

COLLABORATION. INNOVATION. RESULTS.



# LIFT

Leaders Innovation Forum for Technology

# What Is LIFT ?

A WEF/WERF  
Initiative Accelerating  
Innovation  
Into Practice



# Technology Evaluation Program (TEP)

1

Identify

2

Screen

3

Evaluate

4

Share Risk & Cost

5

Integrate Technology



## People and Policy

- Address Local, State, and Federal Barriers to Innovation
- Benchmark Facility Owner R&D Programs



# Communication

- Training
- Education
- Outreach



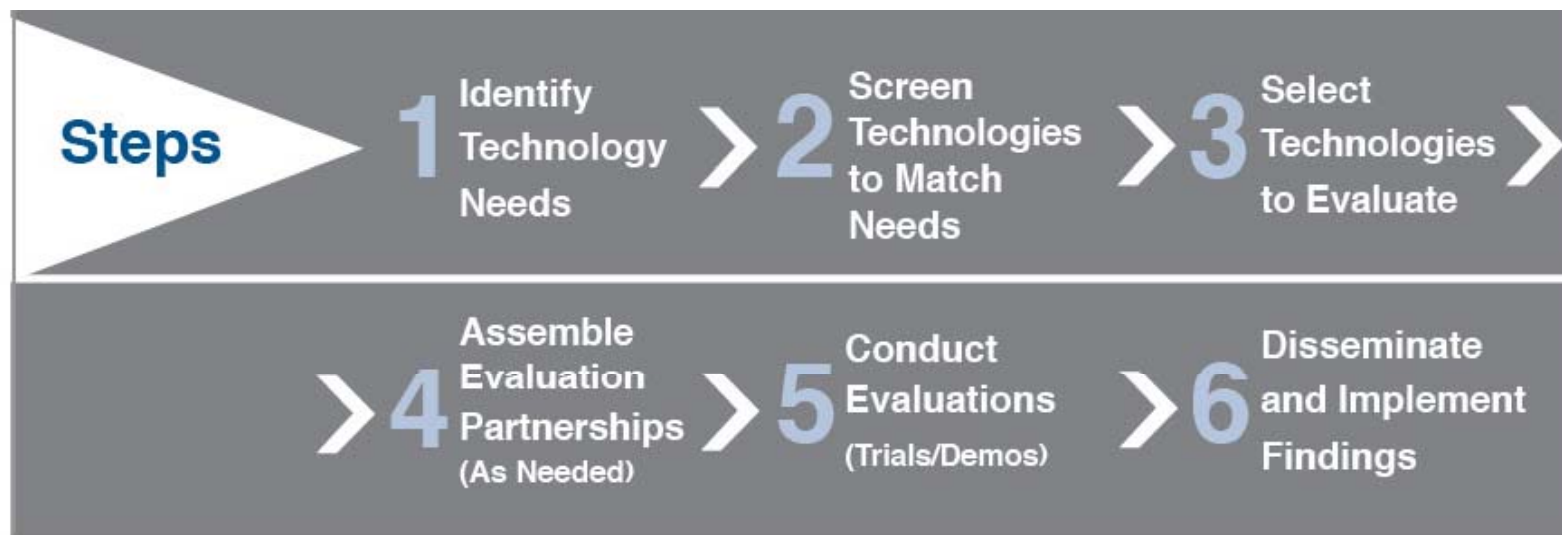


## Informal Forum for R&D Managers

- For individuals responsible for technology identification and deployment
- Share experiences, activities, and interests



# LIFT Technology Evaluation Program Process



# Technology Evaluation Program Benefits

- ☐ Credible, well-documented vetting system to screen new technologies and processes
- ☐ Ability to more rapidly deploy new technologies and remove existing impediments
- ☐ Mitigation of risk and cost of innovative technology deployment through collaborative partnerships
- ☐ Facilitation of collaboration among facilities for the evaluation and testing of new technologies
- ☐ Peer-reviewed information about emerging technologies



# LIFT-TEP Participants



## Working Group:

- Initially about 25 facility owner members, currently about 120 members

## VEP (Volunteer Experts Pool):

- Established for non-facility owners including consultants, academics, equipment manufacturers, etc.

# LIFT-TEP

## Technology Focus Areas

- 1 Shortcut Nitrogen Removal
- 2 P-Recovery
- 3 Pre-Digestion
- 4 Biosolids to Energy
- 5 Electricity from Wastewater



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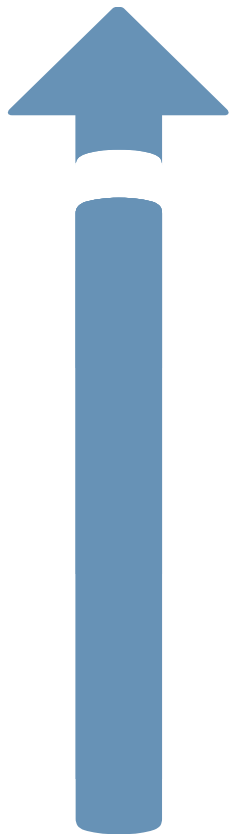


## Where's the Next Big Idea?





## Bottom-Up Approach



Driven by Need

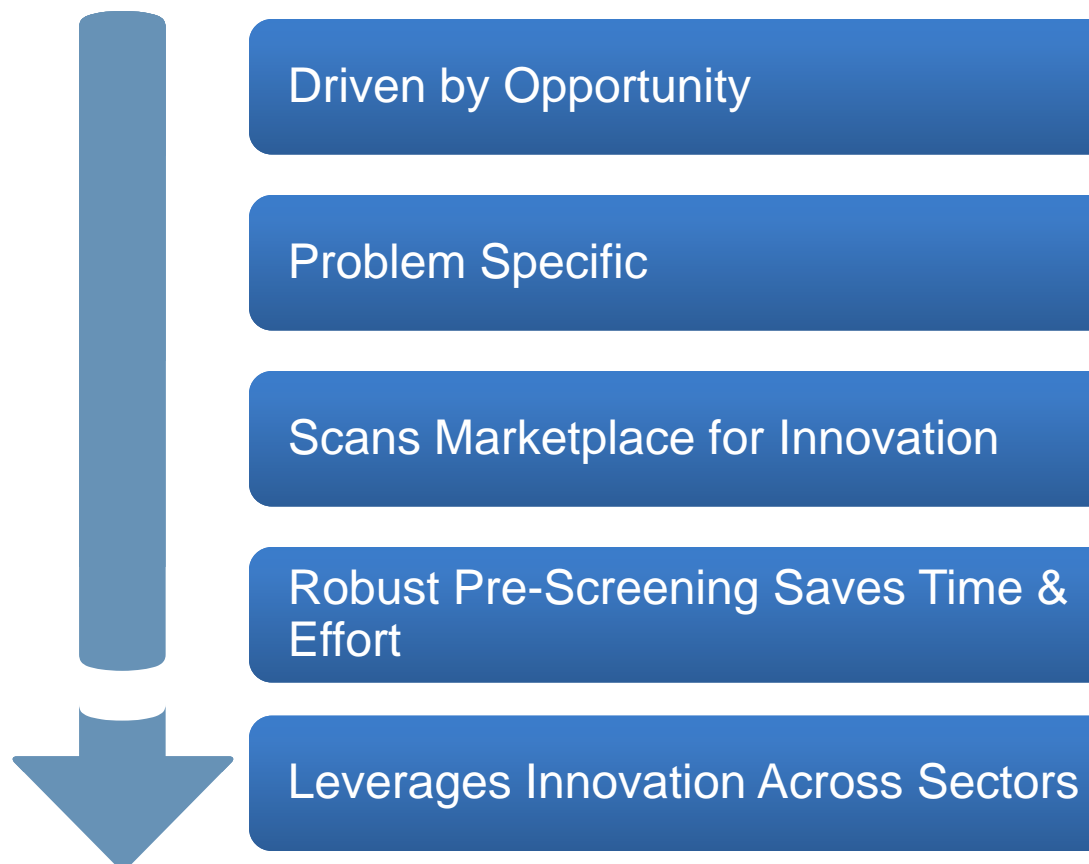
Leverages Ongoing Activities

Encourages Networking & Info Sharing

Avoids Duplication of Efforts



## Top-Down Approach





## Survey Purpose

- Identify new technologies currently being evaluated at facilities
- Provide a networking tool for facility owners
- Identify technology topics of interest for potential collaboration



## Survey Data Collected

- Contacts
- Basic Agency Info
- For the Areas of WW, DW, and SW:
  1. What technologies is your organization currently testing or evaluating?
  2. What technologies are you interested in, but not currently evaluating?
- Select Technology Topics of Interest.
- Description of Needs for Top-Ranked Technology Topics



### 3. WASTEWATER TECHNOLOGY TESTING

What wastewater collection and treatment technologies is your organization currently testing or evaluating? Complete the information below for each technology. Please add rows for additional technologies as needed.

Organization	Technology Name	Vendor (if applicable)	Category (select from topic list in Question 2)	Description (100 words or less)	Cost	Contact Responsible for Evaluation (name, phone and e-mail)
Metro Water Reclamation District	Deammonification	Kruger, Paques, World Water Works	Alternative Treatment Processes	Evaluating technology options for side-stream centrate treatment to (a) reduce effluent nitrogen, (b) reduce peak effluent ammonia, and (c) improve EBPR Performance	Pilot Study - \$220k, plus conducting Facility Planning effort	Jim McQuarrie, 308-286-3374, jmcquarrie@mwrdd.dst.co.us
Metro Water Reclamation District	Phosphorus Recovery	Ostara, others	Nutrient Removal & Recovery	Evaluating struvite precipitation nutrient recovery technologies to (a) address P indexing regarding land application of biosolids, (b) reduce nuisance struvite issues, and (c) improve effluent TP quality	Ostara pilot study complet, plus conducting Facility Planning effort and participating in WERF Nutrient Recovery	Jim McQuarrie, 308-286-3374, jmcquarrie@mwrdd.dst.co.us
Metro Water Reclamation District	Ammonia-based Aeration control	BioChem	Energy Efficiency & Generation	Using in-situ ammonia probes and an ASM-based algorithm to dynamically adjust DO set points, reducing aeration energy, improving denitrification performance, and targeting some residual effluent ammonia for chloramine formation	\$150k	Jim McQuarrie, 308-286-3374, jmcquarrie@mwrdd.dst.co.us
NYC Dept. of Environmental Services	SHARON	Grontmij	13 Nutrient Removal (TN)	Means of removing TN through Nitrification (NO2) followed by denitrification which would cut air and carbon costs over full nit/denit	60M	Keith Beckmann 718-595-5009 kbeckmann@dep.nyc.gov
NYC Dept. of Environmental Services	Annamox	Dutch patented TM	13 Nutrient Removal (TN)	CCNY pilot study of annamox at 26th W/WPCP	300k	Keith Beckmann 718-595-5009 kbeckmann@dep.nyc.gov
NYC Dept. of Environmental Services	3-D Final Tank Modelling	n/a	Final Tanks	Maximize performance of FTs thru 3-D modelling and baffle installation	50k	Keith Beckmann 718-595-5009 kbeckmann@dep.nyc.gov
NYC Dept. of Environmental Services	Struvite Precipitation thru Sludge aeration treatment	Ostara, berlin	Alternative Treatment	CCNY pilot to evaluate sludge processing for struvite removal and potential TN removal	0 so far	Keith Beckmann 718-595-5009 kbeckmann@dep.nyc.gov
NYC Dept. of Environmental Services	Instrumentation DCS	Endress and Hauser, Hach, SCAN	Plant Operations and Control	System wide usage of DCS systems for BNR control	Upgrades	Keith Beckmann 718-595-5009 kbeckmann@dep.nyc.gov
East Bay Municipal Utility District	Anammox		Nutrient removal, energy efficiency	Low energy nitrogen removal process		Donald Gray 510-287-1602 dgabb@ebmud.com
East Bay Municipal Utility District	CANDO		Nutrient removal, energy efficiency	Low energy nitrogen removal process		Donald Gray 510-287-1602 dgabb@ebmud.com
East Bay Municipal Utility District	various organics to energy processes		Energy generation	pre-treatment processes for anaerobic digestion of organics		Donald Gray 510-287-1602 dgabb@ebmud.com
Orange County Sanitation District	OpenCEL	OpenCEL (Atlanta, GA)	Anaerobic treatment	Pre-digestion exposure of WAS to pulsed energy field to improve digestibility (more biogas; less residual solids)	TBD	Jeff Brown, 714-593-7083, jbrown@ocsd.com
Orange County Sanitation District	Superoxygenation (Speece cone)	ECO2 Technologies	Other (odor control)	Collection systems: achieve high dissolved oxygen concentration in wastewater to prevent H <sub>2</sub> S formation	TBD	Jeff Brown, 714-593-7083, jbrown@ocsd.com
Orange County Sanitation District	AquaCrix	SCFI (www.scfi.eu)	Solids treatment	Supercritical water oxidation of biosolids	TBD	Jeff Brown, 714-593-7083, jbrown@ocsd.com
Orange County Sanitation District	Sewex software	Sewex (sewex.com.au)	Other (odor control)	Collection system odor modeling to optimize odor control efforts	TBD	Jeff Brown, 714-593-7083, jbrown@ocsd.com
Orange County Sanitation District	Tri-generation fuel cell using biogas fuel	Fuel Cell Energy / Air Products & Chemicals	Energy efficiency & generation	Digester biogas feeds fuel cell; products are electricity, hydrogen for vehicle fueling, and process heat	TBD	Jeff Brown, 714-593-7083, jbrown@ocsd.com
Orange County Sanitation District	Food waste anaerobic digestion	N/A	Alternative treatment processes	Add processed food waste to conventional W/WTP anaerobic digesters to improve digestion, reduce odors, generate more biogas	TBD	Andre Miller, 714-593-7446, amiller@ocsd.com
Clean Water Services	Sugar Fermentation	(none)	Nutrient Removal and Recovery	Conducting on-site fermentation of sugar from waste sources		Peter Schauer, 503-547-8183, schauerp@cleanwaterservices.org
Clean Water Services	Phosphorus recovery	Ostara	Nutrient Removal and Recovery	Continuing to refine struvite recovery at Durham and Rock Creek		Peter Schauer, 503-547-8183, schauerp@cleanwaterservices.org
Clean Water Services	Ballasted Flocculation	Actiflo	Nutrient Removal and Recovery	Currently installing Actiflo and will be testing for both low P and TSS		Peter Schauer, 503-547-8183, schauerp@cleanwaterservices.org

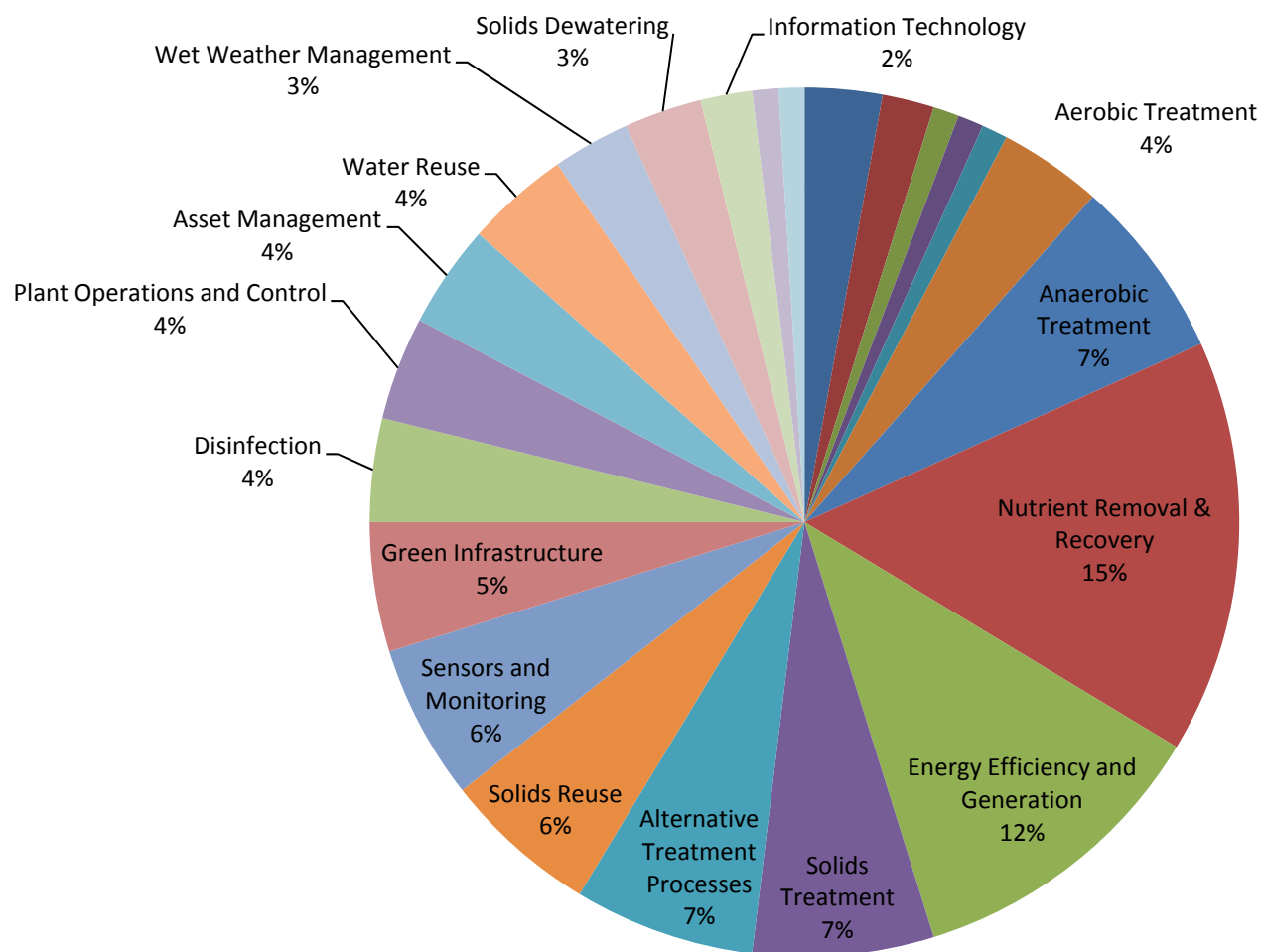
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## Survey Results

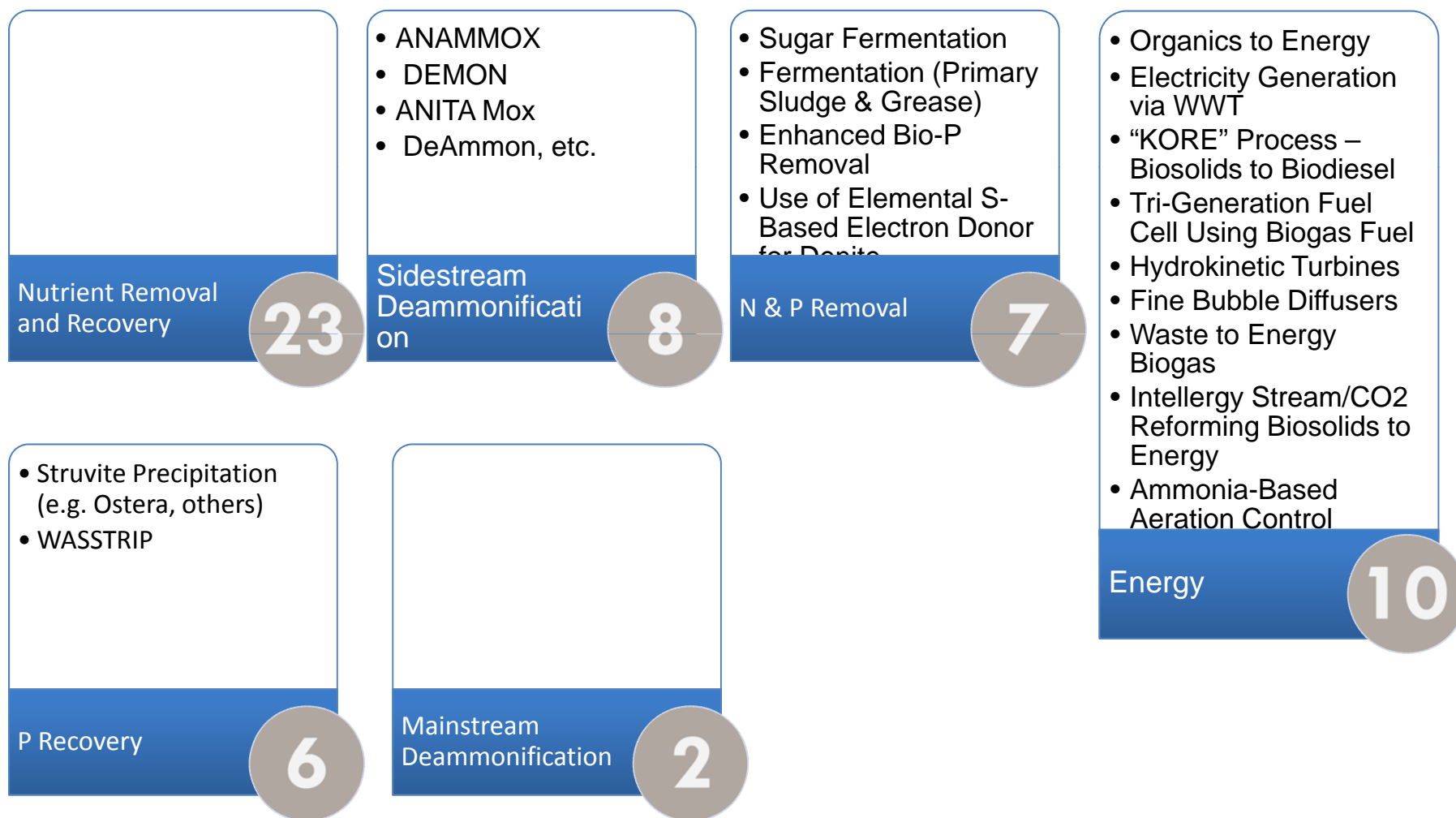


# Wastewater Technology Topics of Interest





# Wastewater Technologies Being Tested



## Summary

Based on the data, areas of technology evaluation and interest that may be good candidates for new focus areas of collaboration under LIFT are:

### **Tier 1:**

Energy, P-recovery, Anaerobic Digestion



### **Tier 2:**

Sensors, Odor Control, Disinfection, Asset  
Management,  
Solids Treatment, Wet Weather

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## R&D Metrics Project



Matt Ries, P.E.  
Ph.D. Student, University of South Florida

## R&D Metrics Project

- Expected Outputs:  
Data, Synthesis Report,  
Comparison
- Expected Outcomes:  
Assist in Developing Best  
Practices, Approaches to  
Implementing, Resource  
Utilization



# R&D Metrics Project – Survey

1

Profile of Respondent &  
Treatment Plant(s)

2

R&D  
Structure/Governance

3

R&D Budget

4

Project Execution

5

Metrics





# Get Involved

## Everyone:

### LIFT Working Group

- **Provides Input on All Three Components of LIFT**
  - Technology Evaluation
  - People and Policy
  - Communication and Education

### Volunteer Expert Panel

- **Advice on Technology Evaluations**
  - Technology Identification
  - Technology Screening
  - Provided Composite Data from Technology Surveys
  - Evaluations
  - Integration

# Get Involved

## Facility Owners:

### LIFT - TEP Working Group

- Sets Technology Evaluation Priorities
- Determines Strategy and Monitors Implementation
- Provides Detailed Technology Survey Information for Networking

### Technology Focus Groups

- Established for each Technology Class to Be Evaluated
- Priorities and Implementation Strategy by Facility Owners
- Supplements Expertise with VEP

## LIFT Contacts at WEF and WERF

### WEF

Matt Ries – [mrries@wef.org](mailto:mrries@wef.org) 703-684-2406

- People and Policy
- Communication and Education

### WERF

2104 Jeff Moeller – [jmoeller@werf.org](mailto:jmoeller@werf.org) 571-384-

2105 Ravi George – [rgeorge@werf.org](mailto:rgeorge@werf.org) 571-384-

- Technology Evaluation Program (TEP)
- Volunteer Expert Pool (VEP)
- LIFT-TEP Working Group