

What's New in Energy Conservation Measures?

Emerging Technologies In Water Resiliency

Defining

noun

noun: **resiliency**

1. the capacity to recover quickly from difficulties; toughness.



The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

(Executive Order 13653)

ENERGY SECURITY & SUSTAINABILITY (ES²) STRATEGY



GOAL 4 – Build Resiliency

- Maintain Continuity of Operation
 - of critical systems (cooling towers, data centers, process cooling, etc.)
 - assuring continuity of essential functions (drinking water)
- Foster Adaptability
 - to quickly adjust to response to disruptions in land availability, energy and water supplies, and supply chain functions
 - by cultivating diversity among Army capabilities with respect to energy, water, and land resources
- Adapt to Uncertain, Changing Conditions
 - Develop comprehensive energy, water, and land management practices
 - Continuously monitor the operating equipment at all levels

Source: US Army Energy Security & Sustainability (ES²) Strategy

Water Resiliency Systems— Maintaining Continuity

Resilient Water Sources

- **Fresh Water Sources** for Backup Potable Water Supply
- **Alternative Sources** for Critical Systems Operation

Distribution Tie-ins

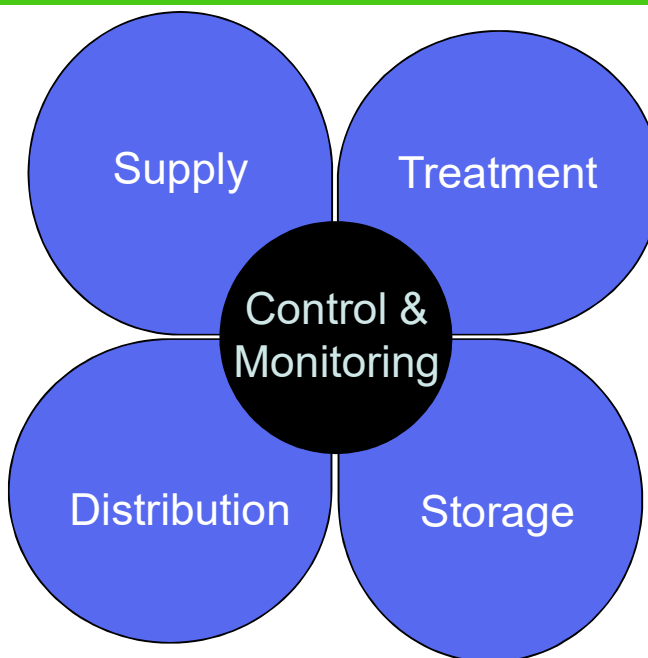
- Piping Infrastructure
- Manual Valving
- Automated/Remote Valving

Treatment Requirements

- Filtration
- Disinfection
- Reverse Osmosis
- Specialty Treatment

Storage Options

- Above Ground
- Subsurface
- On Demand Use
- Capacity is Key!!



Water Resiliency Systems— Foster Adaptability

Rapid Response to Supply Disruptions

Control Systems are Critical for Rapid Response

- Distribution network interconnections and automated valving
- Systems operational monitoring

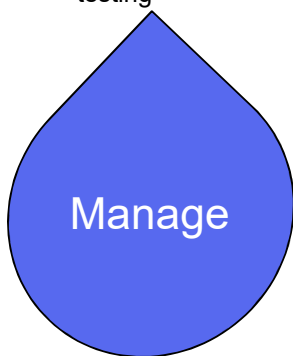
Diversity in Water Supply Sources

- **Fresh Water Sources** - Surface Water, Well Groundwater
- **Alternative Water Sources** - Dewatering Systems, Condensate Capture, Rain / Stormwater Capture, Process Discharge Streams, Brackish Supplies

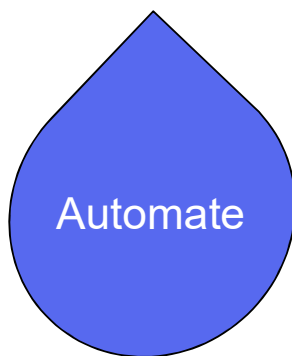
Diversity of Supply Resources

Water Resiliency Systems— Adapt to Changing Conditions

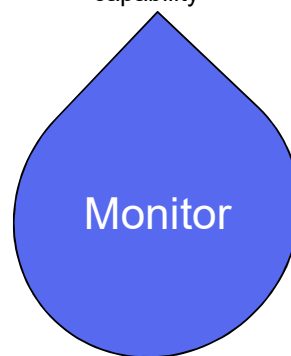
- Oversight of supply chain
- Management of backup systems
- Routine preventative maintenance and system testing



- Automated treatment, water quality analysis, and distribution system interconnection
- Alarm notifications



- Remote telemetry
- Metering and monitoring of operational datapoints
- System reporting capability

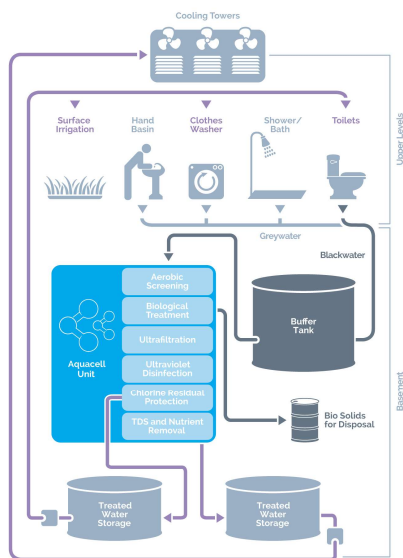


Emerging Technologies – Water Treatment



Multiple Manufacturers of
customized treatment components to
meet specific needs of the end use.

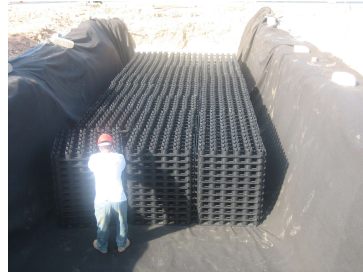
Emerging Technologies – Blackwater Systems



Onsite Re-use of Wastewater

- Some challenges with scalability and space limitations but improvements are being made regularly
- Restrictions on collection locations and end-use

Emerging Technologies – Storage Systems



Emerging Technologies – Water Monitoring Systems

Water Compass Shadow Metering and Monitoring Systems

- 1) Install the Shadow Meter technology at the source of measurement: The Water Meter.
- 2) Water Compass manually calibrates the device to ensure accuracy.
- 3) Data from the water meter is collected continuously in real-time.
- 4) Collected meter data is uploaded to a secure data center. All meter data is available 24/7 and is accessible through any internet connected device.
- 5) If a leak or other catastrophic failure occurs, the Water Compass system will alert you via email and SMS text message indicating distribution system deficiencies



Emerging Technologies – Water Demand Load Shedding

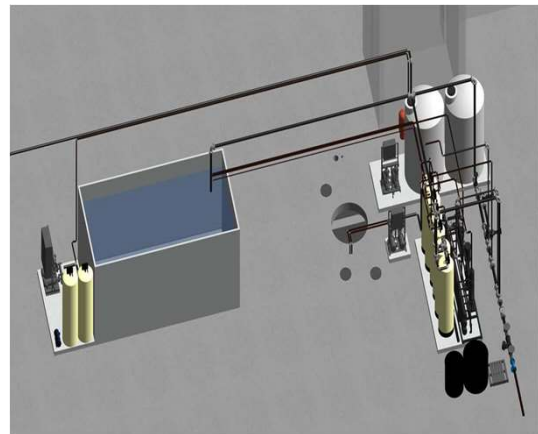
I-CON EDGE® revolutionizes water management in the commercial industry. I-CON EDGE® features a single, easy-to-use dashboard that manages fixtures and shows usage and water consumption by building, floor, restroom, and individual fixture. With the detailed logs and analytics collected, it can create predictive maintenance schedules based on historical data and current usage. I-CON EDGE® is changing the game in the commercial industry.



Courtesy of I-Con Systems

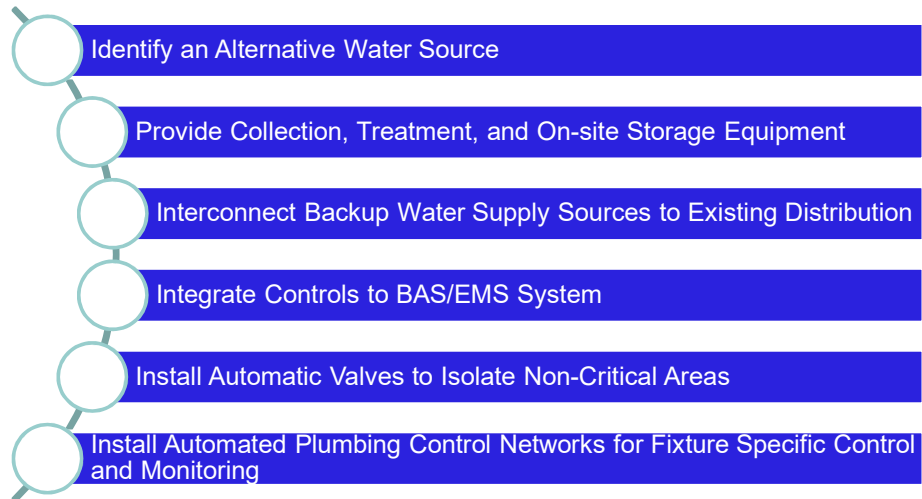
Case Study – Department of Interior Headquarters

- Captured Ground Water and Reused
- Air Handler Condensation Recovery and Reuse
- Advanced on site water treatment
- Alternate water supply for cooling tower make-up and toilet/urinal flushing in high traffic cafeteria restrooms
- Integration automation into BAS/EMS
- Reduced domestic water consumption by 70%



Consolidation of Technologies

Using DOI-HQ as a platform approach...



WHAT ABOUT FUNDING WATER RESILIENCY?

Since water resiliency generally doesn't provide savings, except in complete potable offset situations.



Implementation **MUST** rely on contributions from other low-hanging fruit in a performance based contract. Don't forget about all of a facility's areas of water use as a way to generate savings.



Thank You

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