

Water Supply Planning

TWDB Activities and Drought Monitoring

October 14, 2011 | Temple McKinnon

Texas Water Development Board

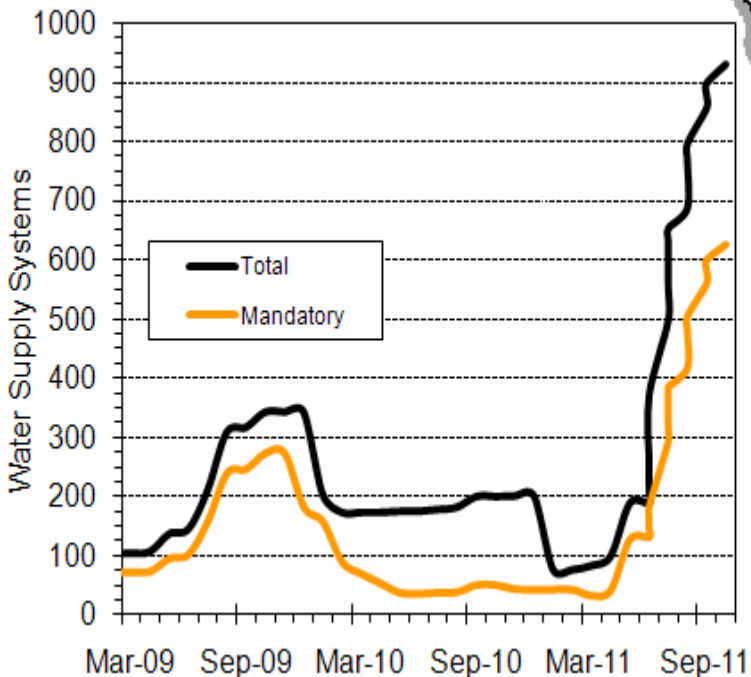
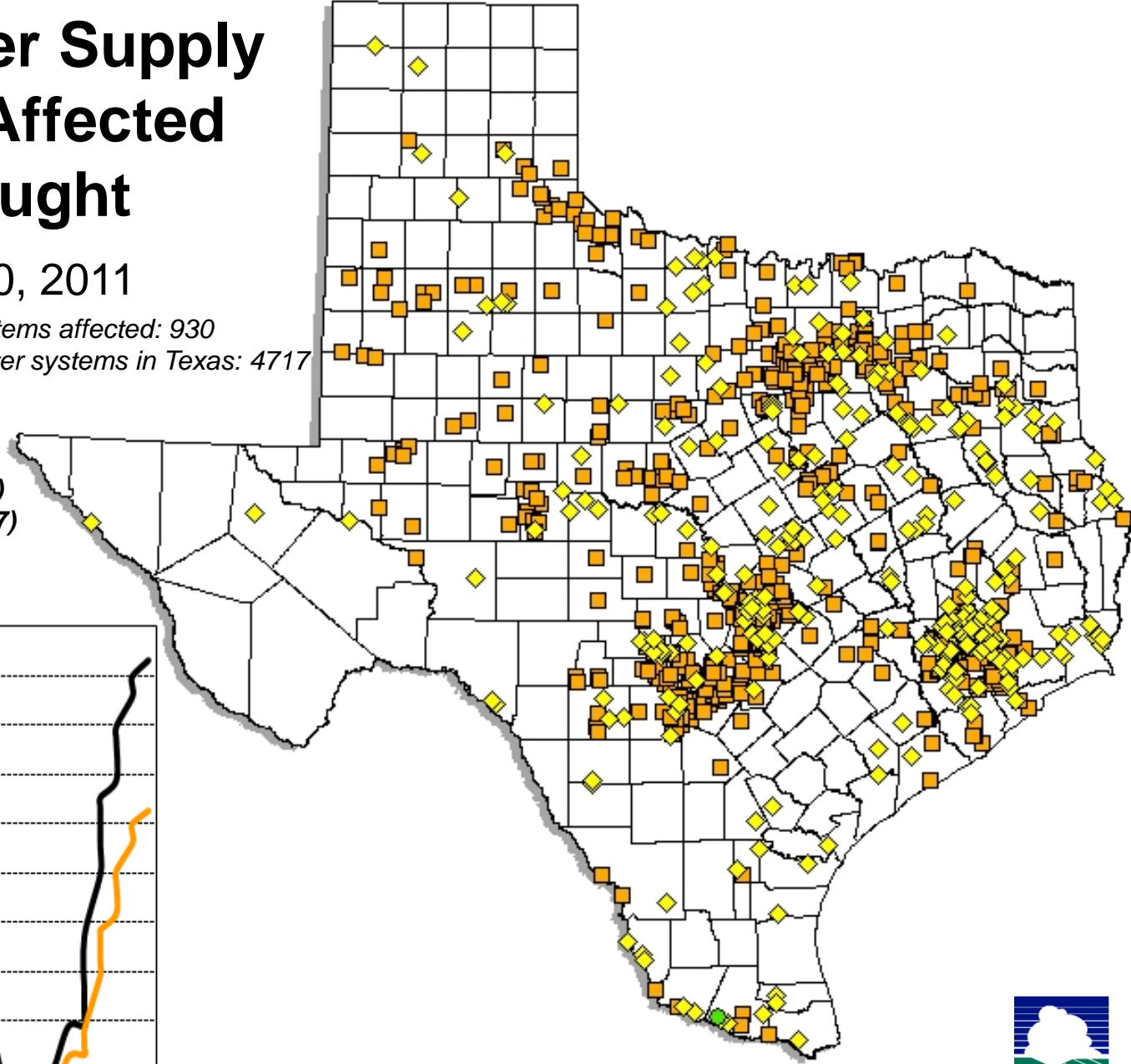


Public Water Supply Systems Affected by Drought

October 10, 2011

Total number of Community water systems affected: 930
Total number of active Community water systems in Texas: 4717

- **RESOLVED (3)**
- ◆ **WATCH – Voluntary (303)**
- **WATCH – Mandatory (627)**



http://www.tceq.state.tx.us/permitting/water_supply/pdw/trot/location.html



U.S. Drought Monitor

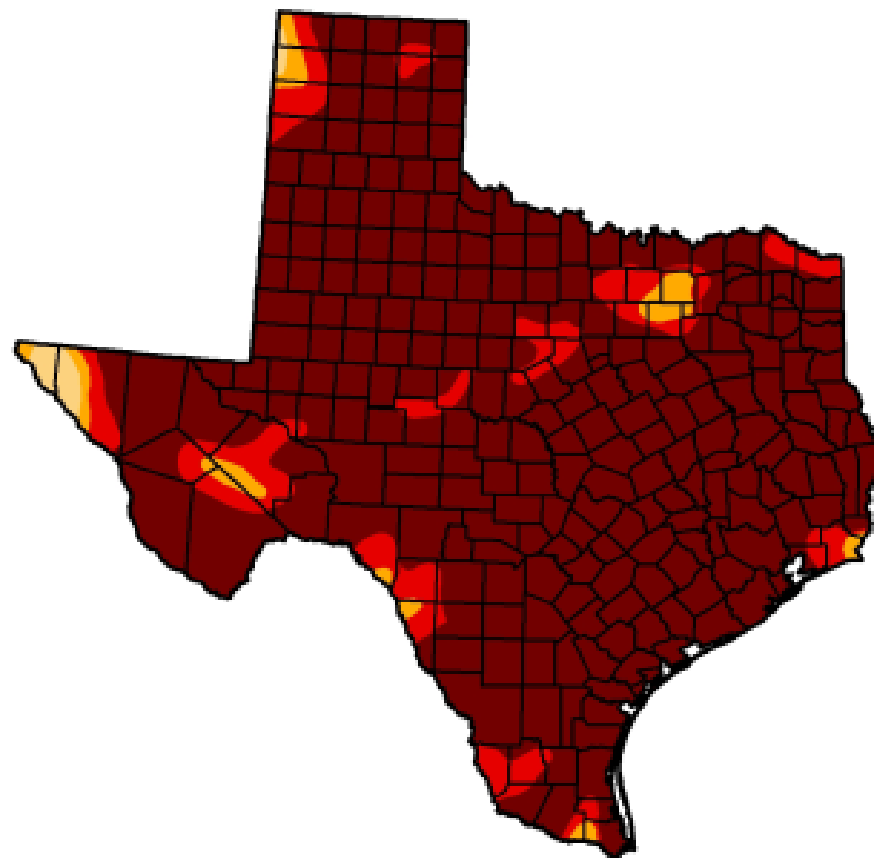
Texas

October 4, 2011

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	99.16	96.99	87.98
Last Week (09/27/2011 map)	0.00	100.00	100.00	99.16	96.65	85.75
3 Months Ago (07/05/2011 map)	2.41	97.59	95.73	94.39	90.21	71.30
Start of Calendar Year (12/28/2010 map)	7.89	92.11	69.43	37.46	9.59	0.00
Start of Water Year (09/27/2011 map)	0.00	100.00	100.00	99.16	96.65	85.75
One Year Ago (09/28/2010 map)	75.57	24.43	2.43	0.99	0.00	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, October 6, 2011
Rich Tinker, Climate Prediction Center/NOAA



Precipitation Rankings as of August 2011, Texas

National Oceanic and Atmospheric Administration

National Climatic Data Center

Period	Temp	Long Term Average	Departure	Rank	Warmest/Colest Since	Record Year
Aug 2011 1-month period	88.1°F (31.2°C)	82.1°F (27.8°C)	6.0°F (3.4°C)	117 th Coldest 1 st Warmest	Coldest since: 2010 Warmest to Date	Coldest: 1971 Warmest: 2011
Jul - Aug 2011 2-month period	87.6°F (30.9°C)	82.3°F (27.9°C)	5.3°F (3.0°C)	117 th Coldest 1 st Warmest	Coldest since: 2010 Warmest to Date	Coldest: 1976 Warmest: 2011
Jun - Aug 2011 3-month period	86.8°F (30.4°C)	81.4°F (27.4°C)	5.4°F (3.0°C)	117 th Coldest 1 st Warmest	Coldest since: 2010 Warmest to Date	Coldest: 1903 Warmest: 2011
Mar - Aug 2011 6-month period	77.7°F (25.4°C)	73.2°F (22.9°C)	4.5°F (2.5°C)	117 th Coldest 1 st Warmest	Coldest since: 2010 Warmest to Date	Coldest: 1931 Warmest: 2011
Dec 2010 - Aug 2011 9-month period	67.6°F (19.8°C)	64.8°F (18.2°C)	2.8°F (1.6°C)	116 th Coldest 1 st Warmest	Coldest since: 2010 Warmest to Date	Coldest: 1979 1973 Warmest: 2011
Sep 2010 - Aug 2011 12-month period	67.5°F (19.7°C)	65.1°F (18.4°C)	2.4°F (1.3°C)	114 th Coldest 1 st Warmest <small>Ties: 1984, 2008</small>	Coldest since: 2010 Warmest since: 2006	Coldest: 1973 Warmest: 2011

Record High Temp.

August

Jul-Aug

Jun-Aug

Mar-Aug

Dec-Aug

Sep-Aug

Record Low Precip.

Jun-Aug

Mar-Aug

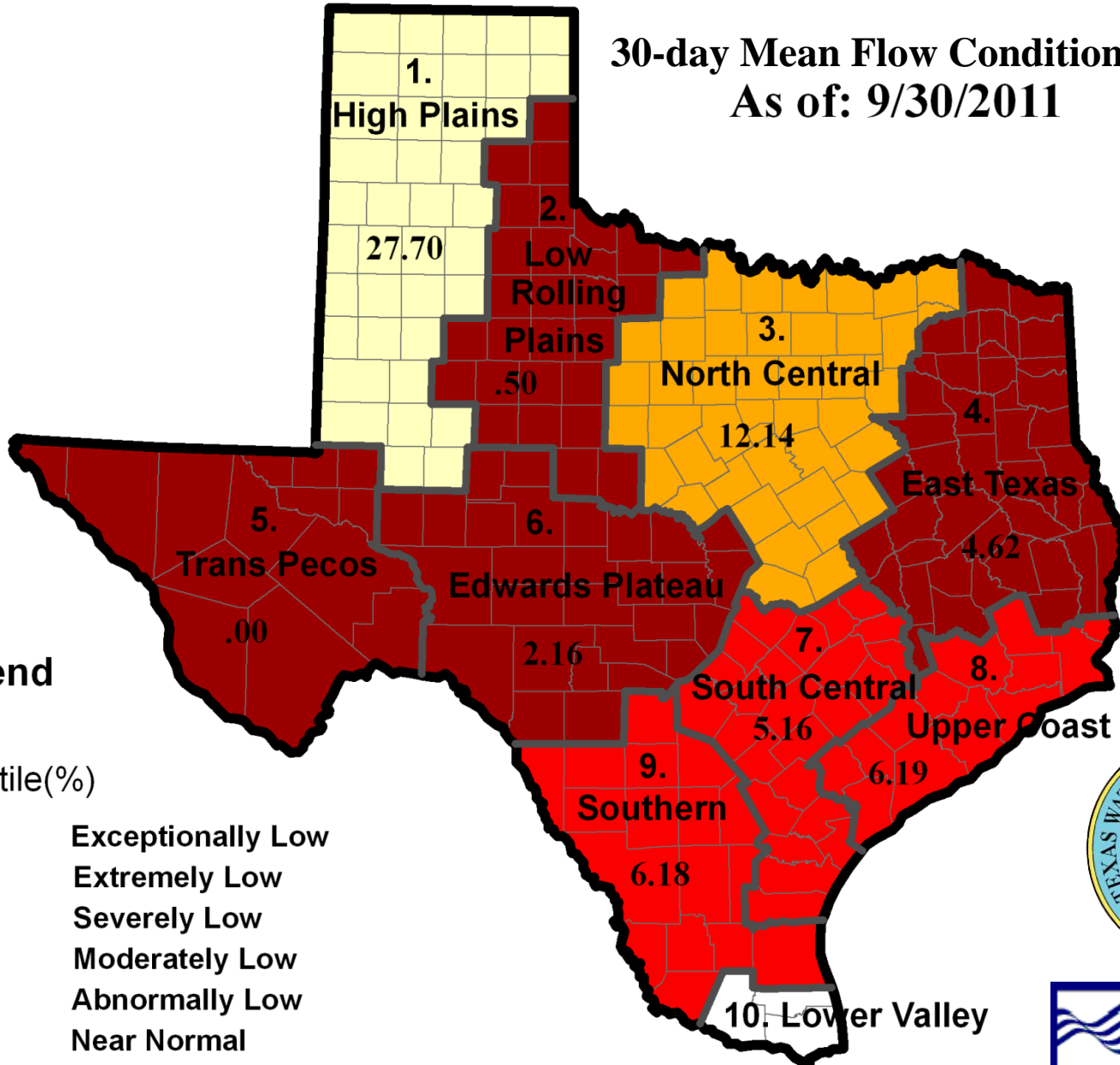
Dec-Aug

Sep-Aug

Period	Amount	Long Term Average	Departure	Rank	Wettest/Driest Since	Record Year
Jun - Aug 2011 3-month period	2.44" (61.98 mm)	7.73" (196.34 mm)	-5.29" (-134.36 mm)	1 st Driest 117 th Wettest	Driest to Date Wettest since: 2010	Driest: 2011 Wettest: 2007
Mar - Aug 2011 6-month period	5.10" (129.54 mm)	15.34" (389.64 mm)	-10.24" (-260.10 mm)	1 st Driest 117 th Wettest	Driest to Date Wettest since: 2010	Driest: 2011 Wettest: 2007
Dec 2010 - Aug 2011 9-month period	8.21" (208.53 mm)	20.41" (518.41 mm)	-12.20" (-309.88 mm)	1 st Driest 116 th Wettest	Driest to Date Wettest since: 2010	Driest: 2011 Wettest: 2007
Sep 2010 - Aug 2011 12-month period	14.83" (376.68 mm)	27.95" (709.93 mm)	-13.12" (-333.25 mm)	1 st Driest 116 th Wettest	Driest to Date Wettest since: 2010	Driest: 2011 Wettest: 1914

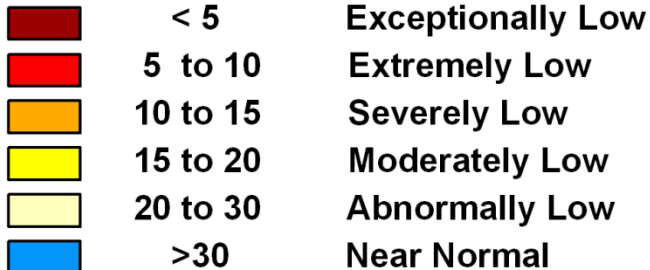
Streamflow Index (SFI)

30-day Mean Flow Conditions
As of: 9/30/2011



Legend

Percentile(%)



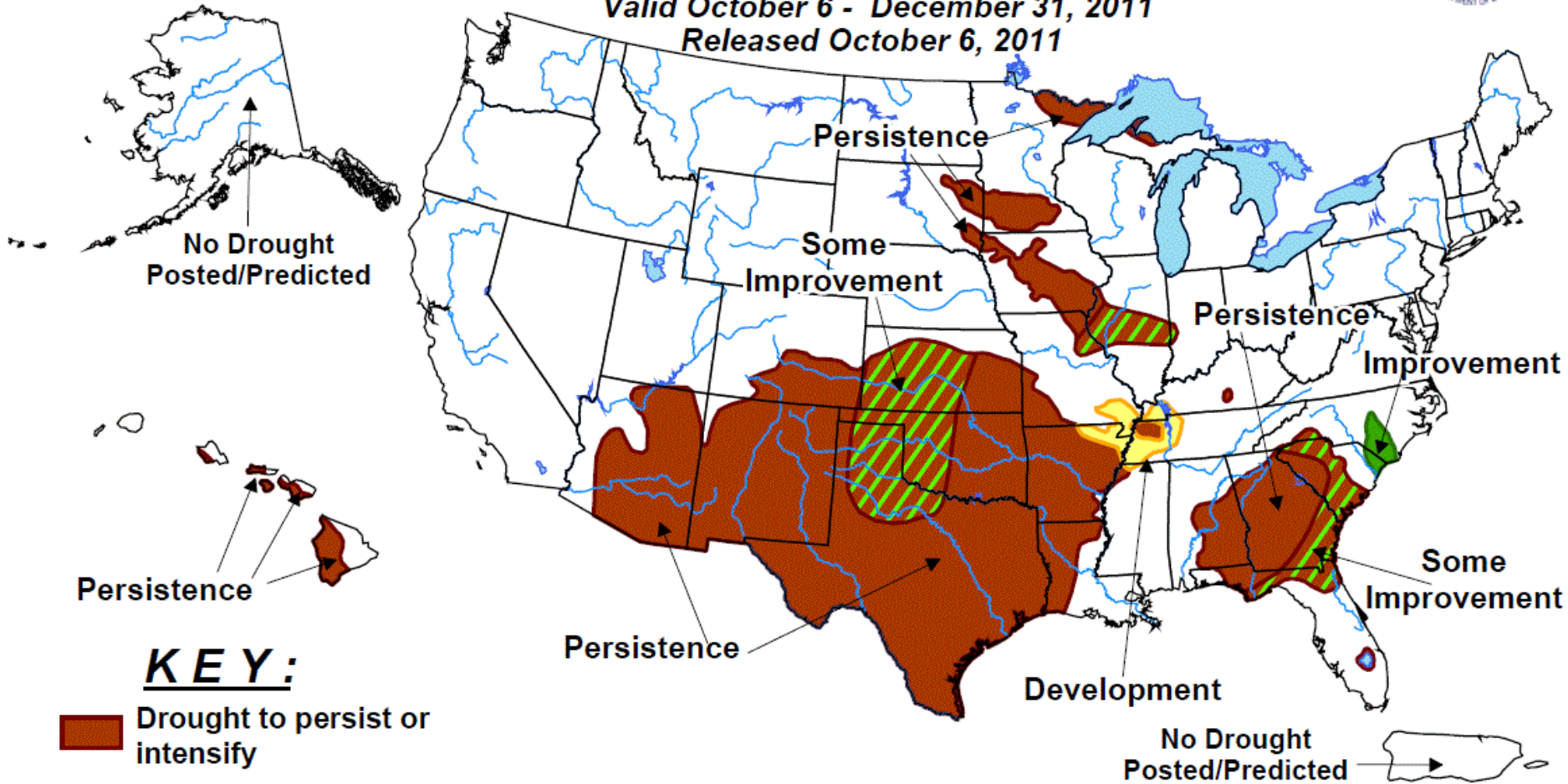


U.S. Seasonal Drought Outlook





Drought Tendency During the Valid Period



Valid October 6 - December 31, 2011
Released October 6, 2011



KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

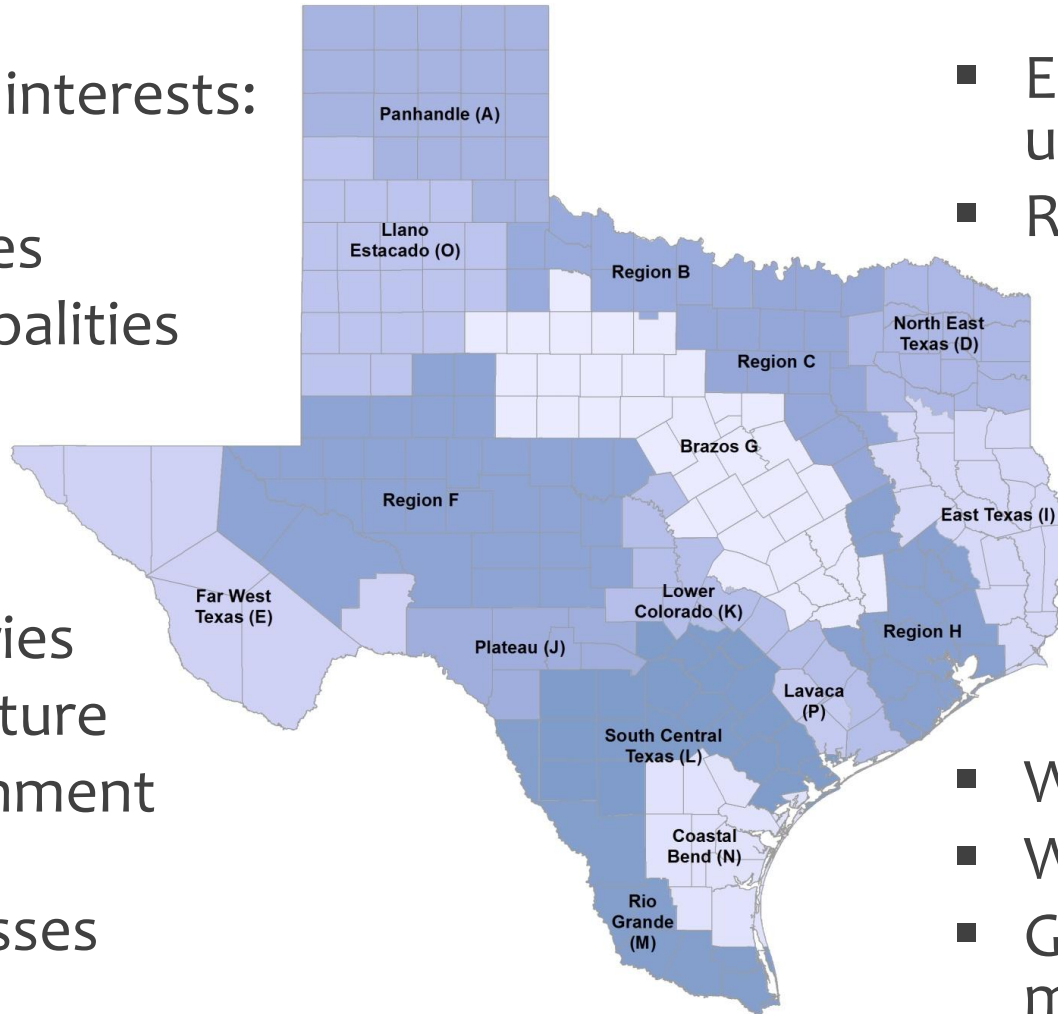
Regional Water Planning

Statutory interests:

- Public
- Counties
- Municipalities

- Industries
- Agriculture
- Environment
- Small businesses

- Electric-generating utilities
- River authorities



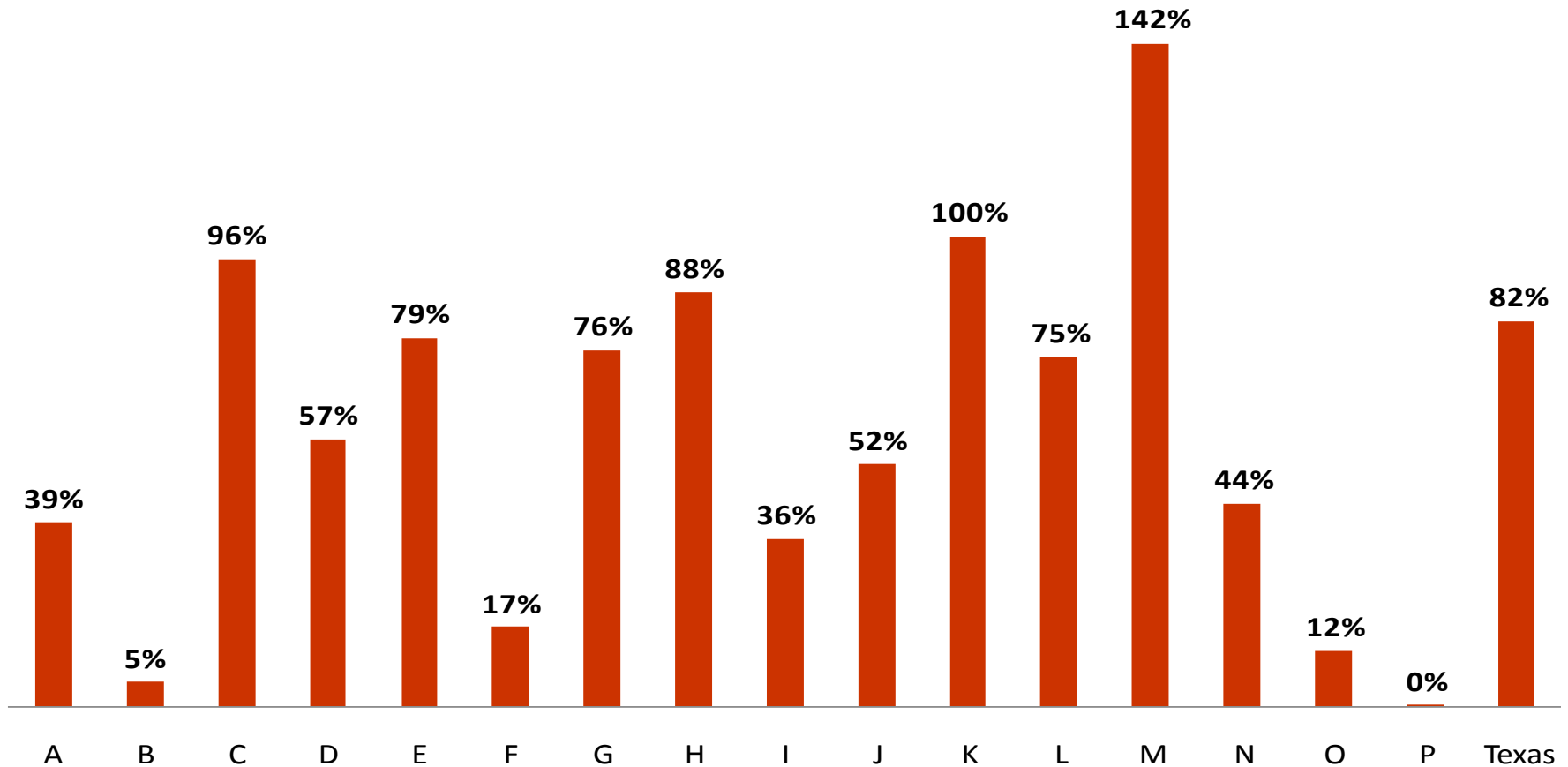
- Water districts
- Water utilities
- Groundwater management areas

Regional Water Planning

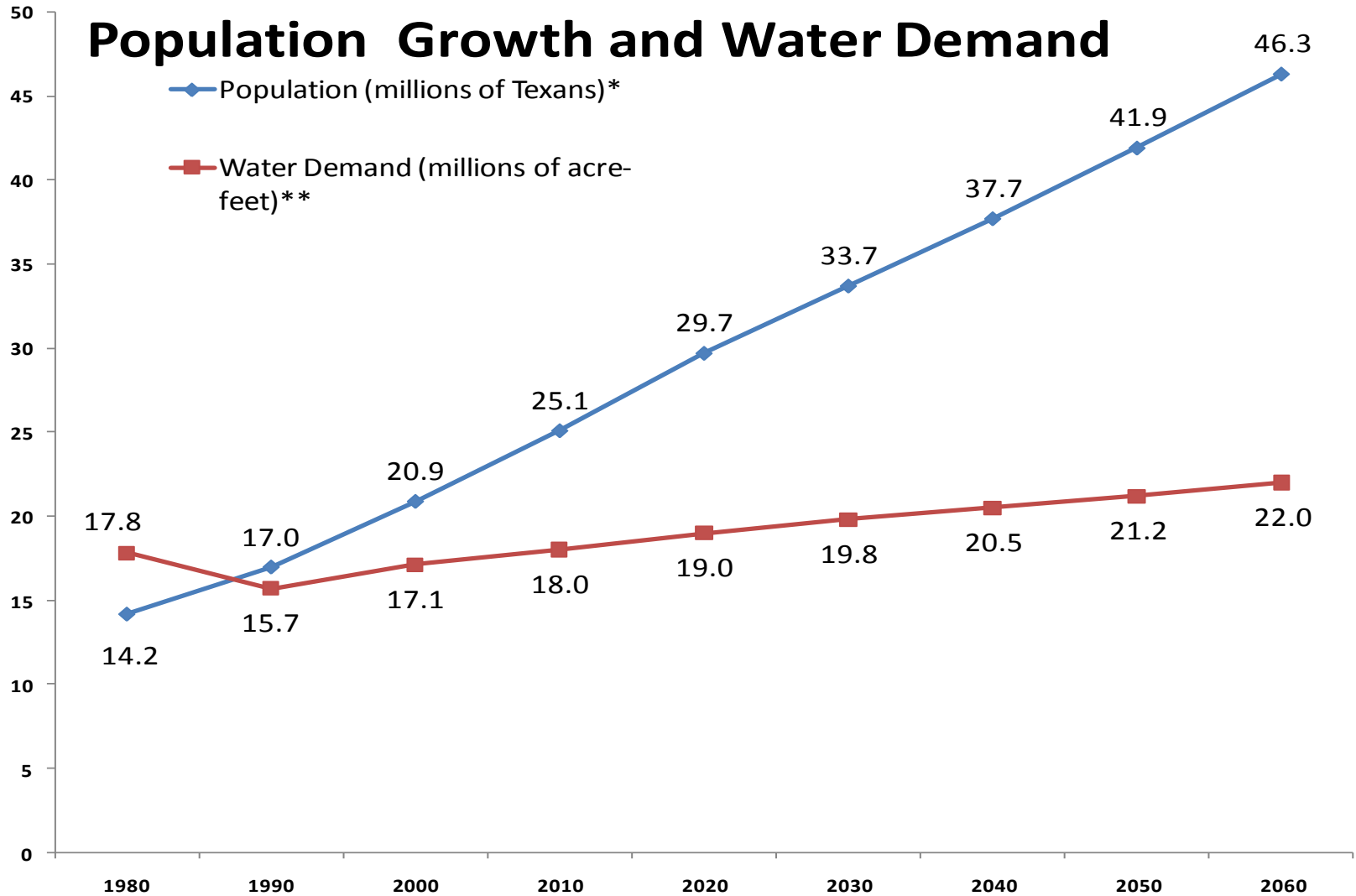
- Project future population and water demand
- Quantify existing and future water supplies
- Identify surpluses and needs
- Evaluate and recommend water management strategies
- Make policy recommendations
- Adopt the plan



Texas population growth rates by planning region, 2010-2060

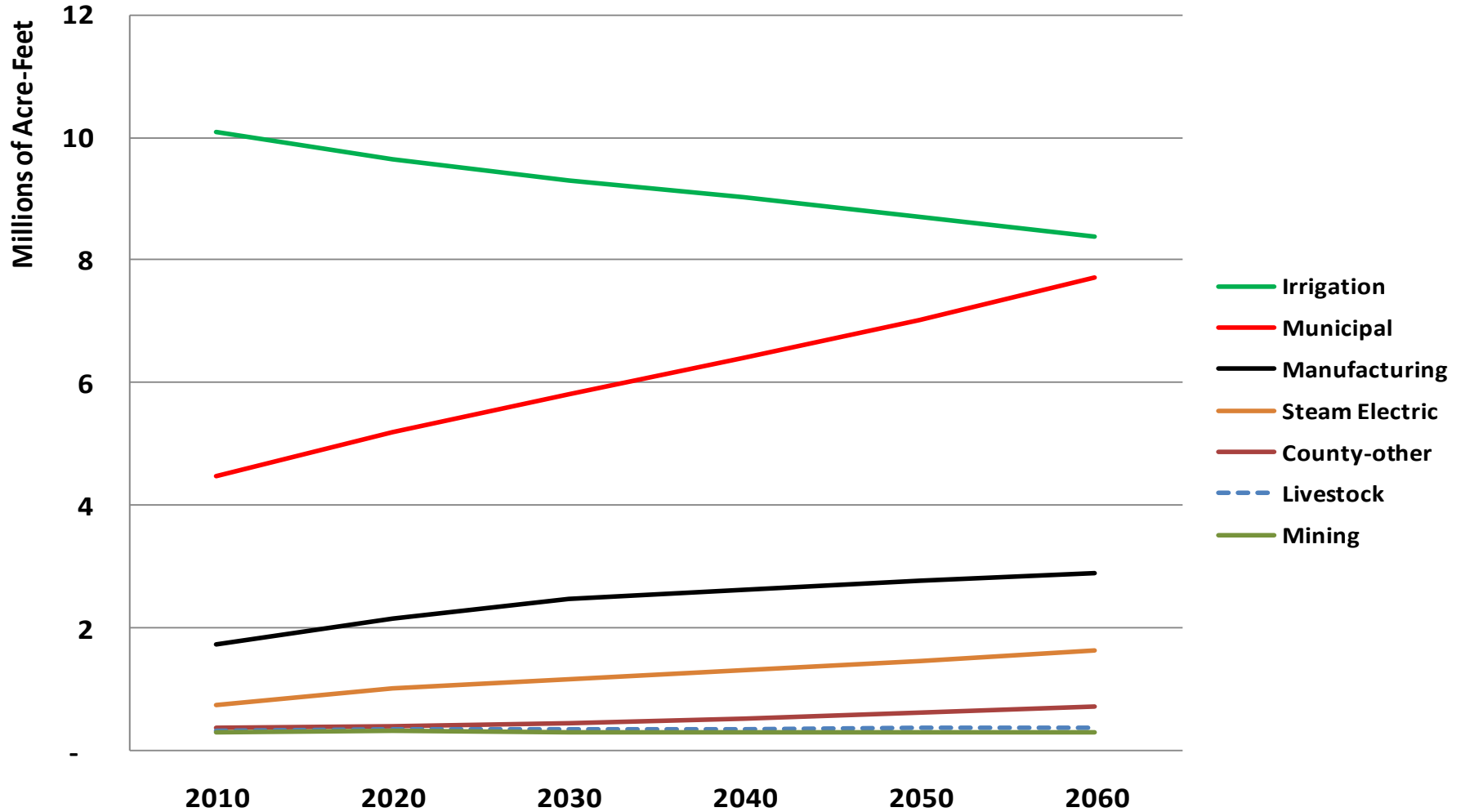


Population Growth and Water Demand

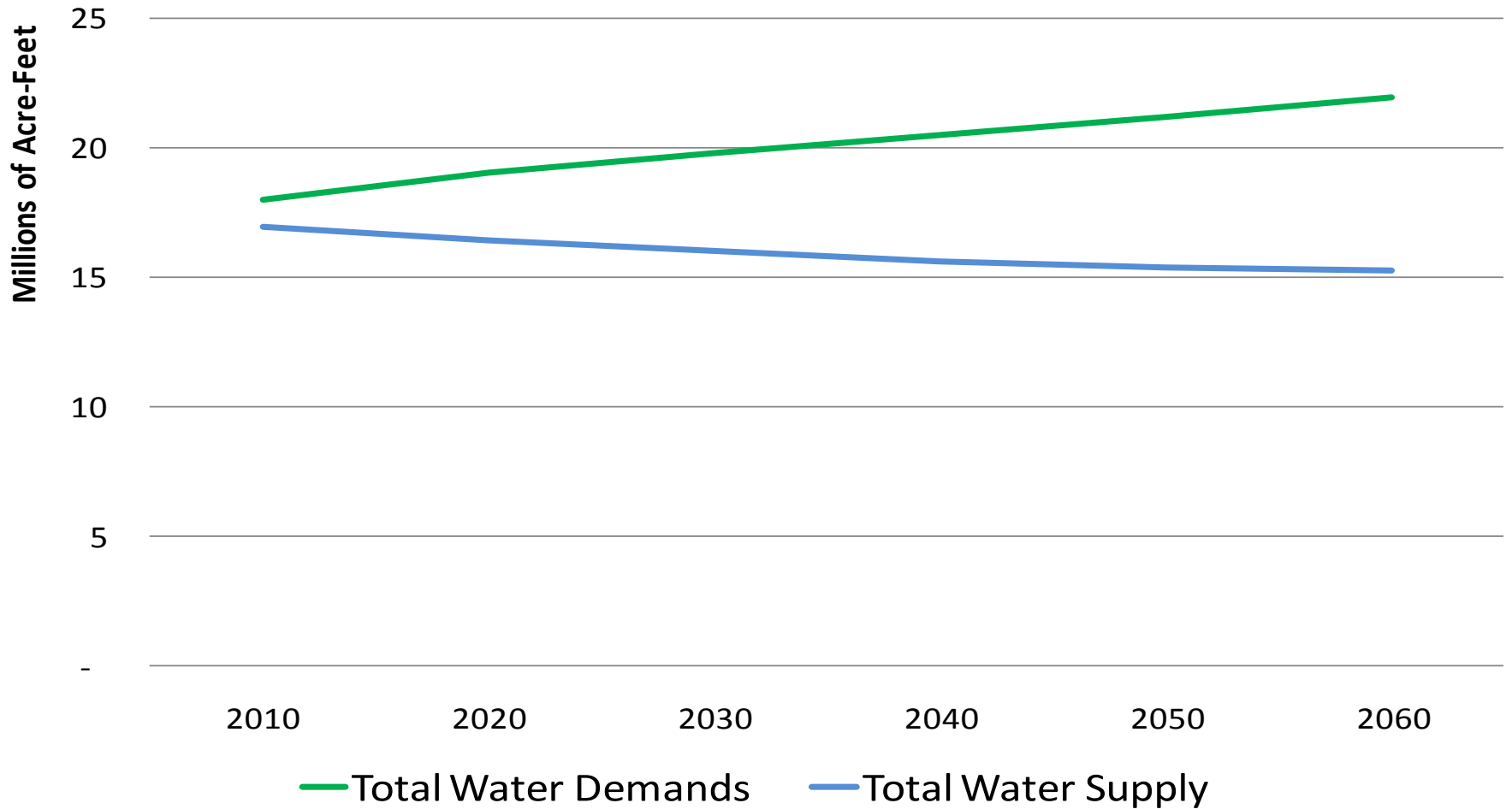


*Population: 1980 - 2010 Actual, 2020 - 2060 Projected; ** Water Demand: 1980 - 2000 Actual, 2010 - 2060 Projected

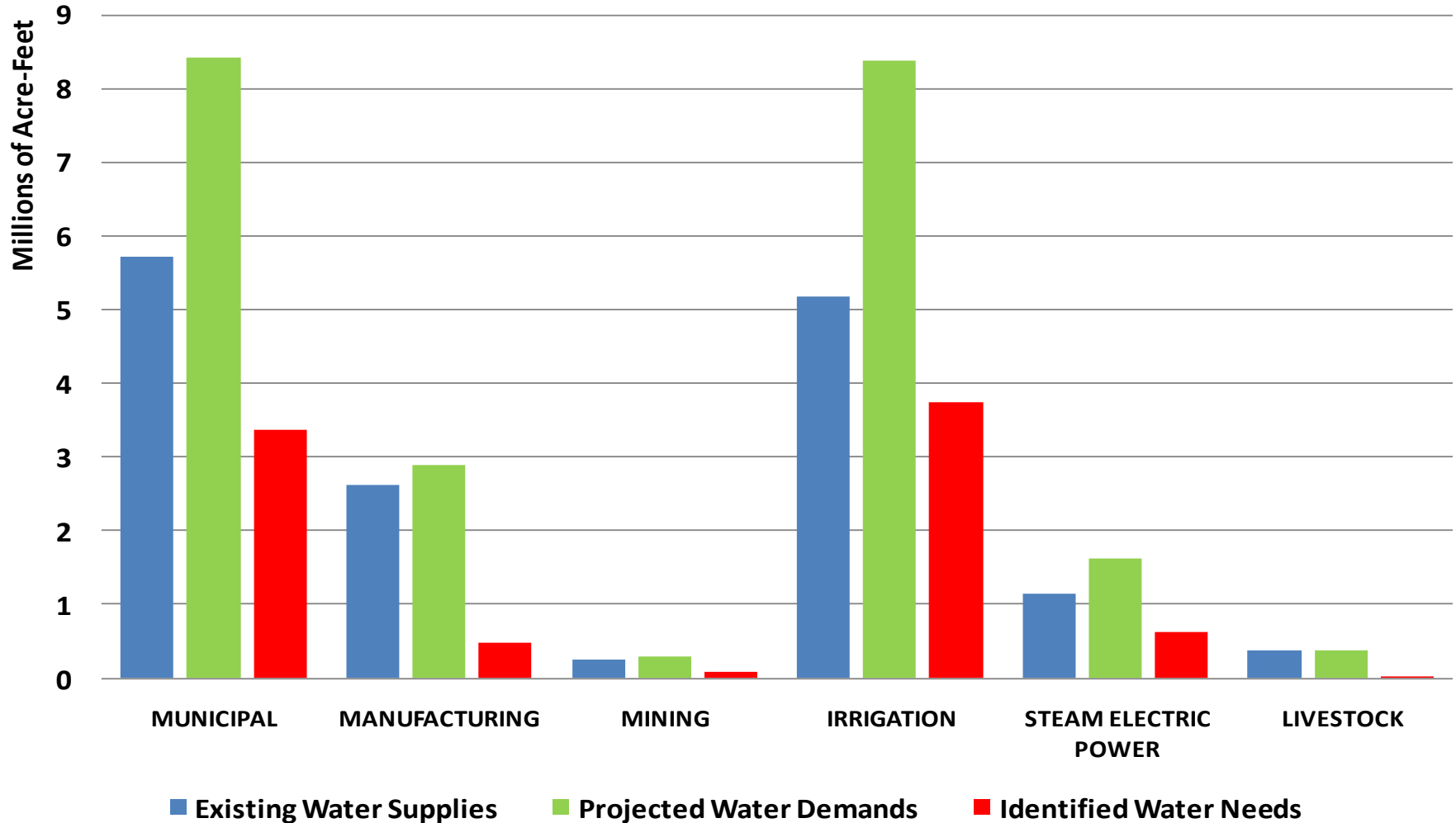
Municipal demand will increase, irrigation demand will decrease



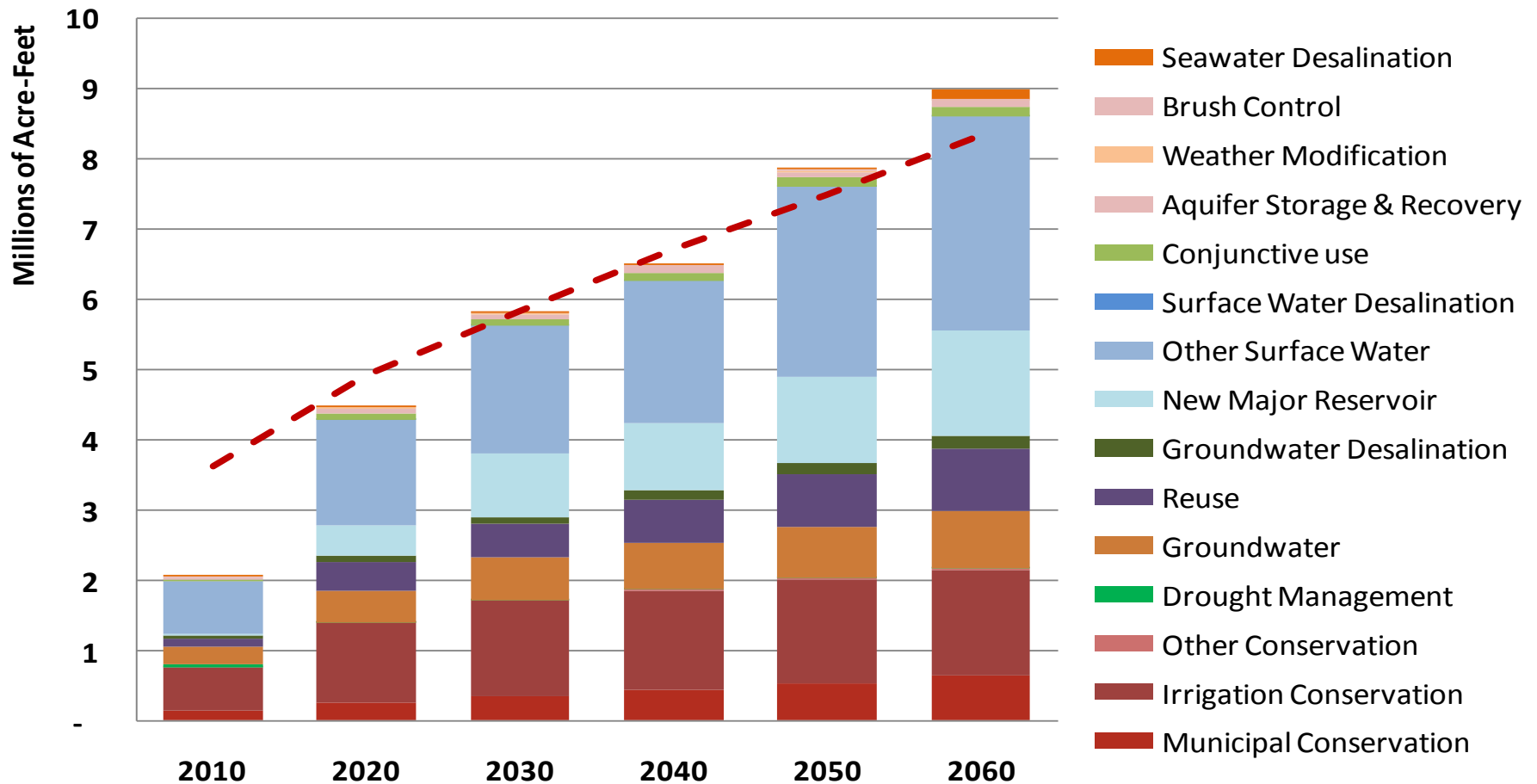
In a drought of record, Texas does not have enough existing supplies to meet demands



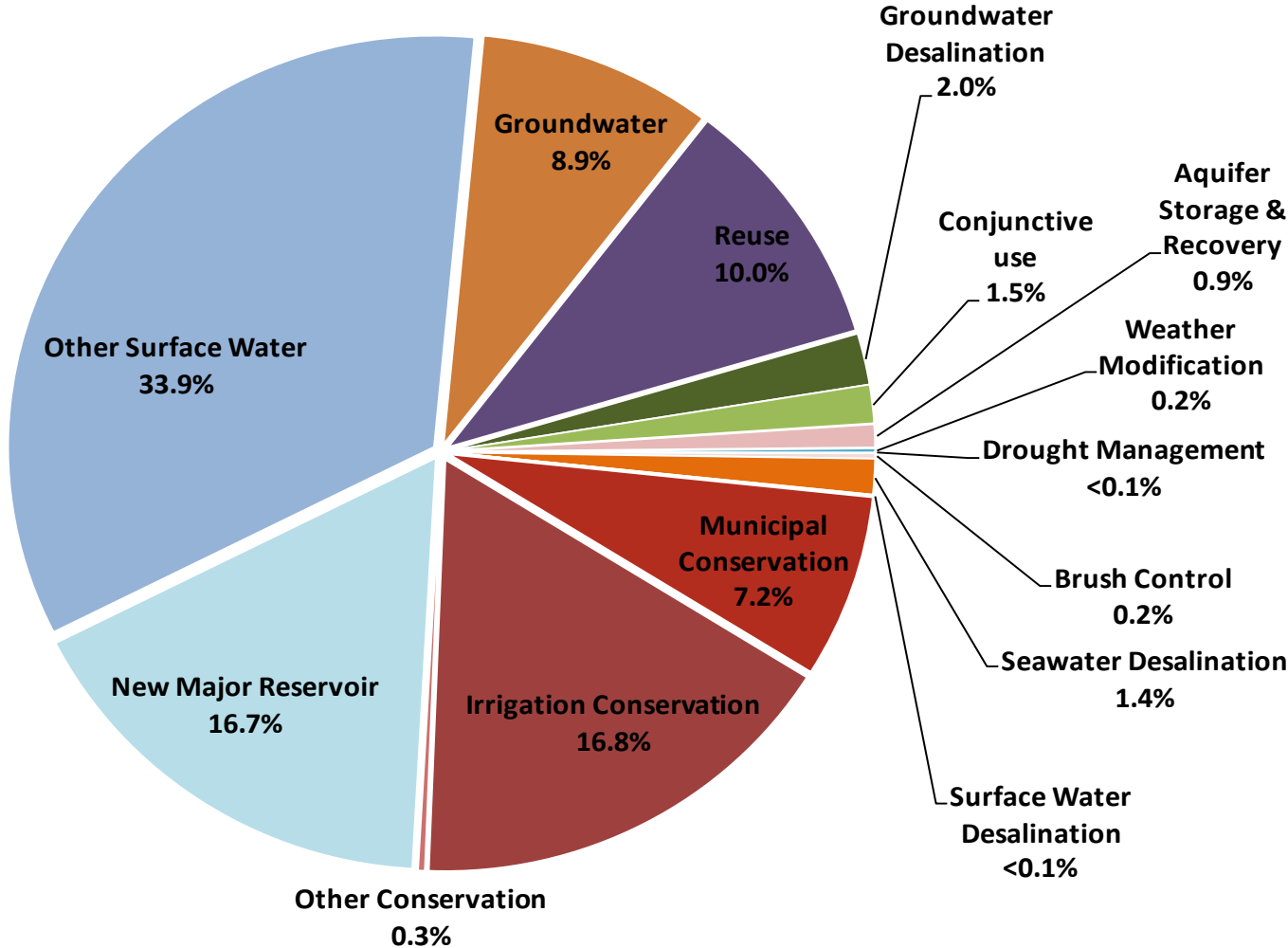
By 2060, demand is expected to exceed supply in all demand categories



Water Management Strategies recommended to account for 9 million acre-feet of additional supplies in 2060



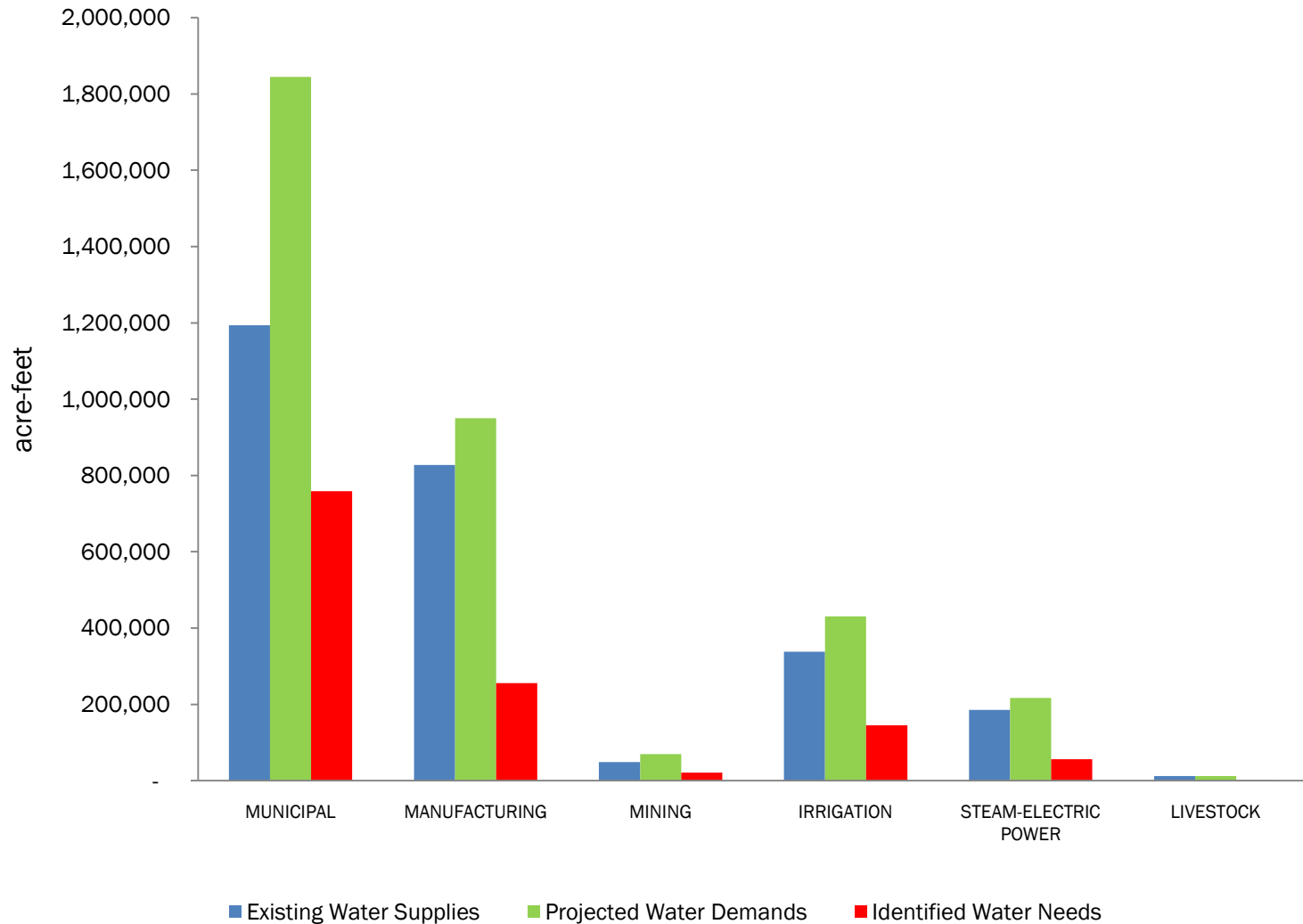
Relative Volume of Water Management Strategies by Type in 2060



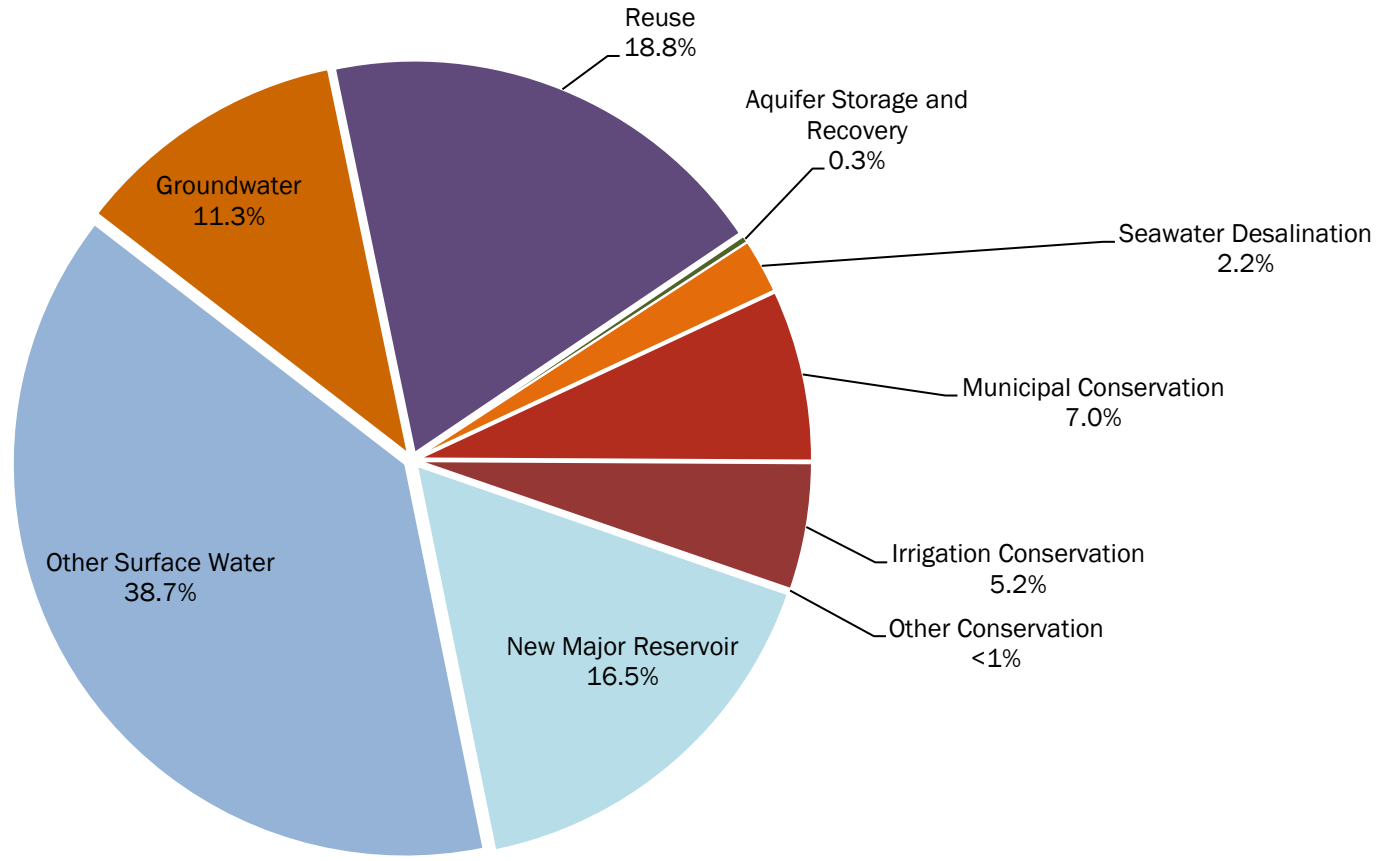
Water Supply Needs – Region H

Water Use Category	2010	2020	2030	2040	2050	2060
Municipal	42,081	206,131	317,539	367,712	428,499	534,252
Rural	13,070	21,975	42,697	85,430	150,770	224,682
Manufacturing	75,164	131,531	168,597	202,219	231,118	255,604
Mining	5,992	10,595	13,850	16,278	18,736	20,984
Irrigation	151,366	141,232	137,995	137,113	140,733	144,802
Steam-electric	3,203	12,609	18,058	24,726	34,976	55,972
Livestock	14	64	40	40	40	39
Total water needs	290,890	524,137	698,776	833,518	1,004,872	1,236,335

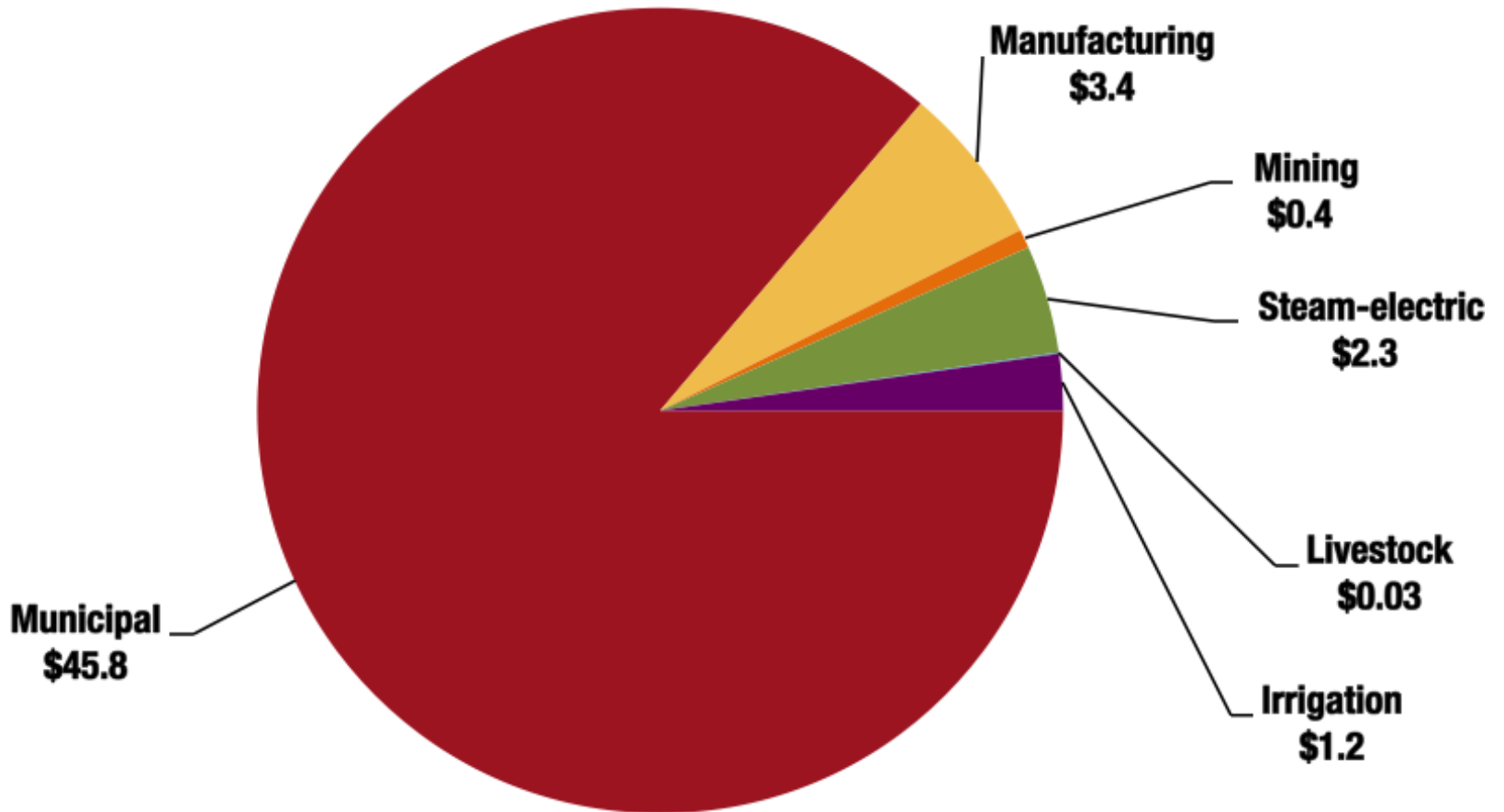
2060 Region H supplies, demands, needs by water user category



Region H recommended strategies – relative share of supply in 2060



Statewide Costs by Water Use Category



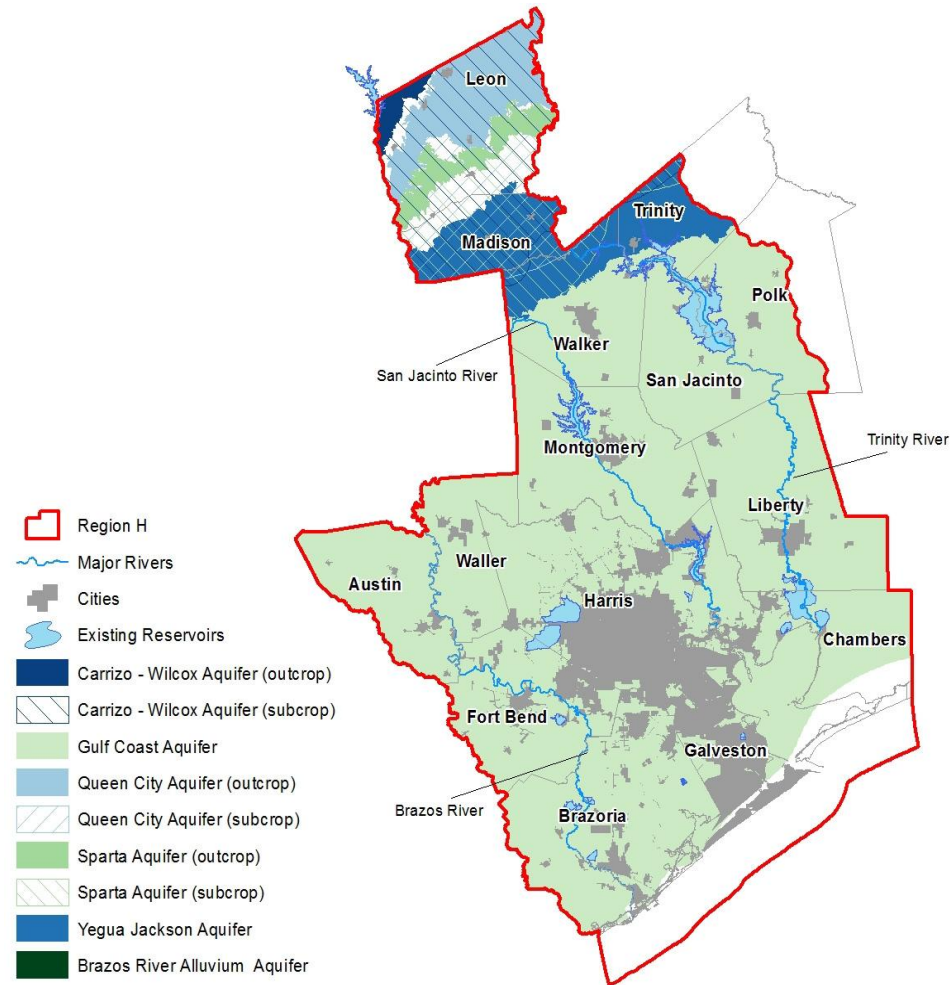
Cost of Not Implementing State Water Plan Recommendations

- \$12 billion lost income - 2010
- \$116 billion lost income – 2060
- State/local business taxes lost: \$1 billion – 2010
- State/local business taxes lost: \$10 billion – 2060
- Lost jobs : 115,000 – 2010
- Lost jobs: 1 million – 2060
- Lost population growth: 1.4 million - 2060



2060 Cost of Not Implementing Region H Regional Water Plan Recommendations

- \$61.2 million from rice production and milling
- \$233.8 million from reduced mining output
- \$2.5 billion from reduced commercial business activity
- \$4.6 billion from reduced electrical generation
- \$11.2 billion from reduced manufacturing output



Thank you

For questions regarding Water Resources Planning & Information:

Temple.McKinnon@twdb.state.tx.us

