The State of Collaborative Delivery: WDBC Research Results

DBIA

ROCKY MOUNTAIN
REGION

DESIGN-BUILD
INSTITUTE OF AMERICA

2017 Regional Conference
"Progressive Design Build: Improving the Process"
May 12, 2017

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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
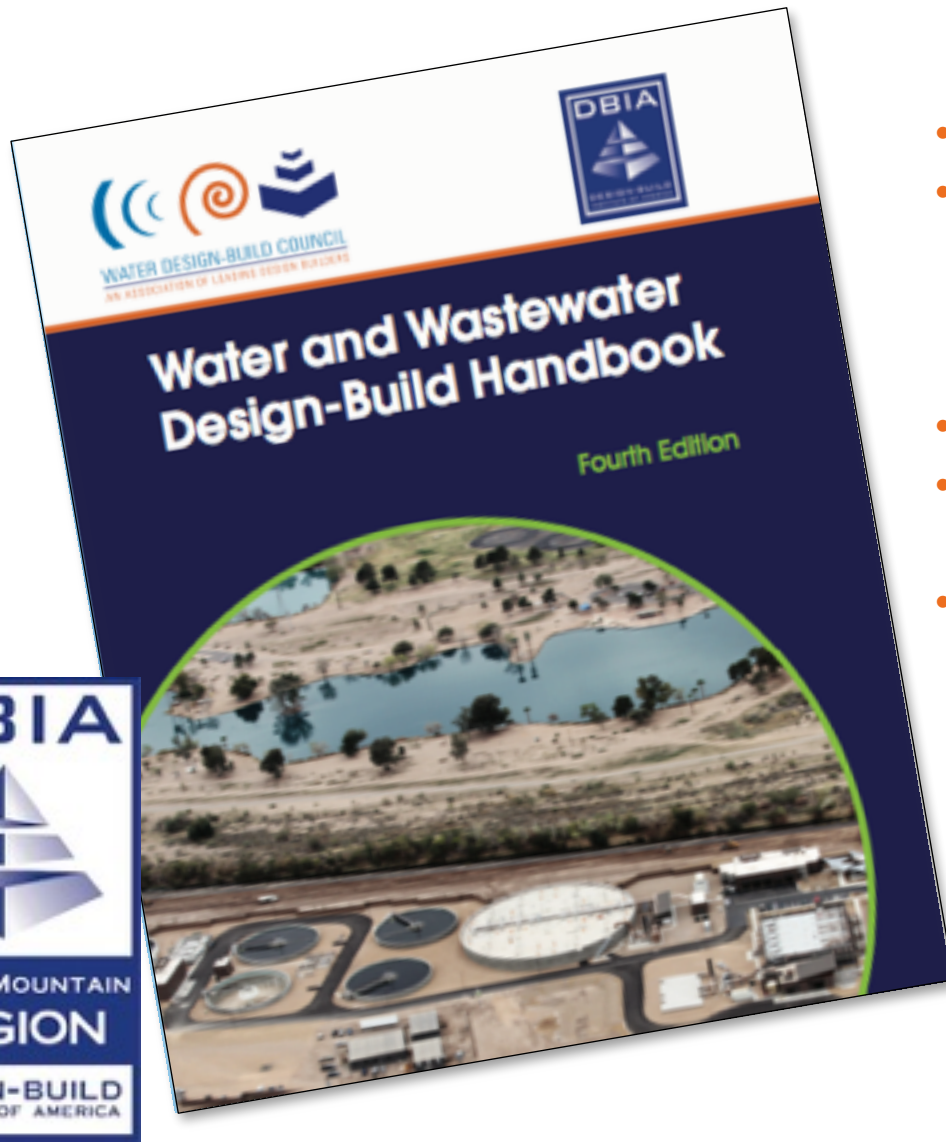*A 501 C (6) non-profit corporation*
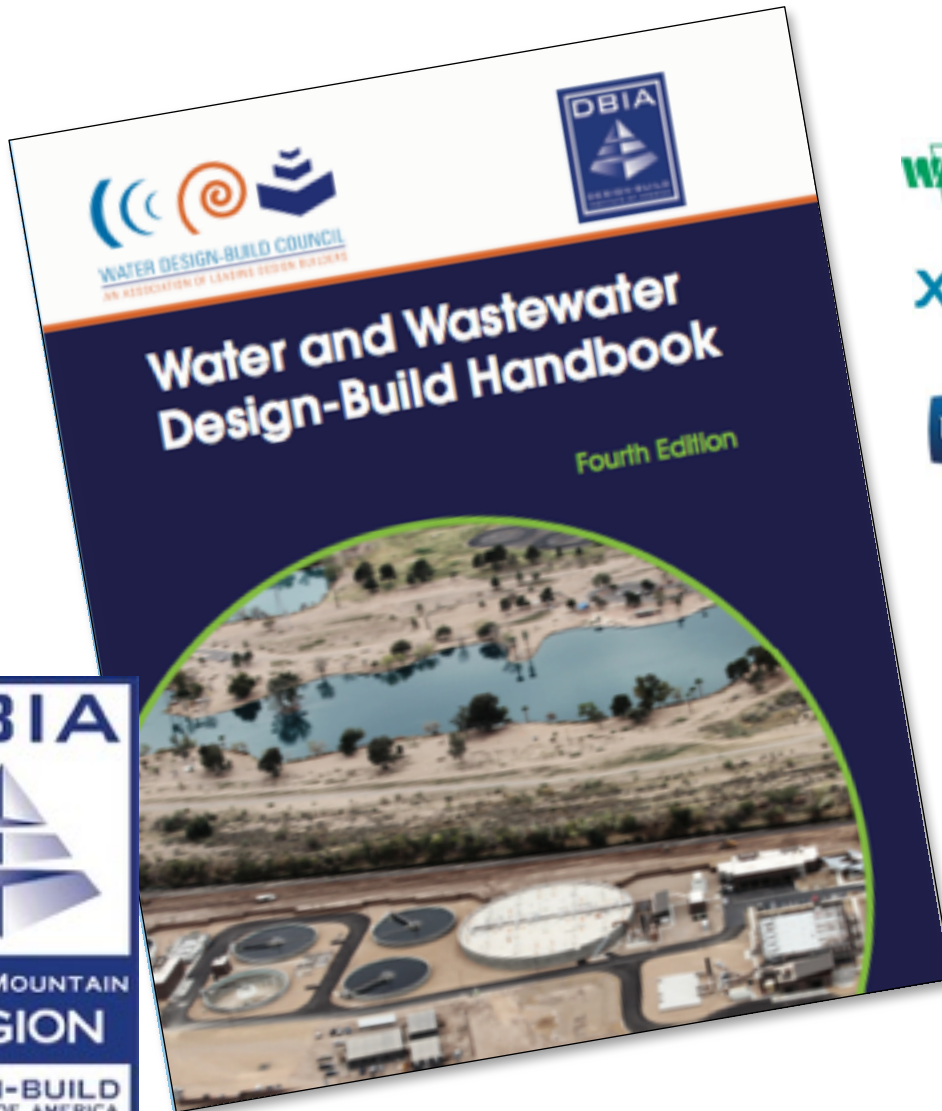*Membership Supported*

MA

WDBC Education Platform

- **Handbook, 4th Edition, 2016**
- **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

Water and Wastewater Design-Build Handbook — Fourth Edition

WDBC 2017 Research Program

Research Scope
The first data of its kind

Design-Build Trends
Where the market has been

Market Forecast
Where DB is headed

Where Next?
What it means for you

Research Objectives and Team

- Macroeconomics: Determine Size & Complexion Market Demand for DB Contracting in the Domestic, Municipal Water Space – 2014 to 2021

- 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
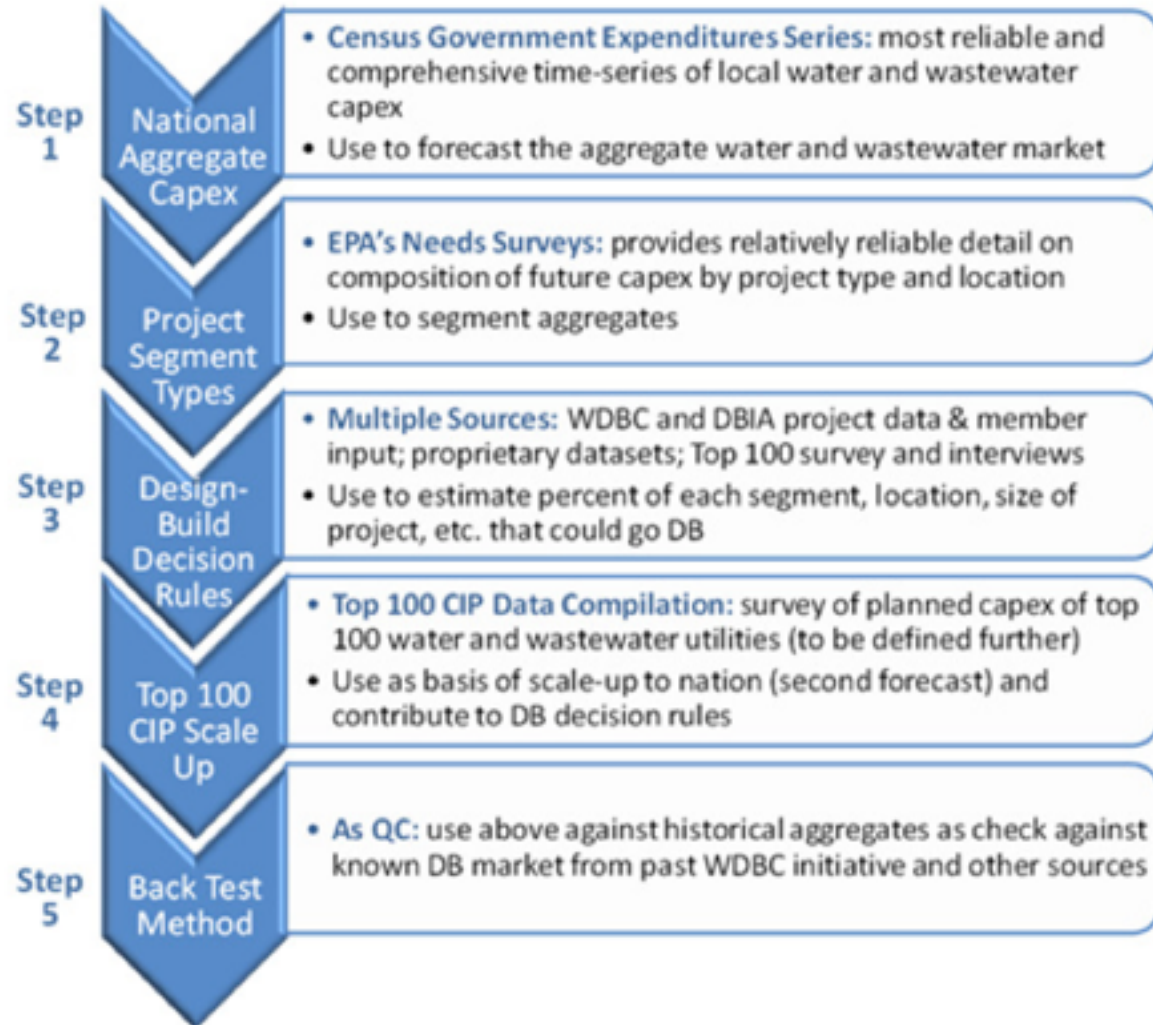
Rubin Mallows Worldwide/UNC, Environmental Finance Ctr.

- ➤ 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

Step 1 — 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

Step 2 — 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

Step 3 — 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

Step 4 — 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

Step 5 — Back Test Method
- **As QC:** use above against historical aggregates as check against known DB market from past WDBC initiative and other sources

WDBC 2017 Research Program

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Design-Build Trends
Where the market has been
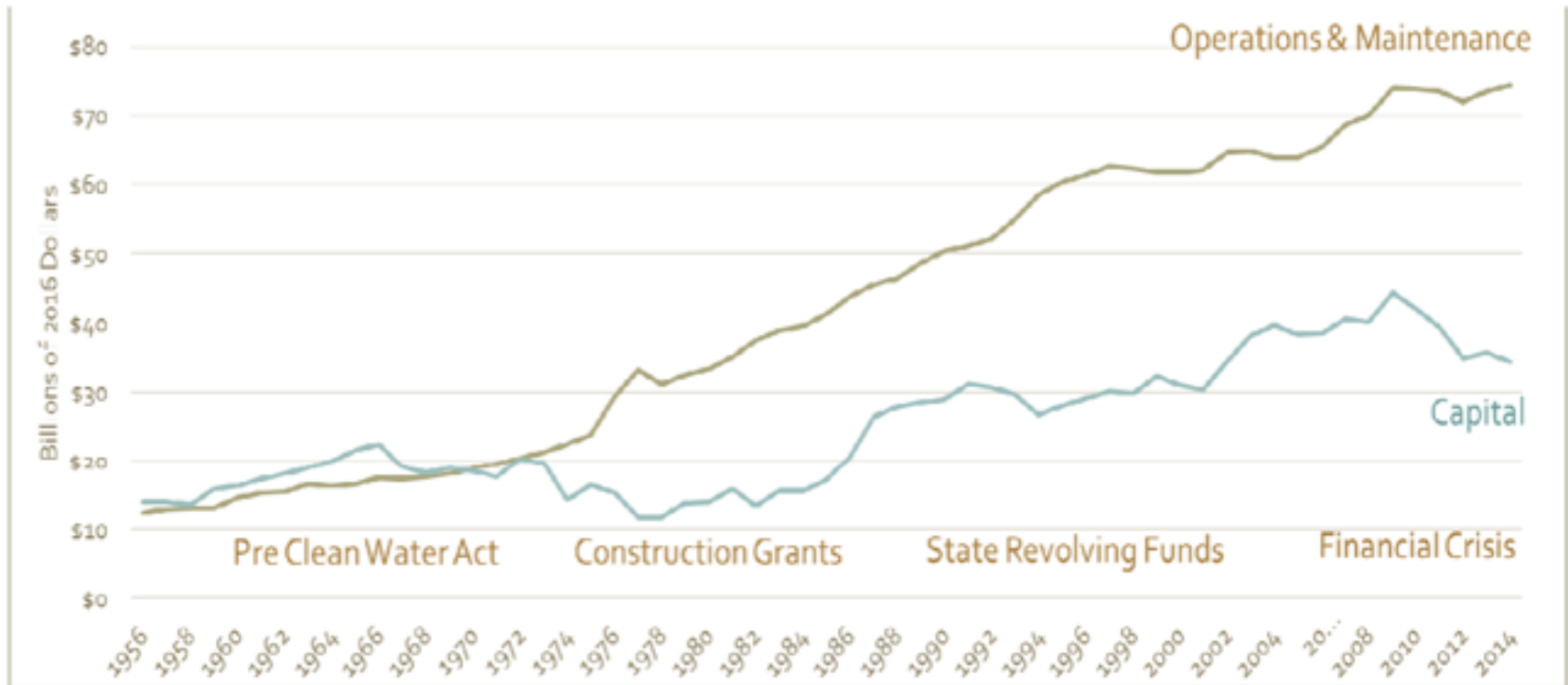
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Background, Trends, and Drivers

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
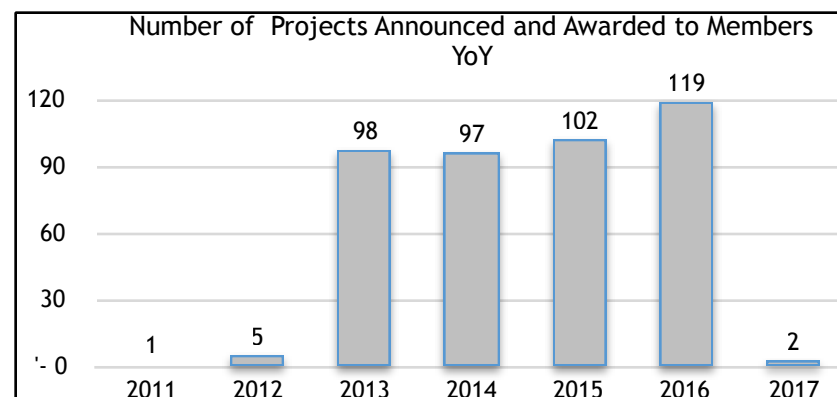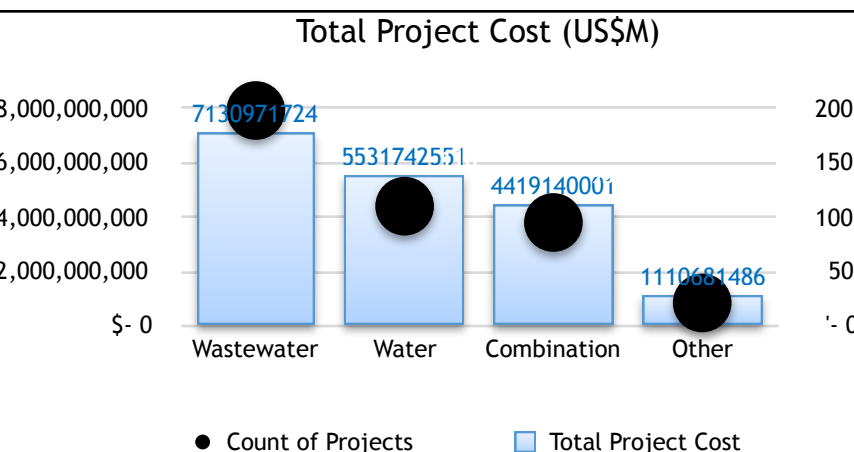
Look Back to 2013 Indicates Uptick in Market

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

Number of Projects Announced and Awarded to Members YoY

Year	Value
2011	1
2012	5
2013	98
2014	97
2015	102
2016	119
2017	2

Total Project Cost (US$M)

Category	Value
Wastewater	7130971724
Water	5531742551
Combination	4419140001
Other	1110681486

● Count of Projects   ☐ Total Project Cost

- Award rate at approx. 100 projects/ year
- Total project cost - $18.2B
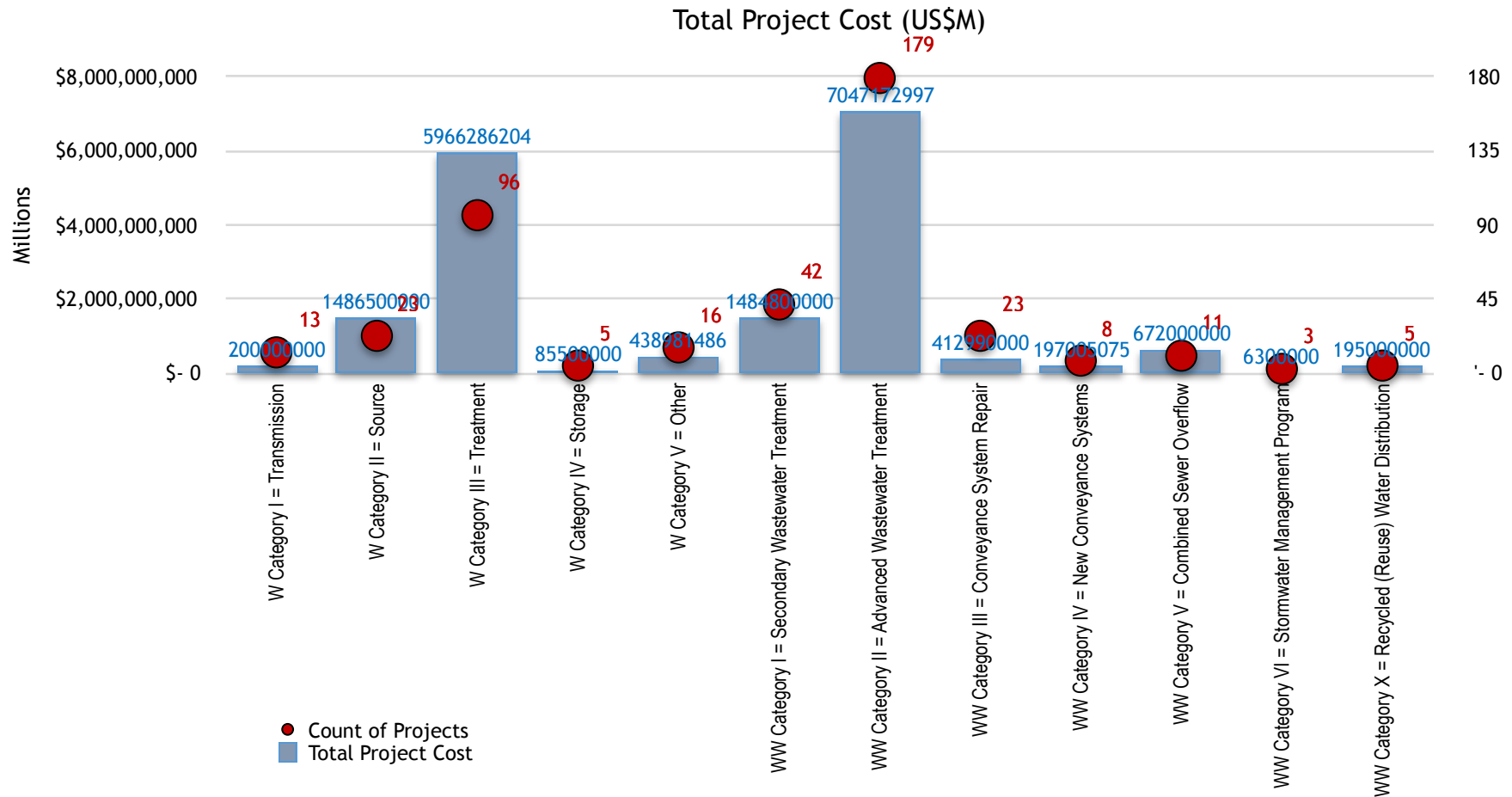- "Other" client category includes USACE

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

Market Indicators (8 WDBC Companies)

☐ Average Project Size ▬ Number of Projects
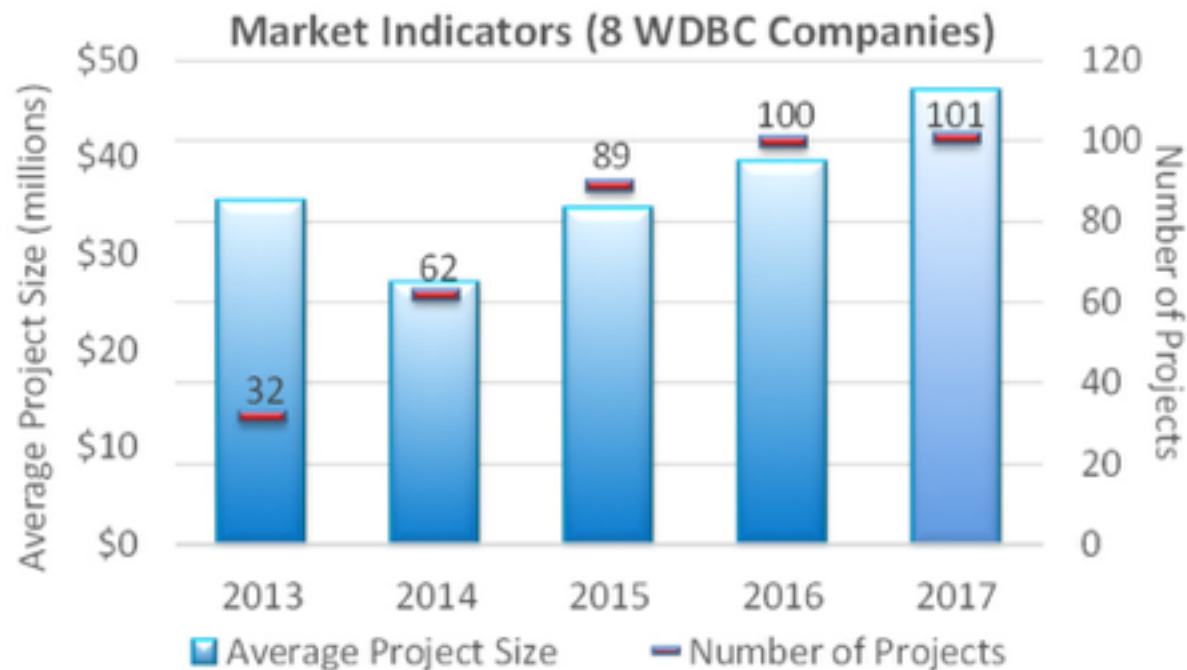
Treatment projects lead in value and count, amounting to nearly 78% of all projects (WW: 47% and W: 33%). Advanced treatment leads at 38% of all projects. Source water projects are at around 9%.

Total Project Cost (US$M)

Legend:
- ● Count of Projects
- ▊ Total Project Cost

Chart data by category:
Category	Total Project Cost	Count of Projects
W Category I = Transmission	200000000	13
W Category II = Source	1486500000	23
W Category III = Treatment	5966286204	96
W Category IV = Storage	85500000	5
W Category V = Other	438981486	16
WW Category I = Secondary Wastewater Treatment	1484800000	42
WW Category II = Advanced Wastewater Treatment	7047172997	179
WW Category III = Conveyance System Repair	412990000	23
WW Category IV = New Conveyance Systems	197005075	8
WW Category V = Combined Sewer Overflow	672000000	11
WW Category VI = Stormwater Management Program	6300000	3
WW Category X = Recycled (Reuse) Water Distribution	195000000	5

WDBC 2017 Research Program

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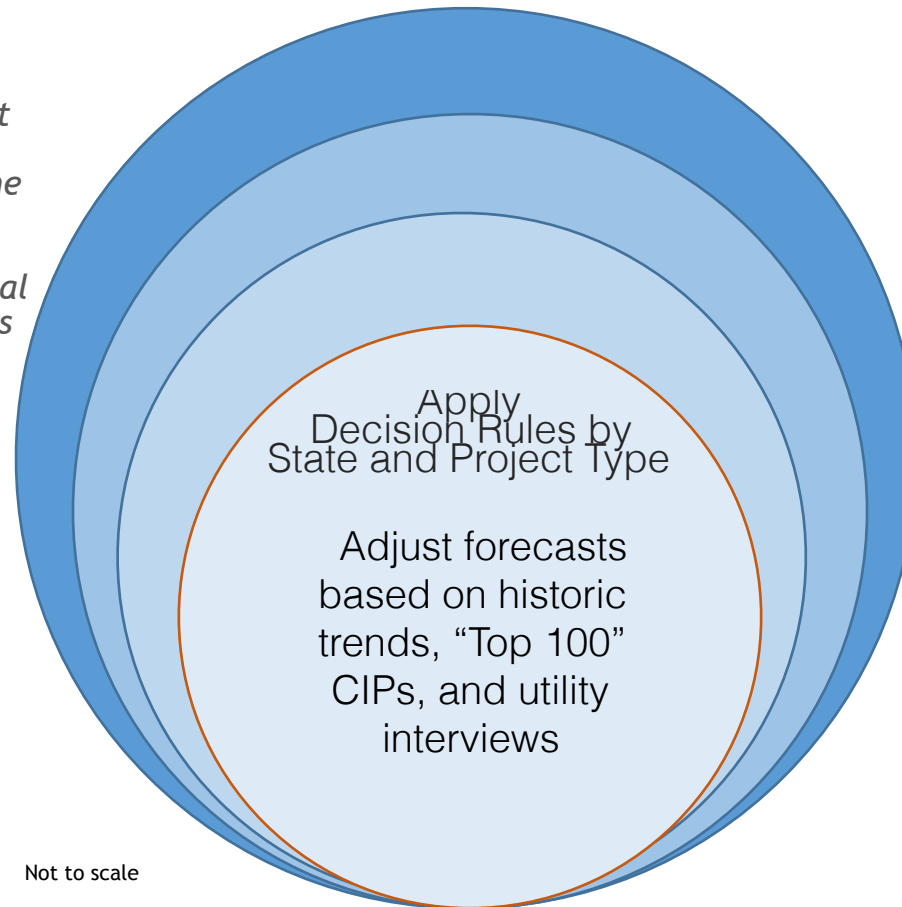Where DB is headed

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Forecast Model Framework

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
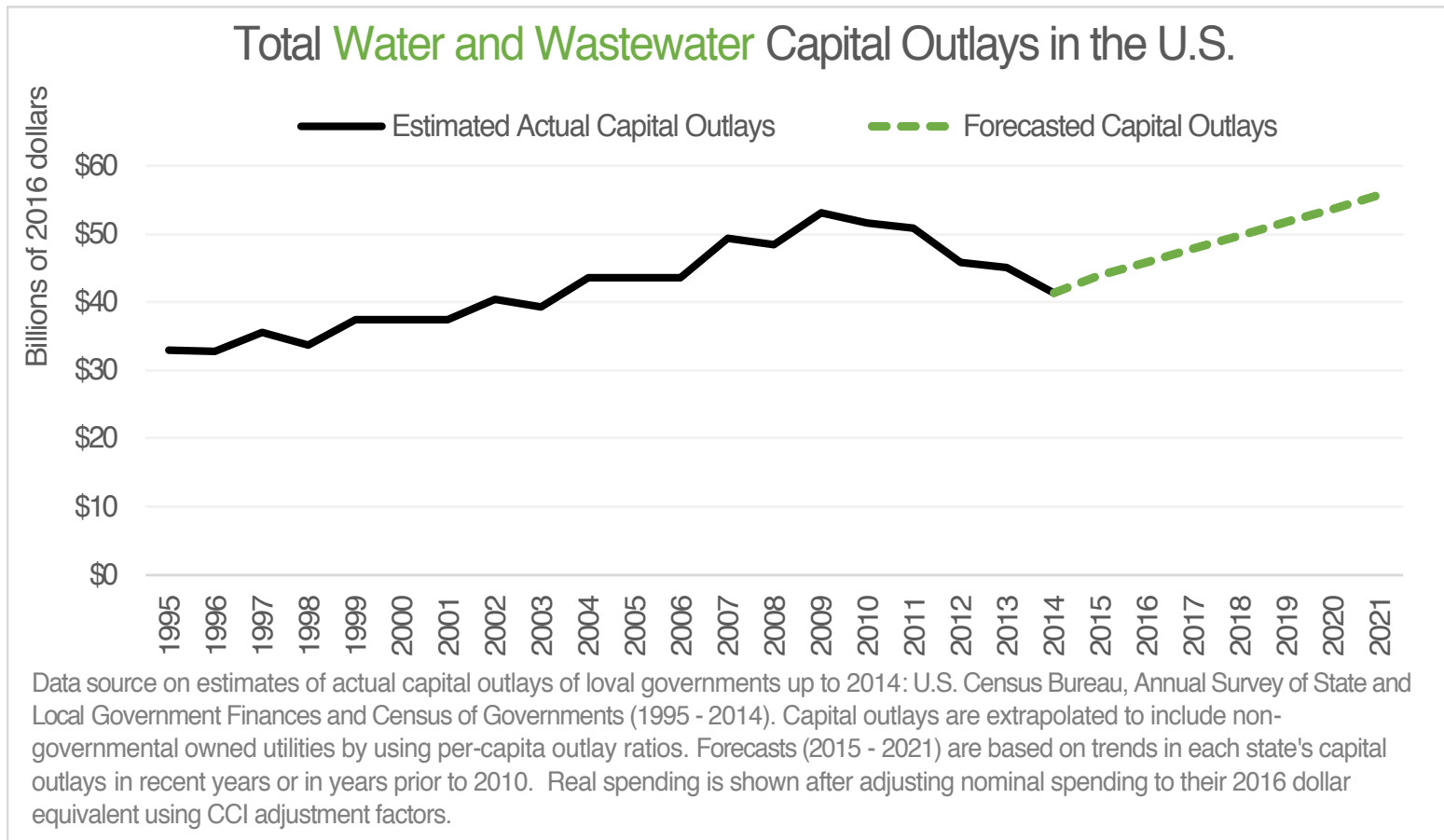
Apply
Decision Rules by
State and Project Type

Adjust forecasts based on historic trends, "Top 100" CIPs, and utility interviews

Not to scale

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.

Billions of 2016 dollars

— Estimated Actual Capital Outlays   - - - Forecasted Capital Outlays

Data source on estimates of actual capital outlays of loval 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)
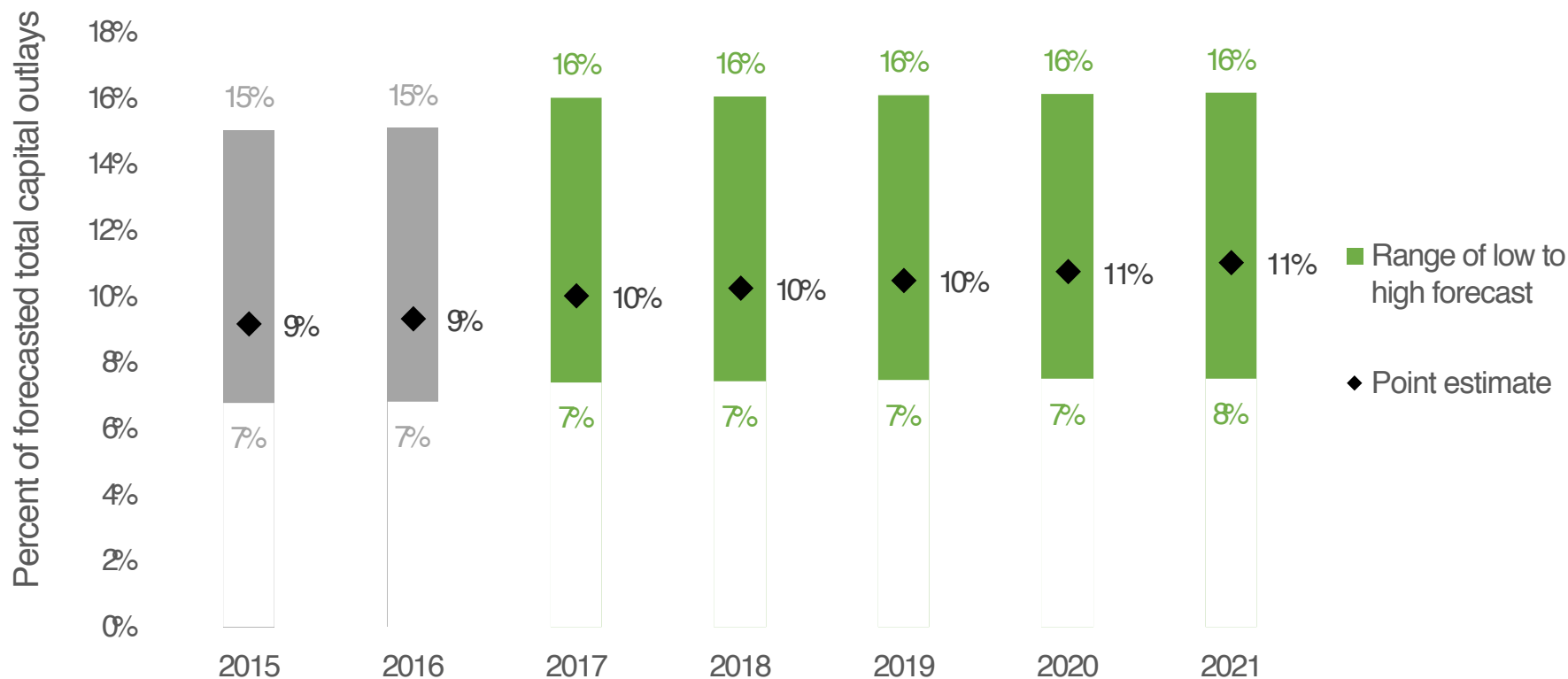
Design-Build Market Forecast ($)

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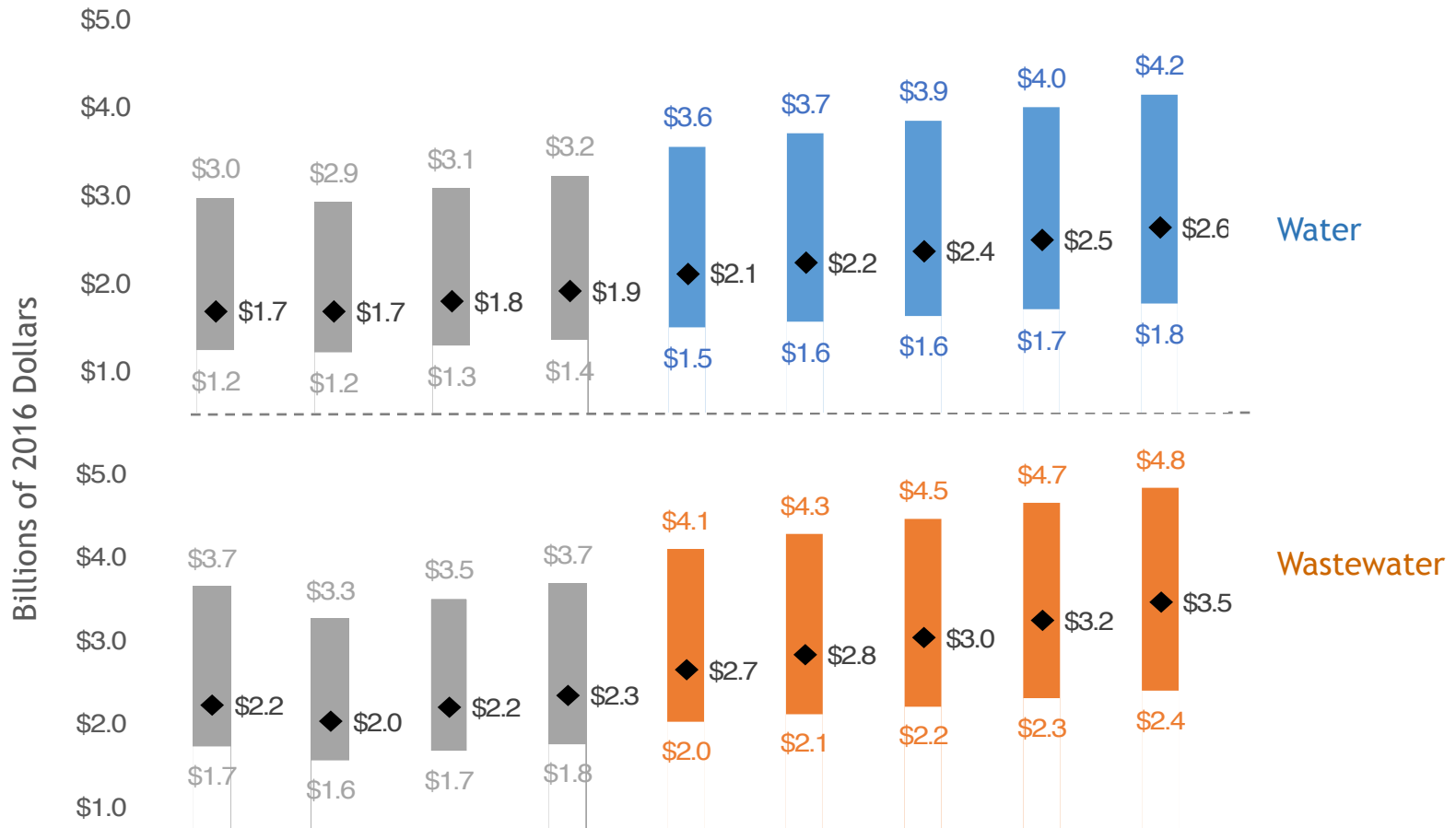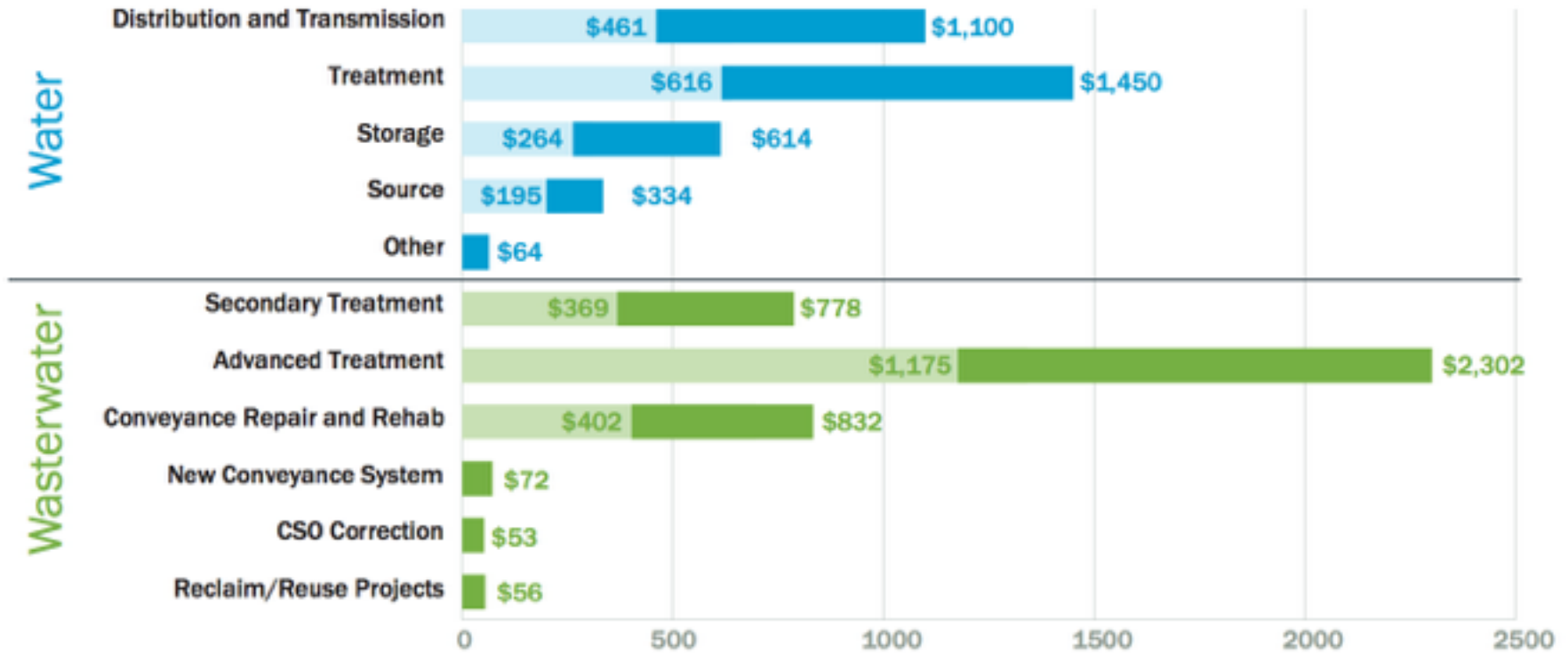Water and Wastewater Projects throughout the U.S.

Billions of 2016 dollars

Legend:
- Range of low to high forecast
- ◆ Point estimate

Year	High	Point estimate	Low
2013	$6.6	$3.9	$3.0
2014	$6.2	$3.7	$2.8
2015	$6.6	$4.0	$3.0
2016	$6.9	$4.3	$3.1
2017	$7.7	$4.8	$3.5
2018	$8.0	$5.1	$3.7
2019	$8.3	$5.4	$3.9
2020	$8.7	$5.8	$4.0
2021	$9.0	$6.1	$4.2

Growth in Design-Build as Percent of Total Water and Wastewater Capex
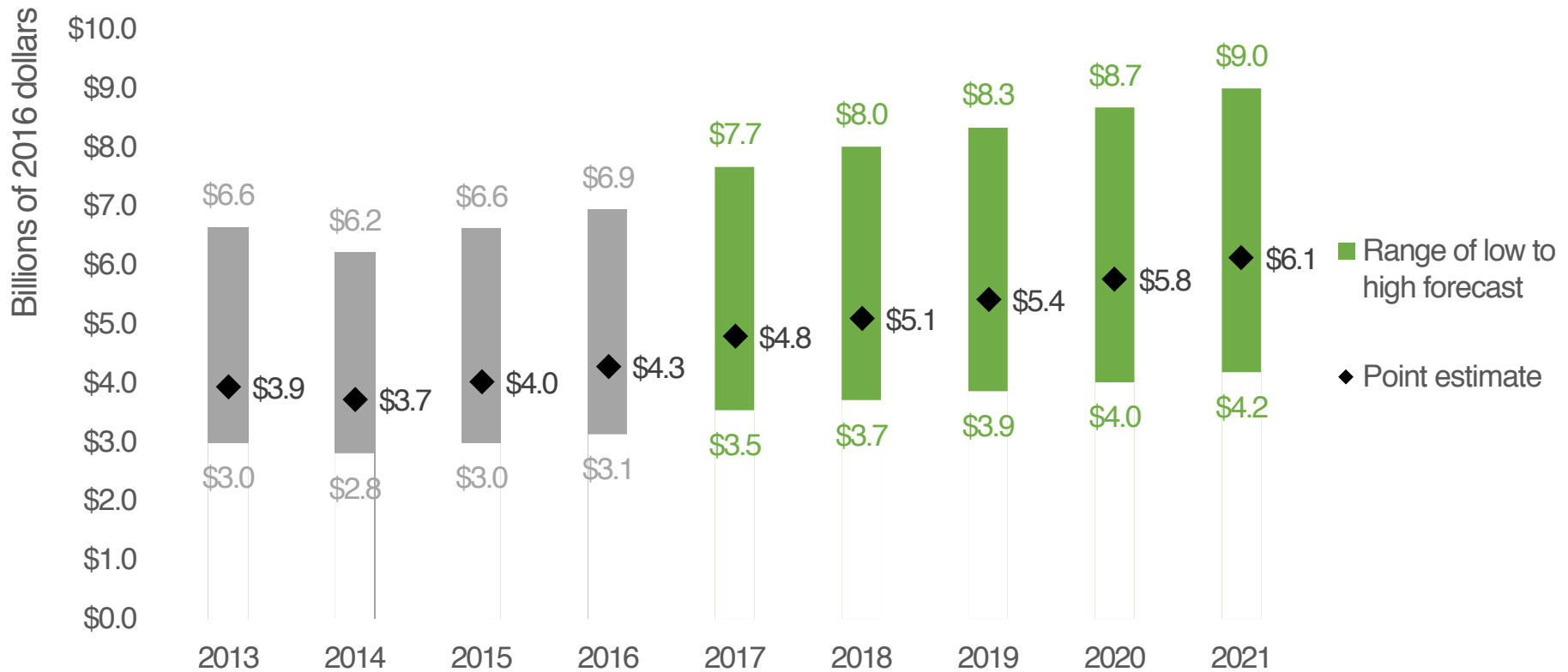
Forecasted Proportion of Potential Capital Outlays on Design-Build Water and Wastewater Projects throughout the U.S.

# Water and Wastewater Design-Build Forecasts

Billions of 2016 Dollars

Water

$3.0	$2.9	$3.1	$3.2	$3.6	$3.7	$3.9	$4.0	$4.2
$1.7	$1.7	$1.8	$1.9	$2.1	$2.2	$2.4	$2.5	$2.6
$1.2	$1.2	$1.3	$1.4	$1.5	$1.6	$1.6	$1.7	$1.8

Wastewater

$3.7	$3.3	$3.5	$3.7	$4.1	$4.3	$4.5	$4.7	$4.8
$2.2	$2.0	$2.2	$2.3	$2.7	$2.8	$3.0	$3.2	$3.5
$1.7	$1.6	$1.7	$1.8	$2.0	$2.1	$2.2	$2.3	$2.4

2017 Design Build Market
by Type of Project

Top Ten State **Water** Design-Build Markets in 2017
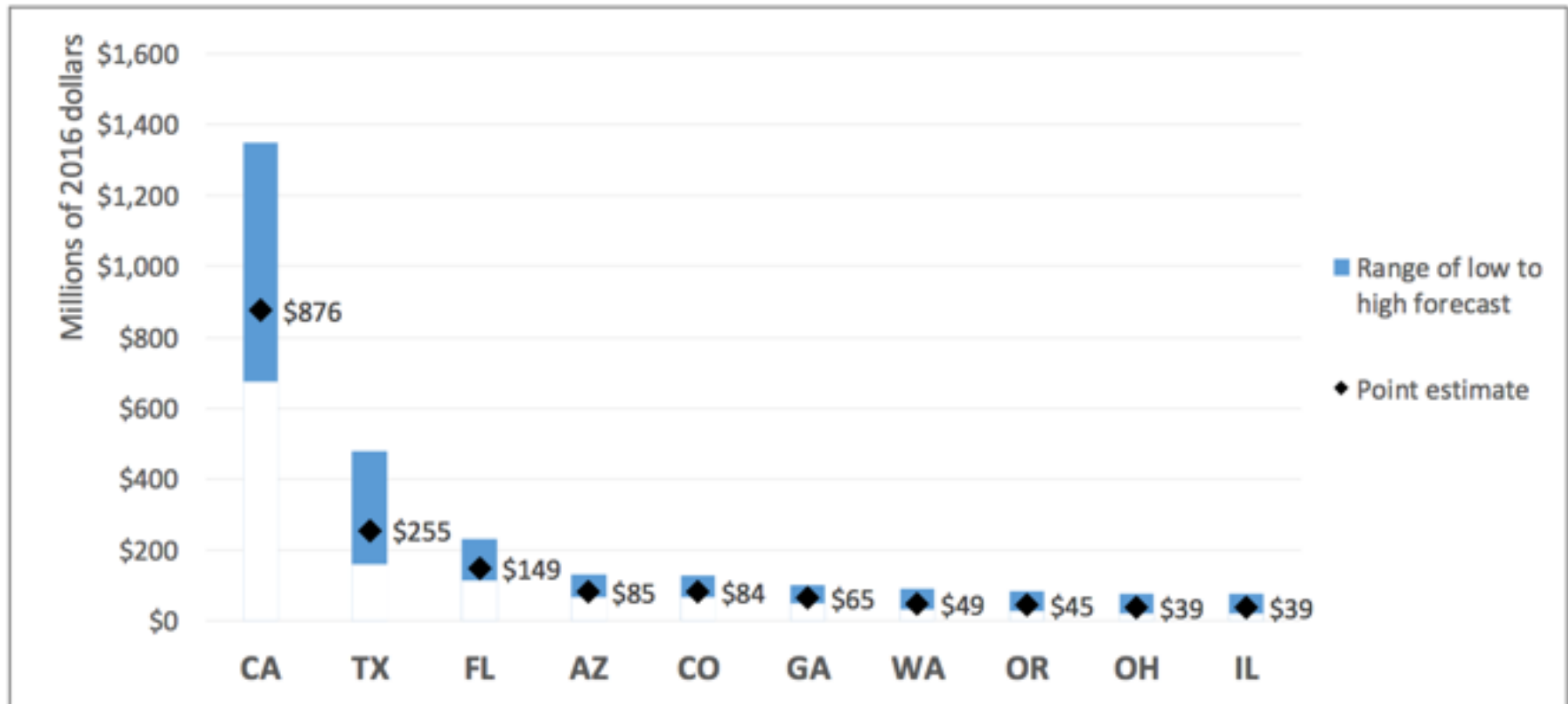
Top Ten State **Wastewater** Design-Build Markets in 2017
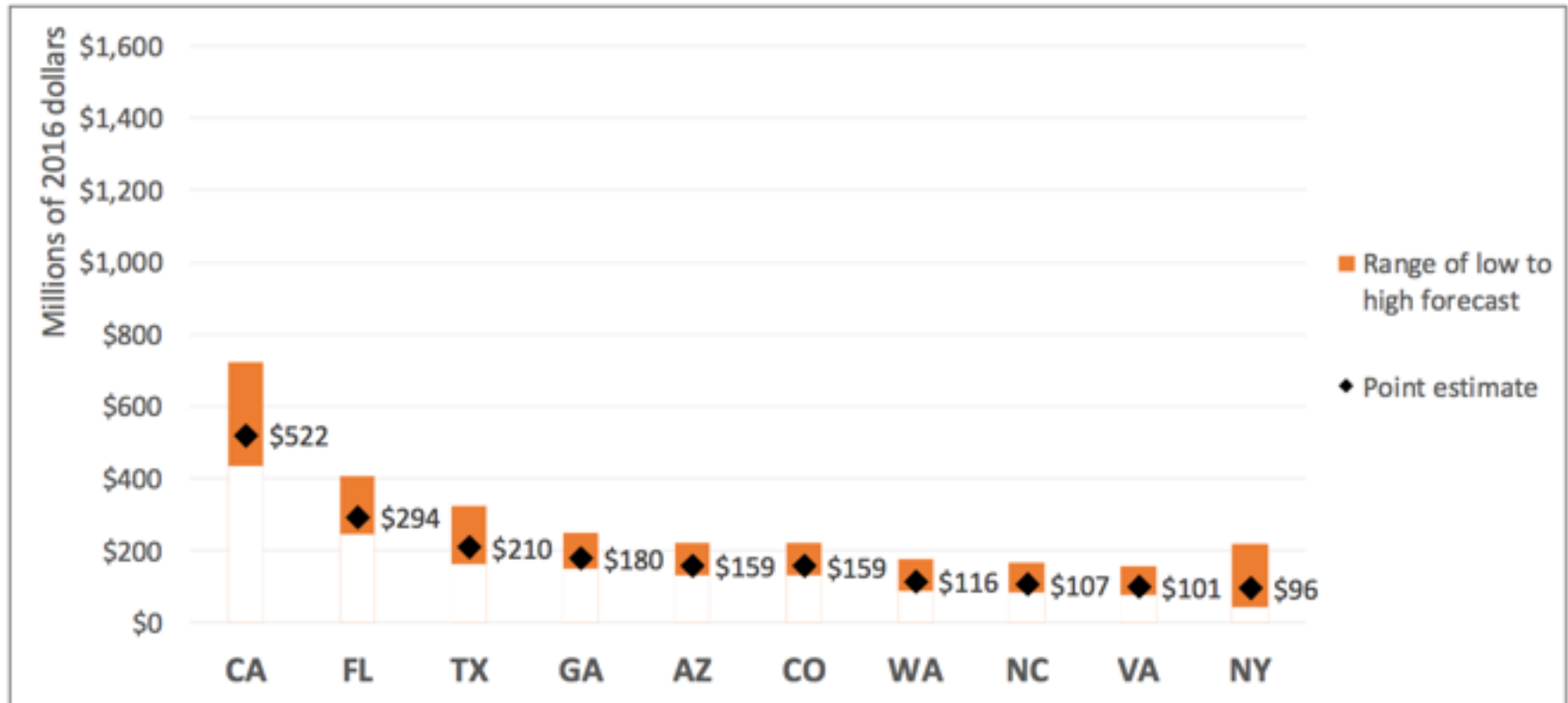
FL, CA Lead in Number of Projects, TX in Project Value

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
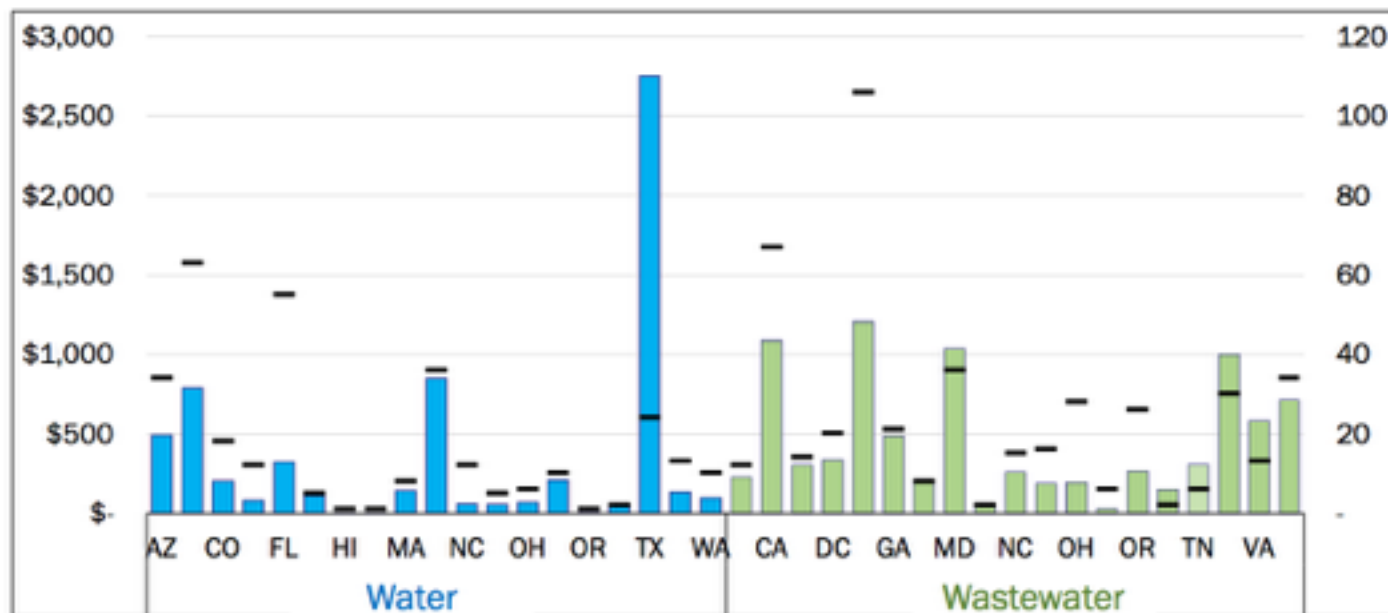
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How to Interpret the Forecast

"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).

$6.9

"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.
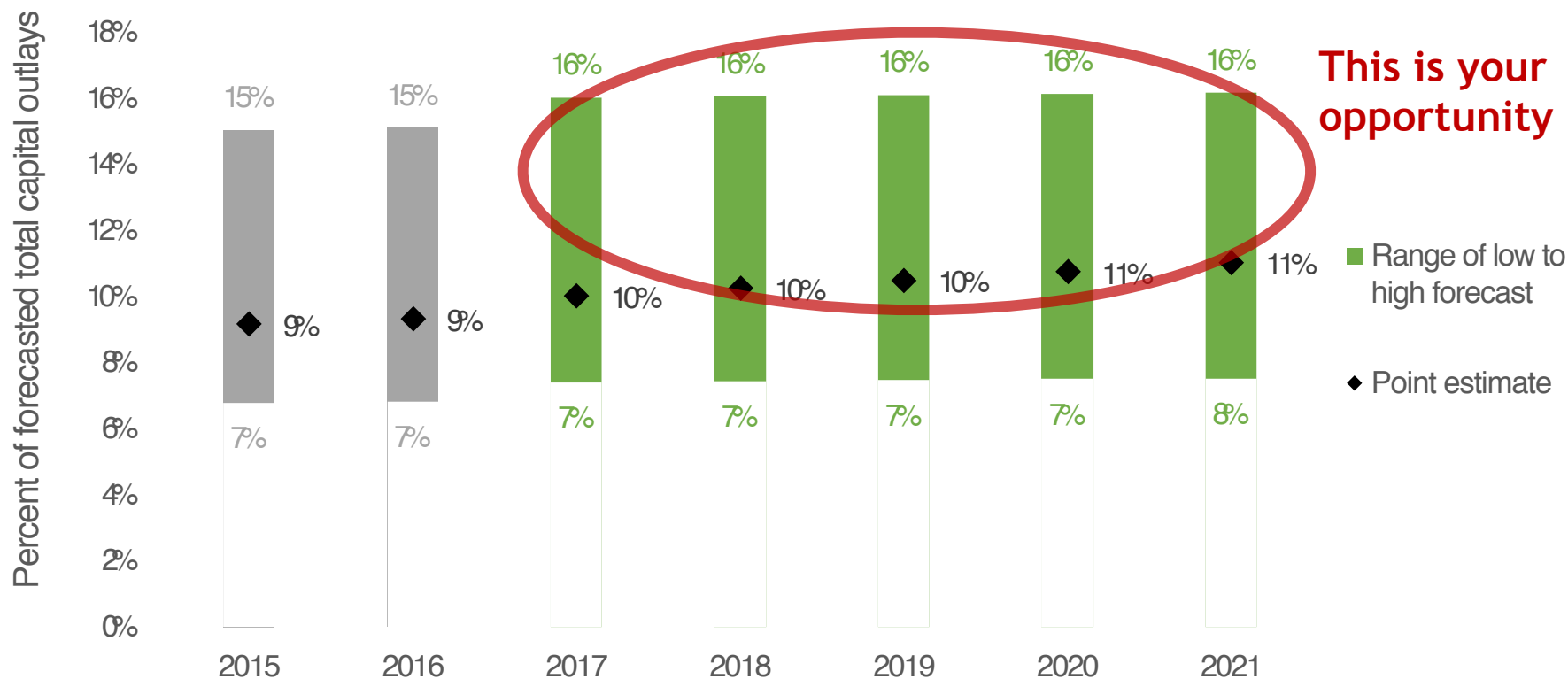
$5.6

$4.7

"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.
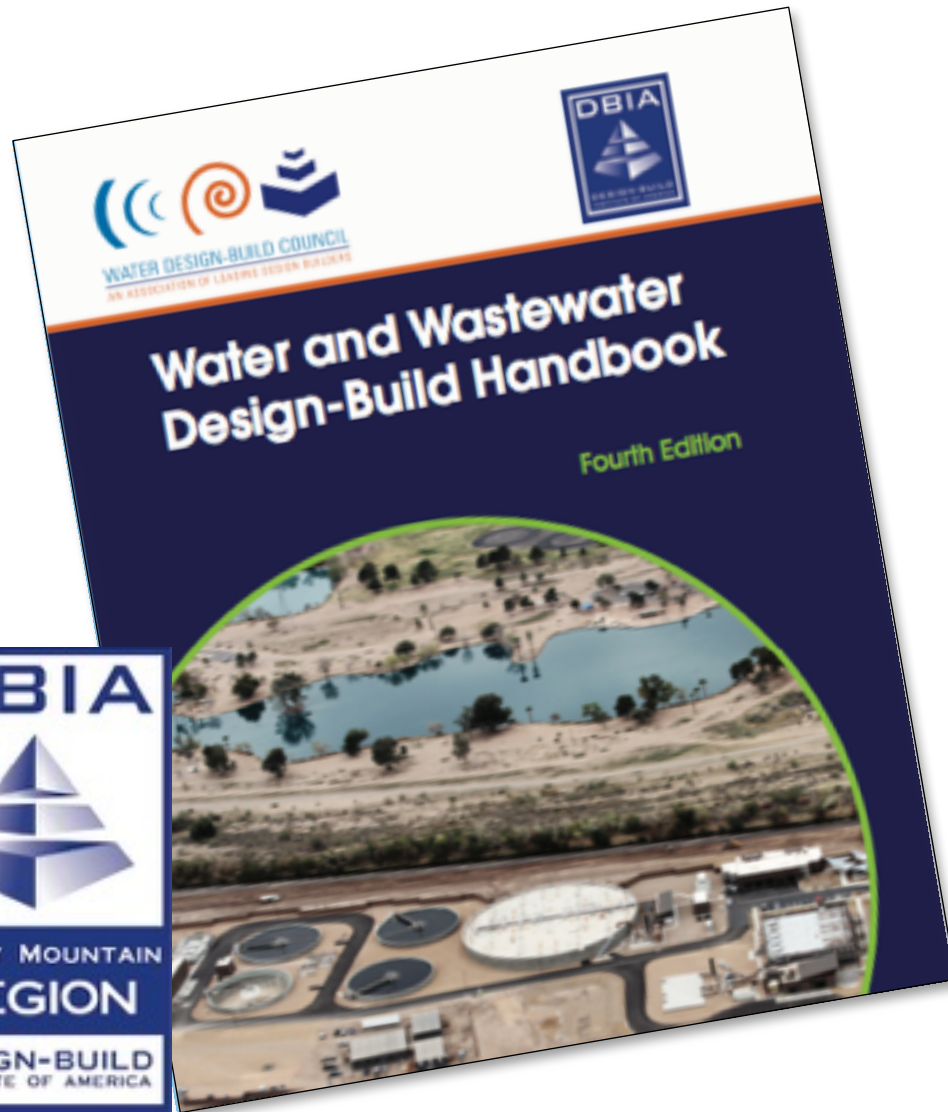
Growth in Design-Build as Percent of Total Water and Wastewater Capex

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

This is your opportunity

WDBC Education Platform

http://waterdesignbuild.com/knowledge-center/research/

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