Creating "New" Water: Exploring the Options

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The mechanics of desalination

[Diagram showing desalination process]

- Feed Water
- Spiral-Wound RO Module
- Permeate
- Concentrate
- Product Spacer
- RO Membrane
- Feed Spacer
- RO Membrane

[Diagram of desalination plant with flow of water]

- Desalination Plant
- Drinking Water
  - 50 to 80 gal
- 100 gal saline water
- Concentrate
  - 20 to 50 gal
Desalination in Texas

- Why desalination?
  - Availability
  - Technology improvements

- Why now?
  - Develop the supply before it is critically needed
  - Drought-proofing regional water supply systems
Projected Statewide Water Supplies and Demands

- **Industrial demand** (includes manufacturing, power generation, and mining)
- **Agriculture demand** (includes irrigated agriculture and livestock)
- **Municipal demand** (includes county-other)

- **Current supply with no water management strategies implemented**
- **Supply with all water management strategies implemented**

Year:
- 2000
- 2010
- 2020
- 2030
- 2040
- 2050

Acre-Feet (million):
- 0
- 5
- 10
- 15
- 20
- 25
2001 Regional Water Plans

Regions with Desalination Water Management Strategies
“It has been estimated that for the same capital investment spent on seawater reverse-osmosis desalination in 1980, 27 times more water can be produced by today’s systems.”

Tom Pankratz-Desalination Trends-2004 TWDB Desalination Report, Vol. 2
Availability-brackish groundwater

- As much as 2.7 billion acre-feet
- Salinity below 10,000 milligrams per liter
Seawater Availability-Gulf of Mexico

- 367 miles of coastline
- Availability of sites
- Proximity to demand centers
SAN ANTONIO - Gov. Rick Perry today called for the construction of the state's first large-scale ocean water desalination plant as one step toward securing an abundant water supply to meet Texas' future needs.
78th Texas Legislature

- HB 1370, directing TWDB to:
  - “undertake or participate in research, feasibility and facility planning studies, investigations, and surveys as it considers necessary to further the development of cost-effective water supplies from seawater desalination in the state.”
Progress to-date

- Seawater Desalination Projects- Feasibility Studies
- Research Studies and Projects
  - Please Pass the Salt
  - Feasibility Study of Product Water Desalination
  - Development of Permitting and Decision Model for Desalination Projects in Texas
  - Capacitive Deionization Technology
Other activities

- Stakeholder Workshops
  - Use of Public-Private Partnerships for Water Infrastructure Seminar
  - Desalination Workshops to discuss progress reports and technology updates
The Future of Desalination in Texas

- Volume 1- Biennial Report on Seawater Desalination, recommends that:
  - Continue advancing toward implementation of a large-scale demonstration seawater desalination facility in Texas
  - Fund pilot plants at each of the 3 proposed sites

- Volume 2 – Technical Papers, Case Studies and Desalination Technology Resources
2004 Biennial Report on Desalination

Regarding the use of brackish groundwater

- TWDB Legislative Appropriations Request includes $600,000 for developing demonstration brackish desalination projects for small to medium size communities
Access to reports:

http://www.twdb.state.tx.us/Desalination/Desal/Index.asp