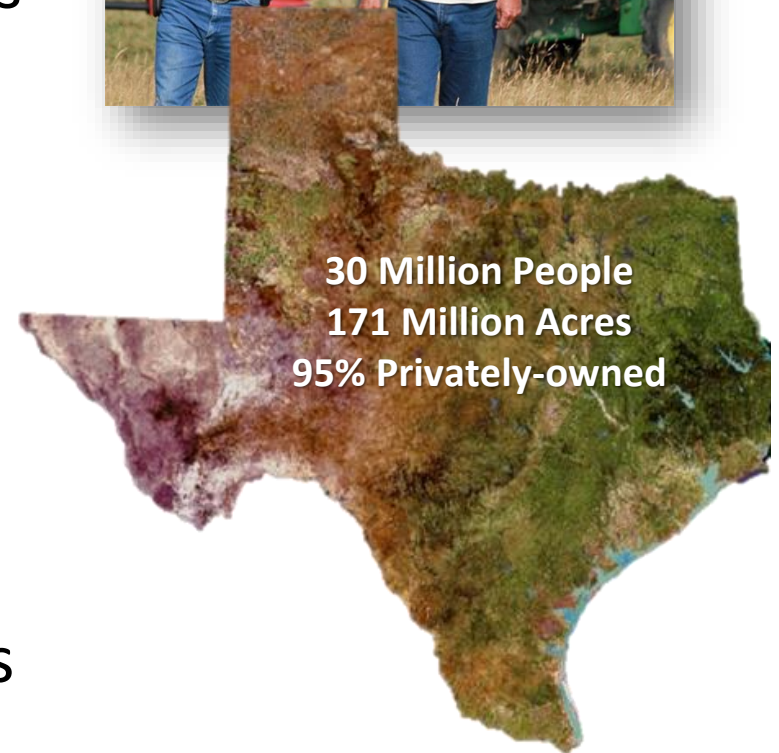


Rural Land Trends and Impacts to Groundwater



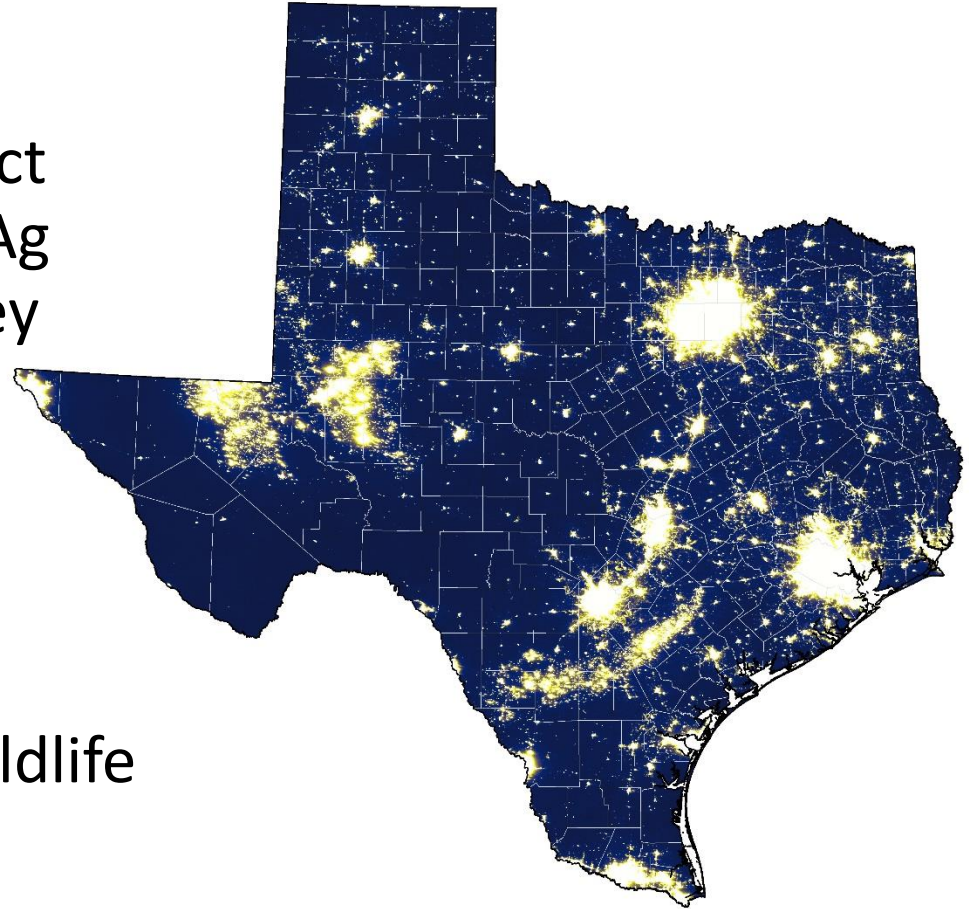
Value of Rural Lands

- Rural working lands –critical role in providing **water**, food, energy, and national security
- *Effective* conservation requires innovative solutions to sustaining private rural working lands.
- Review of data to give a perspective on challenges
 - More people...
 - Less farms and ranches...
 - Changing landowners....
- Opportunities and approaches

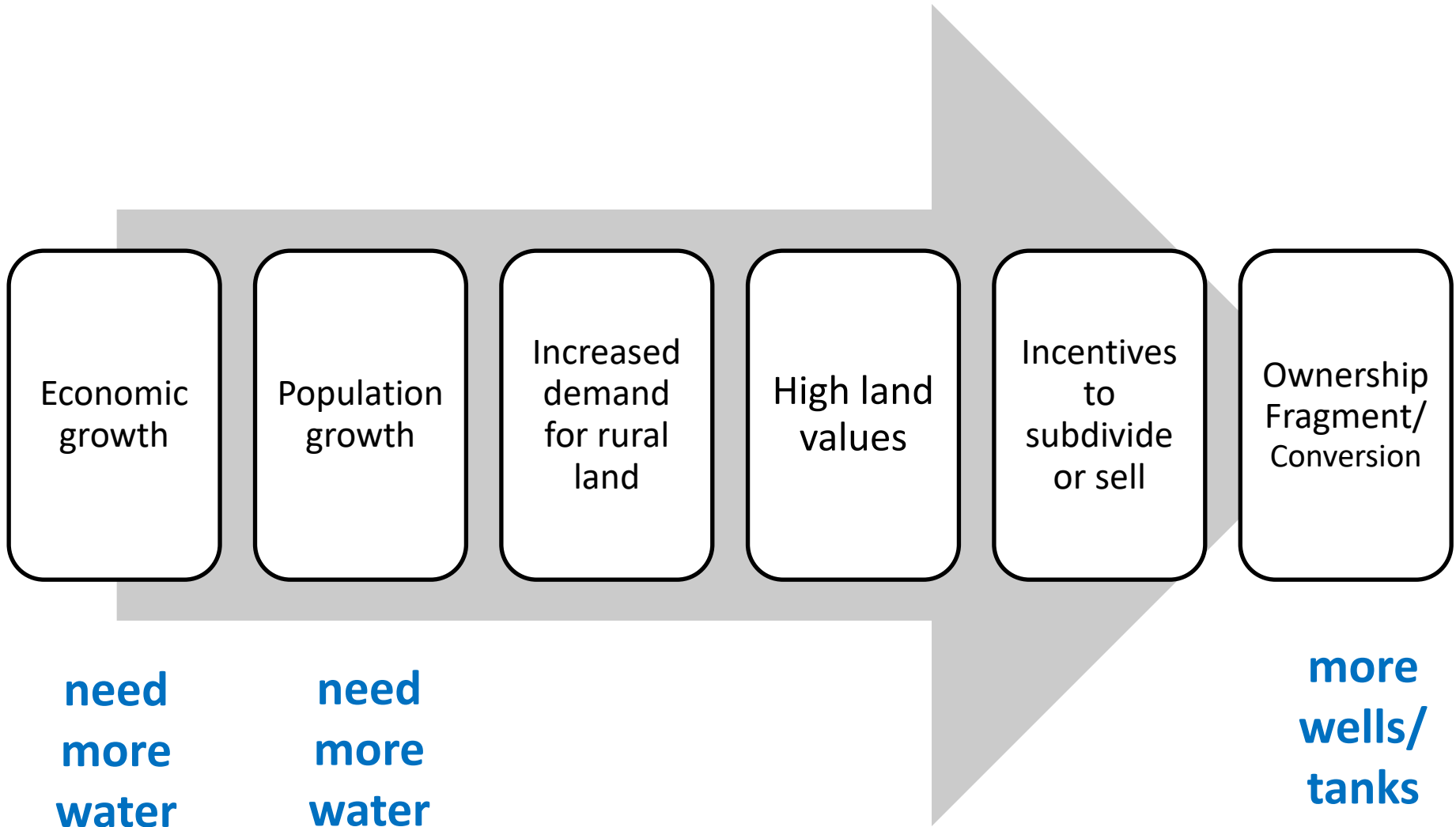


Texas Land Trends

- Trends in land use (1997, 2002, 2007, 2012, 2017)
- Primary datasets used
 - County Appraisal District
 - USDA NASS Census of Ag
 - Texas Landowner Survey
- Relationships among
 - Land Value
 - Land Ownership
 - Land Use
- ***Working Lands*** – farms, ranches, family forests, wildlife (e.g., 1D, 1D1)



Change in Working Lands – *Process*

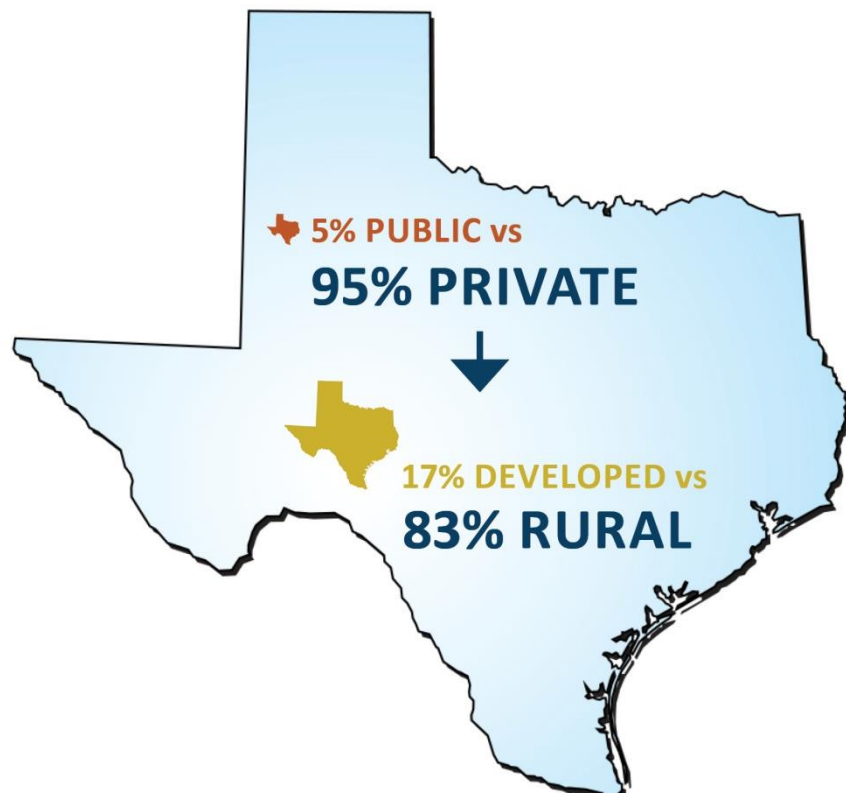


More People....



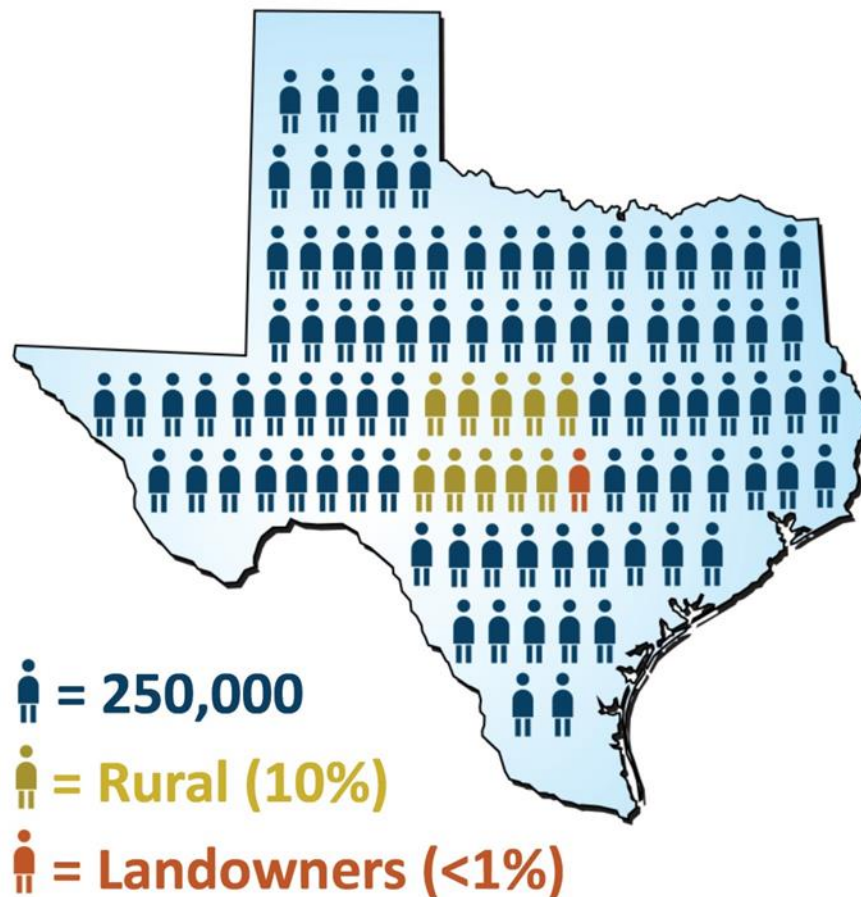
Changing Texas

171 Million Acres...



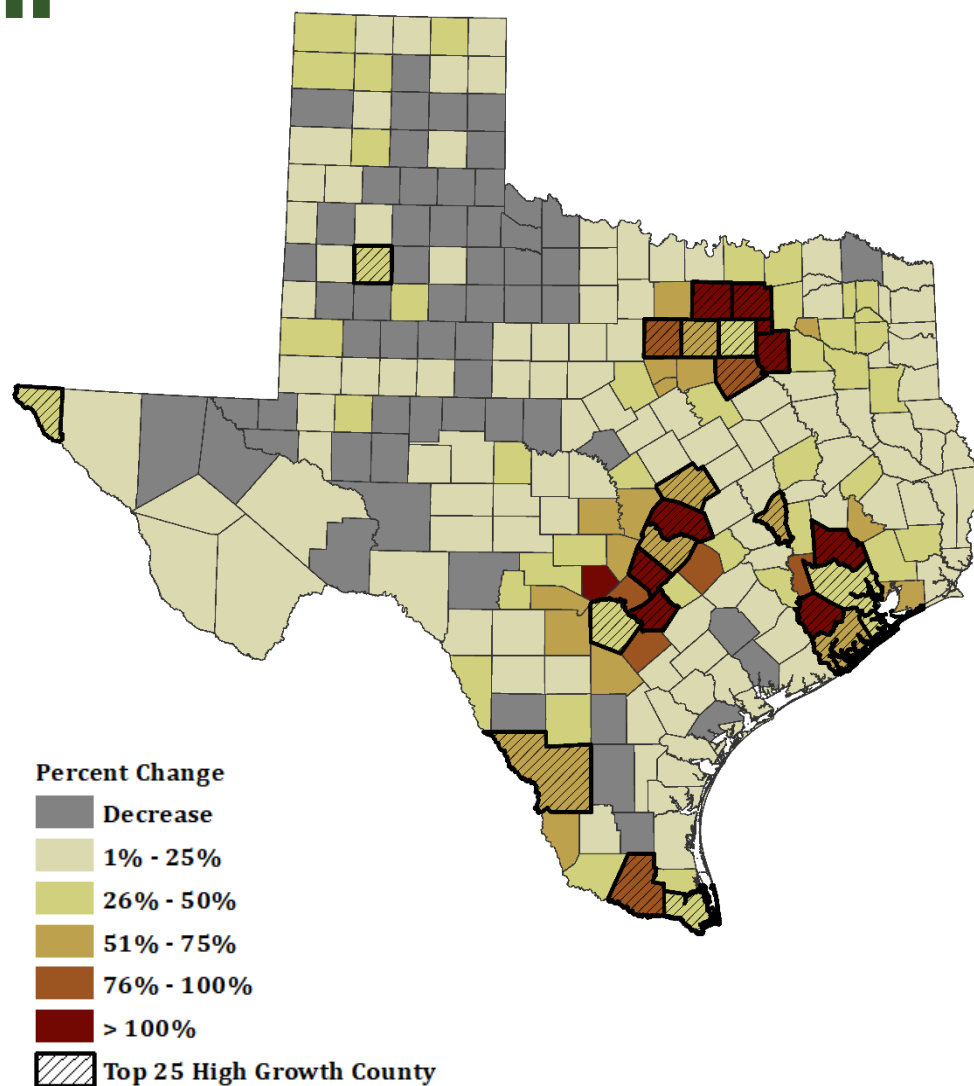
...141 Million Acres
Private Working Lands

Population: 30 Million

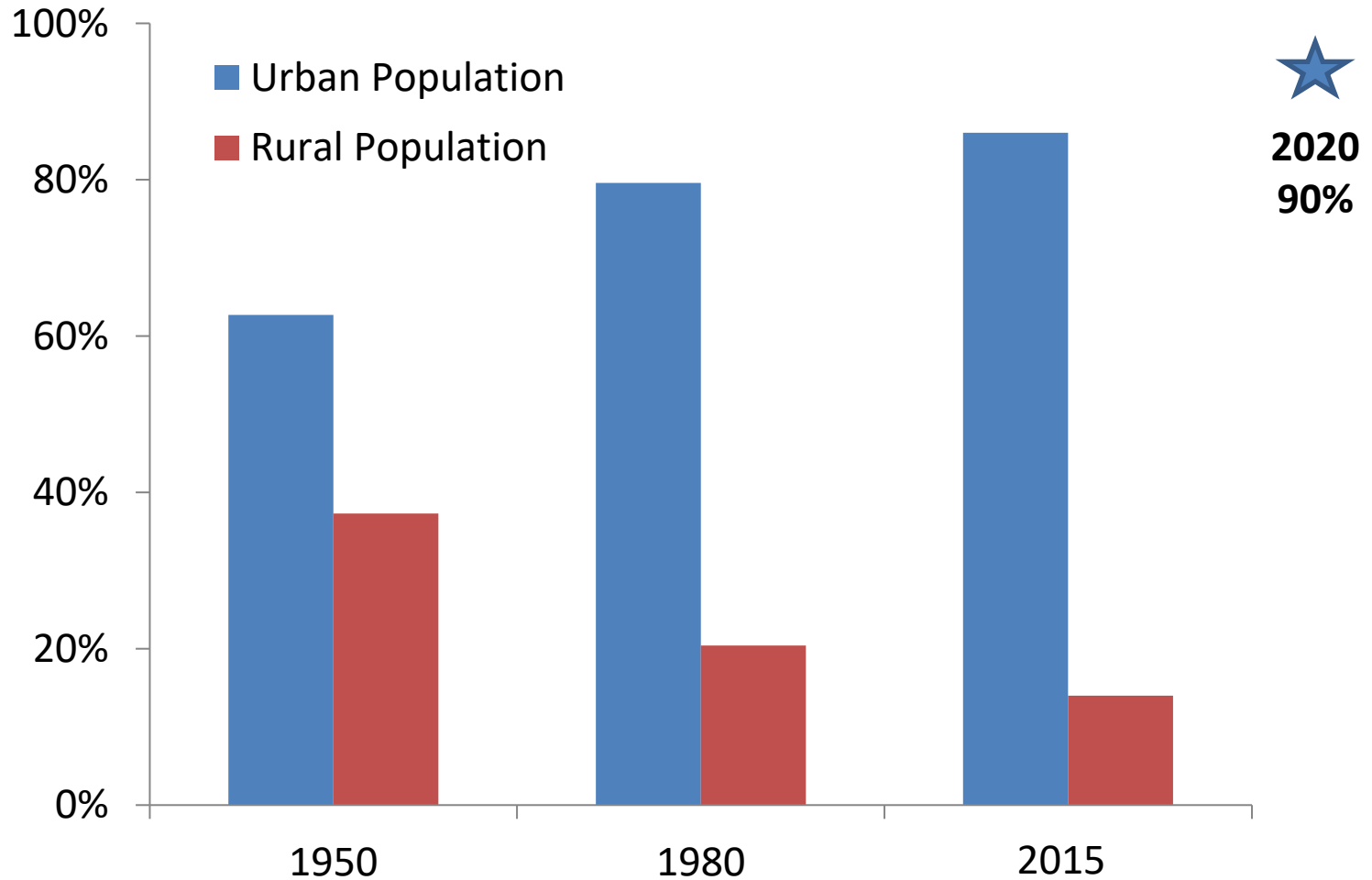


Growing Population

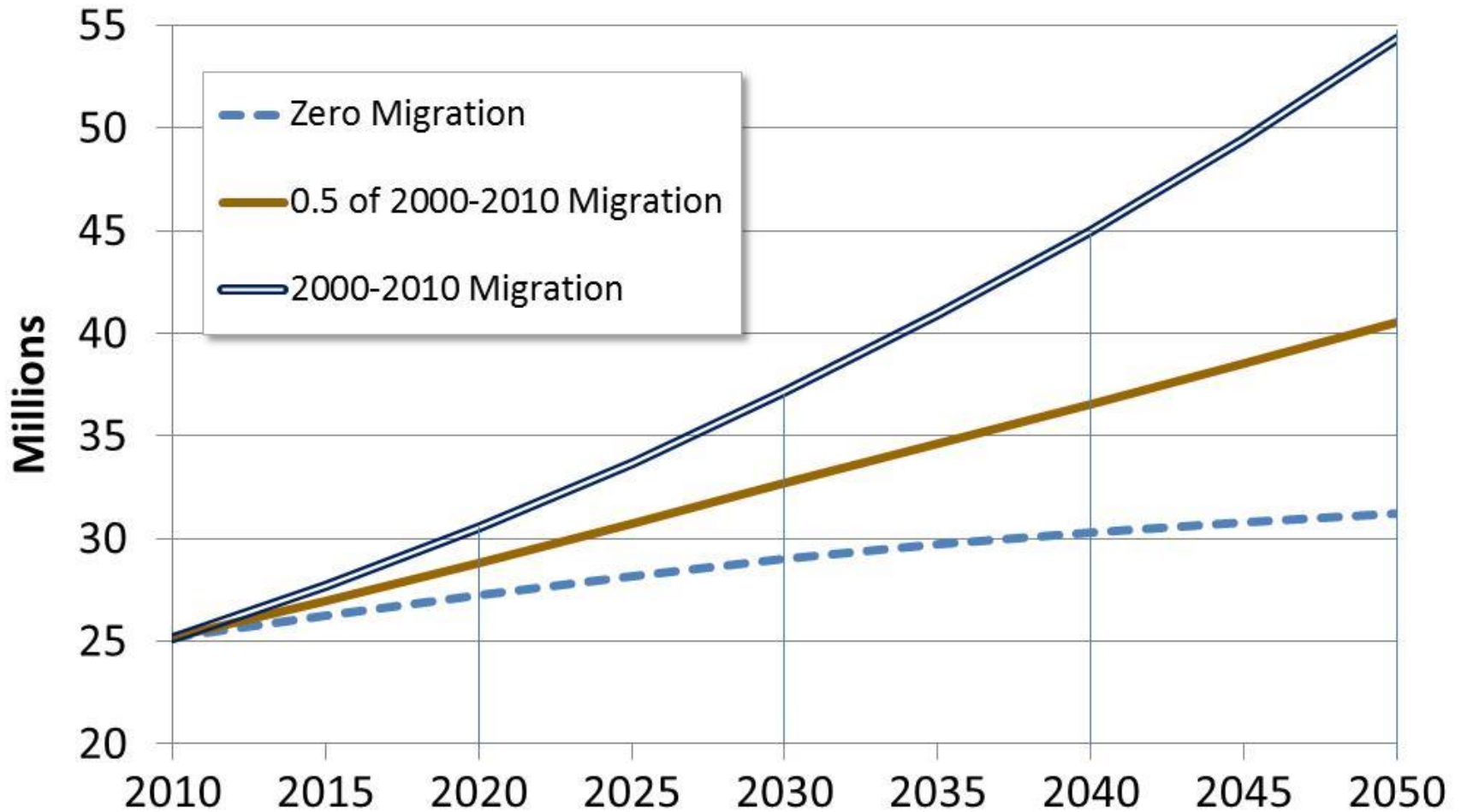
- 1997 – 19 million
- 2020 – 30 million
 - 57% increase
- 7 of the 15 most rapidly growing cities in the nation
- 86% of increase within the 25 highest total population growth counties



Texas Rural and Urban Populations



Texas Projections (2010-2050)



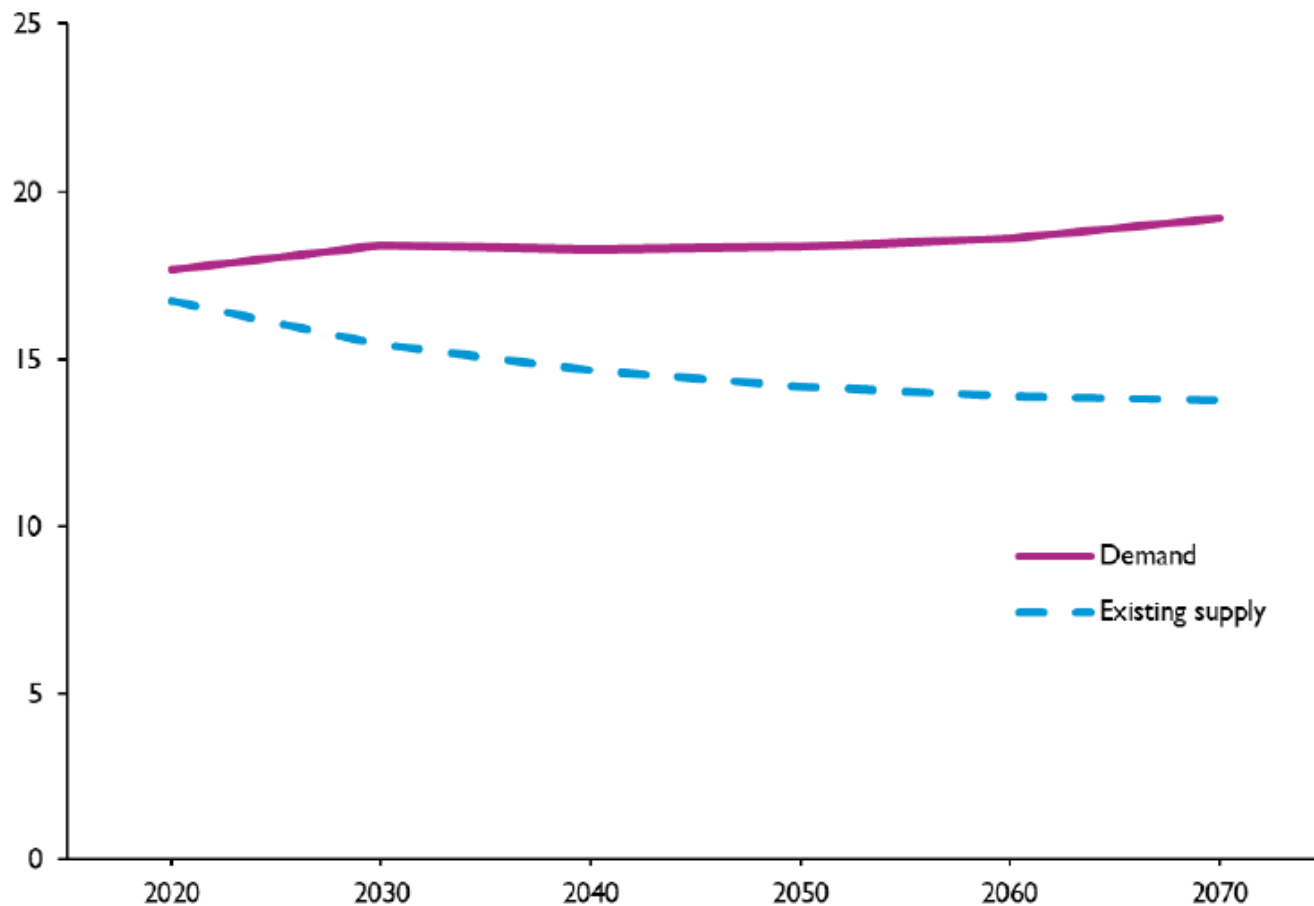
State Demographer



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

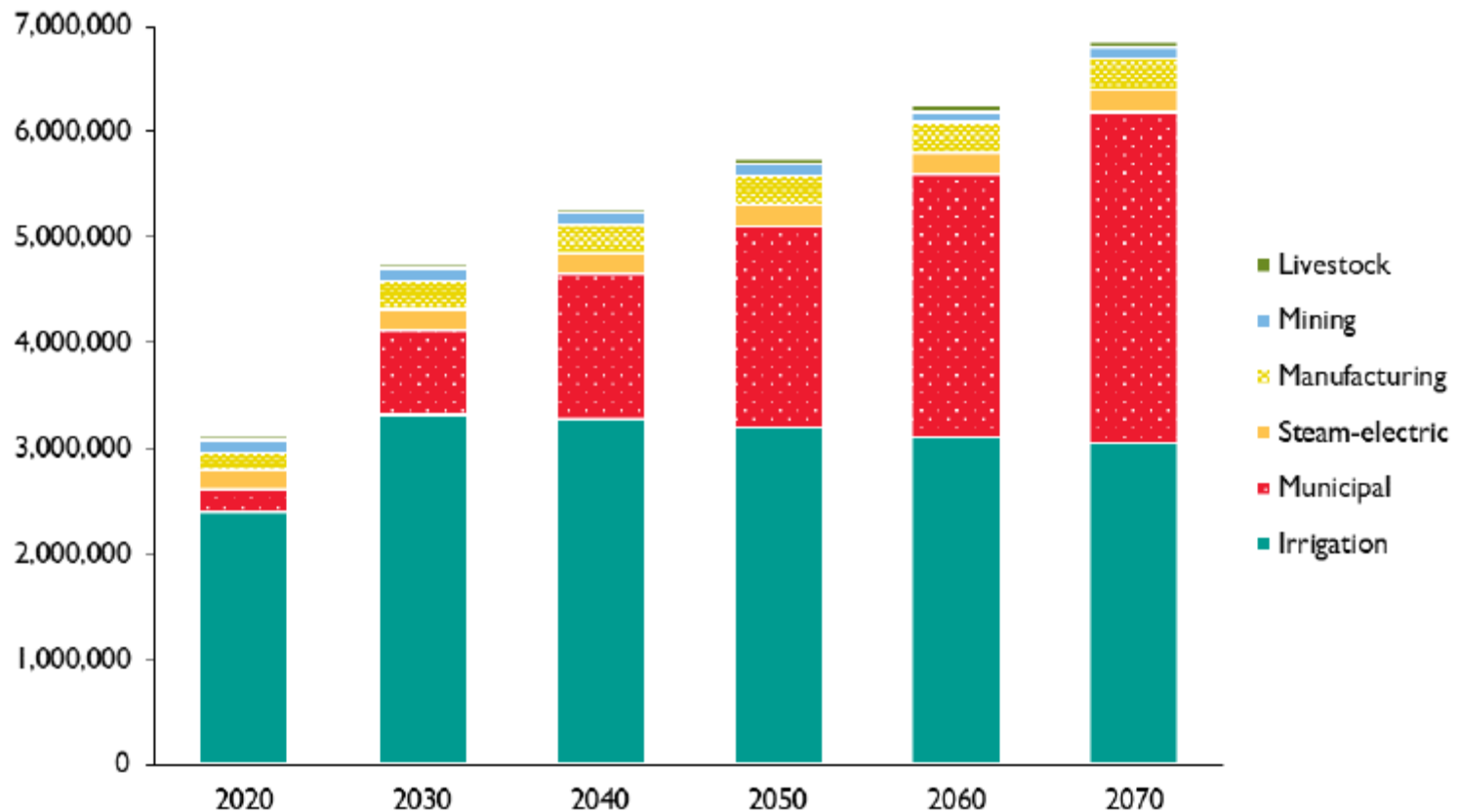
Water Demand and Existing Supply

Figure ES-3. Projected total annual water demand and existing water supply for all sectors in Texas (millions of acre-feet)



Water Needs in 2022 State Water Plan

Figure ES-4. Annual water needs by water use category (acre-feet)



* Water use categories are presented in the order listed in the legend.



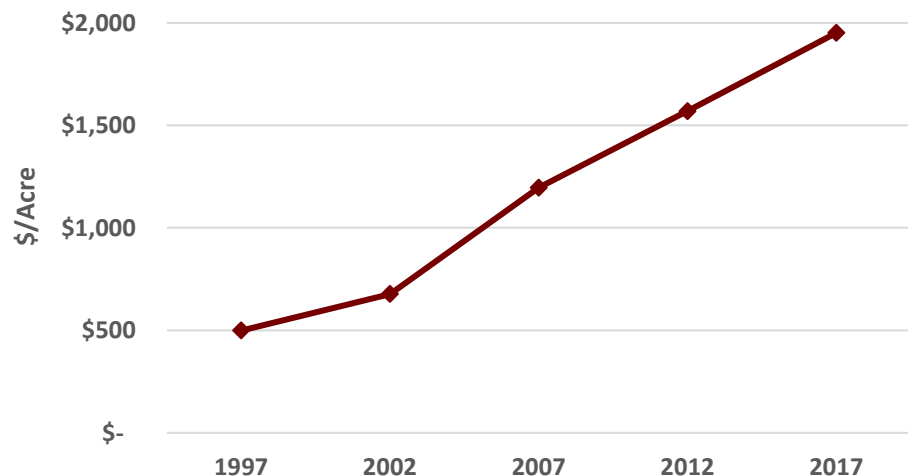
Less Farms and Ranches....



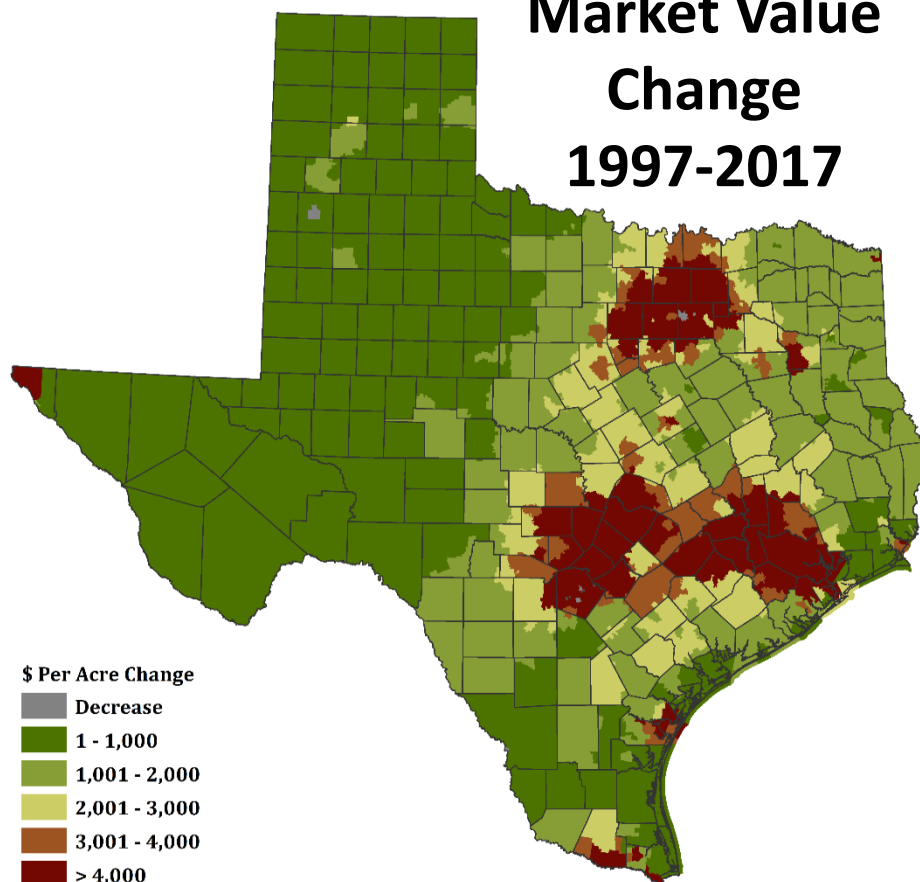
Market Value – *Driver*

- 1997 – \$499/Acre
- 2017 – \$1,951/Acre
- Gain of \$1,452/Acre

Market Value

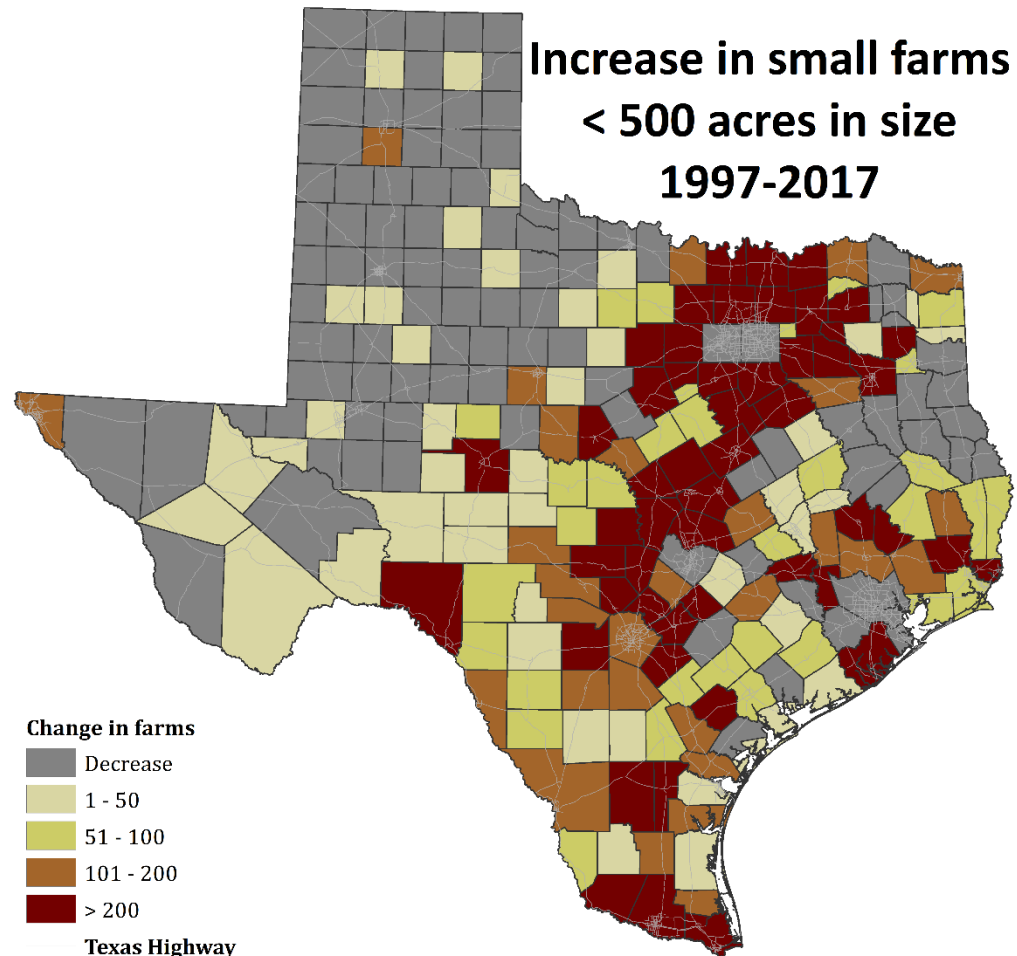


Market Value
Change
1997-2017



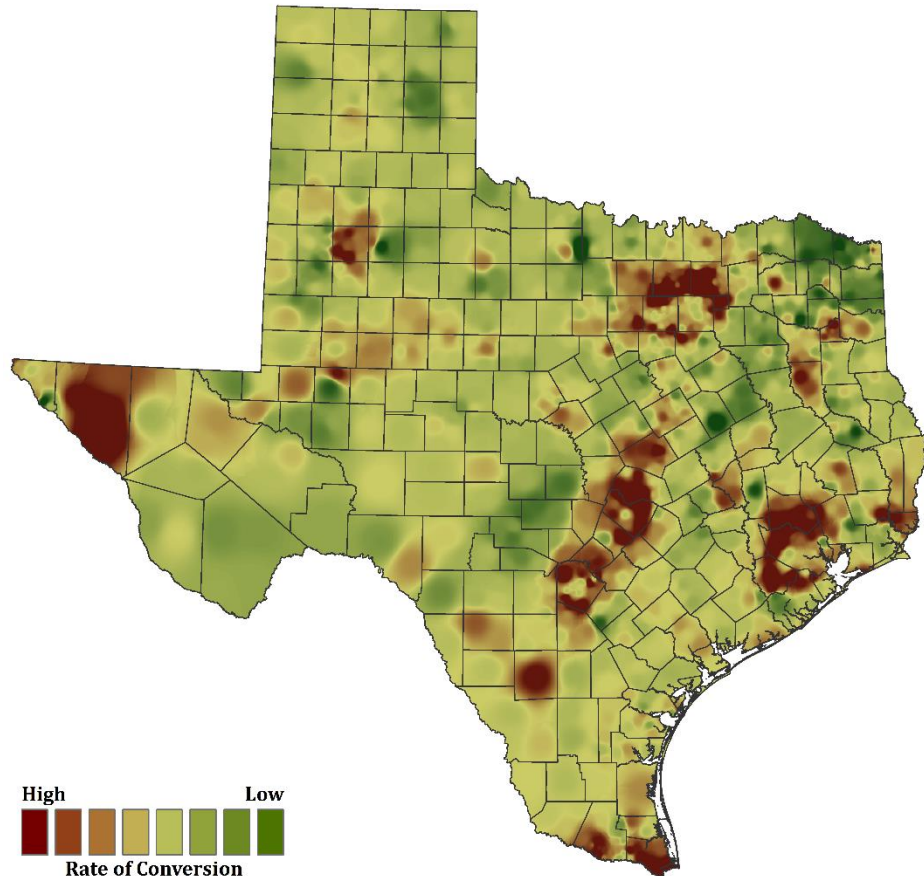
Working Land Loss – *Fragmentation*

- 20,000+ new farms and ranches (1997-2017)
- 6.1M acres impacted

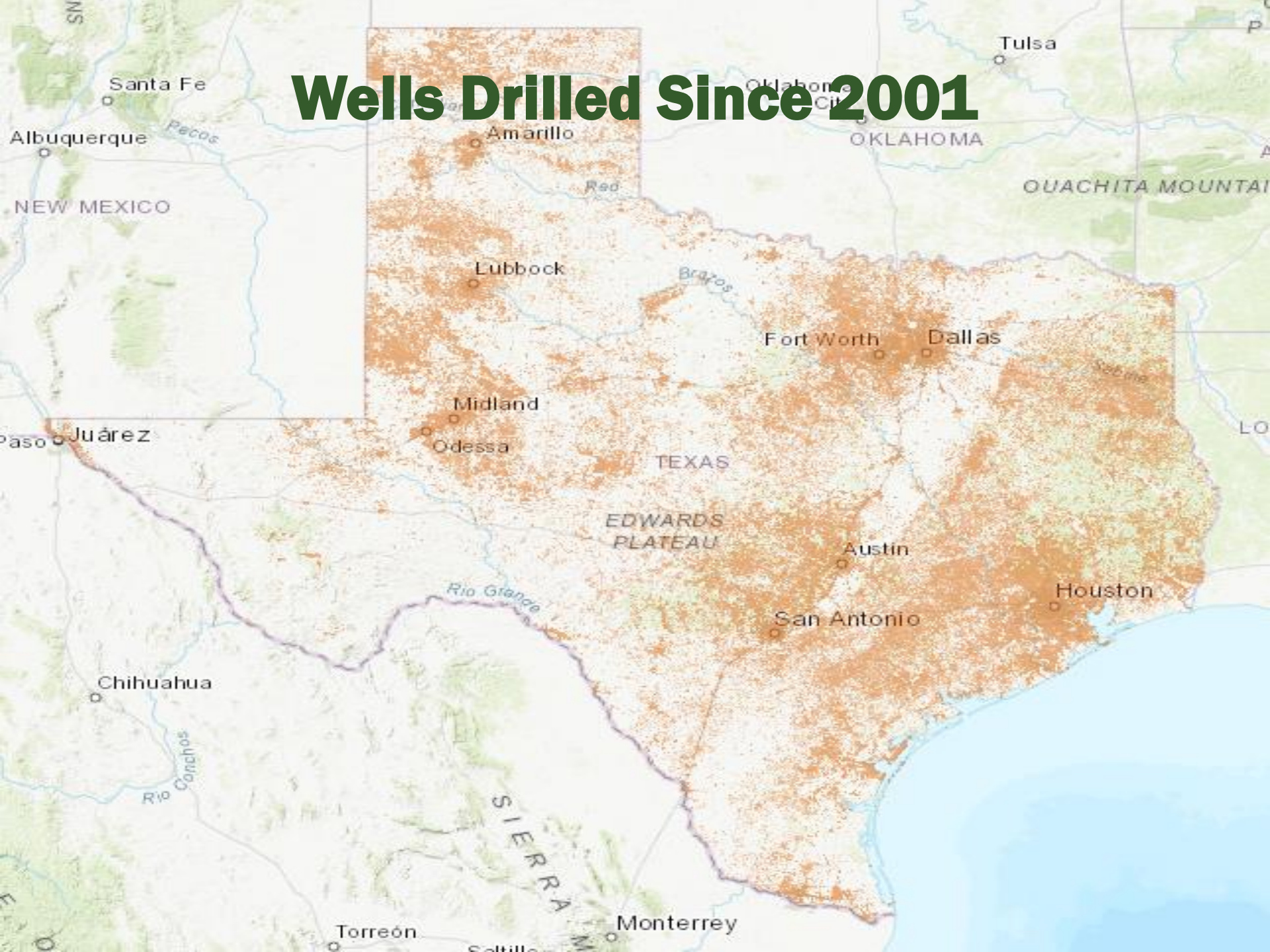


Working Land Loss – Conversion

- 1997 – 143 Million acres
- 2017 – 141 Million acres
- 2022 – Estimates?
- Loss ~2 Million acres



Wells Drilled Since 2001

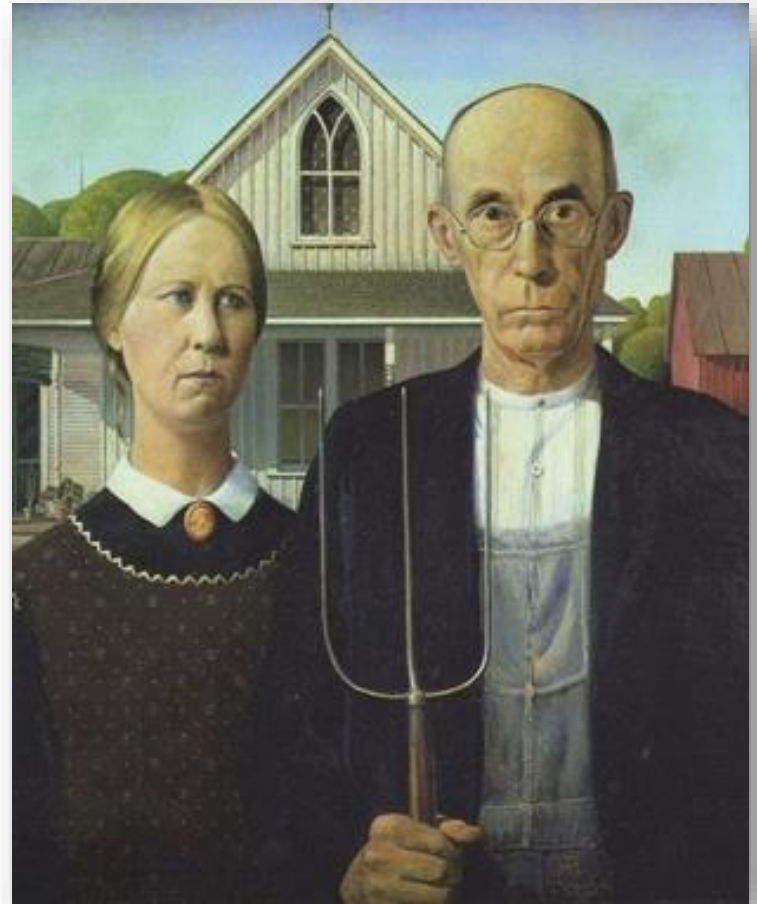


Changing Landowners....



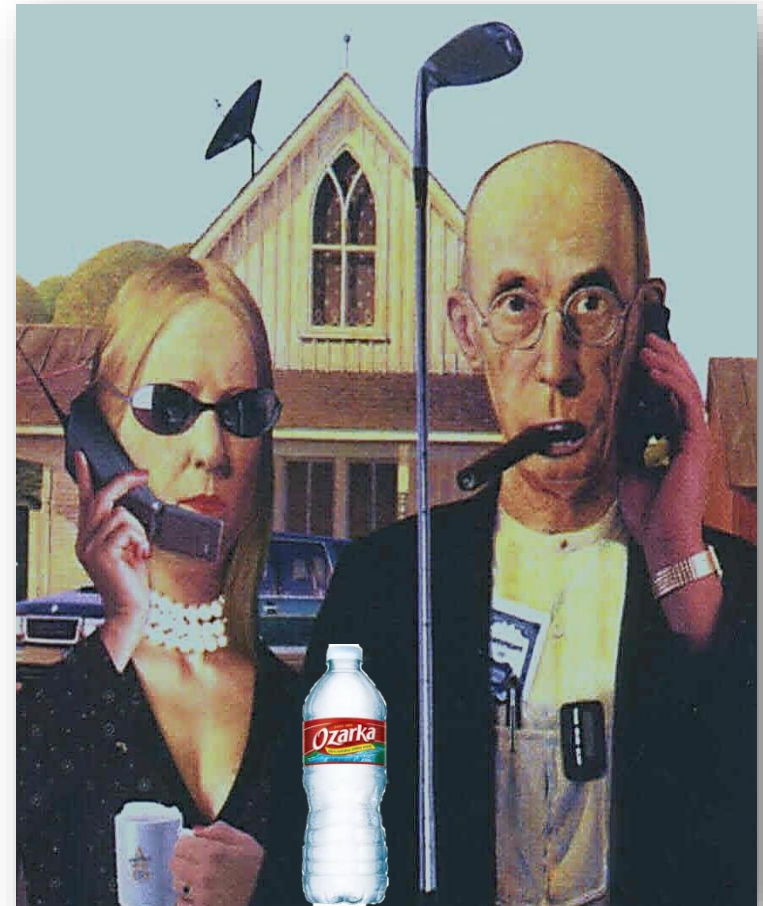
Landowner Demographics

- Average farmer – 57 years old
- Average forest landowner – 65 years old.
- In the next 20 years, U.S. will see the largest intergenerational transfer of rural lands in its history.



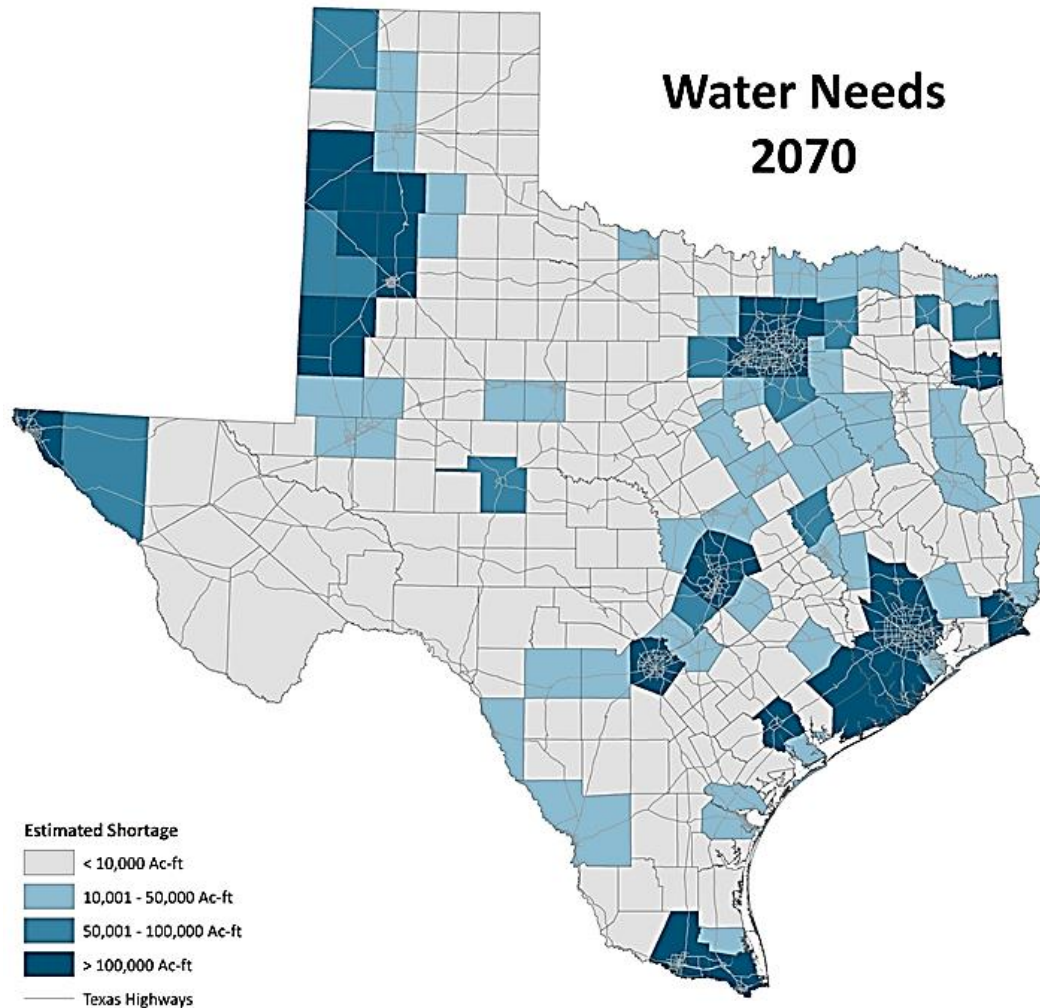
Future Texas Landowner?

- Younger generation less tied to the land.
- Goals and objectives the same? Concerns? **Water?**
 - New Ownership (25%)
Owned <10 years
 - Absentee Ownership (40%)
- Texas Landowner Survey attempts to understand some of these trends.
 - Age, Tie-to-Land, Purpose

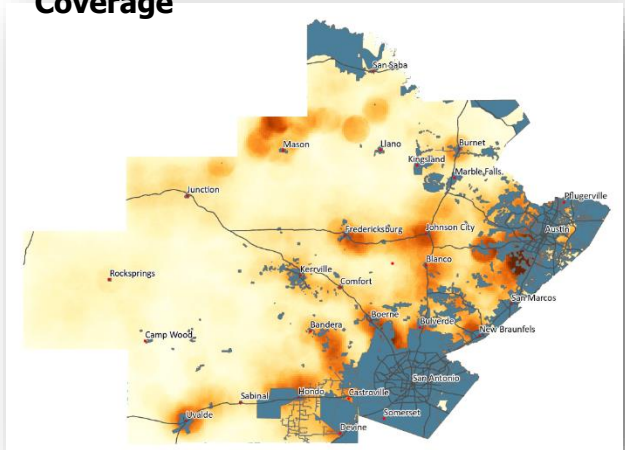


Future Water

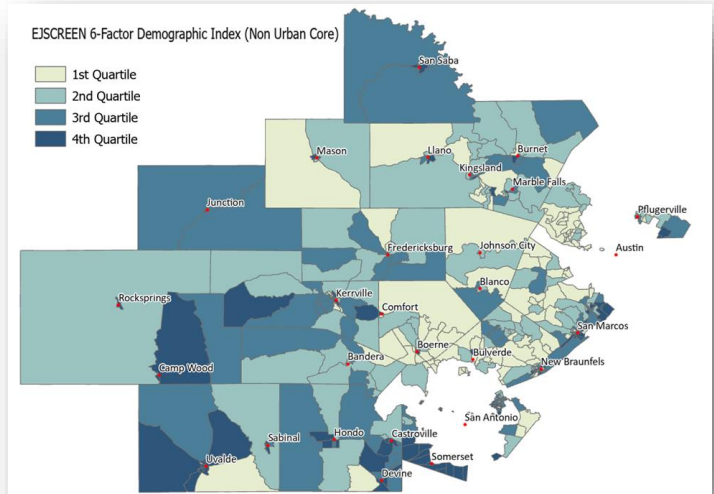
Water Needs 2070



Well Density vs Water System Coverage

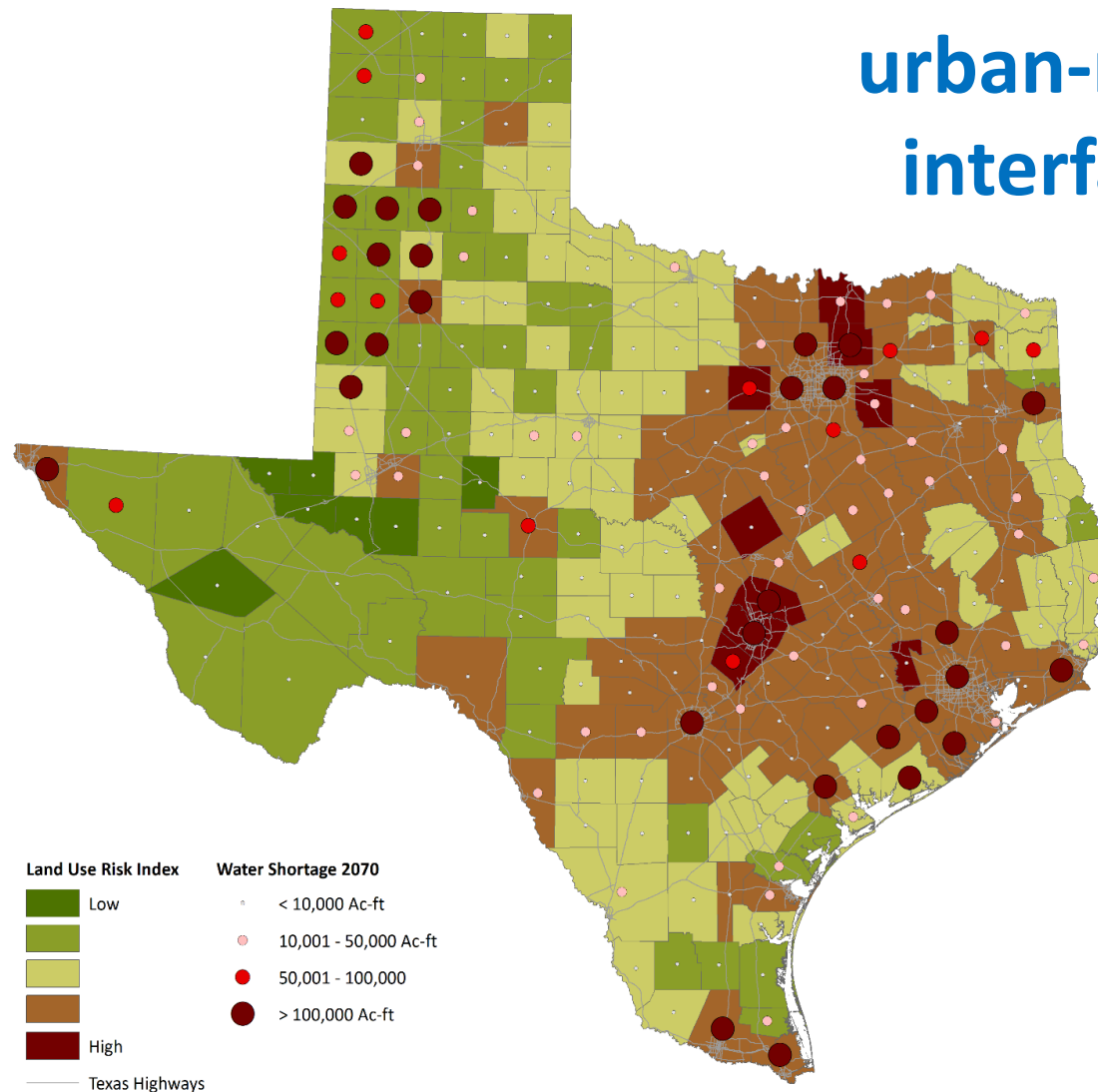


Underserved Communities/Water Equity



Future Fragmentation

urban-rural
interface



Final Thoughts...

- **More People** – Increasing human population.
- **Impacts to Farms and Ranches** – Loss of land infrastructure.
- **Changing Landowner Perspectives** – Largest intergenerational transfer.
- Communicate the *public* benefits of *private lands*...
- All these factors impact our future water supply....

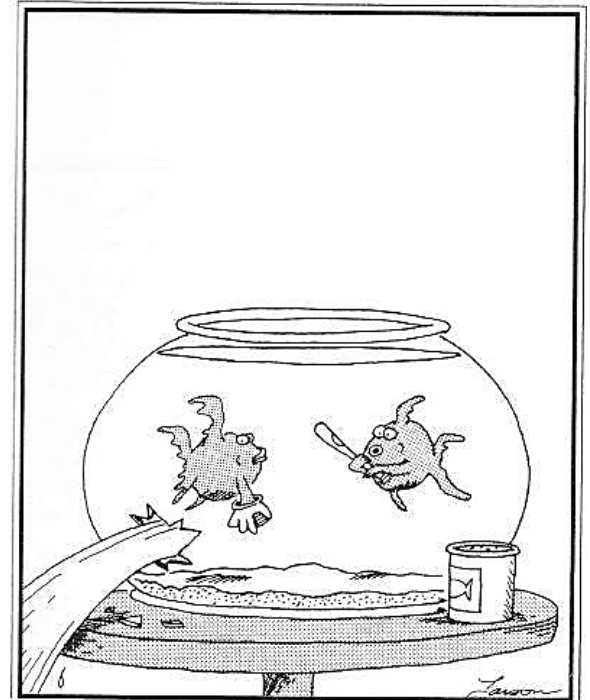


"Now just hold your horses, everyone. ... Let's let it run for a minute or so and see if it gets any colder."



Final Thoughts...

- A Need for More **Water** – More water wells; more export
- **More Fragmentation** – More water wells; more tanks (less surface water, more water wells)
- **Traditional Methods of Permitting Do Not Work at the Urban-Rural Interface**
- **Absentee Owners** – May be more about \$ than conservation
- **Climate Change** – Groundwater expected to pick up the slack



Promoting Private Lands Stewardship through Research, Education, and Policy.

<http://nri.tamu.edu/>

<http://txlandtrends.org/>

Roel R. Lopez roel@tamu.edu

***Inspiring research and leadership that ensures clean,
abundant water for the environment and all humanity.***

<https://www.meadowscenter.txstate.edu/>

Robert E. Mace robertmace@txstate.edu



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

