



Research and Innovation at WE&RF

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**Multi-States Salinity Coalition (MSSC) Summit
Las Vegas, NV
March 3, 2017**

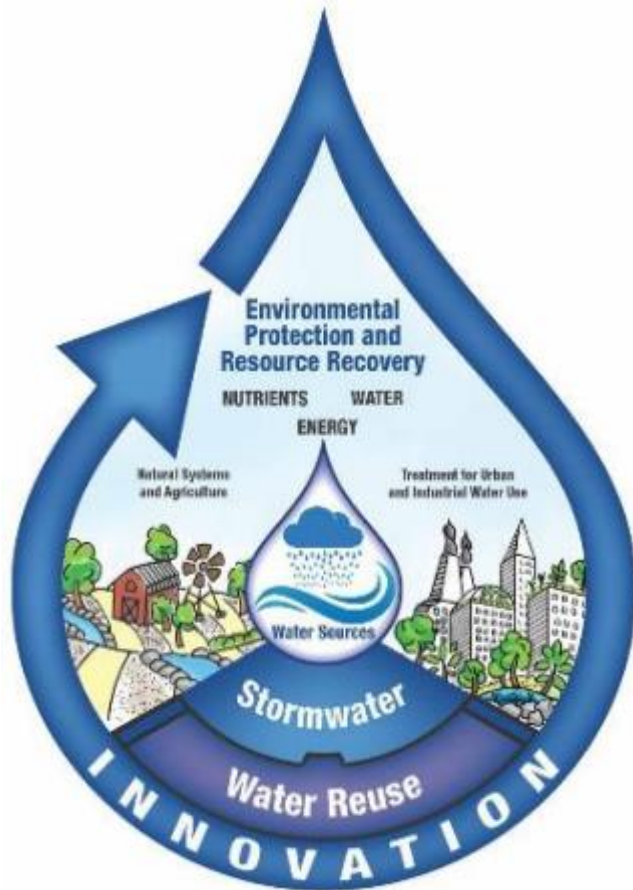
Water Environment & Reuse Foundation

Water Environment Research Foundation
and WaterReuse Research Foundation
merged in May 2016

New Focus: One Water

WaterReuse brings recycled water, desalination and related topics.

WERF brings wastewater, resource recovery, stormwater, receiving waters, climate change, and integrated water.



Bottom Line: Major Paradigm Shift

PAST

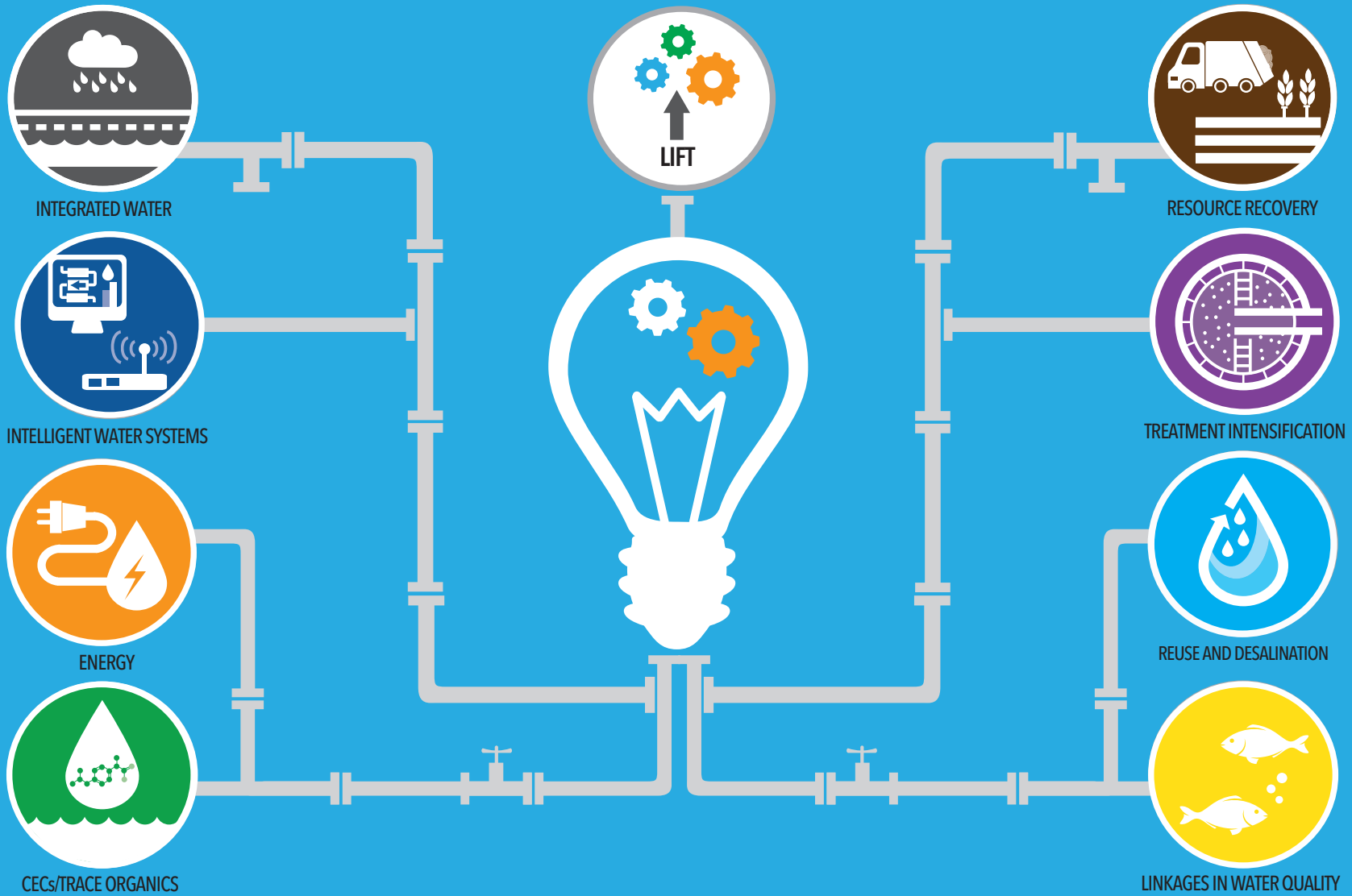
Collect wastewater, move it quickly downstream, treat it to acceptable standards, and dispose of waste without harming the environment

FUTURE

- Manage resources to generate value for the utility and its customers
- Improve environmental quality, at least cost to the community
- Use a holistic “one water” approach to water management



WE&RF RESEARCH PORTFOLIO



Core Program Elements



Applied research in water and the environment –

- providing greater value to the industry by linking research with practical applications in the field.



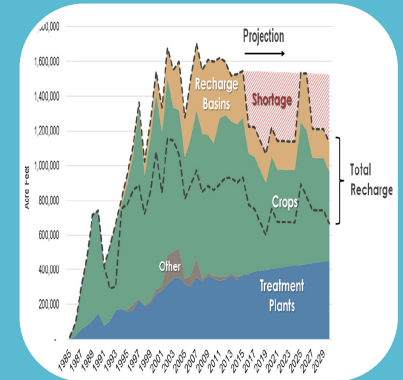
Accelerating innovation and adoption of technology

- through engagement, evaluation, and sharing of new technologies and solutions to complex problems to create impact.



Transferring knowledge

- the rapid and cohesive dissemination of research results to our subscribers and the water community to facilitate positive action.

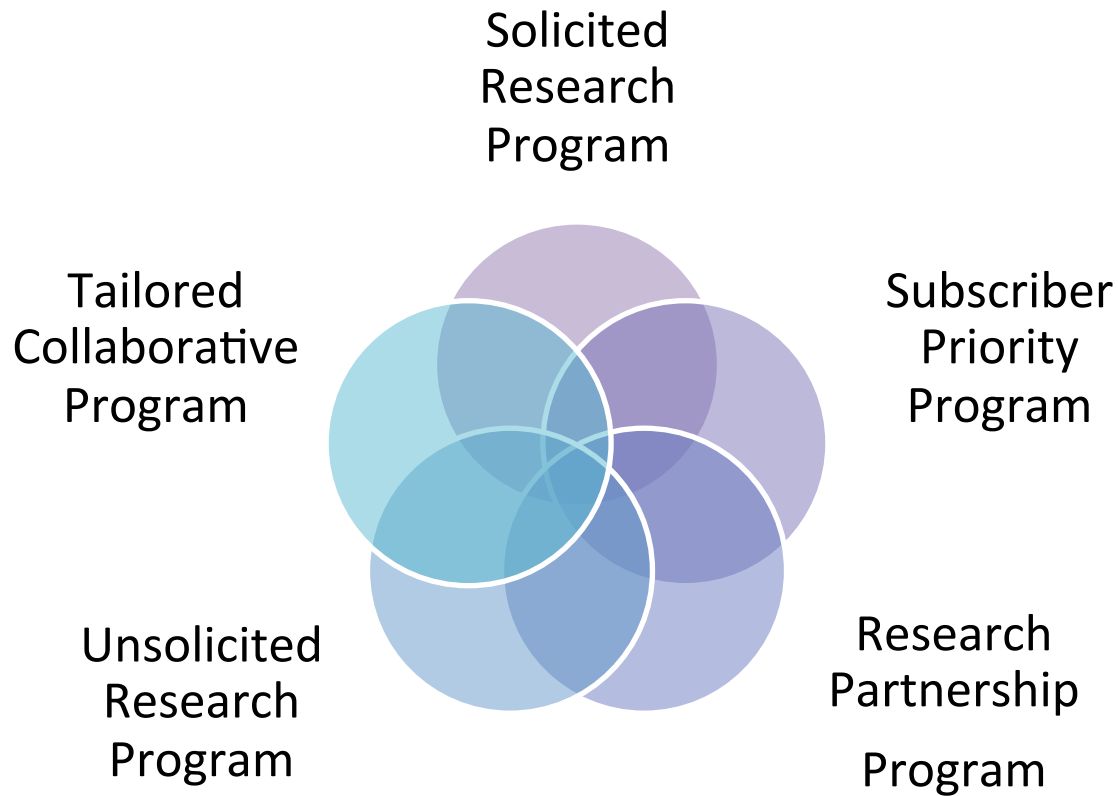


Setting an industry research agenda

- as an accelerator for launching new research initiatives that will be needed to address future challenges for our industry.



WE&RF: 5 Research Programs



Strategic Collaborations

- Federal and State Agencies
- Water sector partners and NGOs
- Global Partners

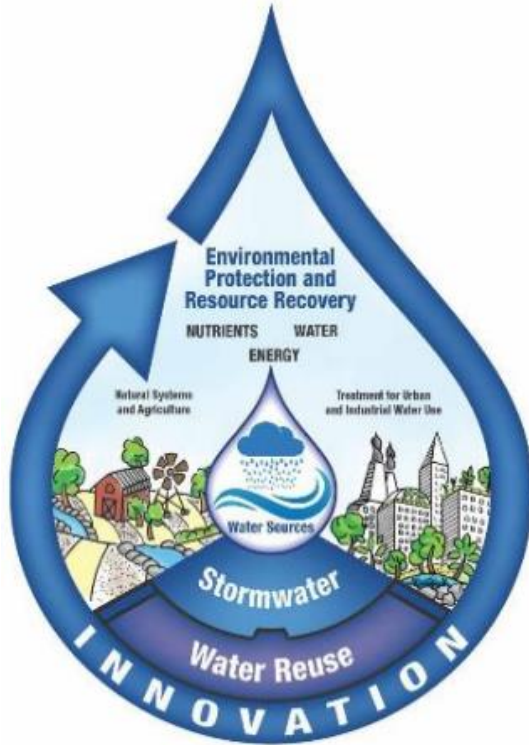


NYSERDA



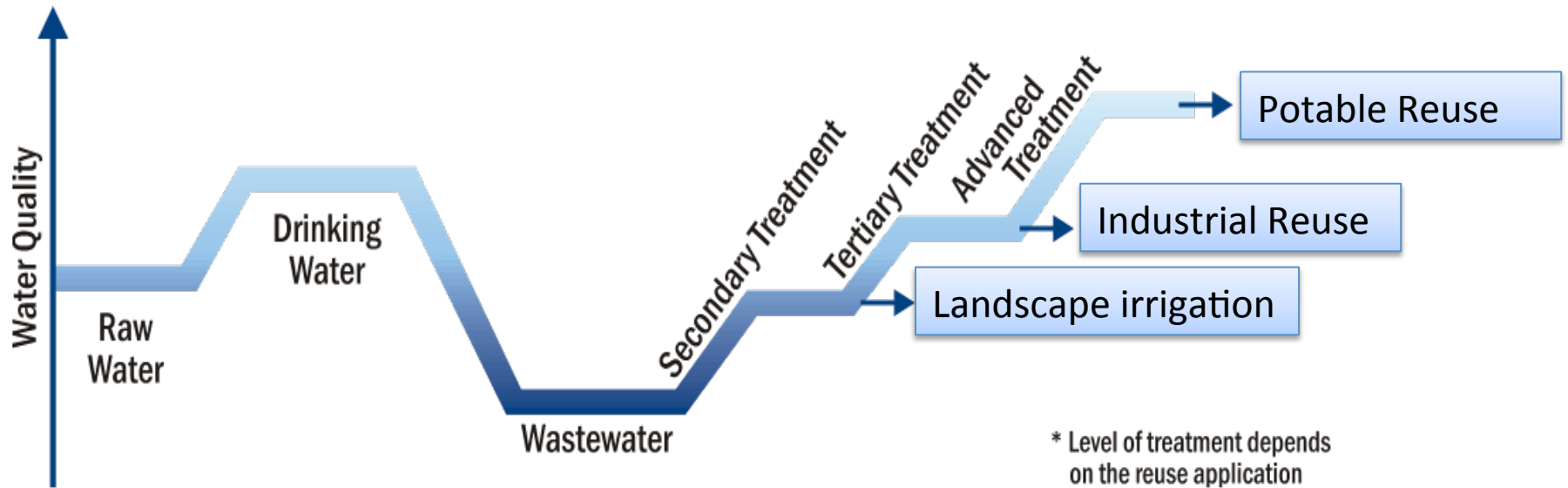
Global Water Research Coalition





Movement towards Potable Reuse

Level of Treatment is dependent on End Use



Adapted from EPA Guidelines, 2012

Potable Reuse

Drivers

- Drought
- Increased Demand
- Lack of/contaminated local supply

Potable Reuse is

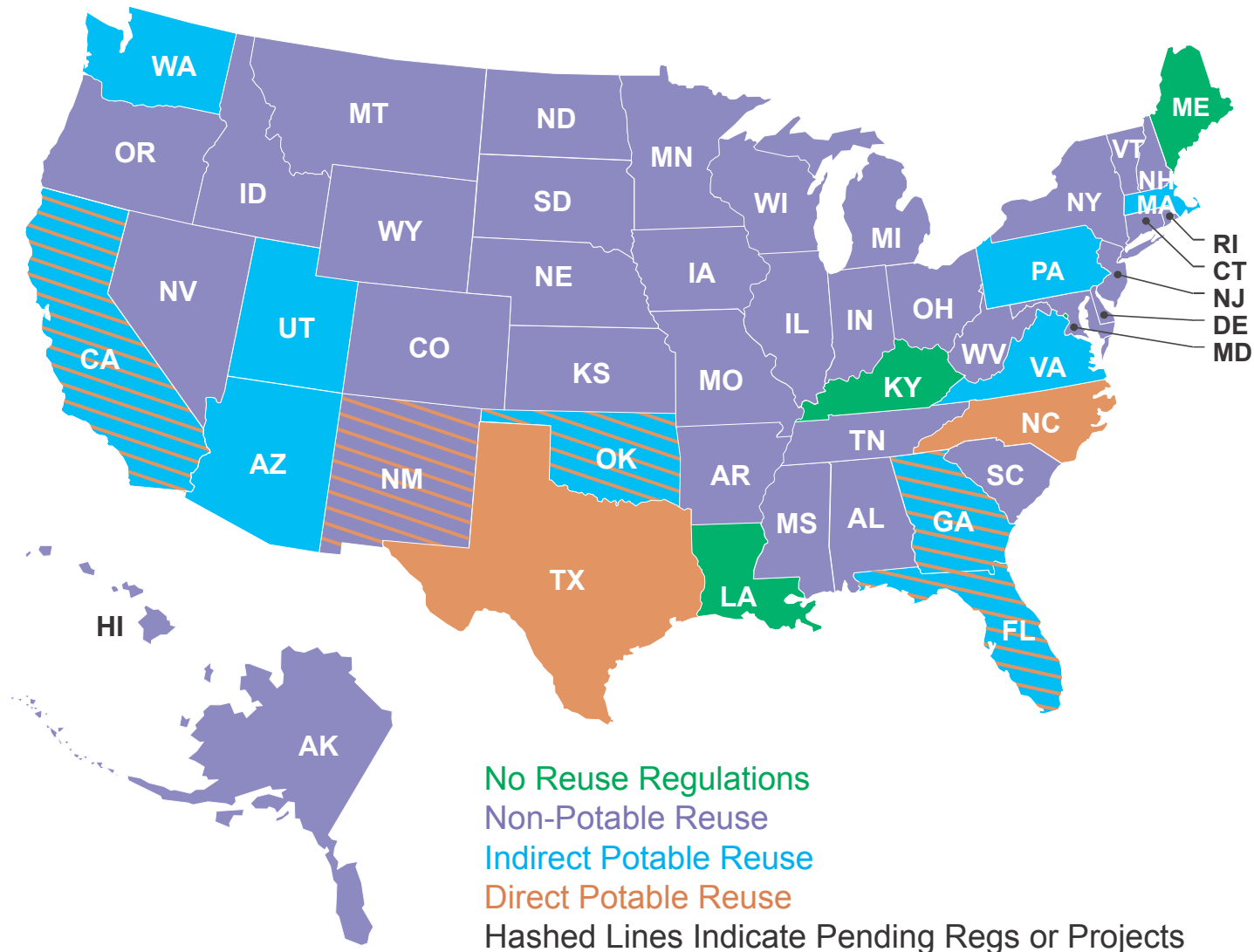
- Safe and Reliable
- Locally-Controlled
- Environmentally-Friendly and Protective

Tools to deliver

- Research
- Technology
- Sound Science
- Innovation



The “State” of Reuse: Developing Consensus on Public Health Protection



WE&RF DPR Research Initiative (2012-2016)

- **California SB 918 (2010)**

- “Feasibility of developing criteria for DPR”
- Established DPR Expert Panel

- **Initiative**

- \$6 million raised to the need to fill knowledge gaps
- Leveraged to \$24 million

- **Funded 34 projects on topics**

- Reliability of treatment trains
- Microbial and chemical water quality
- Monitoring and operations
- Public engagement

Demonstration of reliable, redundant treatment performance

Critical control points

Operations, maintenance, training/certification

Pathogens: surrogates and credits

Pathogens: rapid/continuous monitoring

Failure and resiliency

Removal and risk of constituents of emerging concern

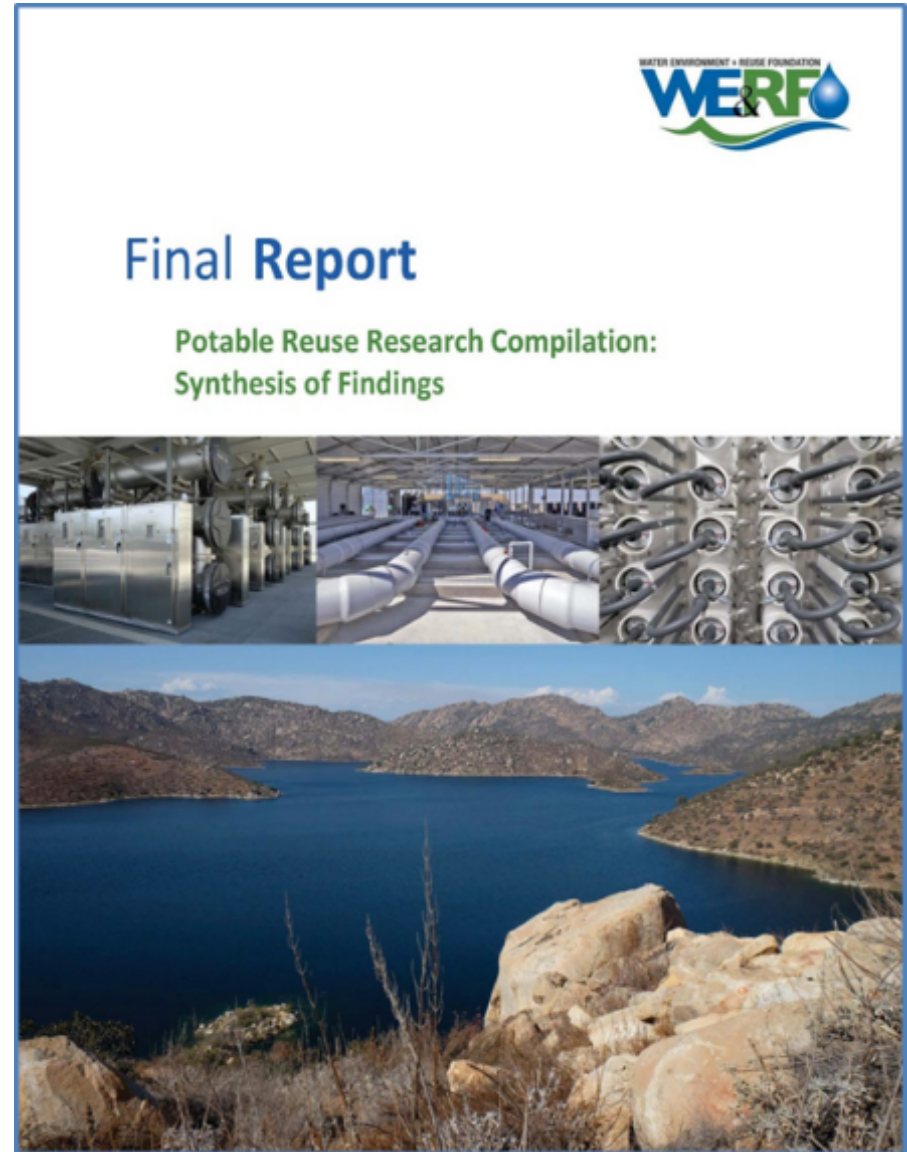
Evaluation of potential DPR trains

Source control

Available Now!

Potable Reuse Research Compilation: Synthesis of Findings (Reuse 15-01)

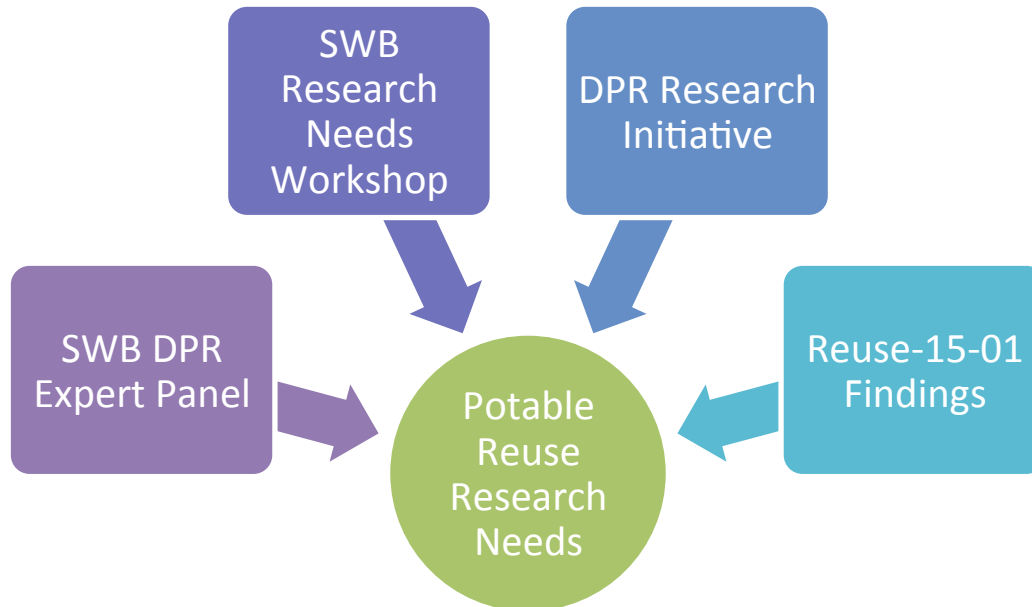
- Summarized and synthesized key results of **34 research projects** in DPR Initiative
- Published in **December 2016**
- Principle Investigators:
 - NWRI
 - George Tchobanoglous

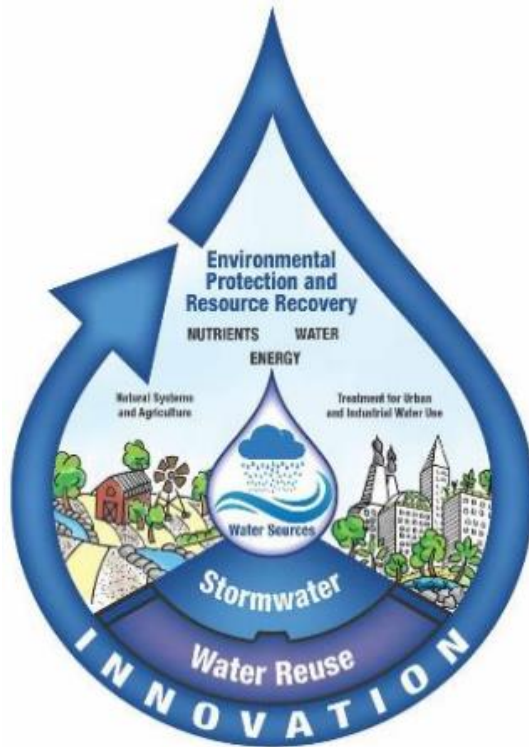


Next Steps for Potable Reuse Research

Research Partnership: WE&RF is working on grant under Prop 1 with SWRCB for potable reuse research

WE&RF research process: Water Reuse Issue Area Team meets in March 2017





Desalination & Concentrate Management Research

WE&RF Salinity Management and Desalination Research

- Effectiveness, practicality, and benefits of desalination
- Knowledge and understanding of salinity management
- Effective tools and information regarding the benefits of desalination as part of a diverse water portfolio

Research Topics Include:

Cost Analysis

Treatment Processes

IM&E Mitigation

Intake Systems

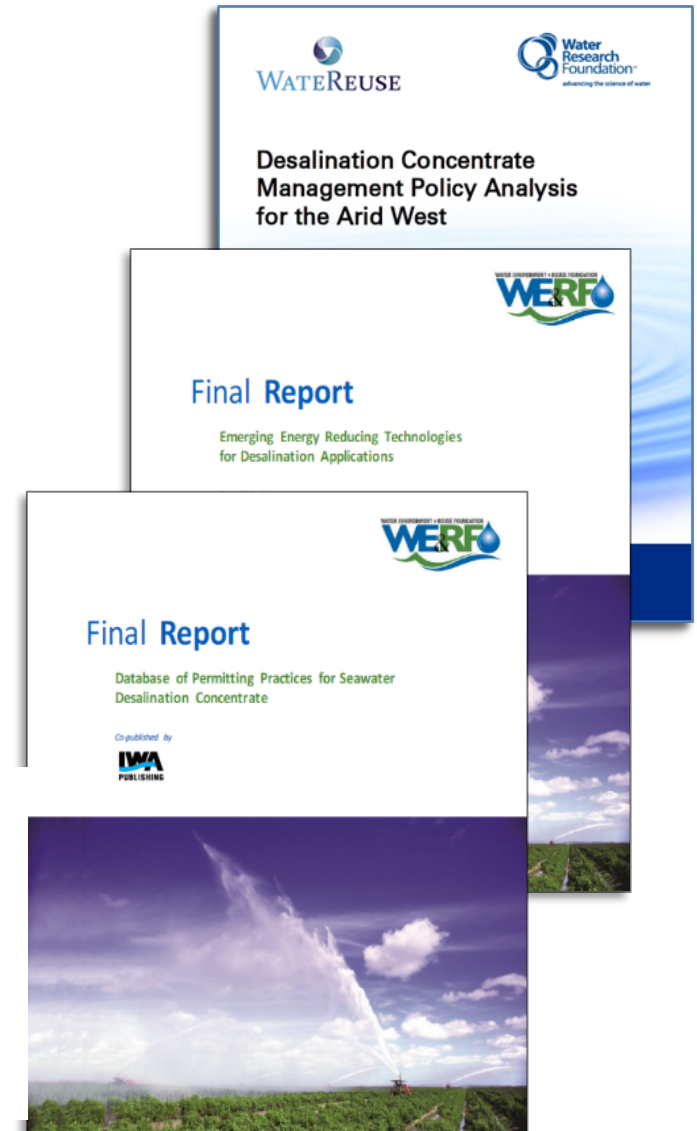
Membrane Biofouling

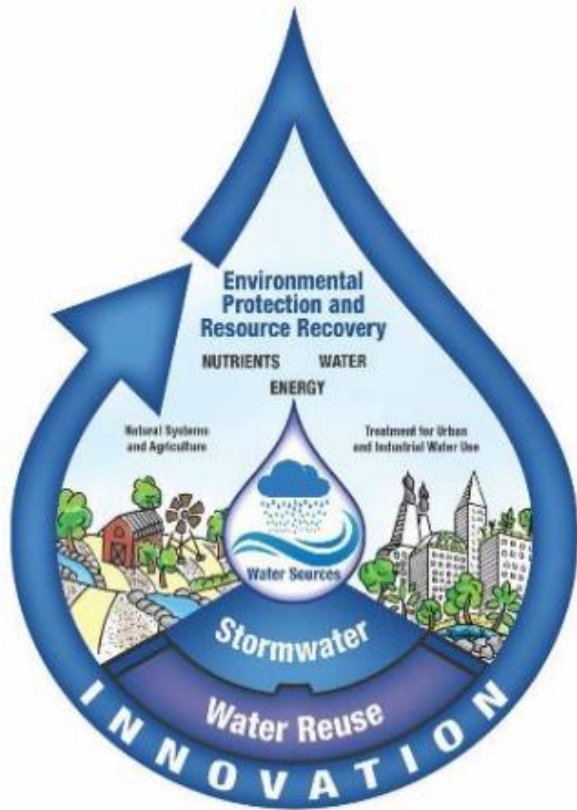
Regulatory Barriers

Public Acceptance

WE&RF Salinity Management and Desalination Research Portfolio

- **Portfolio:**
 - Valued at over \$8 million
 - 18 Desalination Projects
 - 11 Salinity Management Projects
- **Includes:**
 - \$2M partnership with DWR, WRF, & Sandia



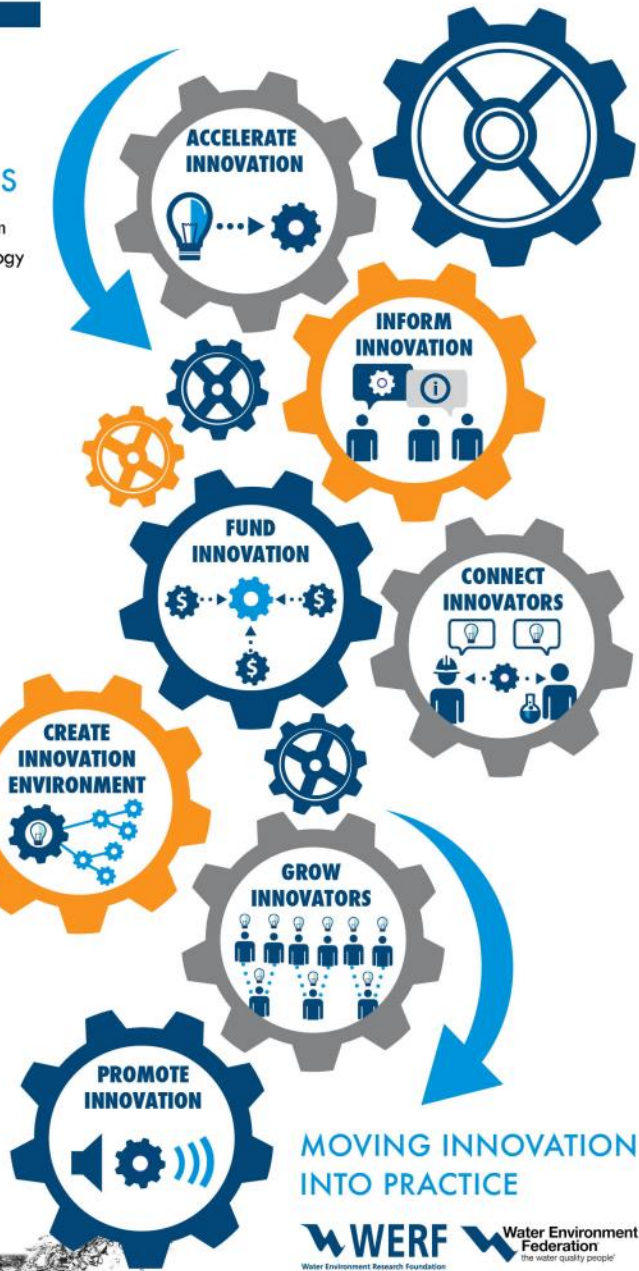


Driving Innovation

LIFT 2.0

7 STRATEGIC
AREAS OF FOCUS

LIFT is a WERF-WEF program that accelerates water technology demand and adoption and engages the entire water sector in all phases of the innovation process.



LIFT

Leaders Innovation Forum
for Technology

www.werf.org/lift

Joint WEF and WE&RF Initiative

Program Components

1. Technology Evaluation Program
2. People and Policy
3. Communication
4. Informal Forum for R&D Managers

Utility Technology Focus Groups

1 Shortcut Nitrogen Removal

2 P-Recovery

3 Digestion Enhancements

4 Biosolids to Energy

5 Energy from Wastewater

6 Collection Systems

7 Green Infrastructure

8 Small Facilities

9 Odor Control

10 Disinfection

11 Water Reuse

12 Intelligent Water Systems



Technology Scans

72 Technologies
68 Companies



LIFT Link to Learn More



- Discover new technologies
- Connect with others
- Collaborate on research and technology ideas, proposals,
- Potential for demonstrations and implementation

Discover Technologies

NUTRIENT REMOVAL

Intermittently Decanted Extended Aeration Lagoon (IDEAL)

Environmental Dynamics International (EDI)

Recent ammonia criteria released by the U.S. EPA will cause wastewater treatment ...

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RESOURCE RECOVERY

KORE Infrastructure

KORE Infrastructure

KORE has scaled down and re-engineered a historically large-scale industrial process ...

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COLLECTION SYSTEMS

Sewer Line Rapid Assessment Tool (SL-RAT®)

InfoSense, Inc.

The Sewer Line Rapid Assessment Tool, or SL-RAT®, is an acoustic inspection ...

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National Test Bed Facility Network

Steering Committee



Planning Partners



*Its not the history of the water that is important,
it is the quality.*



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