

DEMOWARE WATER REUSE CONFERENCE

*U.S. Municipal Wastewater Reuse:
Project Pipeline and Market Update 2016*

June 2016

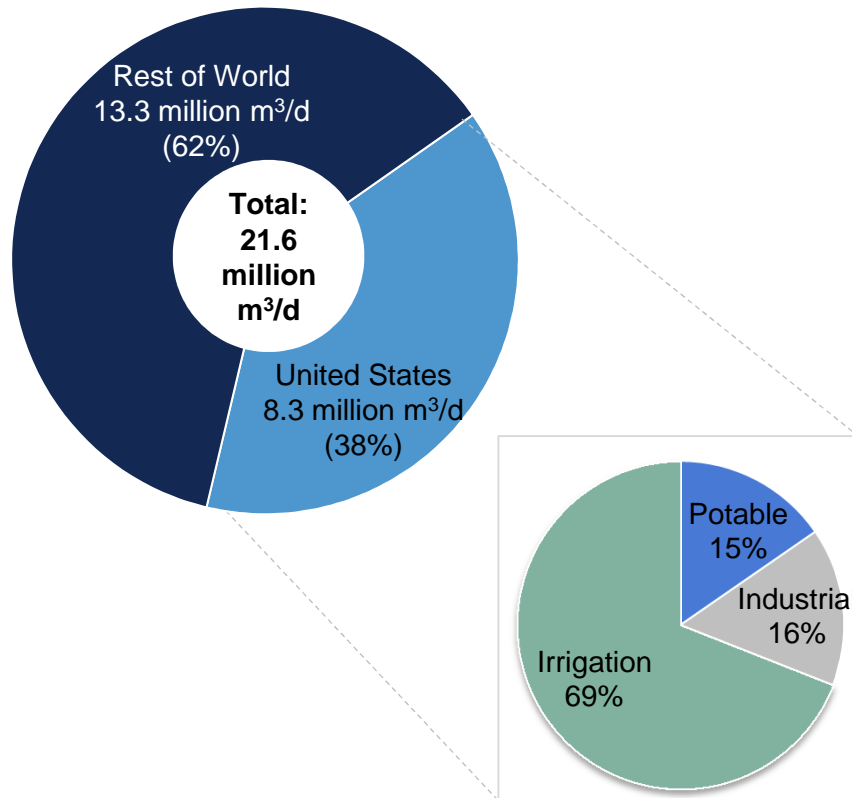
Summary

- **The US is the world's largest market for wastewater reuse by volume (38%) – but still has a long way to go in terms of tapping its full potential (3%).**
- **Bluefield Research's analysis of the U.S. wastewater reuse sector demonstrates a total installed capacity of 18.5 million m³/d and US\$12 billion of projects in the pipeline.**
- **Longer-term water planning cycles at the state level are demonstrating greater support for the expansion of reuse systems.**
- **Federal support for reclaimed water, especially in the form of financing, continues to gain momentum.**

Wastewater Reuse in the US in a Global Context

The United States stands out as the largest market by volume for municipal wastewater reuse but lags other countries as a percentage total water supply.

Global Wastewater Reuse Volumes



Applications for Reclaimed Water in the US

Analysis

Building blocks in place for broader US reuse build-out

- The US represents a significant share of the total at 38%.
- Relative to share of total water supplies, in the US reclaimed water is only 3%, well below global leaders Singapore and Israel.

Reclaimed water applications to evolve with shifting demands

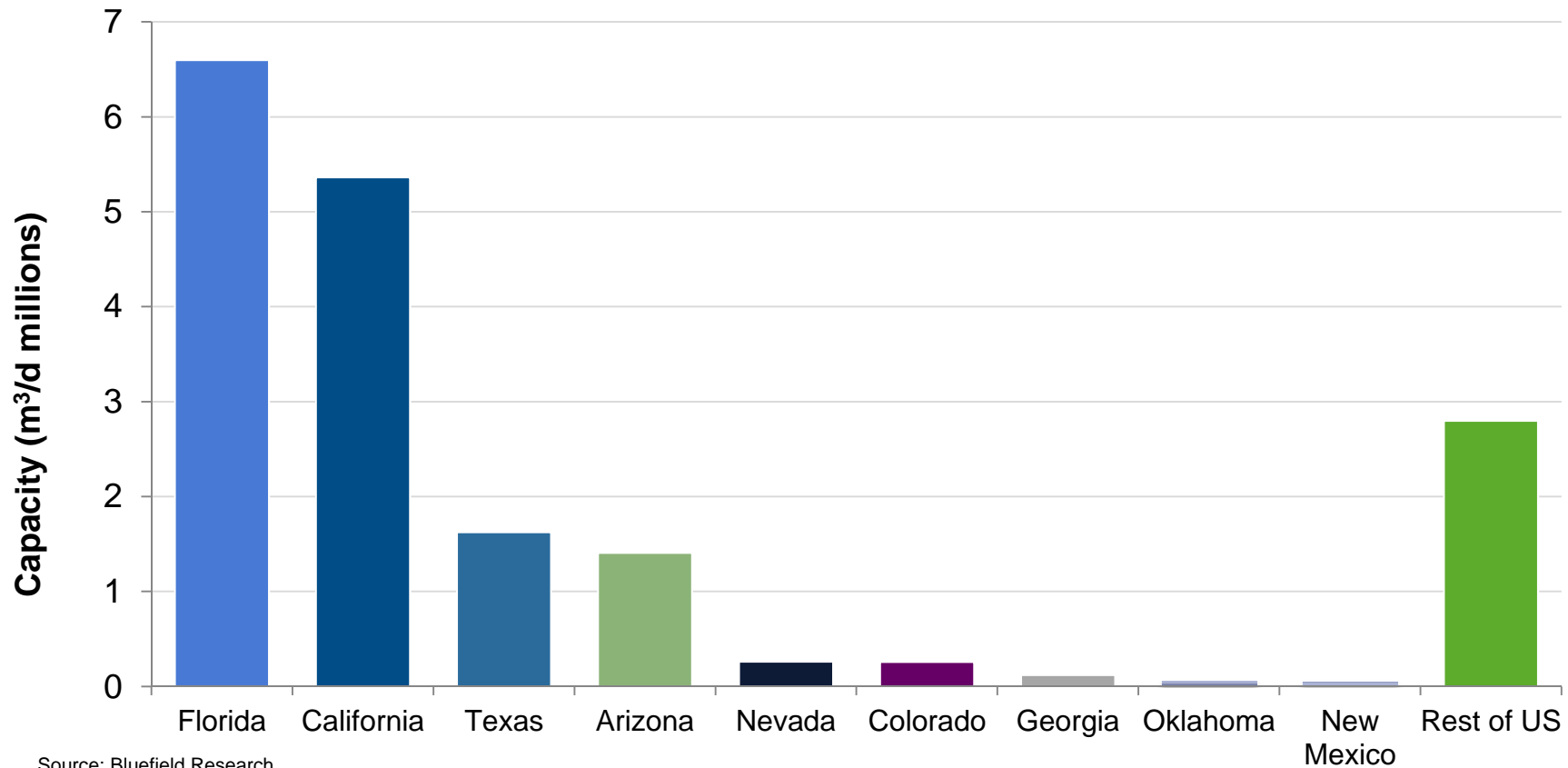
- Potable reuse, almost exclusively indirect, has steadily gained momentum to reach 15% of the total flows.
- Risk to power plants and the energy sector have drawn most reclaimed water for industry.
- Irrigation for agriculture and landscaping, represent 69% of total flows,

Source: Jimenez and Asano (2008), Bluefield Research

Installed Reuse Capacity by State

The U.S. wastewater reuse sector has experienced a slight uptick in activity with 147,000 m³/d of capacity added since the end of Q2 2015 and boosting total installed capacity to 18.5 million m³/d.

Total Installed Water Reuse Capacity by State



Wastewater Reuse Policy Changes

State and federal policy and financing mechanisms continue to evolve to support development of reuse projects.

State	Date	Wastewater Reuse Policy	Impact on Reuse
Oklahoma	Nov 2015	creation of sensitive water supply reuse classification, to support the introduction of reclaimed water in lakes and reservoirs as part of indirect potable reuse	↔
Colorado	Nov 2015	US\$20 billion dollar water plan highlighting future water needs and supplies, including wastewater reuse	↑
Florida	Dec 2015	Senate Bill 536 (SB 536) Study on Expansion of Beneficial Uses of Reclaimed Water, Stormwater and Excess Surface Water.	↑
Federal	Dec 2015	Ban lifted on tax-exempt bonds in conjunction with federal loans (WIFIA) for water projects	↑
Texas	Dec 2015	2016 Regional Water Plans, consolidated into the 2017 State Water Plan and calls for US\$2.7 billion investment in reuse	↔
Federal	Jan 2016	Bill proposed to authorize US\$350 million for water recycling projects	↑
California	Feb 2016	LA Count Dept Public Health publishes guidelines for non-potable reuse,	↑

Analysis

- States with nascent reuse programs continue to pass regulations to supporting a reuse program.
- The federal government continues to develop new financing mechanisms for reuse projects, especially those intended to provide drought relief.
- Reuse market leaders Florida and Texas expand plans for future growth of reclaimed water use.

Key

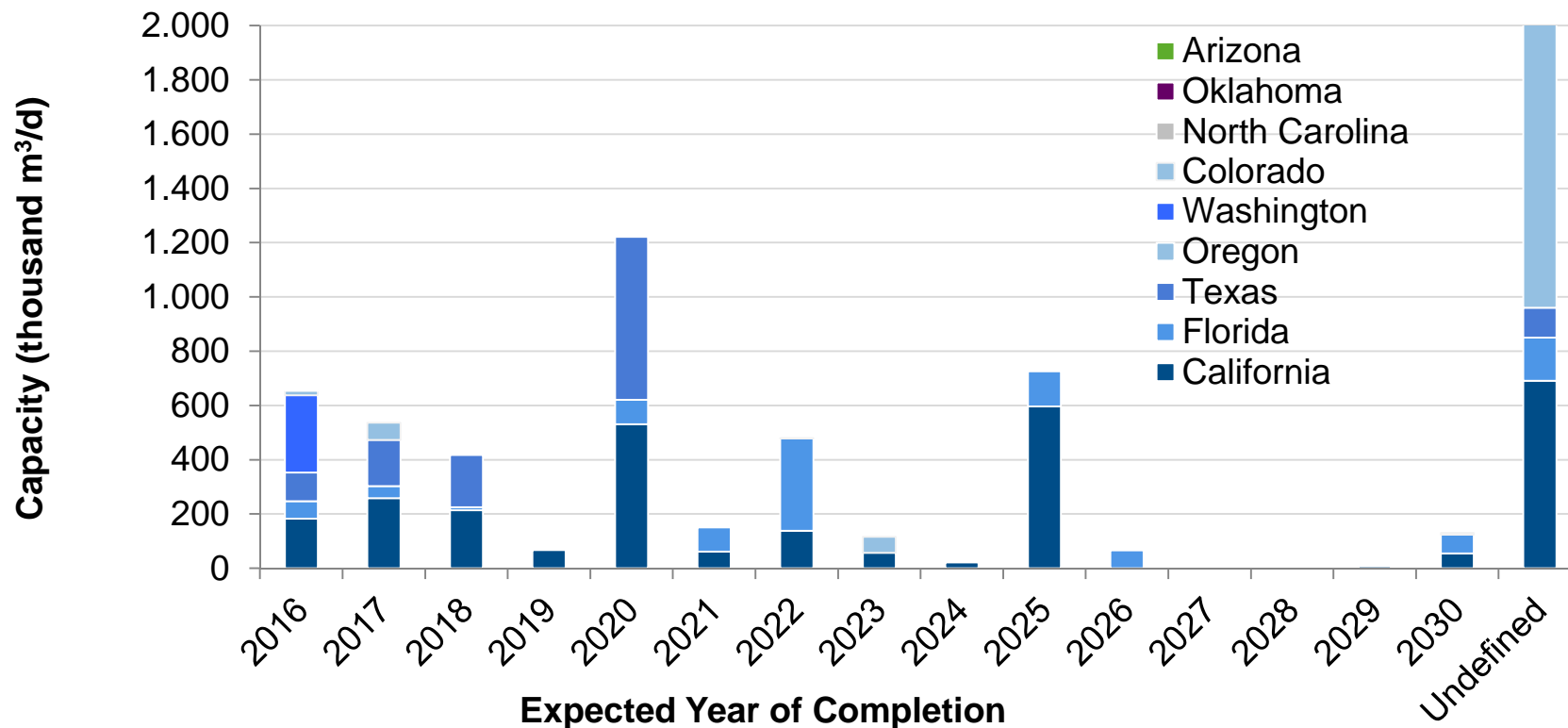
 Reuse Inhibitor
  Neutral
  Reuse Driver

Source: Bluefield Research

Planned Reuse Project Timeline

Currently, 441 systems are expected to be completed by 2030, accounting for over 6.7 million m³/d of reuse capacity that will surpass US\$12.9 billion in infrastructure investment.

Reuse Capacity Additions by Year

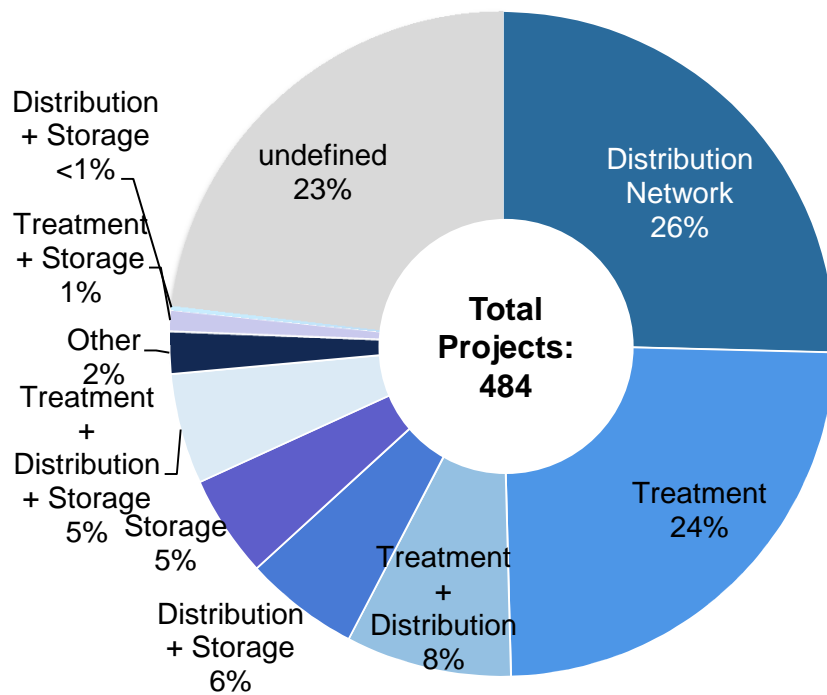


Source: Bluefield Research

Types of Planned Reuse Projects

Of the identified system types, planned reuse projects are evenly split between treatment and distribution systems, accounting for 279 (75%) of total projects, including those that encompass both treatment and distribution components.

Types of Planned Water Reuse Projects



Source: Bluefield Research

Analysis

- Treatment includes upgrades and expansions to existing wastewater treatment plants to make water suitable for reuse, as well as new plants.
- Types of treatment technology being deployed include membrane bioreactors (MBR), ultrafiltration (UF), reverse osmosis (RO) systems, and UV and ozone for disinfection of reclaimed water.
- Distributions networks include pipe systems and pump stations to transport water to the end users.
- Storage includes tanks, wetlands, and ASR (aquifer, storage, and recovery) all designed to hold reclaimed water for use during drought.



Global companies across the value chain are developing strategies to capitalize on greenfield opportunities in water -- new build, new business models, and private investment. Bluefield Research supports a growing roster of companies across key technology segments and industry verticals addressing risks and opportunities in the new water landscape.

Companies are turning to Bluefield for in-depth, actionable intelligence into the water sector and the sector's impacts on key industries. The insights draw on primary research from the water, energy, power, mining, agriculture, financial sectors and their respective supply chains.

Bluefield works with key decision-makers at utilities, project development companies, independent water and power providers, EPC companies, technology suppliers, manufacturers, and investment firms, giving them tools to define and execute strategies.

Contact Bluefield Research

NORTH AMERICA

192 South St // Suite 550
Boston, MA 02111
T +1 617 910 2540

EUROPE

C/ Sant Joan de la Salle 42
Edifici Technova 2.12
08022 Barcelona Spain
T +34 936 81 43 25

waterexperts@bluefieldresearch.com
www.bluefieldresearch.com