Texas Desalination:
System Solution Options

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rwlwater.com

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Sufficient Water Supplies

- Essential for communities
  - Existing residences
  - Residential growth and development
  - Municipal Services
  - Recreation

- Drives Economic success
  - Support existing commercial and industrial activity
  - Funds local economy
  - Future economic growth
  - Supports investment in community development

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Estimate of Water Supplies in TX

Surface Water

- 2010 supply 8.4M acre-feet
- 9M acre-feet (2060)

Ground Water

- 2010 supply 8M acre- feet
- 5.7M acre-feet (2060)

Recycle/Reuse

- 2010 supply 480K acre-feet
- 614K acre-feet (2060)

Conservation

- Improved management practices
- Infrastructure upgrades
- Low-flow mandates

Note: All estimates from TWDB Water for Texas 2012 State Water Plan

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Water Usage

- Existing supplies estimated to diminish from current 17M acre-feet to 15.3M acre-feet in 2060
- Demand estimated to increase to over 20M acre-feet 2060

Estimated percentage demand by user group:

Group	2010, %	2060, %	Δ, acre-feet
Irrigation	56	38	(1,700,000)
Municipal	27	38	3,560,000
Manufacturing	9.6	13.1	1,150,000
Power	4	7.4	887,000
Livestock	1.8	1.7	49,000
Mining	1.6	1.3	3,900

Note: All estimates from TWDB Water for Texas 2012 State Water Plan

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Water Strategies

- Conservation
- New reservoirs
- Surface water conveyance and transfer
- Direct and indirect reuse
- Groundwater desalination
- Seawater desalination

Source austinchronicle.com

TWDB projects that desalination is expected to provide an additional 310,000 acre-feet of drinking water by 2060 (Water for Texas 2012 State Water Plan).

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Desalination System Considerations

- Environmental concerns
- Permitting issues
- Seawater intake/outfall
- Plant economies of scale
- Energy usage concerns
- Brine disposal

Texas has over 1100 towns and cities with populations under 50,000 and over 850 with populations under 10,000.

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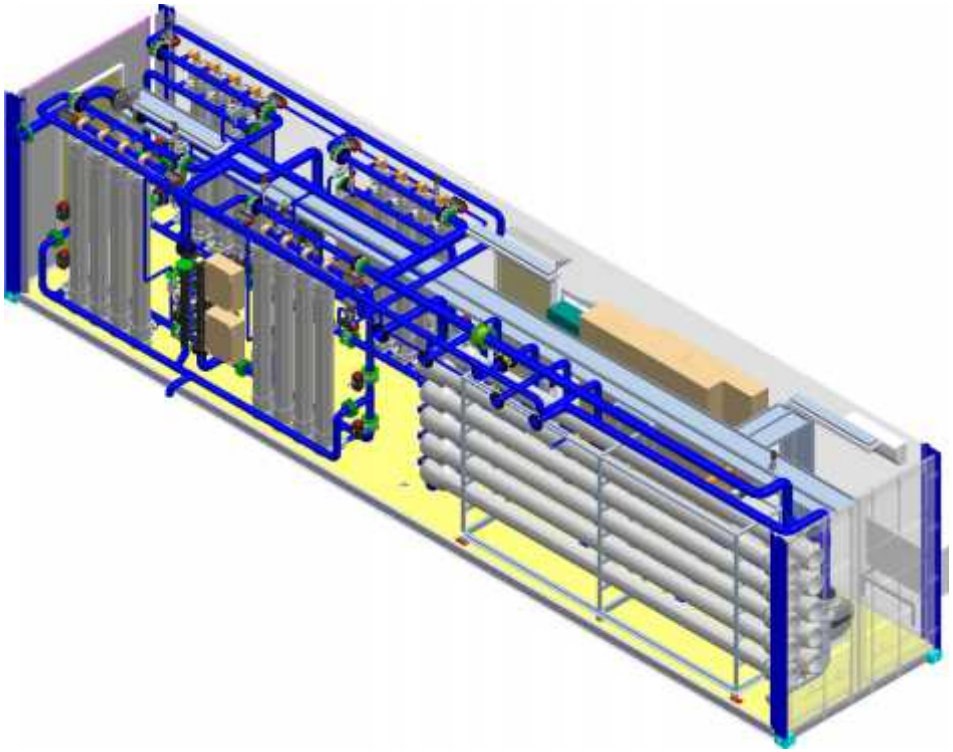
Containerized Systems

- Complete Solution
- Low Cost
- Small footprint
- Minimize Infrastructure
- Modular design
- Relocation potential
- Fast project delivery
- Suitable for smaller SW, BW and reuse projects



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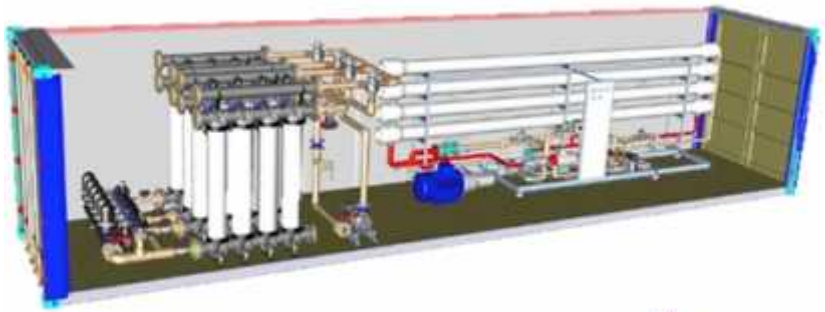
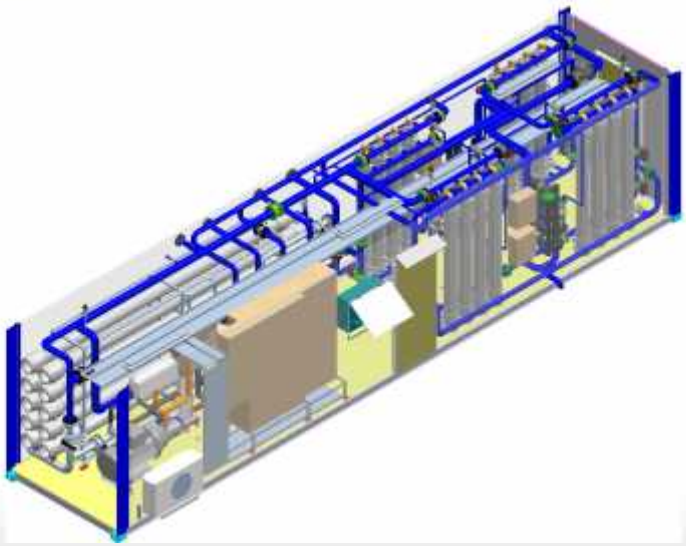
System Design Flexibility

- Complete container solution
  - BW desal - 300,000+ gpd
  - SW desal - 250,000+ gpd



- Modular multiple trains for small and medium applications



- Unit processes separated into individual containers for larger systems.

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Case Study: Desalination

Challenge: Water shortage in Cyprus

Treatment Process: Ultrafiltration membranes, seawater reverse osmosis with energy recovery, and remineralization

Supply:
22,000 m^3 per day (4,000 gpm)

Speed:
8 months from order to supply of water

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Questions?

7,000+
INSTALLATIONS

200+
EMPLOYEES

70+
COUNTRIES WITH INSTALLATIONS

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