Markets Key to Texas Water Availability

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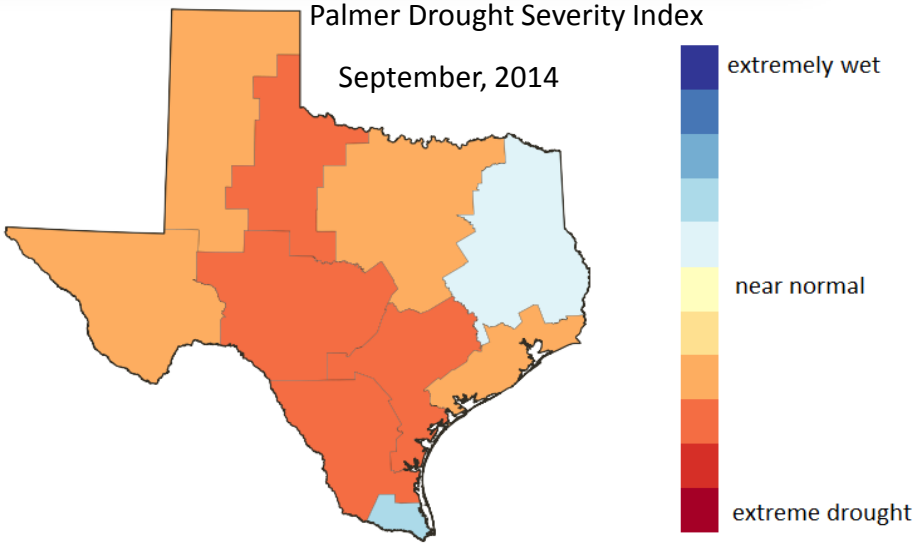
Overview

- Is water scarce?
- How severe is the drought?
- What are the sources and uses of water?
- How is water allocated and priced?
  - Surface water
  - Groundwater
- Policies for more efficient water allocation

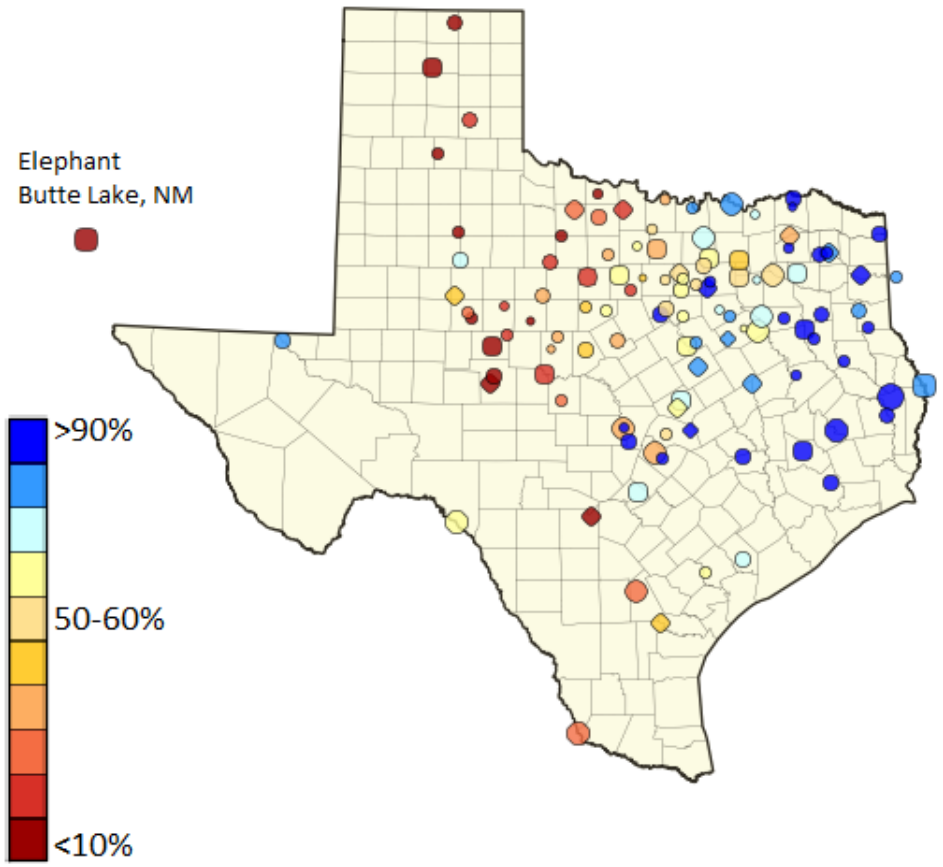
Drought visible in many areas



SOURCE: Texas Water Development Board

Surface water levels falling

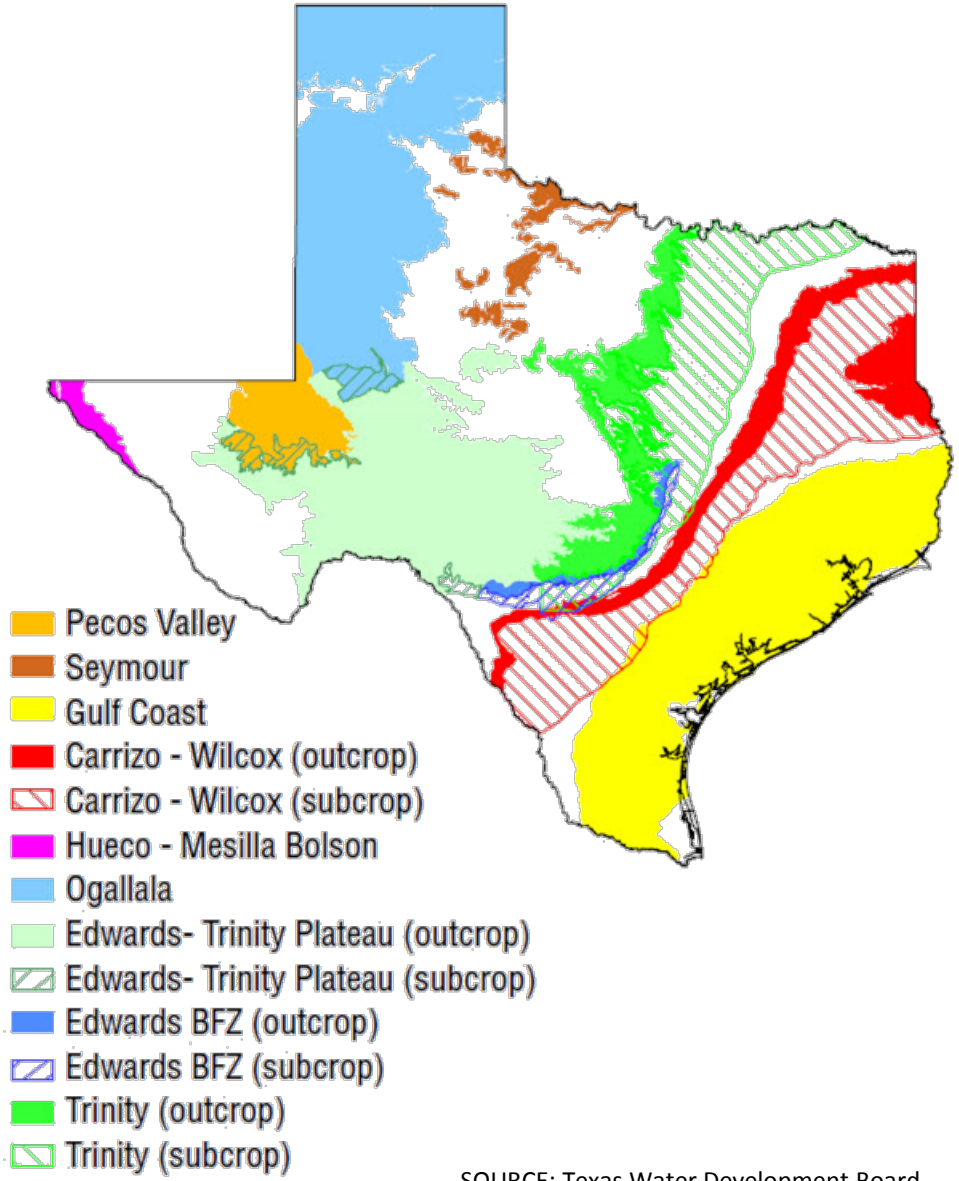
- Statewide levels under 63 percent capacity
  - East Texas reservoirs and lakes at 90 percent
  - Despite recent rainfall, large areas of West and South Texas remain below 33 percent



SOURCE: Texas Water Development Board

Groundwater levels also falling

- Water levels have declined much below normal in majority of major Texas aquifers
  - Trinity aquifer in North Texas has fallen over 1,000 feet in areas around Dallas.
  - Large swaths of Ogallala aquifer down by hundreds of feet



SOURCE: Texas Water Development Board

Water usage will continue to increase…

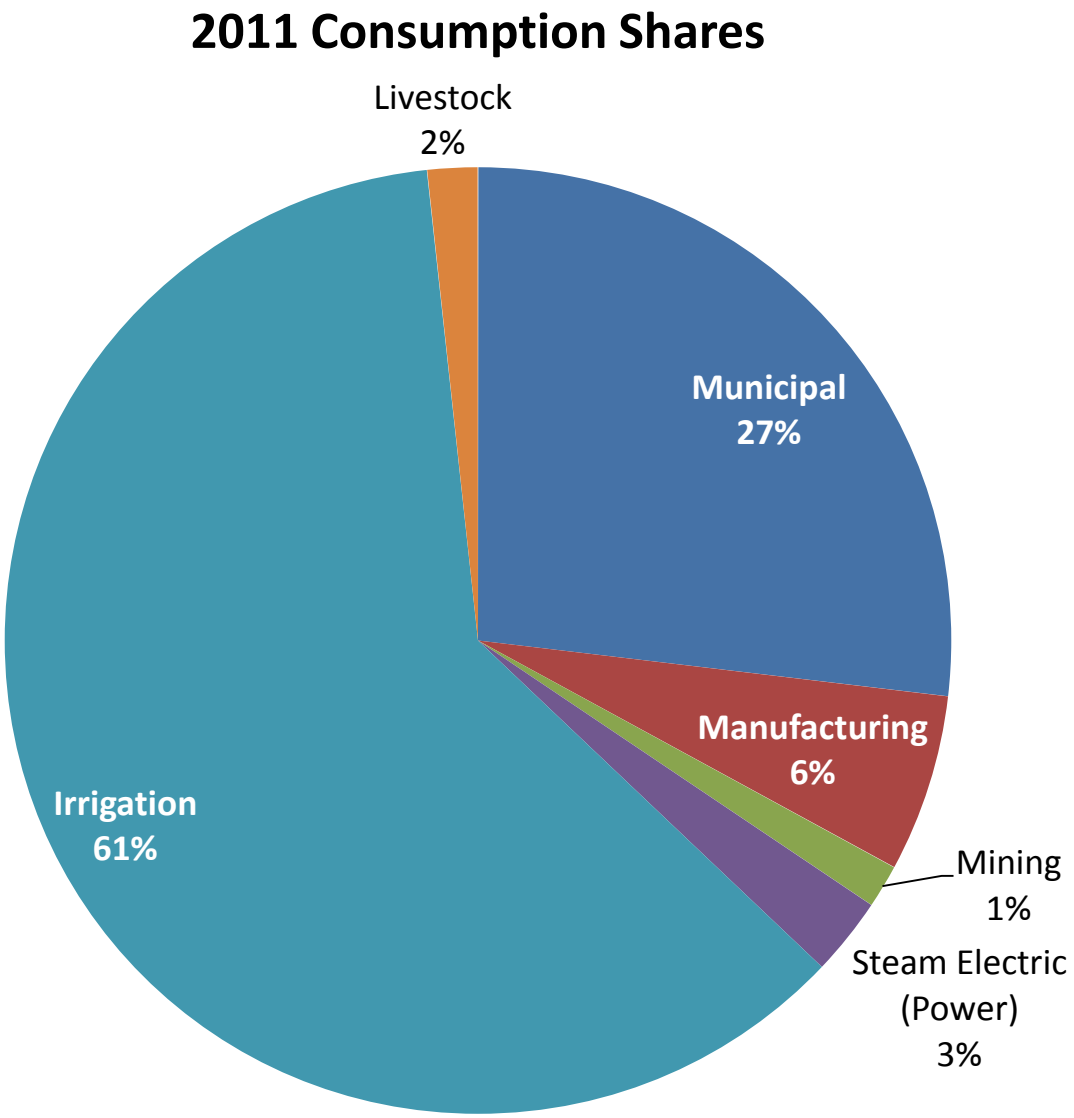
- Water usage projected to rise 22 percent by 2060 due to rapid urban growth
  - Near doubling of population will increase municipal usage by 70 percent
  - Agricultural use projected to fall by 17 percent

…and supplies will likely fall

- Statewide water supplies projected to fall by 10 percent over the same period, due to:
  - Weather
  - Excessive pumping
  - Limited new reservoirs

Sources and Uses of Water in Texas

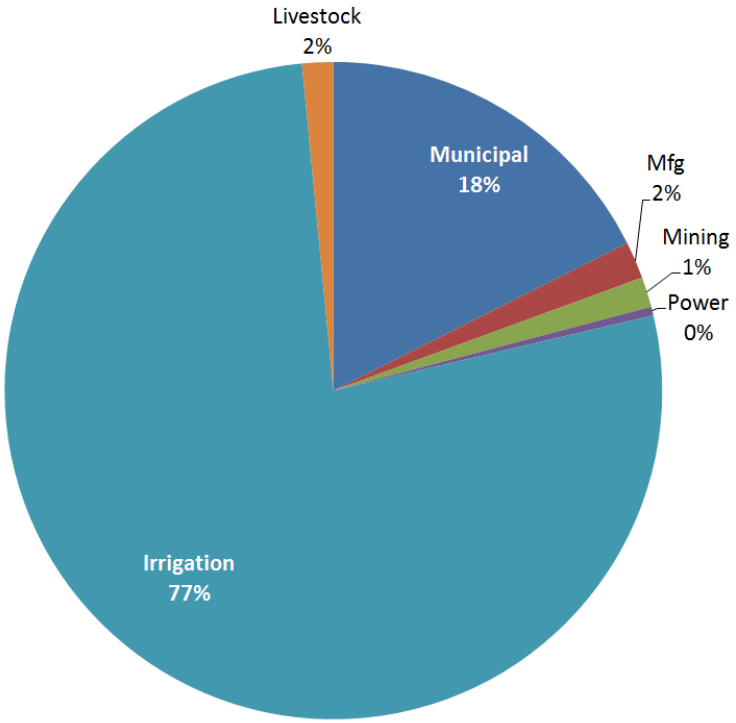
Agriculture uses most of the water in Texas



SOURCE: Texas Water Development Board

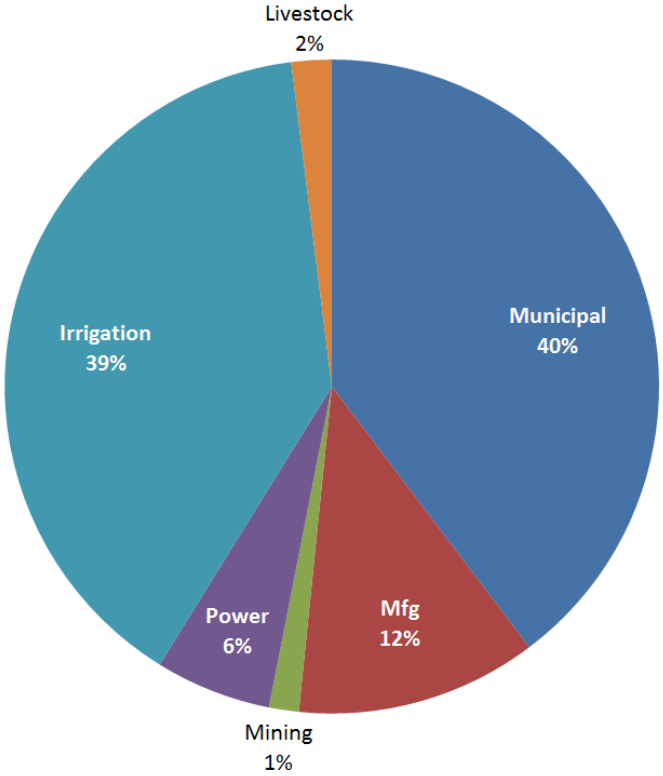
Uses vary by water source

Texas Groundwater Use, 2011



Accounts for 60% of Statewide Water Use

Texas Surface Water Use, 2011



Accounts for 40% of Statewide Water Use

SOURCE: Texas Water Development Board

Water allocation and price not based on supply and demand

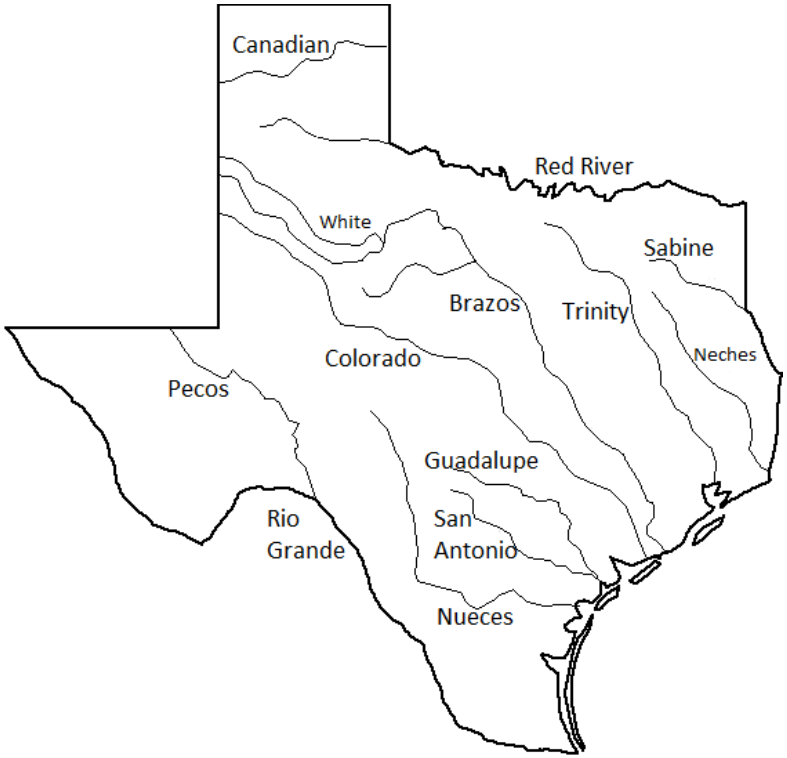
- Surface water rights issued by the state
- Most consumers purchase water from public entities such as cities or water authorities
- Water prices generally based on cost of treatment and delivery
- Groundwater historically open access, but growing powers of Conservation Districts to issue rights

Market principles would allocate water more efficiently

- Water is not priced based on demand and supply, but cost of service
- Prices often do not change with scarcity, discouraging conservation
- Scarcity is often managed by rationing water among users


Surface and Groundwater are
Allocated and Priced Differently

Surface water allocation



- Water rights allocated by state
  - First-in-time, first-in-right
  - Most basins fully allocated
- Legal framework allows for water transfers
  - In practice, many restrictions
- Some active water markets exist
  - The Lower Rio Grande Valley

SOURCE: enchantedlearning.com

Challenges for surface water markets

- No-injury rule for water transfers
- Inter-basin transfers hampered further by junior rights rule
- Seventy percent of water rights held by public entities and water authorities
  - Inflexible “take-or-pay” contracts
  - Customers of river authorities not allowed to resell water

Groundwater allocation

- Property rights not clearly defined
- “Rule of Capture” stipulates water is not owned until pumped out of the ground
  - Leads to tragedy of the commons: one person’s actions leave less for everyone else
- Groundwater Conservation Districts (GCD) have been given authority to regulate groundwater

Challenges for groundwater markets

- No legal right to a fixed amount of water means seller can’t guarantee amount
- Groundwater Conservation Districts have imposed export limits and fees

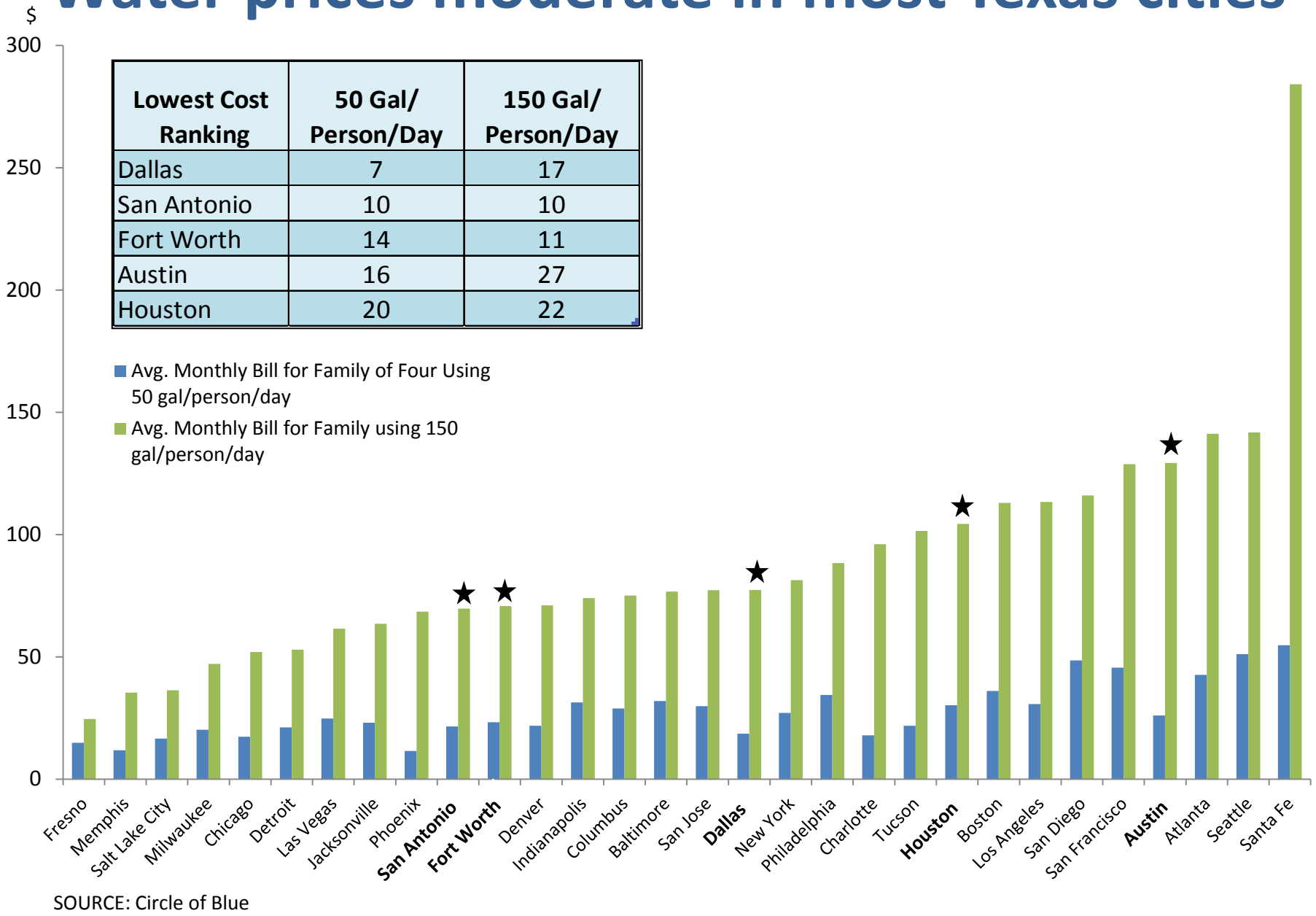
Policy Changes to Encourage Market Principles in Water Allocation

Reducing inefficiencies

- Surface water:
  - Better define “injury”
  - Eliminate junior rights rule on inter-basin transfers
  - Encourage water authorities to reduce “take or pay” contracts and to allow re-sales
- Groundwater:
  - Strengthen the role of GCDs to assign private property rights
  - Minimize export restrictions
- In general:
  - Protect the property rights of others but encourage marketing so that prices reflect scarcity

Water prices moderate in most Texas cities

Lowest Cost Ranking	50 Gal/ Person/Day	150 Gal/ Person/Day
Dallas	7	17
San Antonio	10	10
Fort Worth	14	11
Austin	16	27
Houston	20	22



SOURCE: Circle of Blue

Reasons to be optimistic about the future

- Sales of water from agriculture to cities and industries already happening and likely to increase
- Regional water plans under Senate Bill 1 (1997) have embraced water transfers and markets
- More water planners, farmers, cities realizing that market principles are a part of the solution

Further reading

- Keith Phillips, Edward Rodrigue, Mine Yücel "Water Scarcity a Potential Drain on the Texas Economy," *Southwest Economy*, Q4 2013
- Ronald Kaiser, "Solving the Texas Water Puzzle: Market-Based Allocation of Water," Texas Public Policy Foundation, March 2005