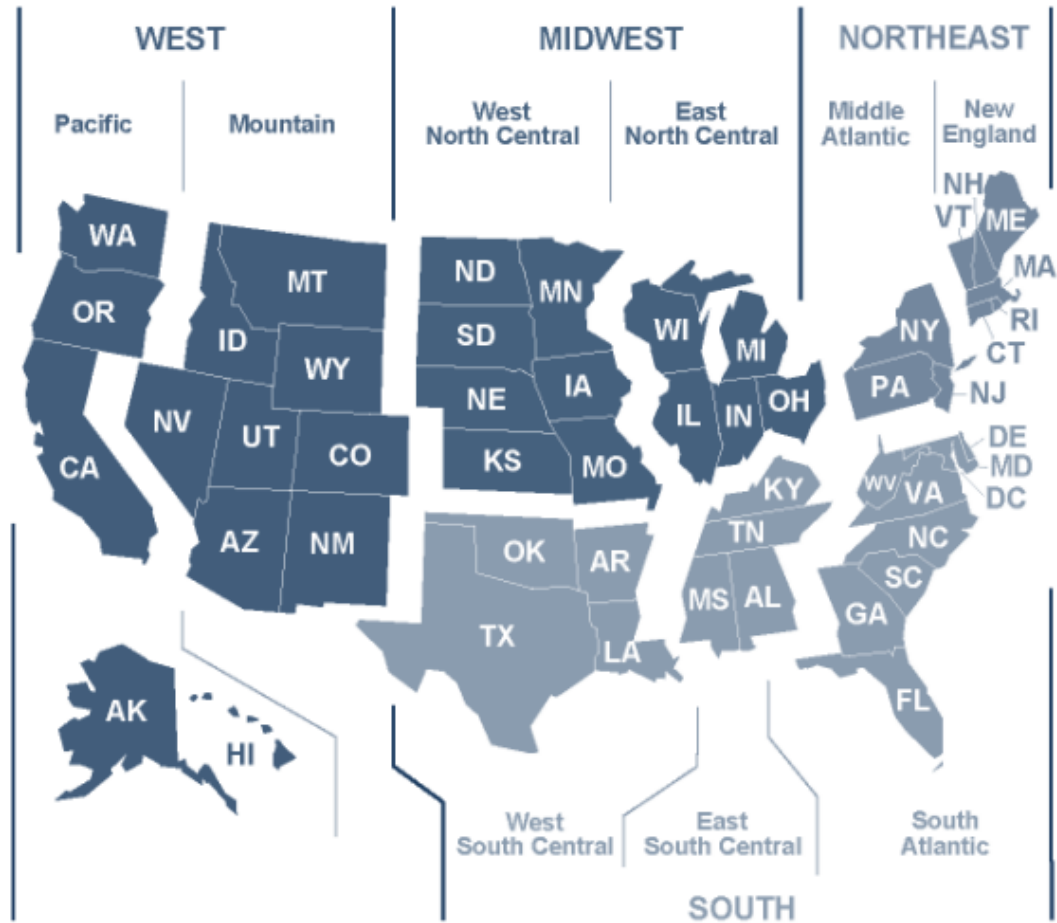




**Consulting**

## **Appendix: Construction Definitions**

## Assessed Geographies



## Construction Definitions

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### **Construction Put in Place (CPiP) includes the following:**

1. New buildings and structures.
2. Additions, alterations, conversions, expansions, reconstruction, renovations, rehabilitations and major replacements (such as the complete replacement of a roof or heating system).
3. Mechanical and electrical installations such as plumbing, heating, electrical work, elevators, escalators, central air-conditioning and other similar building services.
4. Site preparation and outside construction of fixed structures or facilities such as sidewalks, highways and streets, parking lots, utility connections, outdoor lighting, railroad tracks, airfields, piers, wharves and docks, telephone lines, radio and television towers, water supply lines, sewers, water and signal towers, electric light and power distribution and transmission lines, petroleum and gas pipelines, and similar facilities that are built into or fixed to the land.
5. Installation of the following types of equipment: boilers, overhead hoists and cranes and blast furnaces.
6. Fixed, largely site-fabricated equipment not housed in a building, primarily for petroleum refineries and chemical plants, but also including storage tanks, refrigeration systems, etc.
7. Cost and installation of construction materials placed inside a building and used to support production machinery; for example, concrete platforms, overhead steel girders, and pipes to carry paint, etc. from storage tanks.

### **The following are excluded from construction:**

1. Maintenance and repairs to existing structures or service facilities.
2. Cost and installation of production machinery and equipment items not specifically covered above, such as heavy industrial machinery, printing presses, stamping machines, bottling machines, and packaging machines; special purpose equipment designed to prepare the structure for a specific use, such as steam tables in restaurants, pews in churches, lockers in school buildings, beds or X-ray machines in hospitals, and display cases and shelving in stores.
3. Drilling of gas and oil wells, including construction of offshore drilling platforms; digging and shoring of mines (construction of buildings at mine sites is included); work that is an integral part of farming operations such as plowing and planting of crops.
4. Land acquisition.

### **The “value of construction put in place” is a measure of the value of construction installed or erected at the site during a given period, including:**

1. Cost of materials installed or erected.
2. Cost of labor (both by contractors and force account) and a proportionate share of the cost of construction equipment rental.
3. Contractor’s profit.
4. Cost of architectural and engineering work.
5. Miscellaneous overhead and office costs chargeable to the project on the owner’s books.
6. Interest and taxes paid during construction (except for state and locally owned projects).

**Compound Annual Growth Rate (CAGR):** Average annual growth rate over multiple time periods.

## Construction Definitions

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### **Lodging**

Includes hotels, motels, resort lodging, tourist courts and cabins and similar facilities.

### **Office**

In addition to the types of offices listed below, it also includes motion picture, television and radio offices. Office buildings at manufacturing sites are classified as *manufacturing*; however, an office building owned by a manufacturing company and not located at a manufacturing site is classified as *office*.

General - Includes administration buildings, computer centers, office buildings and professional buildings. State and local and federal also includes city halls, borough halls, municipal buildings, courthouses and state capitol buildings.

Financial - Includes banks, financial institutions, building and loans, saving and loans and credit unions.

### **Commercial**

Includes buildings and structures used by the retail, wholesale and selected service industries.

Automotive – Sales – Includes auto dealerships, motorcycle dealerships, auto showrooms, and truck dealerships. Service/Parts – Includes auto service centers, auto parts centers, auto repair centers, tire service centers, car washes, car rental centers, gas stations and emissions testing centers. Parking – Includes commercial parking lots and garages.

Food/Beverage – Food – Includes supermarkets, bakeries, dairies, markets, convenience stores and delicatessens. Dining/Drinking – Includes liquor stores, bars, nightclubs, cafés, diners, restaurants, cafeterias, taverns, inns (eat and drink only), and bistros. Fast Food – Includes drive-in restaurants and fast food restaurants.

Multi Retail – In addition to the types of multi-retail establishments listed below, it also includes warehouse-type retail stores. General Merchandise – Includes department stores and variety stores. Shopping Center – Includes shopping centers, shopping plazas and town centers. Shopping Mall – Includes shopping malls.

Other commercial - In addition to the types of stores listed below, it also includes beauty salons, nail shops, crematories, funeral homes, animal shelters, kennels, veterinary clinics, florists, nurseries, pawnshops, photo shops, dance schools, dry cleaners, laundromats and post offices.

Drug store – Includes drug stores and pharmacies. Building Supply Store – Includes hardware stores and lumberyards. Other stores – Includes clothing stores, jewelry stores, salesrooms (non-auto), furniture stores, office supply stores, storerooms and electronics stores.

General Commercial – Includes commercial warehouses, storage warehouses and distribution buildings. Mini-storage – Includes mini-storage centers and self-storage centers.

Farm - Includes buildings and structures such as barns, storage houses, smokehouses and fences; land improvements such as land leveling, terracing, tile drainage; and the construction of ponds, roads and lanes on establishments having annual agricultural sales of \$1,000 or more.

## Construction Definitions

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### **Health Care**

Hospital - Includes hospitals, mental hospitals, infirmaries and infrastructure.

Medical building - Includes clinics, medical offices, medical labs, doctor and dentist offices, outpatient clinics, and research labs (nonmanufacturing, noneducational, or non-hospital).

Special care - Includes nursing homes, hospices, orphan homes, sanatoriums, drug clinics, rehabilitation centers, rest homes and adult day-care centers.

### **Educational**

In addition to the types of educational facilities listed below, it also includes nursing schools, cosmetology and beauty schools, trade schools, military training facilities, schools for the handicapped and modeling schools.

Preschool - Includes childcare and day-care centers, nurseries and preschools.

Primary/Secondary - In addition to the types of primary and secondary schools listed below, it also includes academies, parochial schools and vocational schools.

Elementary - Includes elementary schools. Middle/Junior High – Includes middle and junior high schools.

High – Includes high schools.

Higher Education - In addition to the types of higher education facilities listed below, it also includes health centers and clinics located at colleges (including junior and community colleges) and universities.

Instructional – Includes instructional buildings and laboratories.

Parking – Includes parking lots and garages.

Administration – Includes administration buildings.

Dormitory – Includes dormitories, living/learning centers and residence halls.

Library – Includes libraries (school).

Student Union/Cafeteria – Includes student union buildings and cafeterias.

Sports/Recreation – Includes gymnasiums and athletic field houses, etc.

Infrastructure – Includes power plants, water supply, sewage and other infrastructure.

Other Educational - Galleries/museums and libraries/archives.

### **Public Safety**

Correctional - Detention - Includes cell blocks, detention centers, jails, penitentiaries and prisons. Police/Sheriff - Includes police stations and sheriffs' offices.

Other Public Safety - In addition to the types of facilities listed below, it also includes armories and military structures that could not be assigned to a specific type of construction. Fire/Rescue – Includes fire stations, rescue squads, dispatch and emergency centers.

### **Transportation**

Air:

In addition to the types of facilities listed below, it also includes pavement and lighting, hangars, air freight terminals, space facilities, air traffic towers, aircraft storage and maintenance buildings.

Passenger terminal – Includes air passenger terminals.

Runway – Includes airport runway pavement and lighting.

Land:

In addition to the types of facilities listed below, it also includes maintenance facilities and freight terminals (bus, railroad or truck).

Passenger Terminal – Includes bus and railroad passenger terminals.

Mass Transit – Includes light rail, monorail, streetcar, and subway facilities.

Railroad – includes railroad track and bridges.

Water:

Dock/Marina – Includes docks, piers, wharves and marinas.

Dry dock/marine terminal – Includes dry docks, boatels and maritime freight terminals.

## Construction Definitions

### ***Amusement and Recreation***

In addition to the types of facilities listed below, it also includes racetracks, equestrian centers, riding academies, bowling alleys, rifle ranges, casinos, pool halls and driving ranges.

Theme/Amusement Park - Includes amusement buildings or rides, theme parks and arcades.

Sports - Includes these structures not located at schools or colleges: gymnasiums and athletic field houses, arenas, coliseums and stadiums, outdoor courts or fields, racquetball courts, rinks, tennis courts and swimming pools.

Fitness - Includes fitness centers, health or athletic clubs, YMCAs, YWCAs, cabanas, saunas and spas.

Performance/Meeting Center - In addition to the types of facilities listed below, it also includes civic centers, concert halls, opera houses, theaters for the performing arts, amphitheaters, pavilions and auditoriums.

Park/Camp - Includes parks, seasonal camps and tourist camps.

Movie Theater/Studio - Includes movie theaters, drive-ins and movie, radio and television studios.

### ***Manufacturing***

Food/Beverage/Tobacco - Food industries transform livestock and agricultural products into products for intermediate or final consumption. These products are typically sold to wholesalers or retailers for distribution to consumers.

- Beverage industries include manufacturing of nonalcoholic and alcoholic beverages. Ice manufacturing is included with nonalcoholic beverage manufacturing.
- Tobacco industries include the re-drying and stemming of tobacco and the manufacturing of tobacco products, such as cigarettes and cigars.

Textile/Apparel/Leather and Allied - Textile industries transform a basic fiber (natural or synthetic) into a product, such as yarn or fabric.

- Apparel industries purchase fabric to cut and sew to make a garment.
- Leather and allied industries transform hides into leather products. Also included are leather substitutes, such as rubber (*example: rubber footwear*) and plastic (*example: plastic purses or wallets*).

Wood - Manufacture wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, manufactured homes (i.e., mobile home), and prefabricated wood buildings.

Paper - Manufacture pulp, paper, or converted paper products.

Print/Publishing - Print products, such as newspapers, books, periodicals, business forms, greeting cards, and other materials, and perform support activities, such as bookbinding, platemaking services and data imaging.

Petroleum/Coal - Transform crude petroleum and coal into usable products.

Chemical - Transform organic and inorganic raw materials by a chemical process and form products.

Plastic/Rubber - Make goods by processing plastics materials and raw rubber.

Nonmetallic Mineral - Transform mined or quarried nonmetallic minerals, such as sand, gravel, stone, clay, and refractory materials, into products for intermediate or final consumption.

## Construction Definitions

### ***Manufacturing (Continued)***

**Primary Metal** - Smelt and/or refine ferrous and nonferrous metals from ore, pig or scrap, using electrometallurgical and other process metallurgical techniques. The output of smelting and refining, usually in ingot form, is used in rolling, drawing, and extruding operations to make sheet, strip, bar, rod, or wire, and in molten form to make castings and other basic metal products.

**Fabricated Metal** - Transform metal into intermediate or end products, other than machinery, computers and electronics, and metal furniture or treating metals and metal formed products fabricated elsewhere.

**Machinery** - Create end products that apply mechanical force, for example, the application of gears and levers, to perform work.

**Computer/Electronic/Electrical** - Manufacture computers, computer peripherals, communications equipment, and similar electronic products and the components for such products.

**Electrical** - Manufacture products that generate, distribute and use electrical power. Included are manufacturers of electric lighting equipment, household appliances, and other electrical equipment and components.

**Transportation Equipment** - Produce equipment for transporting people and goods.

**Furniture** - Make furniture and related articles, such as mattresses, window blinds, cabinets and fixtures.

**Miscellaneous** - Make a wide range of products that are not produced in the specified manufacturing categories. Examples are medical equipment and supplies, jewelry, sporting goods, toys and office supplies.

### **Water/wastewater**

#### **Sewage/dry waste**

In addition to the types of facilities listed below, it also includes resource recovery and recycling centers, and pond sewage systems.

**Plant** – includes solid waste disposals (incinerator or burial), sewage treatment plants, and sewage disposal plants.

**Line/pump station** – includes sanitary sewers, sewage pipeline, interceptors and lift/pump stations.

#### **Waste water**

**Plant** – includes waste water disposal plants.

**Line/drain** – includes water collection systems (nonpotable water) and storm drains.

#### **Water Supply**

**Plant** - Includes filtration, treatment, water supply, and water softening plants.

**Well** - Includes water wells.

**Line** - Includes culverts (water supply), water transmission pipelines, tunnels and water lines.

**Pump station** - Includes gatehouses and lift/pump stations.

**Reservoir** - Includes potable water supply reservoirs.

**Tank/tower** - Includes water storage tanks and towers.

### **Highway and Street**

**Pavement** - Includes highways, roads, streets, culverts, gutters and sidewalks.

**Lighting** - Includes traffic lights, signals and highway lighting systems.

**Retaining wall** - Includes retaining walls and fences.

**Tunnel** - Includes highway tunnels (vehicular or pedestrian).

**Bridge** - Includes bridges and overhead crossings (vehicular or pedestrian).

**Toll/weigh** - Includes toll facilities, weigh and inspection stations.

Federal includes border-crossing stations.

**Maintenance building** - Includes maintenance and storage buildings and salt domes.

**Rest facility** - Includes rest facilities, travel centers, median improvements, beautification projects and welcome centers.

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FMI is a leading consulting and investment banking firm dedicated exclusively to the built environment. We serve as the industry's trusted advisor, providing current market insights, deep industry research and key relationships that deliver tangible results for our clients.

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