

# Is Design-Build The Future For The Water Sector?

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*Design-build can help speed up the process when building water infrastructure.*

Design, bid, build.

For years, those three steps have been the standard way to get a water or wastewater project accomplished. But an alternative project delivery method is gaining ground.

“Design-build in the water sector has grown steadily every year for the last six years,” said Lisa Washington, CEO for the Design-Build Institute of America (DBIA). “Design-build offers time savings, cost savings, and higher quality through increased innovations.”

Design-build is a method of project delivery in which one entity — the design-build team — works under a single contract with the project owner to provide design and construction services. This varies from the traditional design-bid-build approach, where design and construction services are split into separate entities, separate contracts, and separate work. Design-build accounts for 40 percent of nonresidential design and construction but is still up-and-coming within the water sector.

## **Faster Projects**

One of the biggest draws of design-build for water utilities is its increased project speed. In design-bid-build, valuable time is consumed by the bidding process and by the creation and management of multiple contracts for each of the entities involved. With design-build there is typically no bidding process, and with only one contract, the process is significantly streamlined.

Construction time itself is also shorter with design-build, as all engineers, architects, and builders are on one team. In design-build, instead of waiting for the entire construction plan to be determined and approved before beginning construction, building on one part of the project can commence while the engineers and architects are still nailing down the details of another part.

The utility owner is also more involved in the design and construction of the project and the designers and builders are communicating with each other more throughout the whole building process, so change orders are less common in design-build. When changes do need to be made, it is easier and often faster to resolve.

All of these factors result in an average of 19 to 33 percent shorter project times when compared to design-bid-build, according to the DBIA. This is most appealing to water utilities that are required to complete their projects by certain dates, said John Giachino, director of business development at Haskell, an engineering construction company that specializes in design build.

“We most often hear that utility owners become interested in design-build because they have consent decrees to settle, taste and odor issues to resolve, or new regulations to comply with quickly,” Giachino said. “With design-build you can get things done a lot faster.”

## **Increased Innovation**

The way that design-build projects are facilitated also encourages innovation. Traditionally in design-bid-build projects, a utility owner or consulting engineer determines what changes need to be accomplished and how they will accomplish them, and then creates the design documents to accomplish those goals. Design-build works a bit differently, explained Giachino.

“In design-build we work off of performance-based requirements not design documents. That means the utility owner tells us what the problem is and the requirements that they want met, and we create a design that will best solve the problem working with the utility owner,” he said. “In design-bid-build the utility owner comes up with the plan before he talks to the designer, and then the designer follows that plan exactly.”

Because there is collaboration between the utility owner, the designers, and the engineers, there is more opportunity for new ideas to be considered. A recent example of this process took place at a Georgia water utility. The utility came to Giachino with a request for specific process technology they were familiar with that would solve the issues they were dealing with. Along with the utility owner and on-site engineers, Giachino’s design-build team evaluated over 40 alternative technologies that would also solve the utility’s problem, several of them for less money. Together they ended up selecting a different technology that provided a higher level of treatment and a larger capacity than the utility owner’s original idea.

“From a utility’s point of view, they often go into an update with only one possible solution in mind, and because it is just a small group brainstorming, innovation suffers,” Giachino said.

Innovation is particularly important in the water space, said DBIA’s Washington.

“When you are dealing with something like water infrastructure, you want it to last for a very long time, and you need to think about the future and how things might change,” she

said. “You can’t always do that in the design-bid-build process. What you need is a bunch of experts getting together and determining a better way of doing things. “

## **Challenges**

Despite its benefits, design-build faces legal challenges in the U.S. In five states — Pennsylvania, New York, New Jersey, Delaware, and Missouri — design-build is currently a limited option for public agencies. And in four states — Alabama, North Dakota, Iowa, and Wisconsin — design-build is not specifically authorized for public agencies, according to [the DBIA](#). In the remaining states, design-build is either permitted in most cases or permitted by all agencies for all types of design and construction.

Navigating the legality of design-build for a public water project can be challenging, said Washington.

“The biggest obstacle to design-build in the water and wastewater space is that you are dealing with hundreds of local governments, in addition to state governments,” she explained. “So you may have some authority for design-build in your state, but when you get down to the local level you may find out that you can’t do design-build for your project.”

The DBIA is working to change that. Over the past four years they have introduced 99 design-build bills into state legislatures across the nation. In 2013, the DBIA achieved a favorable outcome on 68 percent of these bills.

In addition to fighting legal battles, the DBIA is also working to fight the misconceptions that many in the water industry hold about design-build. “Utility owners are worried that design-build will take away their control of a project and ability to impact design,” said Washington.

This is not the case if design-build is done right, Washington explained. Utility owners and the design-build team work together to collaborate on project plans throughout the entire process. But letting someone else take the reins is difficult for many utility owners who are used to being the sole decision-makers.

“As part of design-build there is a process where you can outline what you are trying to achieve and the experts go design it, which requires trust and the right team,” said Washington. “This can be hard, and it requires doing your research on the design-build team that you choose, looking at their past performance and making sure they are a group you want to work with.”

Consulting engineers that regularly work with the same utility are also concerned that design-build projects could cut them out of the process entirely. But consulting engineers can be part of design-build collaboration teams as well.

“If design-build is done right, consulting engineers don’t lose their jobs,” explained Washington. “The beauty of the design-build process is that you are tapping the potential of all these resources you already have. The nature of that job does change because they aren’t the ones designing the plan, but the job doesn’t go away. Internal resources are still needed to review all the plans and assist in the process.”

Some water utilities have not considered design-build simply because they have never heard of it. Smaller water utilities, which make up a large percentage of U.S. utilities, often don’t make it to the national tradeshow where information and technical sessions about design-build are shared. To combat this, the DBIA teamed up with the American Water Works Association (AWWA) and the Water Environmental Federation (WEF) to spread the word about design-build. The DBIA has released numerous online guides to design-build including *Design-Build Done Right*, which explains best practices for applying design-build to any size or type of project. There are plans to release a water industry-specific *Design-Build Done Right* document in the near future. Design-build is on its way to becoming more prevalent in the water sector, said Giachino of Haskell.

“Education is of utmost importance for design-build to take off,” said Giachino. “We have been really focusing on that, and as a result we are seeing steady growth in the water and wastewater sector over the past five to six years. That will only continue to grow.”

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*The National Environmental Services Center devoted one of our popular Tech Briefs to design-build issues. Read it at: [www.nesc.wvu.edu/pdf/dw/publications/ontap/2009\\_tb/designbuild\\_DWFSOM137.pdf](http://www.nesc.wvu.edu/pdf/dw/publications/ontap/2009_tb/designbuild_DWFSOM137.pdf). Explore more than 50 other water-related technical topics by visiting [www.nesc.wvu.edu/techbrief.cfm](http://www.nesc.wvu.edu/techbrief.cfm).*