

Utilities of the Future - Today

Featuring Water Reuse Programs



Linda Kelly
Water Environment Federation

About WEF

- Founded in 1928
- Not-for-profit technical and educational professional organization
- 75 affiliated Member Associations (MAs)
- WEF and the MAs proudly work to achieve clean & safe water!



Dr. Eileen O'Neill
Executive Director

About WEF

WEF's 34,000 Membership Includes:

- Utility Managers
- Scientists
- Engineers
- Regulators
- Academics
- Plant Operators
- Students
- Young Professionals



Insights on water reuse from mentors & experience



“Colleagues are a wonderful thing – but mentors, that’s where the real work gets done.”

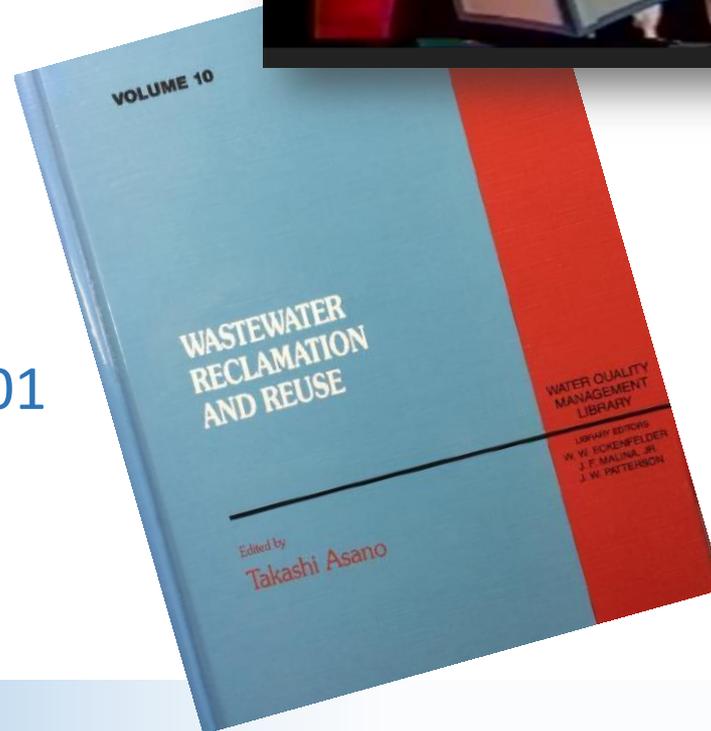
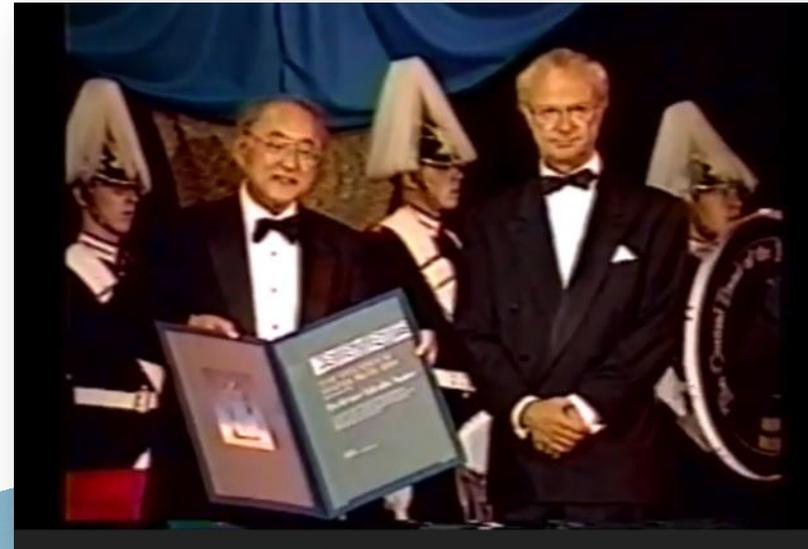
— Junot Diaz



Honored to have worked with & learned from Professor Takashi Asano, Linda Macpherson and Jenifer Simpson

Insights on water reuse from mentors & experience

- Water reuse engagement with my utility – Clean Water Services
- Water reuse meaningful community involvement/acceptance principles and tools that work
- Published papers working with Professor Takashi Asano – winner of the Stockholm Water Prize 2001



Insights on water reuse from mentors & experience

- Technical challenges have been solved (THANK YOU!)
- Barriers remain in regulatory, legal, institutional, etc.
- Barriers I focus on:
 - Meaningful public involvement
 - Public acceptance communications
 - Risk communications
 - Fit-for-purpose communications



Insights on water reuse from mentors & experience

- Water reuse fit-for-use communication
- Water reuse language sometimes shoots us in the foot



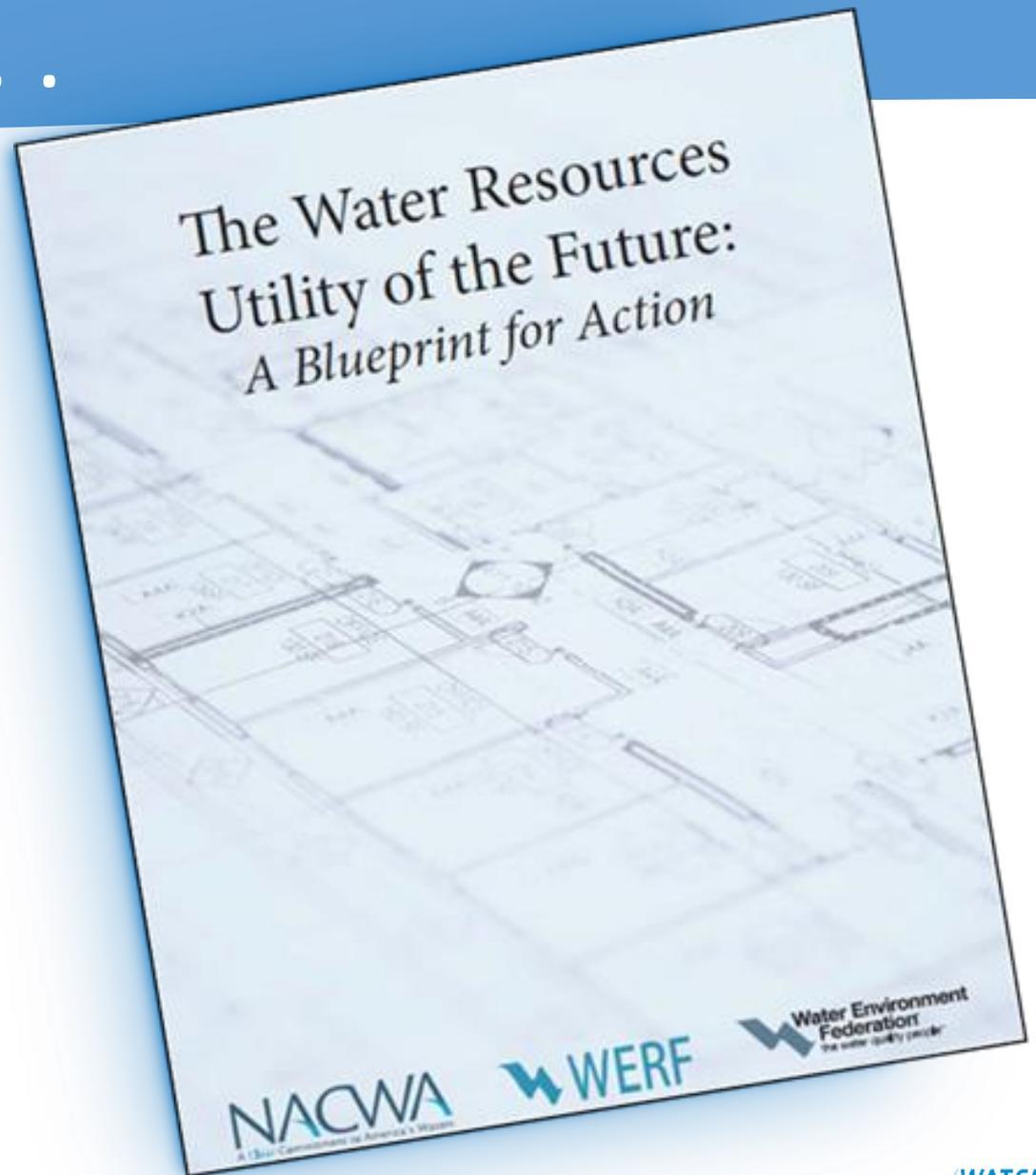


The program celebrates the progress
and exceptional performance
of wastewater utilities

How it Began . . .

Introduced in 2013

- to guide utilities toward smarter, more efficient operations
- progression to full resource recovery with enhanced productivity, sustainability, and resiliency



How it Began . . .

During 2015, a partnership of water sector organizations developed a vision for recognizing Utilities going above and beyond

- U.S. Environmental Protection Agency (EPA)
- National Association of Clean Water Agencies (NACWA)
- Water Environment Federation (WEF)
- Water Environment & Reuse Foundation (WE&RF)
- WaterReuse Association



How it Began . . .



Andrew Sawyers
Director of EPA's Office of
Wastewater Management

“EPA has been pleased to provide input to the partnering Associations on this important new program since the beginning.

We believe it will play an important role in EPA's efforts to advance effective and sustainable practices that will help utilities across the sector on their journey to becoming the Utility of the Future.”



How it Began . . .

New opportunity to recognize the achievements of small, medium and large forward-thinking utilities providing sustainable, efficient, and value-added service to their communities

Special thank you to Melissa Meeker and Zach Dorsey



How it Works . . .

Utilities are given a number of choices for their applications

Organizational Culture is essential to becoming a Utility of the Future



2016 Inaugural Year

- Over 15,000 utilities in US alone
- 61 recognized
- Special ceremony at WEFTEC in October
- Recipients received a display flag and a special certificate



2016 Inaugural Year

- Opportunities by other partners at events
- Special presentation at some utility Board meetings

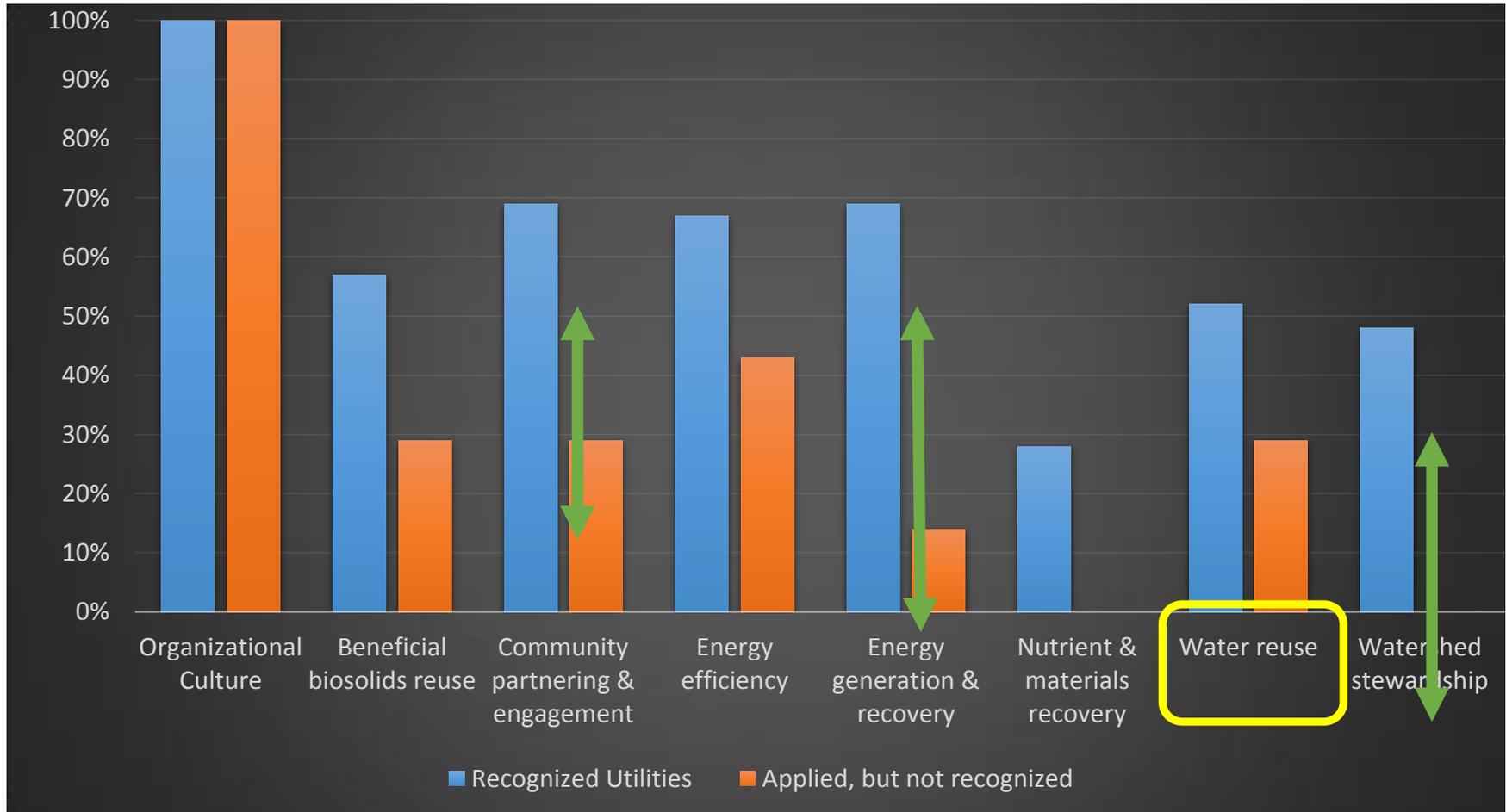


2016 Utility of the Future Today Recipients Activities	Org Culture	Biosolids	Community Partnering	Energy Efficiency	Energy Generation	Nutrients	Water Reuse	Watershed Stewardship
Aarhus Vand, Denmark	x	x	x	x	x	x	x	x
Albuquerque Bernalillo County Water Utility Authority, NM	x	x					x	
Alexandria Renew Enterprises, VA	x	x	x	x			x	
City of Los Angeles – LA Sanitation, CA	x	x	x		x	x	x	x
City of Roseville, CA	x				x		x	
City of San Diego Public Utilities Department, CA	x	x					x	
City of San Jose - Environmental Services Department, CA	x		x		x		x	
City of San Luis Obispo Utilities Department, CA	x		x	x	x		x	x
City of Tacoma Environmental Services, WA	x	x	x	x				
City of Tucson/Tucson Water, AZ	x		x				x	
Clayton County Water Authority, GA	x						x	
Clean Water Services, OR	x		x		x	x		x
East Bay Municipal Utilities District, CA	x	x	x	x	x	x	x	x
Fairfax County Wastewater Management Program, VA	x		x				x	
Fairfield Suisun Sewer District, CA	x	x	x	x	x	x	x	x
LOTT Clean Water Alliance, WA	x	x	x	x	x		x	
Metro Council Environmental Services St. Paul, MN	x	x	x	x	x		x	x
Metropolitan Water Reclamation District of Greater Chicago, IL	x	x	x	x	x	x	x	x
Murfreesboro, TN Water and Sewer Department’s (MWSD), TN	x						x	x
Orange County Sanitation District (CA)	x	x	x		x		x	
Pima County Regional Wastewater Reclamation Department AZ	x	x	x	x	x	x	x	x
Sacramento Regional County Sanitation District, CA	x	x	x	x	x		x	x
Sanitation Districts of Los Angeles County, CA	x	x	x	x	x		x	
Santa Rosa Water, CA	x	x	x	x	x	x	x	x
Scottsdale Water, AZ	x		x	x			x	
Spartanburg Water, SC	x	x	x	x	x	x		
University Area Joint Authority, PA	x	x					x	
Victor Valley Wastewater Reclamation Authority (VWVRA), CA	x			x	x		x	



2016 Utility of the Future Today

Activity Area Analysis



2016 Inaugural Year Ceremony

Pacific Northwest Recipients

- King County
- City of Tacoma
- LOTT Clean Water Alliance
- Clean Water Services
- City of Gresham



Clean Water Services



City of Gresham



City of Tacoma



King County



LOTT

Why Recipients Choose Reuse

So many reasons....
So little time!

- Alternative water supply
- Climate change - drought
- Dependence on imported water
- Groundwater-aquifer recharge
- Irrigation
- Industries seeking alternative source
- River/stream augmentation
- Regulatory issues / consent decrees
- Increasing population
- Aging infrastructure or postpone building new systems



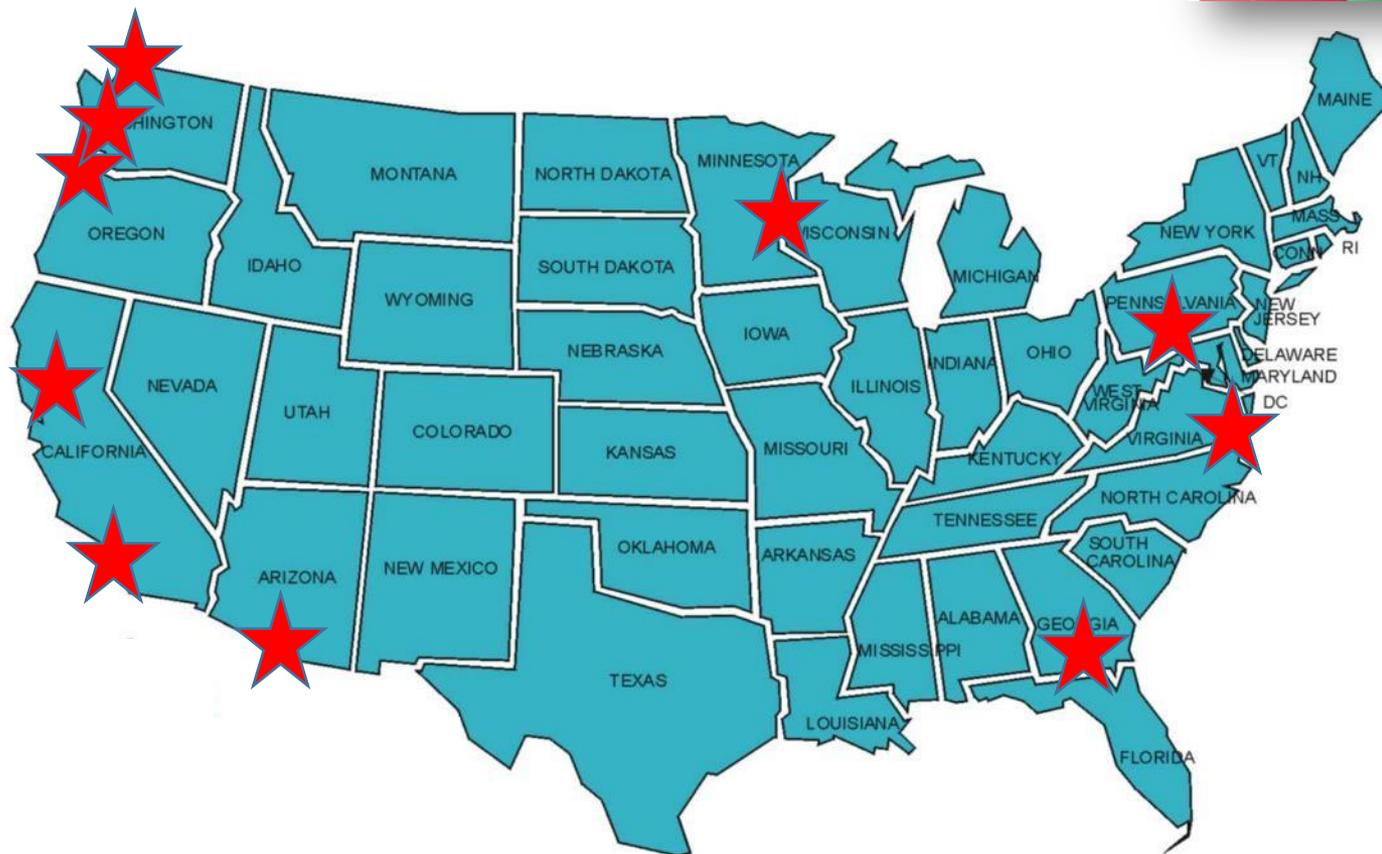
Pajaro Valley Water Management Agency

- **IT'S THE RIGHT THING TO DO!**



Recipients Featured Today

- Alexandria Renew - VA
- City of Los Angeles - CA
- Clean Water Services - OR
- Clayton County – GA
- East Bay MUD – CA
- King County – WA
- LOTT – WA
- Pima County – AZ
- St. Paul - MN
- University Area Authority – VA
- Aarhus Vand - Denmark



Aarhus Vand Utility - Denmark



Aarhus Vand Utility - Denmark

Fast Facts:

- 7 years old – 100% municipality-owned corporation
- 27.5 MGD from 4 Facilities
- A virtual customer panel of 525 individuals
- Reuse water for mixing polymeric, cleaning, etc.
- Use hydrogen peroxide for disinfection



Aarhus Vand Utility - Denmark

What's Cool:

- 600,000 m³/annually pumped from Egå plant to Studstrup Cogeneration Power Plant – used for cooling
- Income from co-gen plant: \$19,000 USD
- Resulting in professional contacts, partnerships and concrete orders to the Danish water industry
- Since 2014, through grant from Danish Foreign Ministry, employee exchange with Greater Chicago



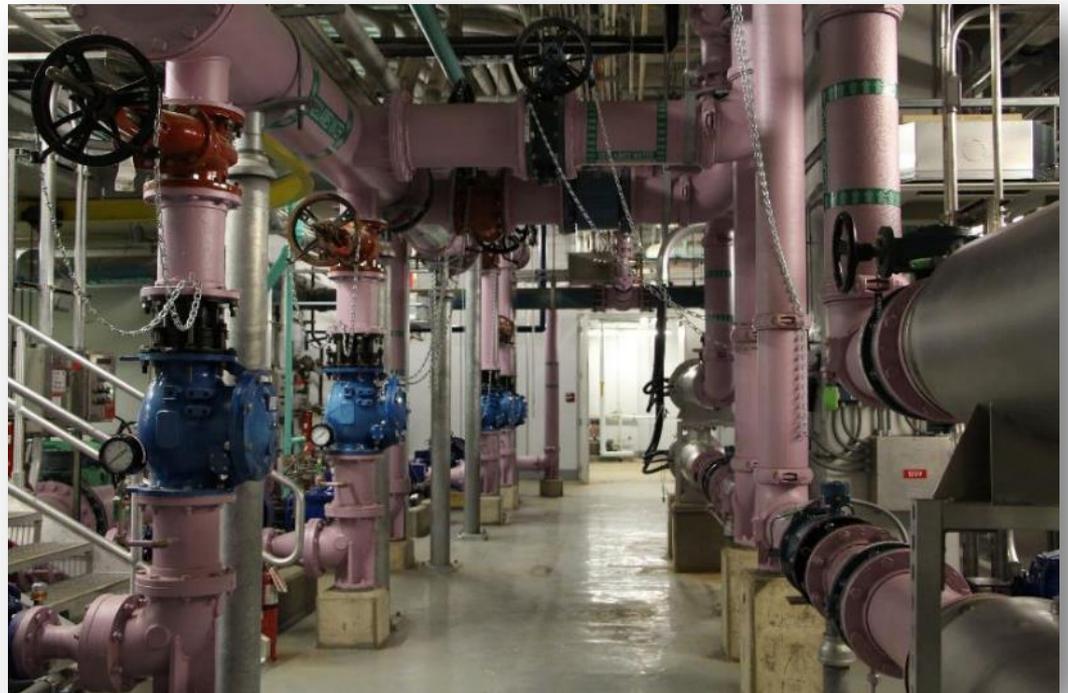
Alexandria Renew Enterprises VA



Alexandria Renew Enterprises VA

Fast Facts:

- 35 MGD from 4 Facilities
- Serves 350,000



Alexandria Renew Enterprises VA

What's Cool:

- AlexRenew changed name in 2012 befitting its role in resource recovery as community benefit
- 1.4 billion gallons reused
- At headquarters:
 - Heating/cooling
 - Exterior fountain
 - Biofilter wall
 - Water feature
 - Bulk fill station
 - Community
 - Concrete mixing
 - Construction dust control



Alexandria Renew Enterprises VA

What's Cool:

Environmental Center Reuse at Headquarters

- Real world learning lab
- 7,000 gallon fish tank in headquarters lobby
- Toilet flushing in environmental center
- Irrigation of landscaping



City of Los Angeles, LA Sanitation CA



City of Los Angeles, LA Sanitation CA

Fast Facts:

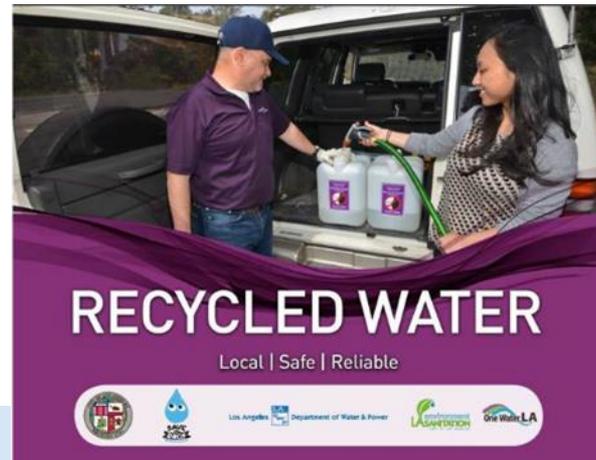
- 400 MGD
- 4 Million served by 4 facilities
- 90% of LA water is imported from hundreds of miles away
- The resolution – conserve, reuse, capture – in partnerships



City of Los Angeles, LA Sanitation CA

What's Cool:

- 100 MGD multipurpose reuse (conserve, reuse, capture)
- Hyperion provides 28 MGD to the West Basin MWD for 200 customer sites
- Since 2006, the Terminal Island Facility supplied high quality water to prevent seawater intrusion
- Community engagement/public fill stations



City of Los Angeles, LA Sanitation CA

What's Cool:

- Supply industrial/commercial customers
- Modifying City's engineering specs for reuse in concrete production
- Discussions with LA Zoo - reuse for irrigation, wash-down, pools
- Discussions with LAX - reuse for irrigation, cooling towers, rental car washing
- Supply Machado lake



City of Los Angeles, LA Sanitation CA

What's Cool:

- Capture



San Fernando Groundwater Basin Treatment



Spreading Grounds for Groundwater Capture



City of Los Angeles, LA Sanitation CA

What's Cool:

- GWR Project Pilot testing 300 compounds



City of Los Angeles, LA Sanitation CA

What's Cool:

- Low-impact development



Lowe's cisterns



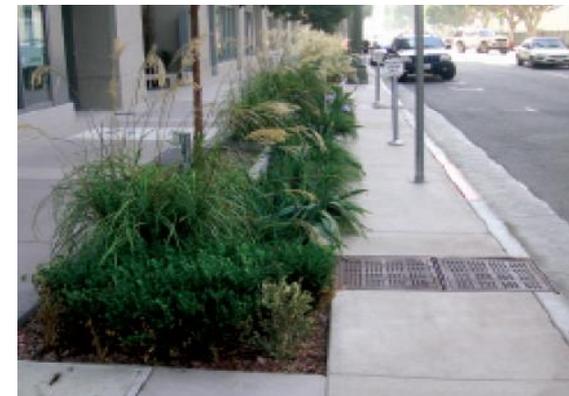
*Porous Pavement –
Rio del LA State Park*



*Planter Boxes - Versailles
Luxury Apartments*



*Sam's Club
bioretention*



Parkway Swale



Costco infiltration

Clayton County Water Authority GA



Clayton County Water Authority - GA

Fast Facts:

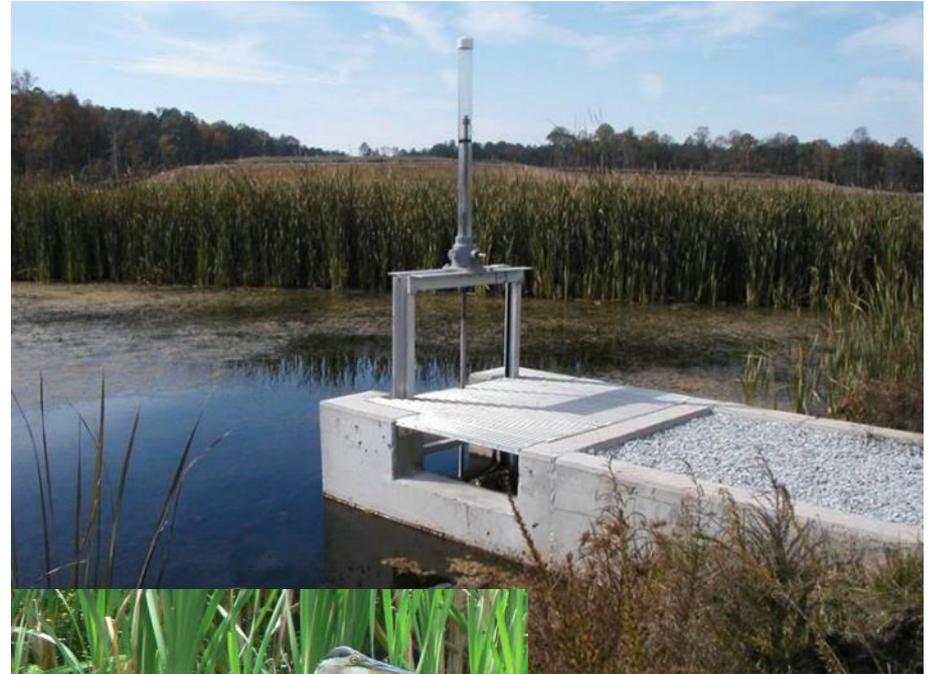
- 25 MGD
- 275,000 served
- Considered model sustainability model for water supply



Clayton County Water Authority GA

What's Cool:

- One of few metro water utilities utilizing constructed treatment wetlands as final treatment stage of water reclamation
- During worst drought kept reservoirs above 70% while others at dangerously low levels
- Case study for Federal Climate Resiliency planning



Clayton County Water Authority GA

What's Cool:

- 263 acres wetlands treatment discharging directly to water supply for 5 reservoirs
- Customers use 25 MGD; treat 17.4 MGD
- Maintenance consists of vegetation management rather than miles of irrigation pipes, valves, pumps, equipment
- Significant savings in energy, pumping, maintenance



Wetlands Environmental Center

- 4,800 sq/ft building complex exhibit/learning area
- 50-seat auditorium
- Offices
- conference facility

Clean Water Services OR



Clean Water Services - OR

Fast Facts:

- 520,000 served
- Provide 92.3 MG reuse to 250 acres of athletic fields, golf courses, wetlands and parks from Durham Facility
- Another 54.5 MG Class A water from Rock Creek Facility to wetlands and Natural Treatment System at Fernhill



Clean Water Services - OR

What's Cool:

- Water Reuse Education: One pint at a time!
- Demystify water purification
- Showcase innovative water technology to inform how water can be used



Clean Water Services - OR

What's Cool:

Started a conversation about the nature of water

Within 3 weeks

- 80+ TV news reports
- 60 + media markets
- 10 Countries
- 60+ radio stories
- More than 150 newspapers, magazines and online news si



CBS NEWS

NEWS

SHOWS

VIDEO

MORE



AP | April 29, 2015, 11:00 AM

Wastewater plant's "sewage to suds" beer brewing challenge



In this photo taken on Friday, April 24, 2015, Clean Water Services spokesperson Mark Jockers shows sealed containers of highly purified water from their facility in Forest Grove, Ore. The utility plans to release 300 gallons of highly purified water to roughly 20 home brewers from the Oregon Brew Crew. AP PHOTO/DON RYAN

4 Comments / Share / Tweet / Stumble / Email

PORTLAND, Ore. -- Some companies boast of making beer with spring water from majestic mountains

East Bay Municipal Utilities District CA



East Bay Municipal Utilities District CA

Fast Facts:

- 650,000 served
- 53 MGD
- Water and wastewater utility using wastewater resources to augment limited potable water supplies



East Bay Municipal Utilities District CA

What's Cool:

- To save drinking water, provides reuse water at no charge for construction and non-potable purposes
- Recycled Water Truck Program is available at EBMUD's plant in West Oakland – can only be used in that service area



East Bay Municipal Utilities District CA

What's Cool:

- RARE Water Project – Chevron's Richmond Refinery Operates one of the largest industrial water reuse projects in CA - 7.5 MGD
- 7.5 MGD tertiary reuse frees up drinking water, indoor/outdoor needs for 83,000 residents
- Cooling, boilers generate steam to make gasoline, jet fuel, diesel and lubricants



King County Wastewater Treatment Division WA



Fast Facts:

- 1.6 million served
- 178 MGD
- 711 MG/year reuse
- 3 Facilities



Reuse at Chinook Bend Wetland

What's Cool:

- Golf course committed before facility was built!
- Reduction of fertilizer – all about 'Salmon Safe' program



Willows Run Golf Course saves time and money by using Recycled Water.



Willows Run Golf Course became Salmon Safe certified after switching to recycled water. Learn more at salmonsafe.org

King County WA

What's Cool:

- Largest soccer complex west of Mississippi
- 60 acres to use reuse
- Reuse provides alternative to closed water rights



LOTT Clean Water Alliance WA



Fast Facts:

- 120,000 served
- 13 MGD
- Advanced secondary effluent discharged to Budd Inlet
- Inlet is impaired, regulations on additional discharge
- Long-range plan relies heavily on production and reuse
- Class A produced at 2 facilities
- 14% reused



What's Cool:

- WET Center - LOTT's certified LEED platinum Regional Services Center
- Reuse water for parks irrigation, streetscapes, golf course, as toilet flushing, decorative fountains



What's Cool:

- Interactive splashing stream in a public space owned and operated



LOTT WA

What's Cool:

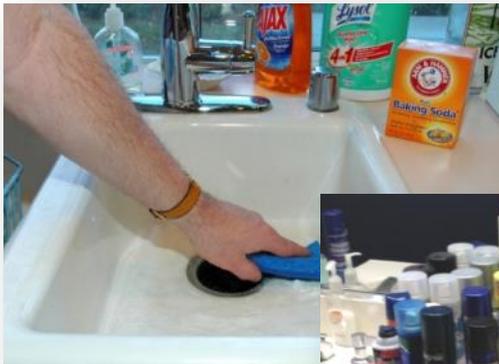
- First and only recreational water feature permitted in WA fed by reuse water
- Incredibly popular community amenity
- Touch, see, appreciate high quality water
- Interactive displays that teach visitors
 - importance of clean water
 - science of wastewater treatment
 - reclaimed water as a new resource
 - green design, water conservation, and environmental stewardship



Partnership with Hands On
Children's Museum

What's Cool:

- Reuse water infiltration study on risks
- Fate of residual chemicals in reuse water
- Fate/transport of those chemicals when reuse water is used for groundwater recharge
- Completed study in 2019



Metropolitan Council of Environmental Services - St. Paul, MN



St. Paul Twin Cities MN

Fast Facts:

- 250 MGD
- 3 Million served
- 182 communities
- 8 treatment facilities
- Potential for 40% reduction in groundwater use



St. Paul MN

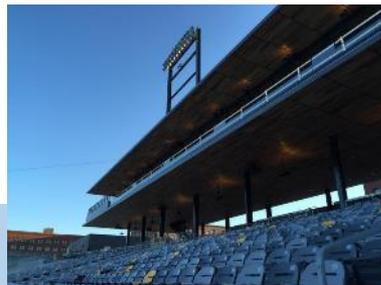
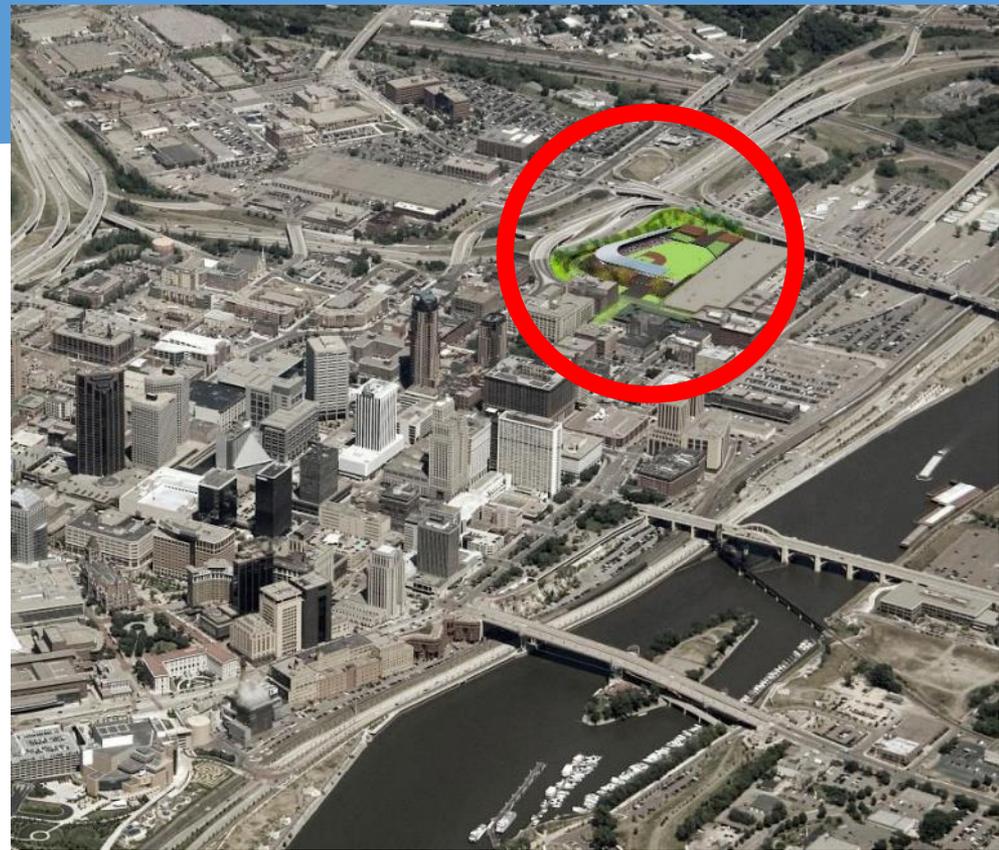
What's Cool:

- St. Paul Saints Minor League Baseball Field
- Rainwater Harvesting and Reuse project
- Public-private partnership
- LEED Silver Equivalent



St. Paul MN

- Brownfield industrial redevelopment - 9 impervious acres
- 180 events each year
 - 50+ Saints games
 - College partnership
 - Amateur baseball
 - Concerts
 - Community space
 - Rentable conference
 - Reception space
 - Movie nights
- 400,000 annual visitors
- 7,000 seats
- Terrific education



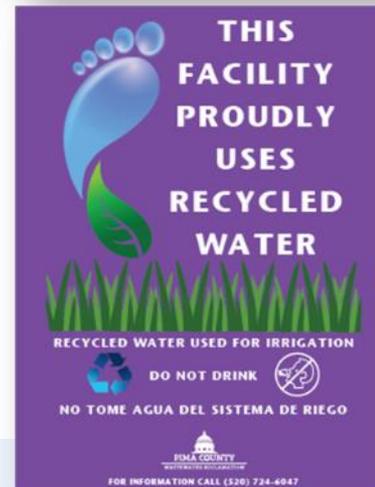
Pima County Regional Wastewater Reclamation Department AZ



Pima County AZ

Fast Facts:

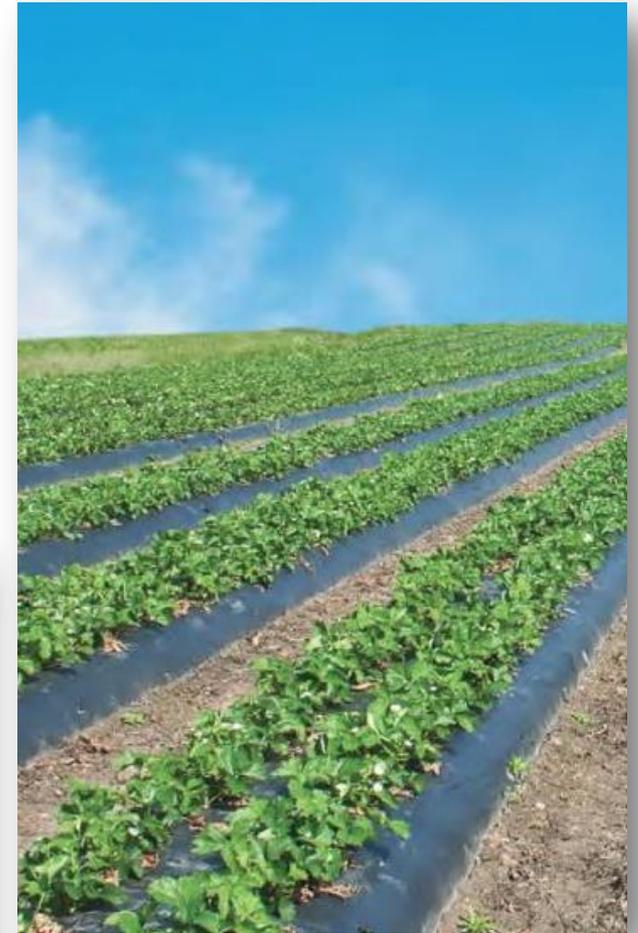
- 916,000 served
- 60 MGD
- 18 golf courses, 50 community parks, 65 schools and aquifer recharge, cooling tower water, fire suppression, toilet flushing
- Collaboration with City of Tucson
- Some of the lowest water consumption in the west at 84 gpcd
- Focus on water footprint for education



Pima County AZ

What's Cool

- Class A+ helped to expand to irrigation of food crops
- The Water Campus laboratory -- 48,000 analyses annually to ensure reuse water quality



Pima County AZ

What's Cool:

- Pure Brew Challenge Mobile Water Purification Facility
- Making beer process, explaining water purification to students
- Over 1,600 visited



“Potable reuse is increasingly important in Arizona’s future, but it’s that public perception issue that we are trying to overcome. Thus the use of beer is the PERFECT ice breaker. Mark Jockers and Guy Carpenter are even on my team, and it has been one of the funner projects I have ever worked on!”

Jeff Prevatt

University Area Joint Authority PA



University Area Joint Authority PA

Fast Facts:

- 93,000 served
- 5 MGD
- Communities surrounding Penn State and Borough of State College
- Reuse to customers and industries to improve local water quality, not in response to drought planning



University Area Joint Authority PA

What's Cool:

- Reuse distributed through regional transmission system to commercial uses
- Programs to reduce risk and improve guaranteed reuse water quality



Cintas Uniform Service
60,000 gpd



Best Western
University Park
5000 gpd



College Township
Alpha Fire Company
HVAC System

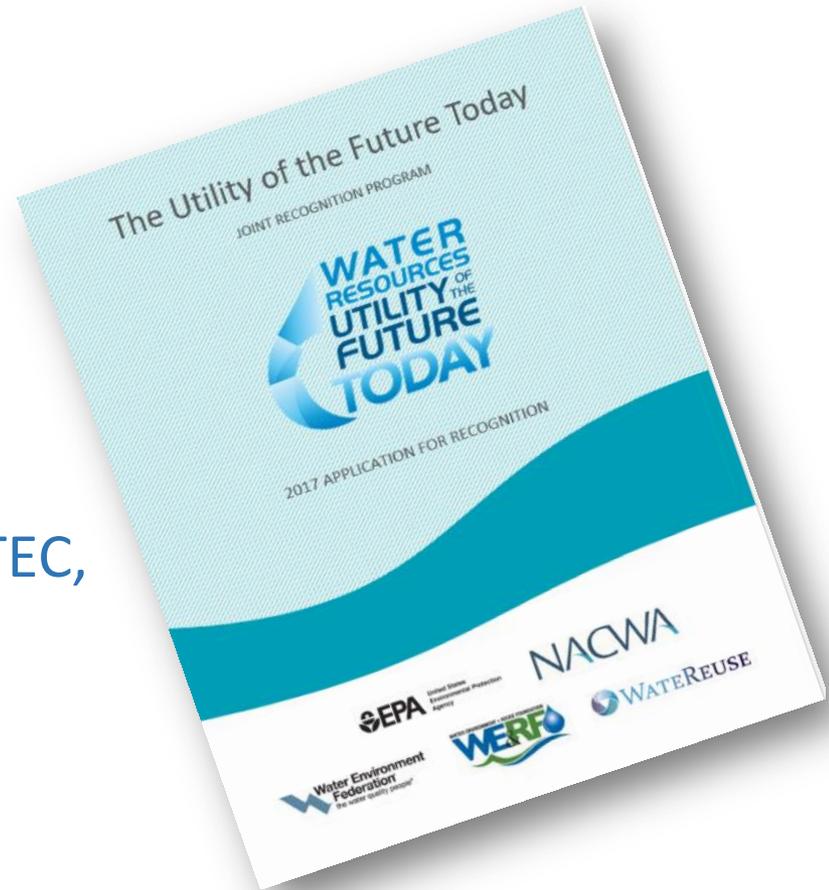


RedLine Speedshine Car Wash
1,000 Gpd plus HVAC

2017 Recognition Program Opportunity

Applications Open for Utility of the Future Today Recognition Program

- Application deadline – **June 9**
- Encourage small, medium, large utilities to apply
- Formal recognition at 90th WEFTEC, Chicago, October 3



Thank you!
Lkelly@wef.org

visit <http://www.wef.org/UtilityoftheFuture>
or contact UtilityRecognition@wef.org.