The State of Collaborative Delivery: WDBC Research Results
WDBC Mission
To evolve best practices for successful implementation of water projects through collaborative delivery methods, by facilitating thought leadership with stakeholders through research, education and communication.

Chartered in 2006
A 501 C (6) non-profit corporation
Membership Supported
WDBC Education Platform

• Procurement Guides
  • CMAR
  • Progressive Design-Build (PDB)
  • Fixed Price Design Build (FPDB)
• Original Research
• Publications, Community Forums, and Blogs
• DBIA Partnership
  • Best Practices
  • W/WW Specialty Conference
  • PDB Contract Document
WDBC Advisor Program
WDBC 2017 Research Program

Research Scope
The first data of its kind

Market Forecast
Where DB is headed

Design-Build Trends
Where the market has been

Where Next?
What it means for you
Research Objectives and Team

- Microeconomics: Determine the Plans for DB Contracting in the Next 5 Years of the Nation’s Top 100 Water/Wastewater Utilities.
- Establish & Document Standard Methods for Annual Updates

Rubin Mallows Worldwide/UNC, Environmental Finance Ctr.
- 100+ Similar Assignments
  - NACWA
  - WEF
  - WERF
  - AWWA
  - USEPA
  - SWANA

Lead Researcher: Dr. Kenneth Rubin, Managing Director

- BSCE, Cornell; MSPH, UNC/Chapel Hill; Ph.D., Harvard
- Consults with Fortune 500, utilities, professional associations, investment bank & governments worldwide.
Research Approach: Look Back...and Look Forward

- **National Aggregate Capex**
  - Census Government Expenditures Series: most reliable and comprehensive time-series of local water and wastewater capex
  - Use to forecast the aggregate water and wastewater market

- **Project Segment Types**
  - EPA’s Needs Surveys: provides relatively reliable detail on composition of future capex by project type and location
  - Use to segment aggregates

- **Design-Build Decision Rules**
  - Multiple Sources: WDBC and DBIA project data & member input; proprietary datasets; Top 100 survey and interviews
  - Use to estimate percent of each segment, location, size of project, etc. that could go DB

- **Top 100 CIP Scale Up**
  - Top 100 CIP Data Compilation: survey of planned capex of top 100 water and wastewater utilities (to be defined further)
  - Use as basis of scale-up to nation (second forecast) and contribute to DB decision rules

- **Back Test Method**
  - As QC: use above against historical aggregates as check against known DB market from past WDBC initiative and other sources
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Regulations and demographics drive the US market for water and wastewater services, but it is not immune to macro perturbations, like the financial crisis of 2008/2009, which resulted in crowding and subsequent deferral of capital investment – we believe this reversed in 2015/2016.
Look Back to 2013 Indicates Uptick in Market

Our look back is based on portal project profiles, web-based sources, and WDBC member survey of DB project activity in the 2013-2016 post-recession period.

Highlights

• 8 companies reporting
• 424 projects reported awarded and under construction
• WW entities leading with 198 projects, W entities at 110

- Award rate at approx. 100 projects/year
- Total project cost - $18.2B
- “Other” client category includes USACE
Historic Trend 2103-29017

Market indicators of eight WDBC companies suggest growth in both size and number of DB water/wastewater projects over the period 2013-2017.
Majority of DB Projects are W and WW Treatment

Treatment projects lead in value and count, amounting to nearly 78% of all projects (WW: 47% and W: 33%). Advanced treatment leads at 38% of all projects. Source water projects are at around 9%.
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Objective: Develop a spreadsheet tool to forecast the water and wastewater design-build market over the next five years, 2017-2021, based on best available, internally consistent national databases and decision rules extracted from market experience.

Sources:
- US Bureau of the Census
- State/EPA Needs Surveys
- WDBC Member Opinions
- Analyses of WDBC Projects
- Top 100 Database
**Market Capex Forecast**

**Total Water and Wastewater Capital Outlays in the U.S.**

- **Estimated Actual Capital Outlays**
- **Forecasted Capital Outlays**

Data source on estimates of actual capital outlays of local governments up to 2014: U.S. Census Bureau, Annual Survey of State and Local Government Finances and Census of Governments (1995 - 2014). Capital outlays are extrapolated to include non-governmental owned utilities by using per-capita outlay ratios. Forecasts (2015 - 2021) are based on trends in each state’s capital outlays in recent years or in years prior to 2010. Real spending is shown after adjusting nominal spending to their 2016 dollar equivalent using CCI adjustment factors.

**Forecasts By:**
- Water vs Wastewater
- State
- Type of Project

**Source Data:**
- US Bureau of the Census
- State/EPA Needs Surveys

**Methods:**
- 7 models
- Best fit (least sq. residuals)
Design-Build Market Forecast ($)

Forecasted Potential Capital Outlays on Design-Build Water and Wastewater Projects throughout the U.S.

Billions of 2016 dollars

- 2013: $3.0
- 2014: $2.8
- 2015: $3.0
- 2016: $3.1
- 2017: $3.5
- 2018: $3.7
- 2019: $3.9
- 2020: $4.0
- 2021: $4.2

- Range of low to high forecast
- Point estimate
Growth in Design-Build as Percent of Total Water and Wastewater Capex

Forecasted Proportion of Potential Capital Outlays on Design-Build Water and Wastewater Projects throughout the U.S.

<table>
<thead>
<tr>
<th>Year</th>
<th>Low Estimate</th>
<th>Point Estimate</th>
<th>High Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>7%</td>
<td>9%</td>
<td>15%</td>
</tr>
<tr>
<td>2016</td>
<td>7%</td>
<td>9%</td>
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<tr>
<td>2017</td>
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<td>2020</td>
<td>7%</td>
<td>11%</td>
<td>16%</td>
</tr>
<tr>
<td>2021</td>
<td>8%</td>
<td>11%</td>
<td>16%</td>
</tr>
</tbody>
</table>

- Green bars represent the range of low to high forecast.
- Black diamonds represent the point estimate.
Water and Wastewater Design-Build Forecasts

Billions of 2016 Dollars

Water

- $3.0 (2016: $1.2)
- $2.9 (2017: $1.2)
- $3.1 (2018: $1.3)
- $3.2 (2019: $1.4)
- $3.6 (2020: $1.5)
- $3.7 (2021: $1.6)
- $3.9 (2022: $1.6)
- $4.0 (2023: $1.7)
- $4.2 (2024: $1.8)

Wastewater

- $3.7 (2016: $1.7)
- $3.3 (2017: $1.6)
- $3.5 (2018: $1.7)
- $3.7 (2019: $1.8)
- $4.1 (2020: $2.0)
- $4.3 (2021: $2.1)
- $4.5 (2022: $2.2)
- $4.7 (2023: $2.3)
- $4.8 (2024: $2.4)
2017 Design Build Market by Type of Project

**Water**
- Distribution and Transmission: $461 - $1,100
- Treatment: $616 - $1,450
- Storage: $264 - $614
- Source: $195 - $334
- Other: $64

**Wastewater**
- Secondary Treatment: $369 - $778
- Advanced Treatment: $1,175 - $2,302
- Conveyance Repair and Rehab: $402 - $832
- New Conveyance System: $72
- CSO Correction: $53
- Reclaim/Reuse Projects: $56
Top Ten State Water Design-Build Markets in 2017

- CA: $876
- TX: $255
- FL: $149
- AZ: $85
- CO: $84
- GA: $65
- WA: $49
- OR: $45
- OH: $39
- IL: $39

Range of low to high forecast
Point estimate
Top Ten State **Wastewater** Design-Build Markets in 2017
In a sample of 100 water and wastewater utility CIPs, of some 800 planned or potential DB projects, 60% are wastewater, which on average tend to be larger; Texas leads with fewer, but larger projects compared to Florida or California where we expect a greater number of smaller DB projects.
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How to Interpret the Forecast

“High forecast” on how much may be spent on DB projects
Determined as the fraction of forecasted total capital outlays that reflect projects that, forward-looking, are expected to be DB (A1 and A2-type projects) and other projects that have characteristics that make them potential projects for DB (B-type projects). This is adjusted for each state (based on how strong the DB market will be in each state) and for each project type (based on forward-looking C.I.P. data obtained from the Top 100 utilities).

“Point estimate” on how much may be spent on DB projects
This reflects our single-value estimate of the DB forecasts. It is the point between the low and high forecasts that, in 2016, estimates $4.1 billion in DB outlays, which is a more aggressive estimate of the annualized revenues collected by WDBC members for DB projects, extrapolated to a national total assuming that WDBC members constitute 60% of all DB revenues for water and wastewater projects. The scale between the low and high forecasts increases by 7.5% each year to reflect growth within some states.

“Low forecast” on how much may be spent on DB projects
Determined from decision rules by state that computed a total DB outlay in 2016 of $3.5 billion, which is the estimated annualized revenue collected by WDBC members in 2016, extrapolated to a national total assuming that WDBC members constitute 60% of all DB revenues for water and wastewater projects. The decision rules by state also reflect how strong the DB market will be in each state, according to WDBC member ratings.
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This is your opportunity

- Range of low to high forecast
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http://waterdesignbuild.com/knowledge-center/research/

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