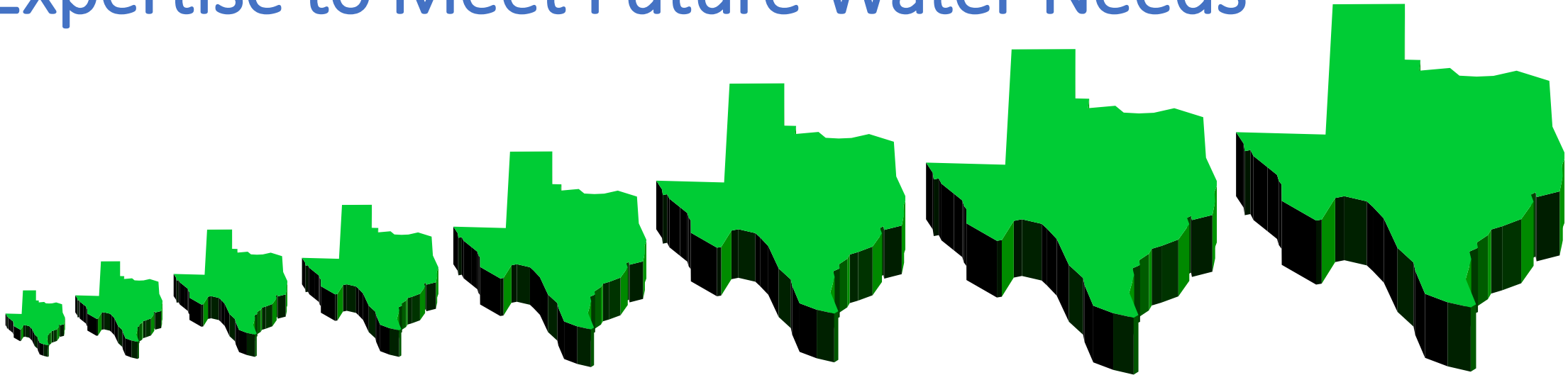


Here a plan, there a plan, everywhere a plan plan: How Texas Taps into Local Expertise to Meet Future Water Needs



Robert E. Mace, Ph.D., P.G.
The Meadows Center for [Water](#) & the Environment
Texas State University

presented at

[Water](#) Summit 2019
hosted by The White River Alliance
Indianapolis, Indiana; August 15, 2019



billboard art by Mark Heckman, posted by Citizens for Michigan's Future

“Water, not oil, is the lifeblood of Texas.”

- James A. Michener

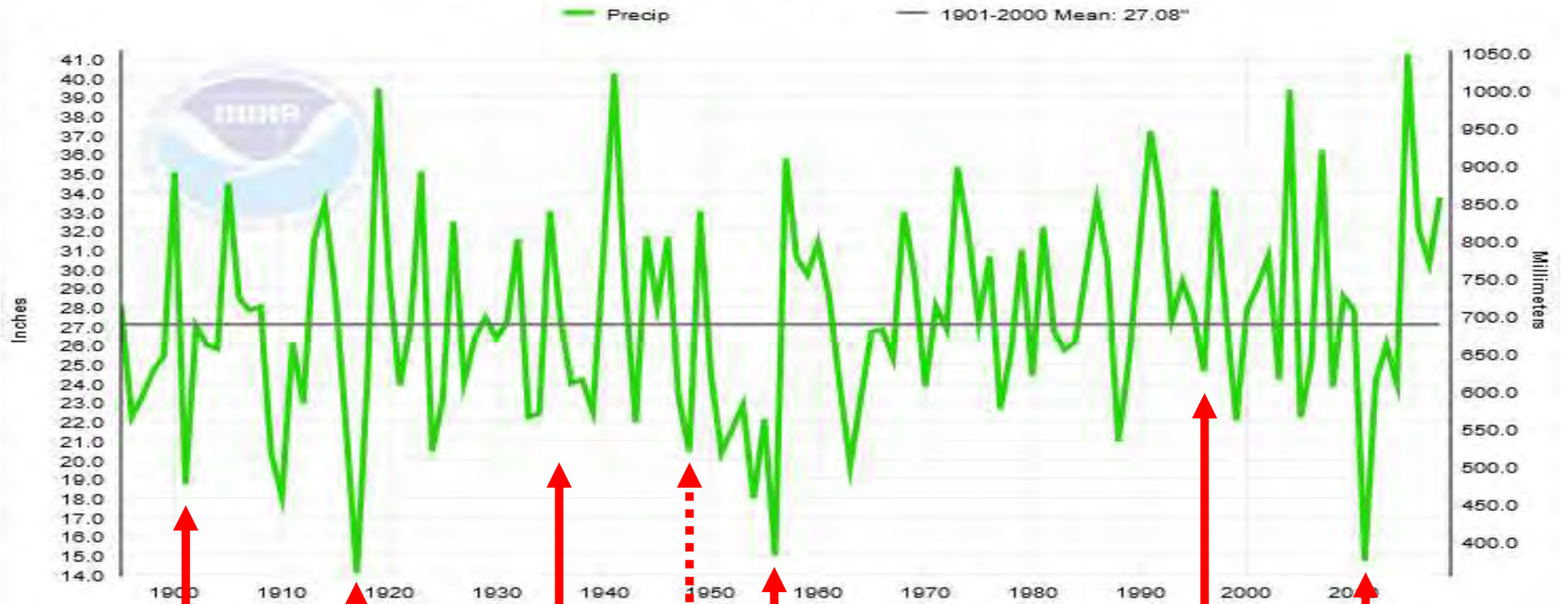


**“Texas is a land of eternal drought
interrupted occasionally
by Biblical floods.”**

- Isaac Cline



Texas, Precipitation, January-December



Rule of Capture
(groundwater)

Prior
Appropriation
(surface water)

Groundwater
Conservation
Districts

State Water
Plan

- Regional Water Plans
- Drought Plans
- Water Conservation Plans

SWIFT
(financing for the
water plan)

“You got to be careful if you don't know where you're going, because you might not get there.”

– Yogi Berra

“A man who does not plan long ahead will find trouble at his door.”

– Confucius

“It pays to plan ahead. It wasn't raining when Noah built the ark”

– unknown

“Expect the best, plan for the worst, and prepare to be surprised.”

– Denis Waitley

Planning (in a nutshell)

- How much do we have now?
- How much are we going to need?
- Do we have enough?
- If we don't, what do we need to do to get more?
- How much will it cost?

focused on drought of record



DAPO82501-8/25/56-DALLAS:Pretty Gloria Ryden,an airline hostess,trys a glass of salt free spring water offered to her by Bob Valentine,manager of one of the stores that has bottled the water to sell in Dallas,since the city water has become so salty.The water sells for 20 cents a half gallon. UNITED PRESS TELEPHOTO

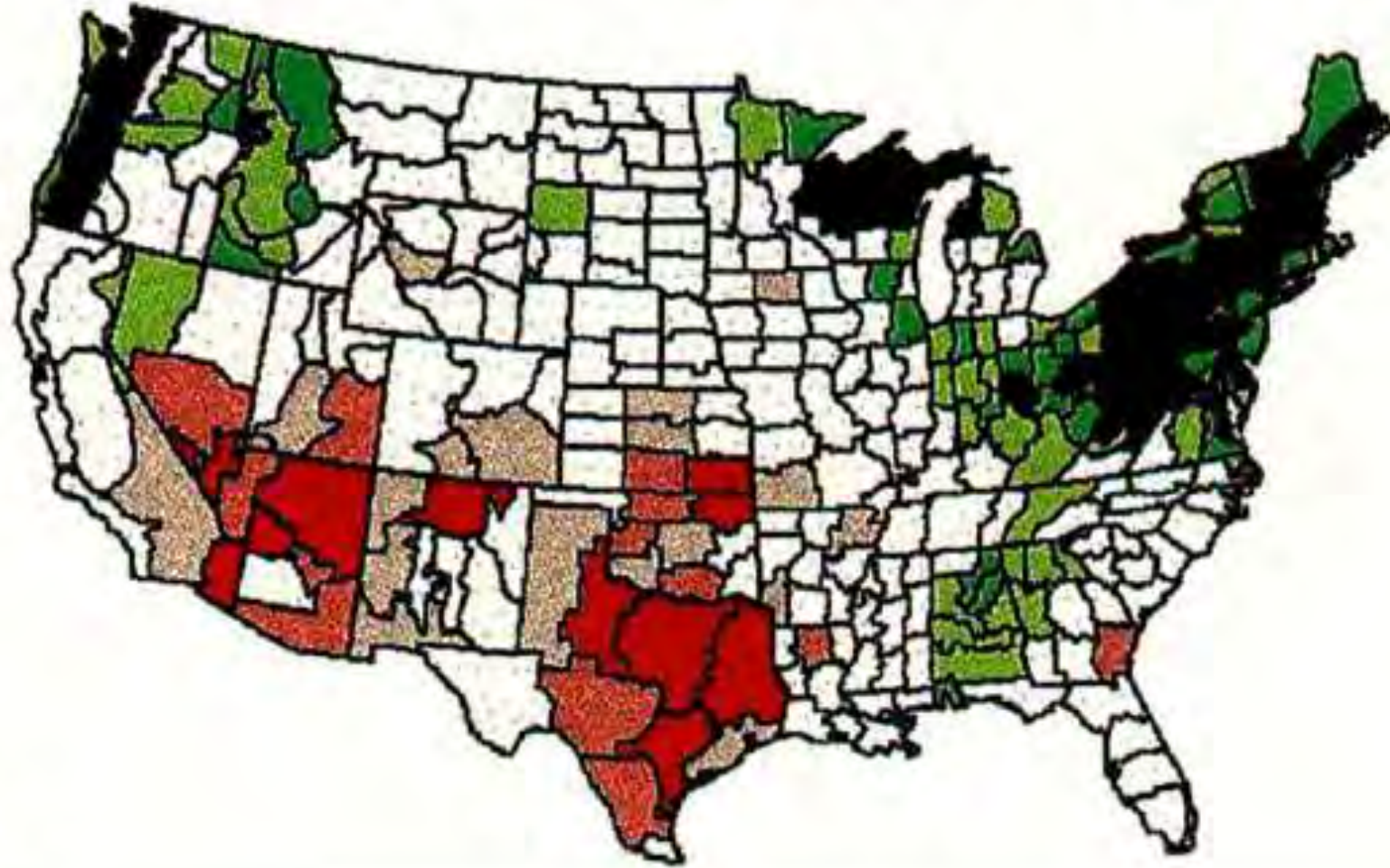
**That would be \$7.55
a gallon today (2019)!**

State Water Planning

focused on drought of record




10-month SPI through the end of July 1996



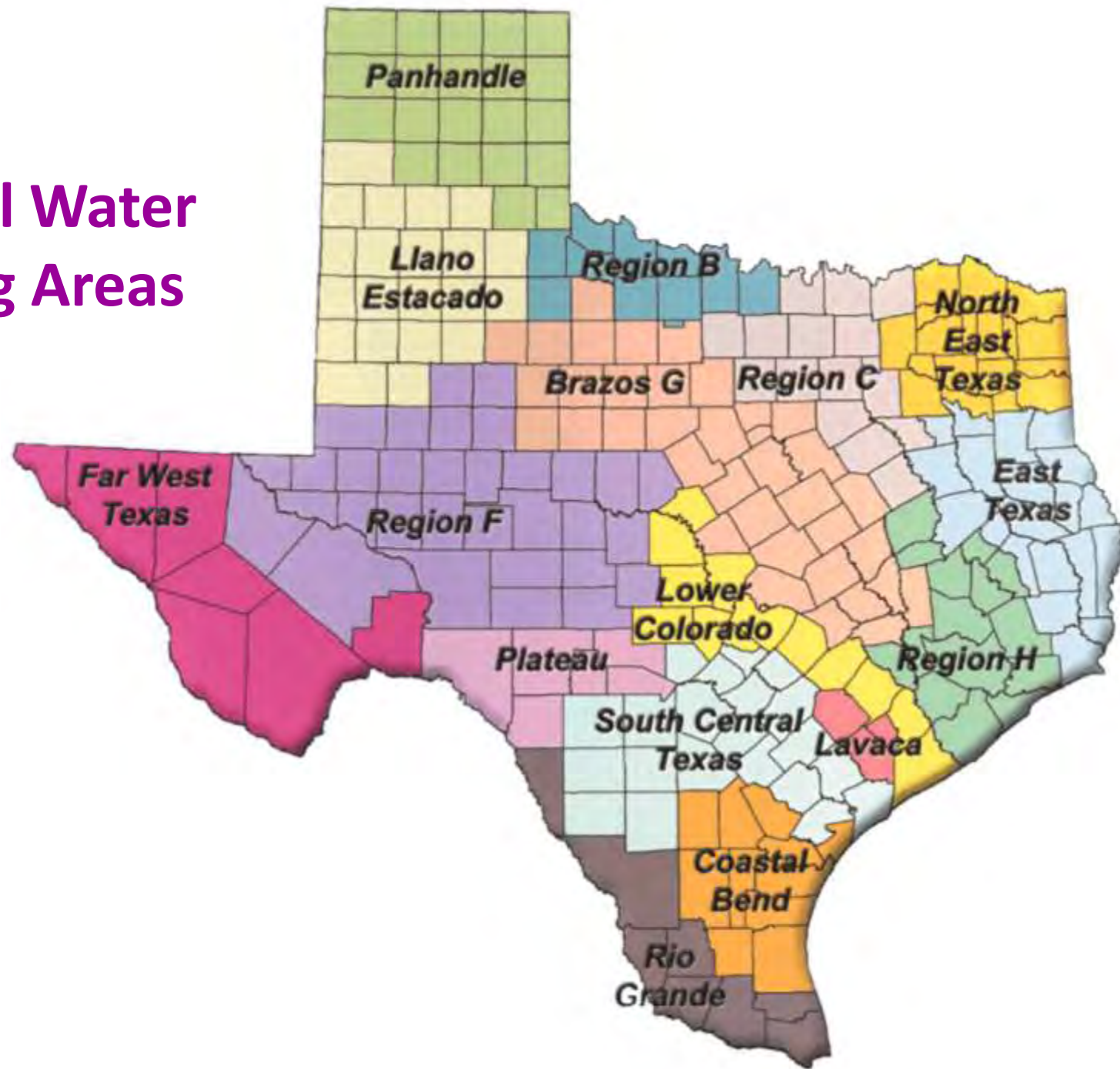
b

from Hayes and others (1999)

A white ceramic cup filled with dark coffee sits on a matching saucer. A silver spoon is placed on the saucer to the left of the cup. The background is a soft, out-of-focus light brown. The text "{a brief dramatization}" is centered on the cup.

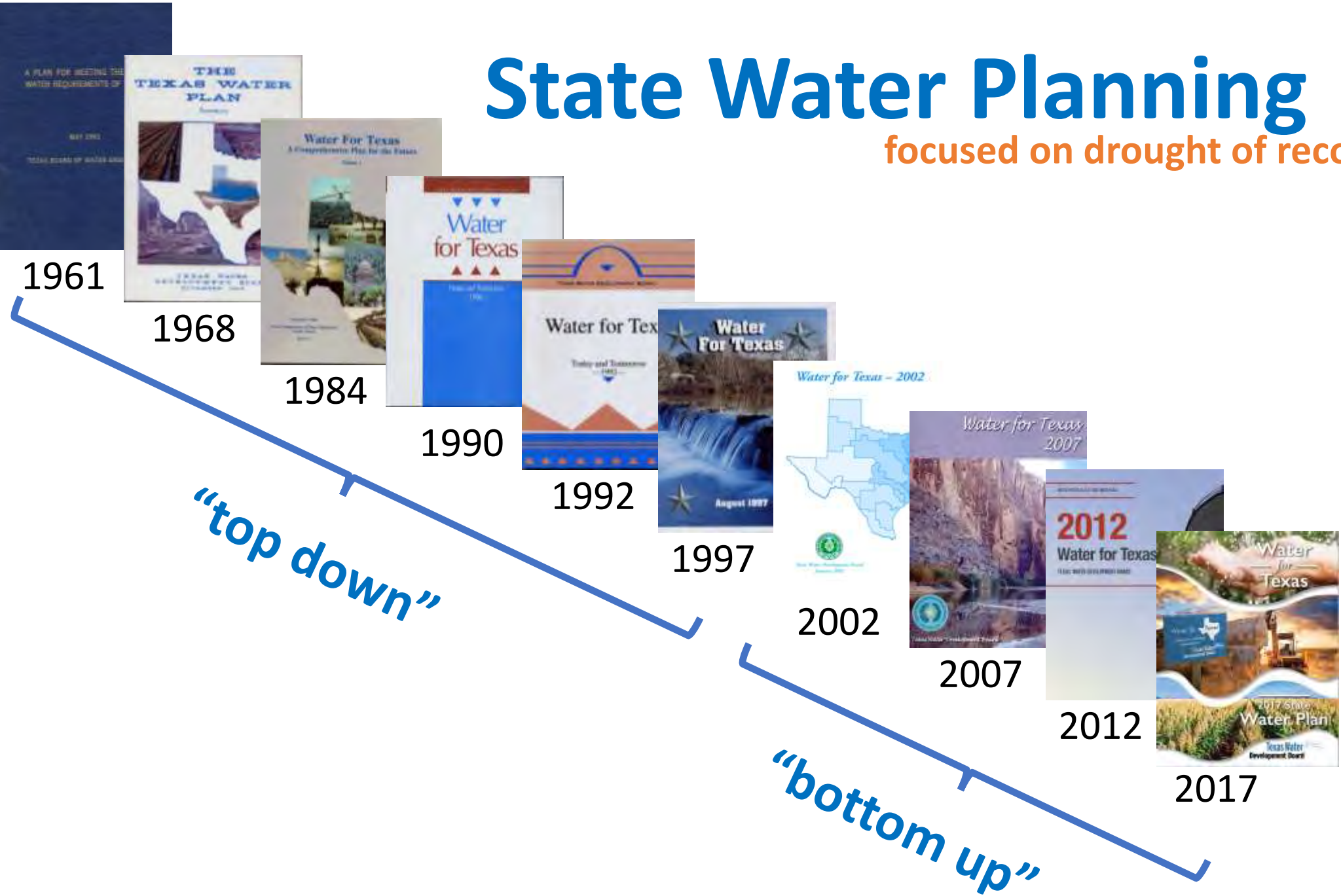
{a brief
dramatization}

Regional Water Planning Areas



State Water Planning

focused on drought of record



Regional **Water** Planning by the numbers

16 regional water planning groups

6 water use categories

12 interest groups

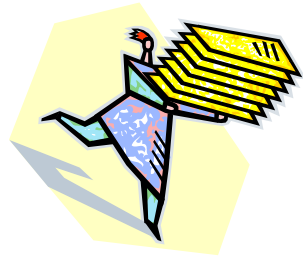
3,000

water user groups

450 voting and non-voting planning group members

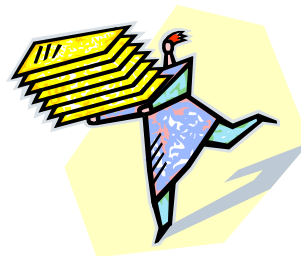
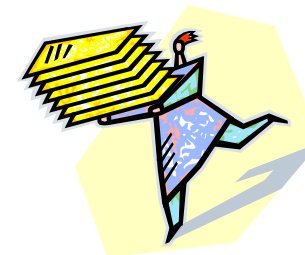
5 year planning cycle

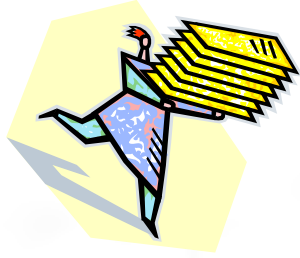




Here a plan, there a plan, everywhere a plan plan!

- Regional water plans
regional water planning groups
- State water plan
texas water development board
- Water conservation plans
certain retail public water providers
- Drought contingency plans
certain wholesale, all retail public water providers
- Drought preparedness plan
drought preparedness council
- State emergency management plan
texas division of emergency management





implement water plan

**implement water
conservation plan**



before the drought

**implement drought
preparedness plan**



**implement drought
contingency plan**



**declare drought
disaster**

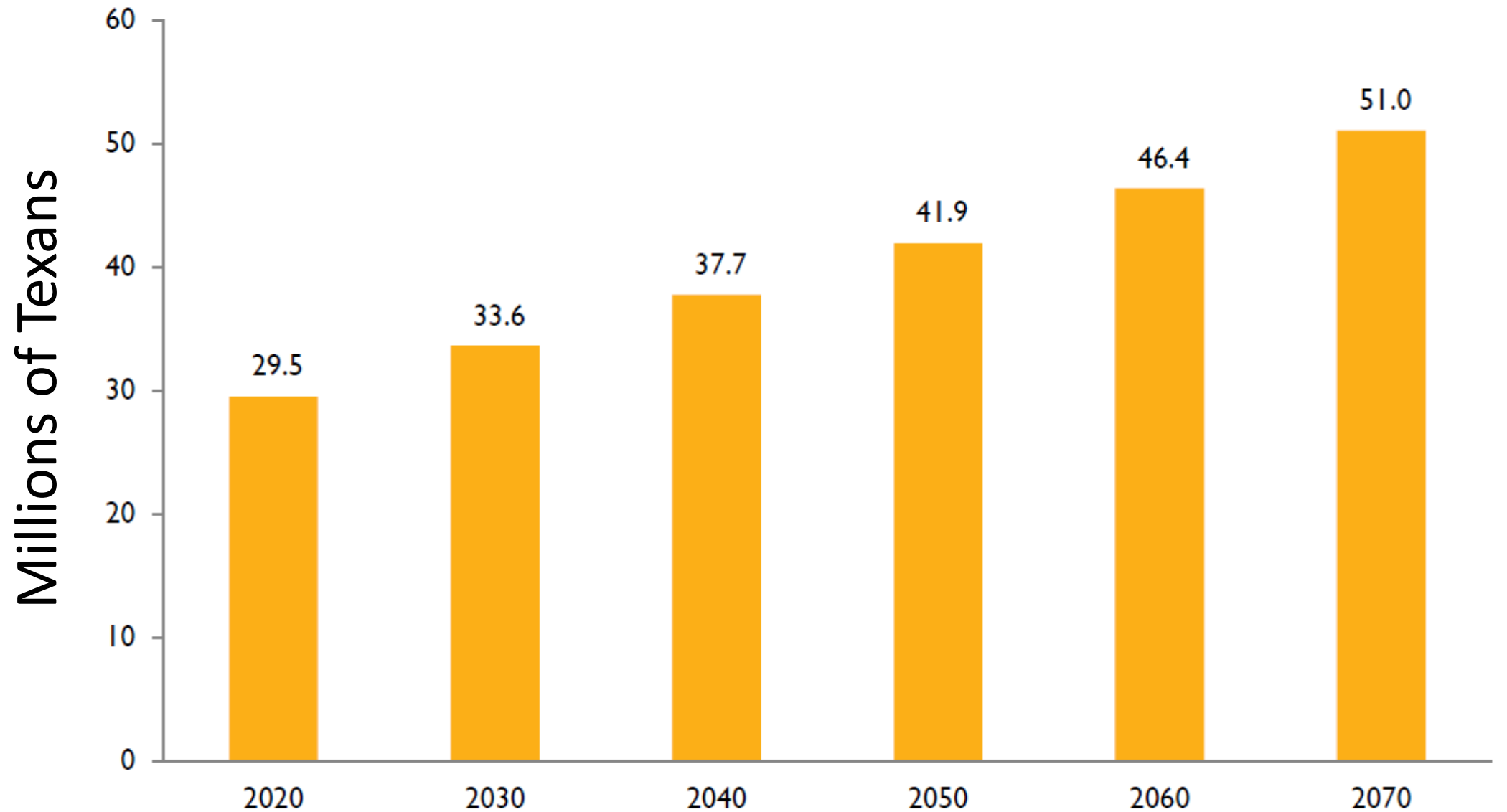


**implement state
emergency
management plan**



drought

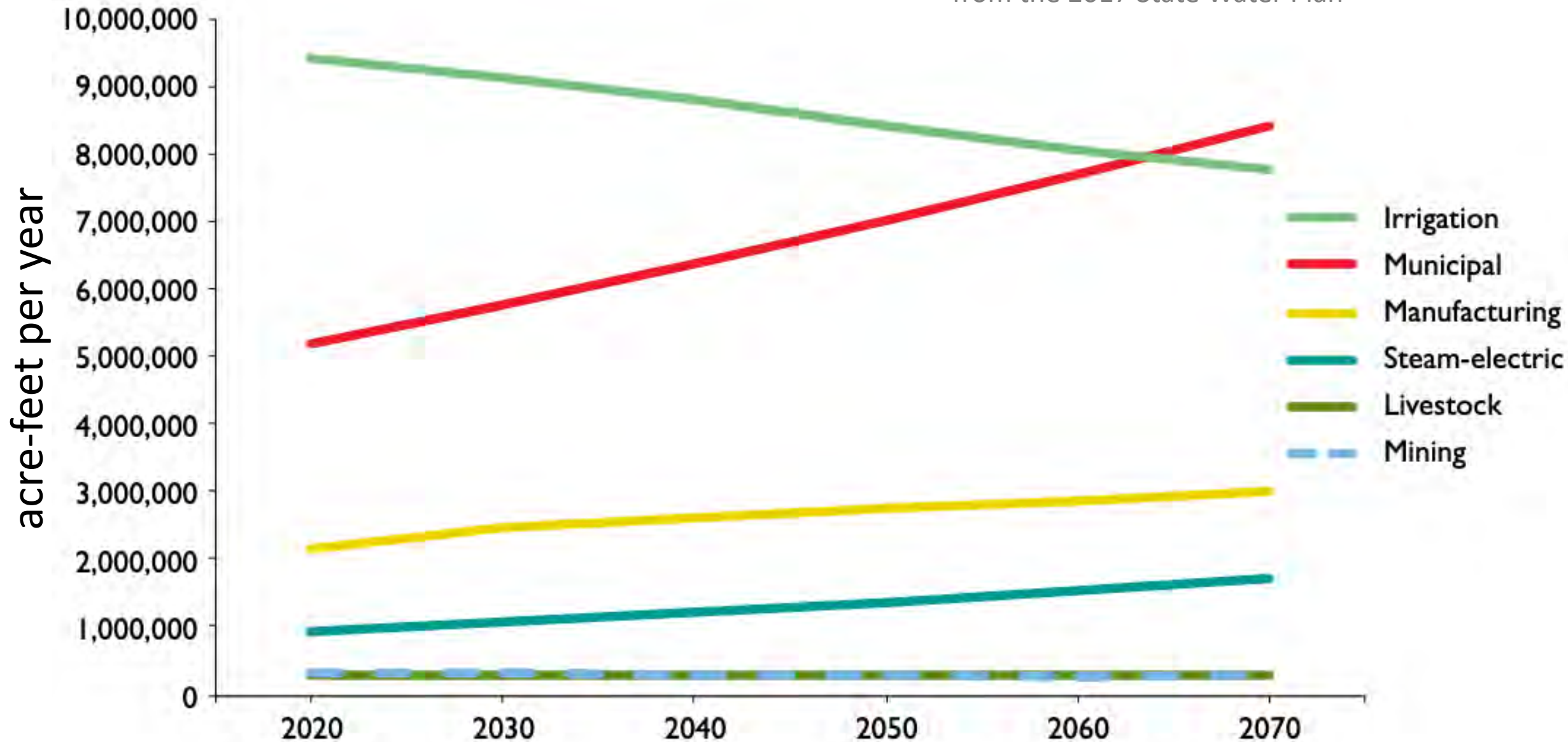
projected population

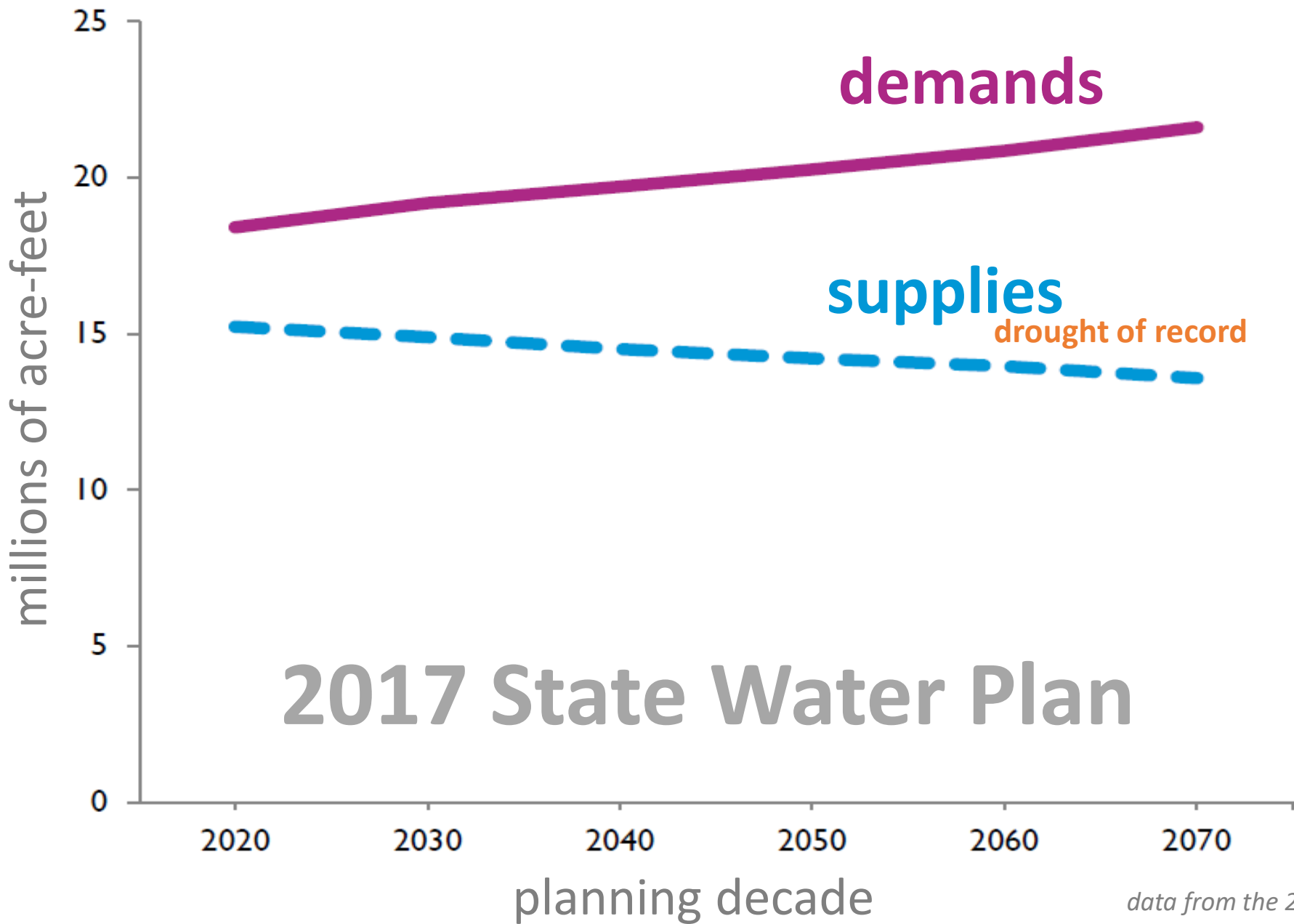


data from the 2017 State Water Plan

projected water demand

from the 2017 State Water Plan

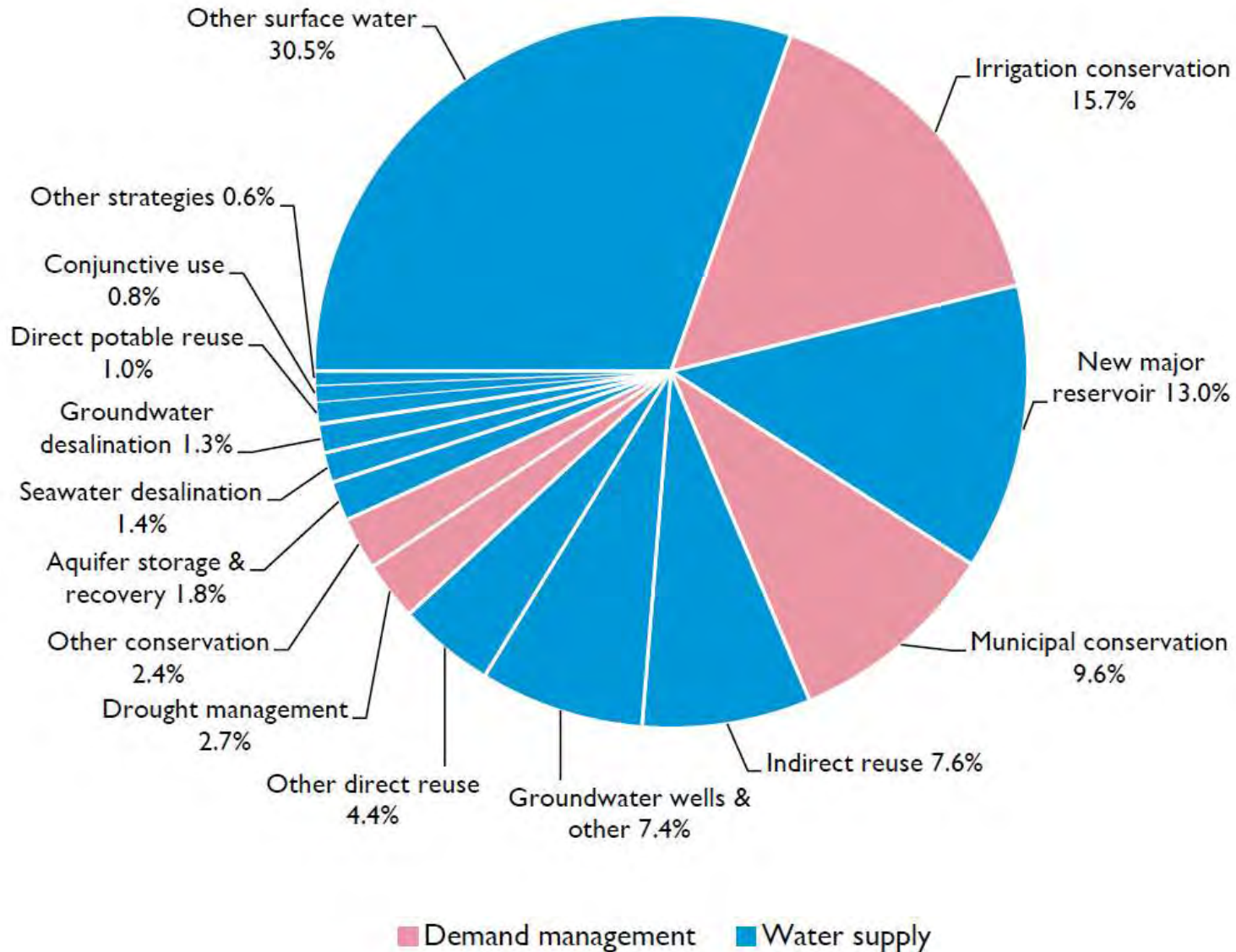




2017 State Water Plan

data from the 2017 State Water Plan

strategies



**5,500 strategies
would result in an
additional 8.5 million
acre-feet per year of
water**



Cost?

billions and billions!

~ \$63 billion





How much will it cost Texas if we do nothing?

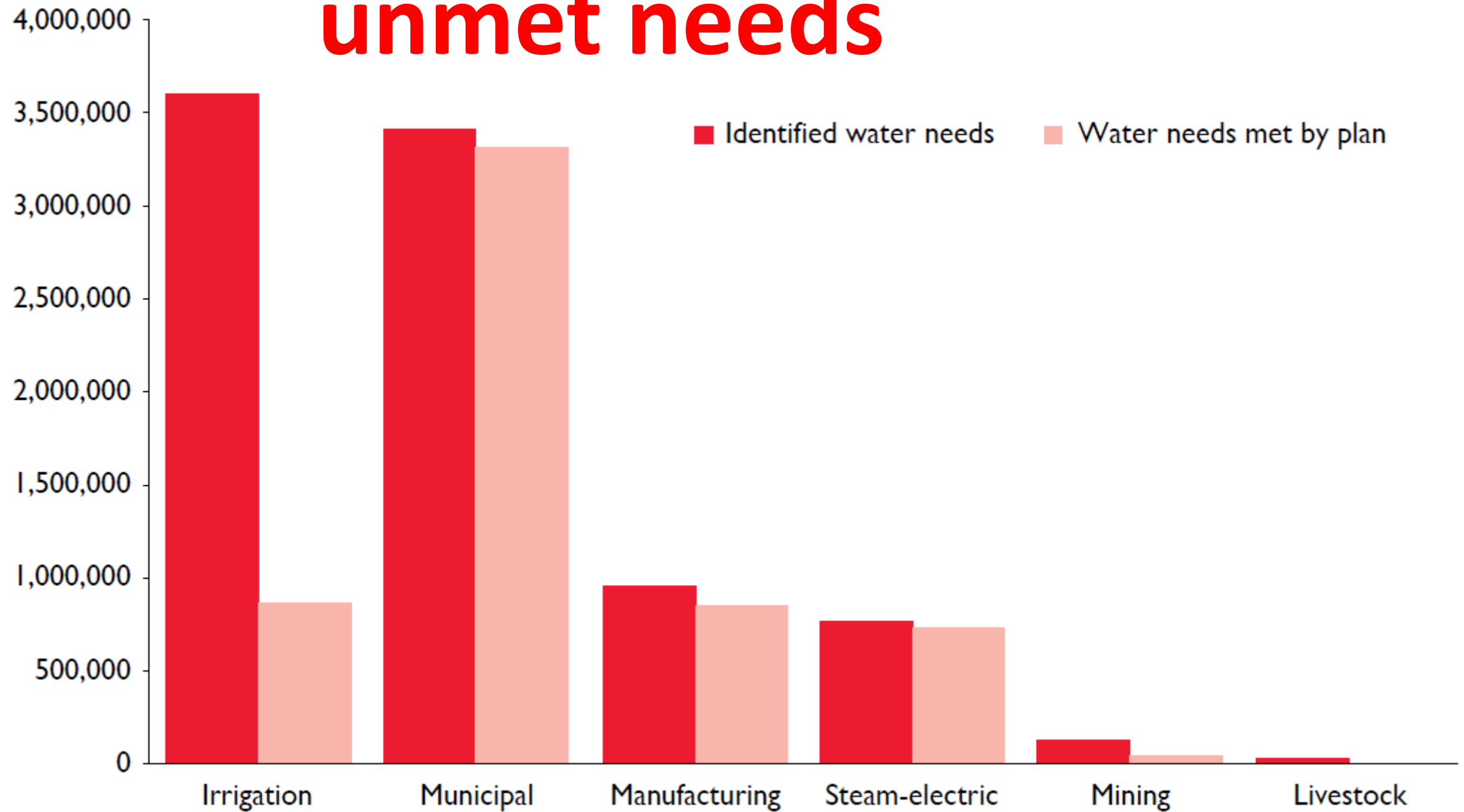
billions and billions!

\$151 billion a year

1.3 million jobs








unmet needs

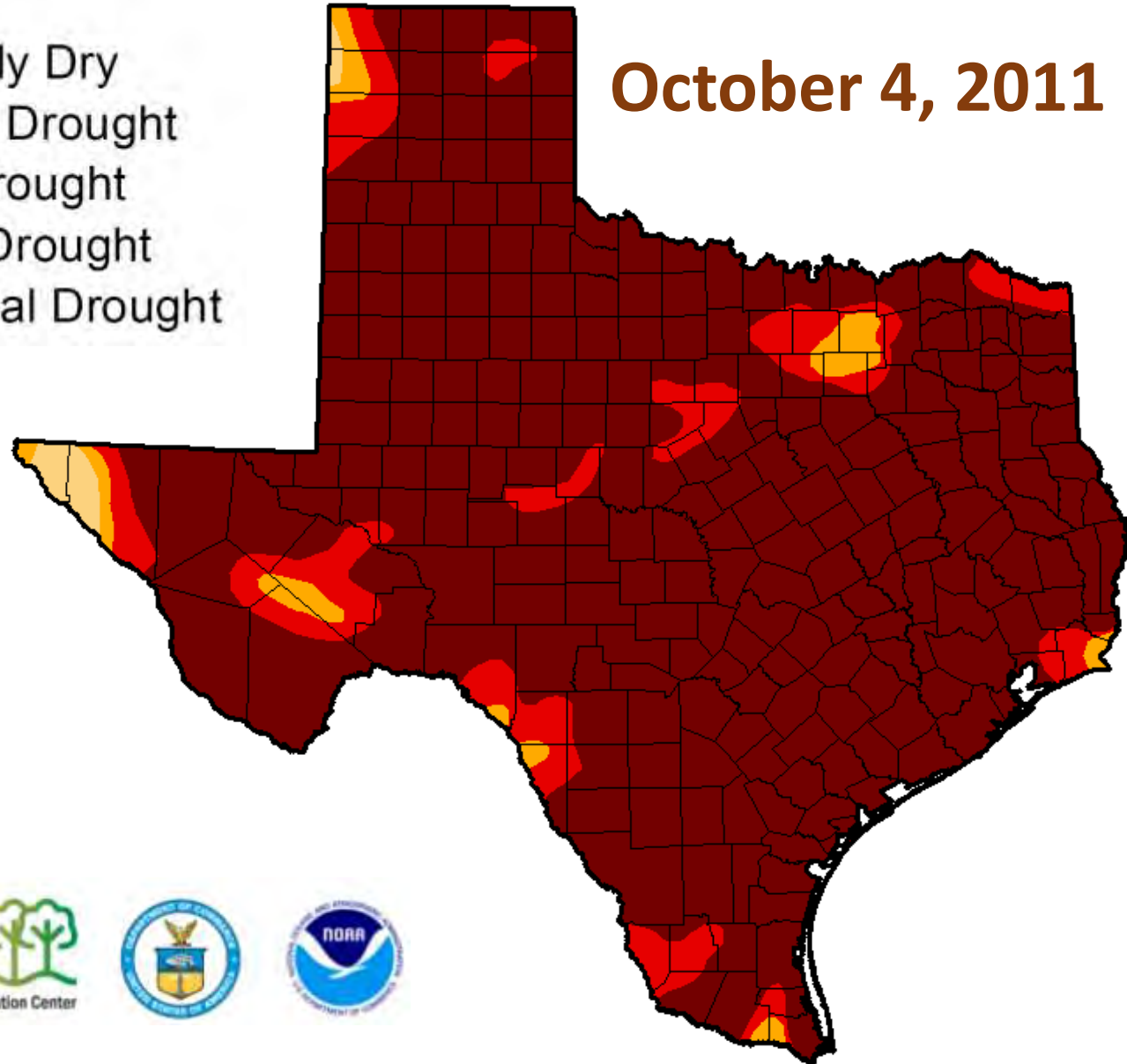


from the 2017 State Water Plan

Intensity:

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

October 4, 2011



**State
Water
Implementation
Fund for
Texas**

\$2,000,000,000

20% for conservation and reuse
10% for rural and agriculture



The background features a light blue gradient with several large, 3D puzzle pieces scattered across the surface. Silhouettes of business professionals in suits are positioned on and around these puzzle pieces, some appearing to stand on them. The overall theme is business strategy and interconnectedness.

water = stakeholders



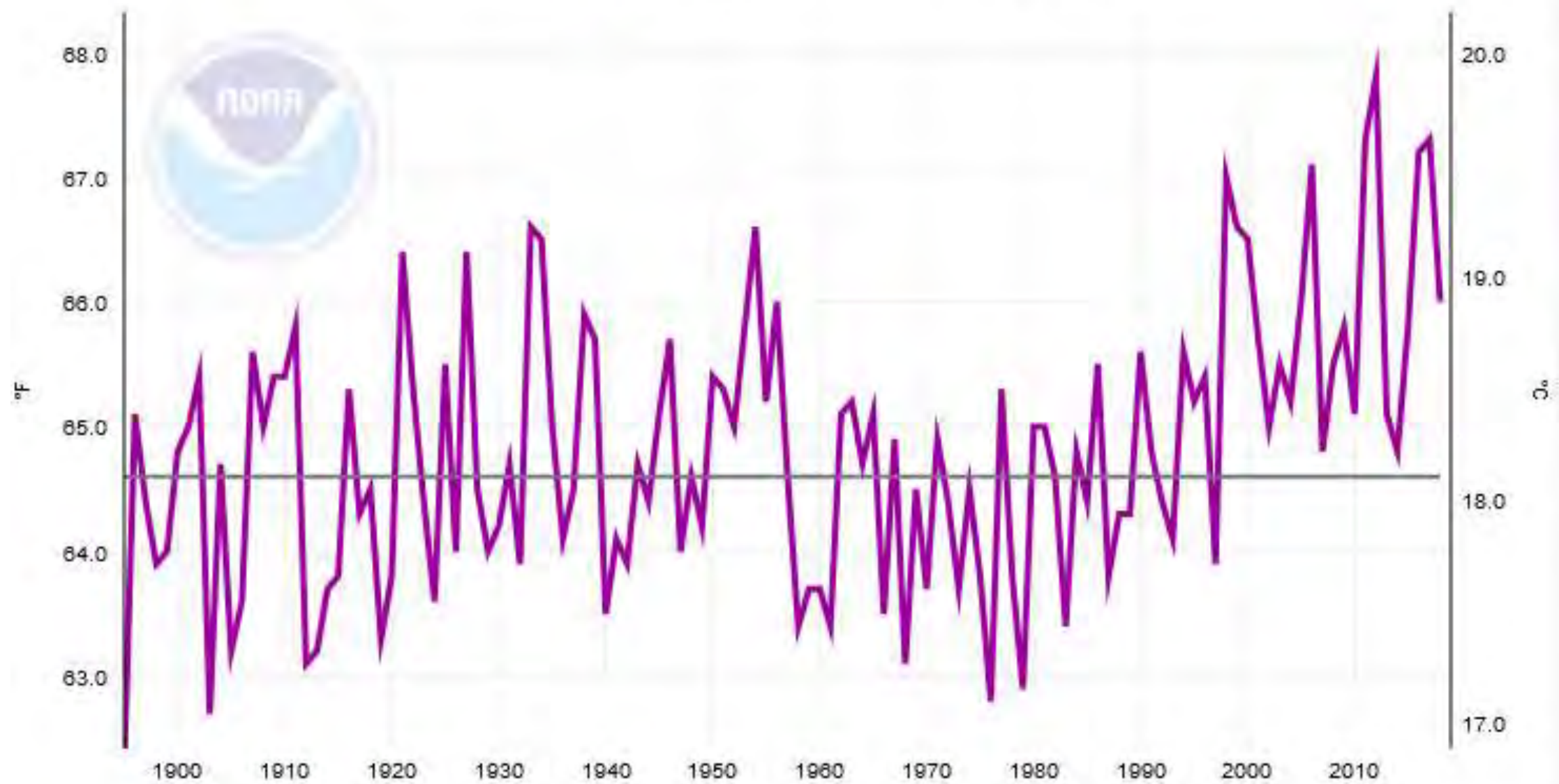
**WE'RE GOING TO HAVE TO THINK
OUTSIDE THE BOX HERE**

I JUST POOPED IN IT

Texas, Average Temperature, January-December

Avg Temperature

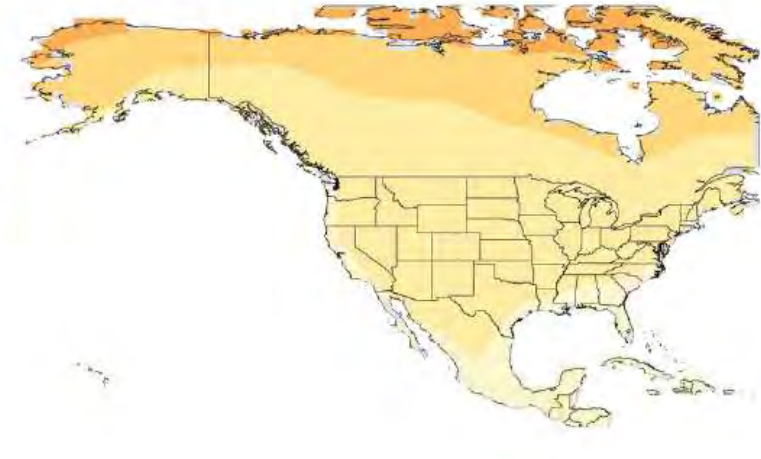
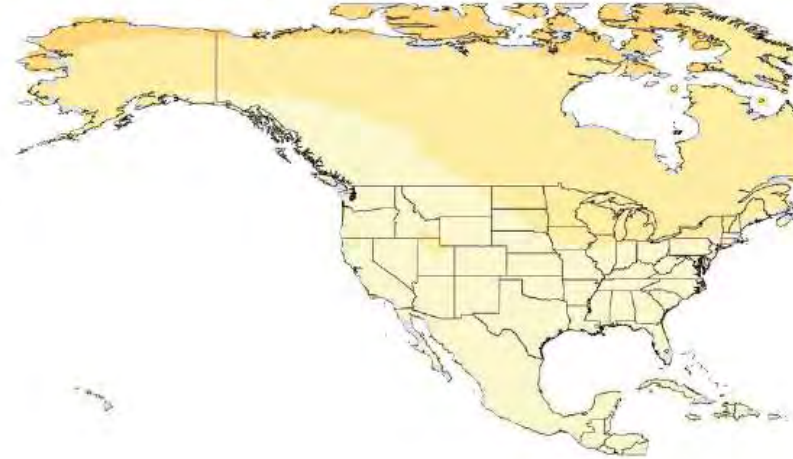
1901-2000 Mean: 64.6°F



Mid 21st Century

Lower Scenario (RCP4.5)

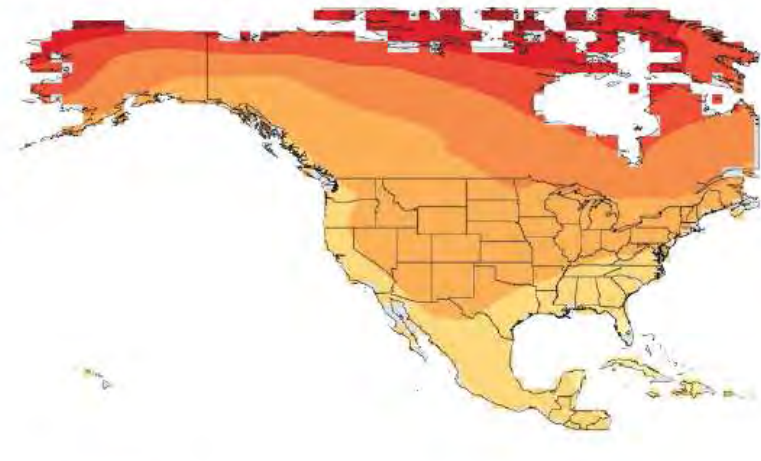
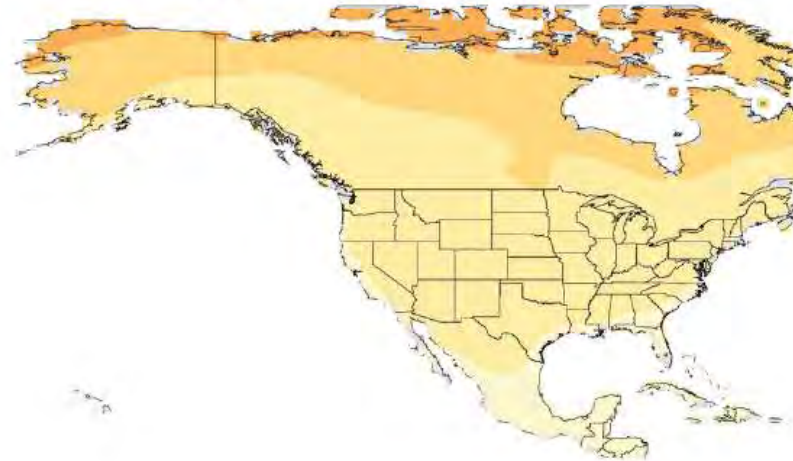
Higher Scenario (RCP8.5)



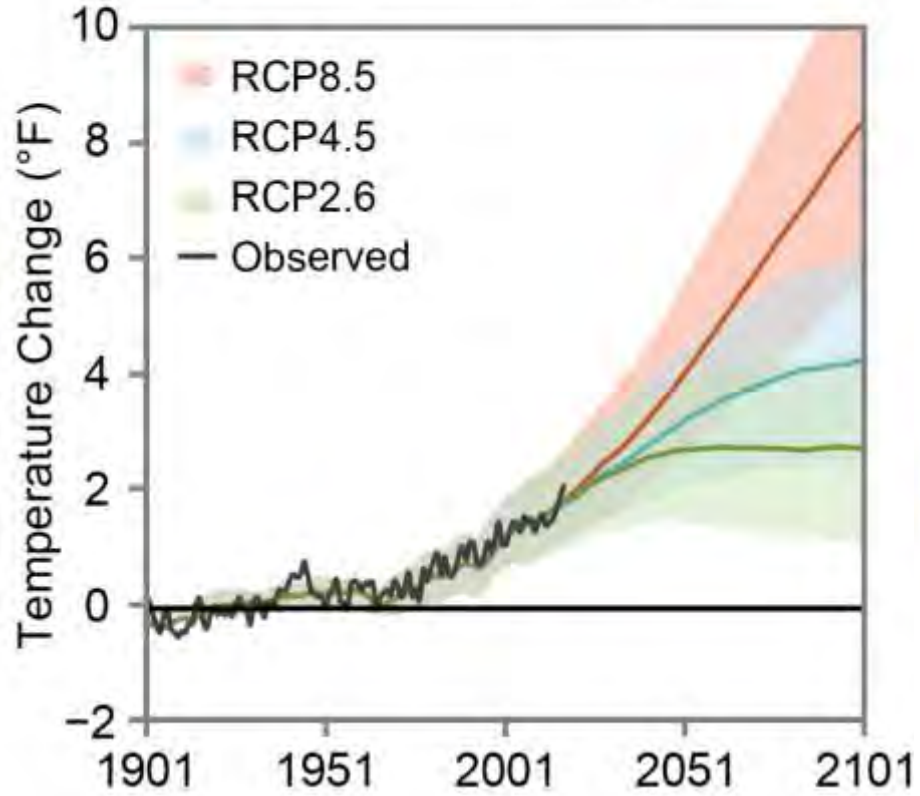
Late 21st Century

Lower Scenario (RCP4.5)

Higher Scenario (RCP8.5)



Projected Global Temperatures



(USGBRC 2017)

Change in Temperature (°F)



**What
about
me?**





***“Solutions for water
may flow through Austin,
but they start and end
at the local level.”***

Agricultural Commissioner Todd Staples

Said at a Texas Water Conservation Association meeting

March 2013

“It is far better to foresee even without certainty than not to foresee at all.”

- Henri Poincare





questions?

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presentation available at sosecretoccultandconcealed.com