Regional Water Planning Group Technical Webinar

February 10, 2017

The following presentation is based upon professional research and analysis within the scope of the Texas Water Development Board's statutory responsibilities and priorities but, unless specifically noted, does not necessarily reflect official Board positions or decisions.

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Agenda

1. Timeline of deliverables
2. Draft water demand projection methodologies and criteria for projections adjustment
   A. Irrigation
   B. Manufacturing
   C. Steam-electric power
3. Inclusion of historical reuse and brackish GW in water demand projections

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Timeline of Deliverables

Date	Deliverable
February	Detail list of County-Other water systems
February-May?	Historical reuse and brackish groundwater use (mining and municipal)
June	Irrigation, Livestock, Manufacturing and Steam-Electric Power draft water demand projections
April - July	Historical utility per-person water use
September 1st	Regions submit desired Sub-WUGs
November 15th	Deadline for regions to submit requested changes

Draft Projection Methodologies and Criteria For Projections Adjustment

- Irrigation

- Manufacturing

- Steam-Electric Power

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Methodology Development Process

- December 2015 – Hired CDM Smith
- April 2016 – First draft of CDM Smith report
- Summer 2016 – Initial stakeholder outreach
- August 2016 – Final CDM Smith report
- Fall 2016 – Continued stakeholder outreach
- February 2017 – Finalize methodology
- *June 2017 – Draft projections to RWPGs*
- *November 2017 – Region-requested changes*

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Projection Methodology Goals

Methodologies should:

1. Utilize historical water use data and publically available data

2. Be possible with existing TWDB staff resources

3. Be reproducible at the beginning of each planning cycle

5th Cycle Goal: Get projections to the regions earlier in planning cycle.

Irrigation Projection Methodology

November 2016 Methodology

- Baseline: Average water use over the last 5 years (2010 – 2014), constant between 2020 and 2070.

- If projected groundwater demands > total groundwater availability, then projections will decline after 2030 or later.

- Will include reuse and brackish groundwater when appropriate

Irrigation Projection Methodology

Feedback, December 2016

- Basing demands on 5-year average is problematic and may under estimate demands

- Method and trend of constrained demand is appropriate

- More detailed study should be done

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Irrigation Projection Methodology

February 2017 Methodology

- Baseline: Average water use over the last 5 years (2010 – 2014), constant between 2020 and 2070.

- If projected groundwater demands > total groundwater availability, then projections will decline after 2030 or later.

- Will include reuse and brackish groundwater when appropriate

Irrigation Change Criteria

1. Other water use estimates are more accurate

2. Recent trends better than groundwater-constrained projections

3. Baseline projections more likely than groundwater-constrained projections

4. Local studies are more accurate than draft projections

Manufacturing Projection Methodology

November 2016 Methodology

- 2020 projections – average of recent water use (2010-2014)
  - Include reuse and brackish groundwater
  - additional data collection
- 2030 projections – 2020 demand increased by projected employment growth
- 2030 – 2070 projections held constant

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Manufacturing Projection Methodology

Feedback December 2016

- Basing demands on 5-year average is problematic and may under estimate demands

- Holding demand constant after 2030 is problematic for various reasons

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Manufacturing Projection Methodology

February 2017 Methodology

- 2020 projections – highest of recent water use (2010-2014)

- Include reuse (and brackish groundwater), plus additional data collection

- 2030 projections – 2020 demand increased by projected employment growth

- 2030 – 2070 projections held constant

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Why Constant Demands After 2030?

1. 3 Goals of projection methodologies
2. Historical Trends: Texas & Nation
   - Efficiency
   - Industrial Changes
3. Long-term manufacturing output ≠ water use
4. Long term planning assumes continued efficiency

Why Constant Demands After 2030?

Statewide Manufacturing Water Use and Demand Projections
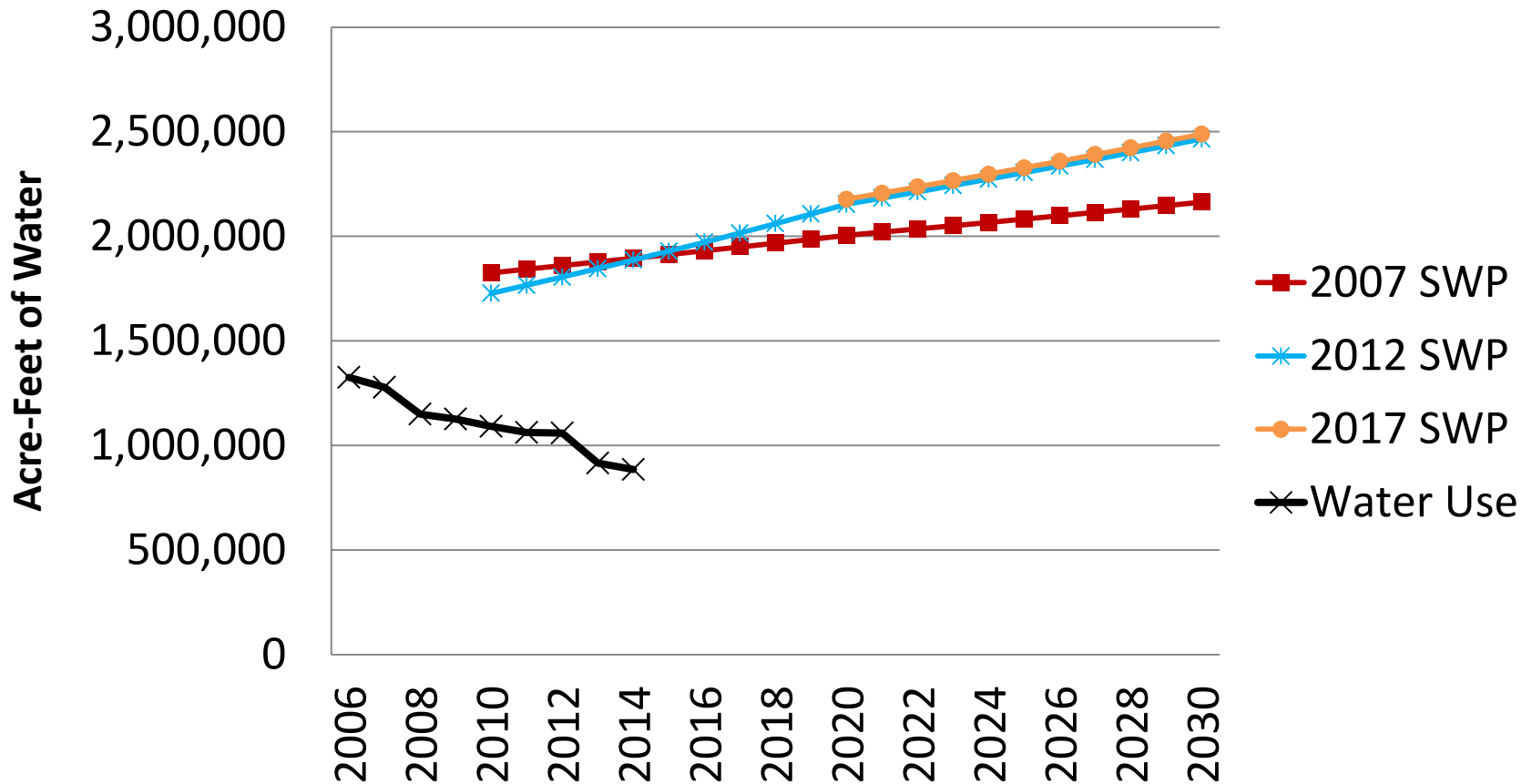
Why Constant Demands After 2030?
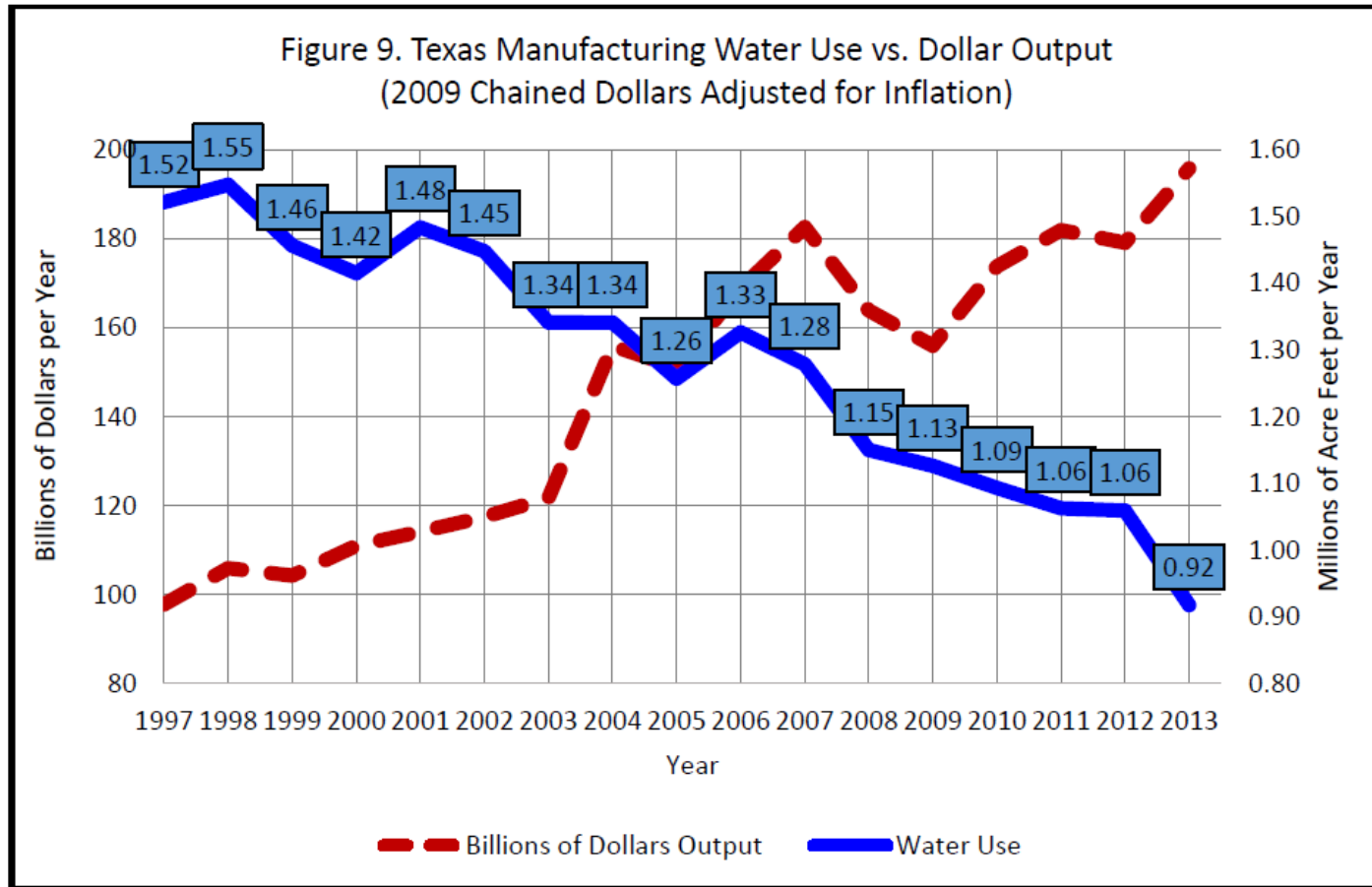
Figure 9. Texas Manufacturing Water Use vs. Dollar Output (2009 Chained Dollars Adjusted for Inflation)

Why Constant Demands After 2030?

Long-term assumption of efficiency:
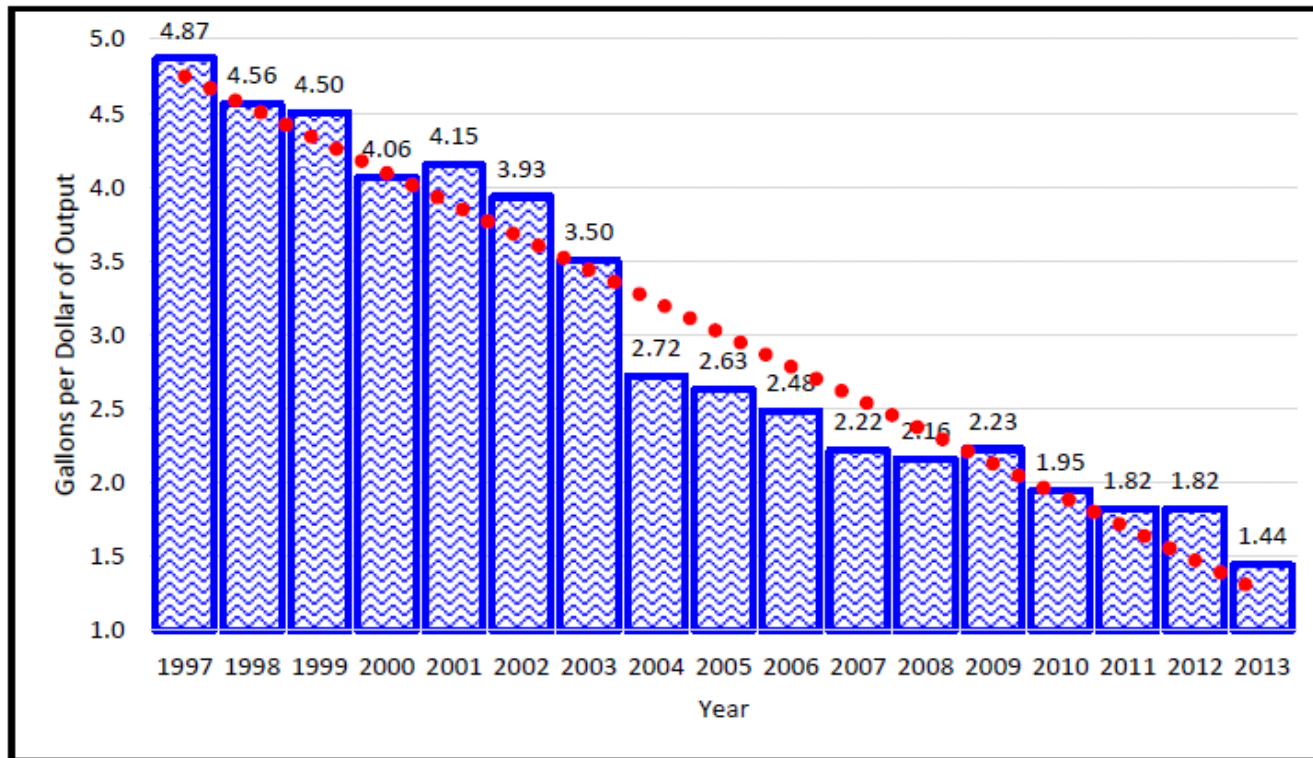
Figure 10. Gallons of Water per Dollar of Output for Manufacturing in Texas (2009 Chained Dollars Adjusted for Inflation)

Manufacturing Change Criteria

1. New or existing facility is not in TWDB data

2. Facility has recently closed

3. Planned construction of a facility

4. Documentation to support alternative long-term planning projections

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Steam-Electric Power Projection Methodology

November 2016 Methodology

- 2020 projections
  - Average of recent water use (2010-2014)
  - Water use of recent constructions and announced retirements
- Include reuse and brackish groundwater
- Increase 2020 projections by a standard growth rate based on fuel type

Steam-Electric Power Projection Methodology

Feedback, December 2016

- Basing demands on 5-year average is problematic and may under estimate demands

- Trend projections methodology is over-simplified and flawed

- Suggest coordinating with power generation companies

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Steam-Electric Power Projection Methodology

February 2017 Methodology

- 2020 projections
  - Highest of recent water use (2010-2014)
  - Water use of near-term additions and retirements
  - Include reuse and brackish groundwater

- 2020 – 2070 projections held constant

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Why Constant Demands After 2020?

1. 3 Goals of projection methodologies
2. Long-term unknowns:
   - Electricity demand
   - Solar/Wind/Dry-Cooling
   - Fuel type
   - Cooling type
   - Generation type
   - Efficiency
   - Carbon capture and environmental regulations

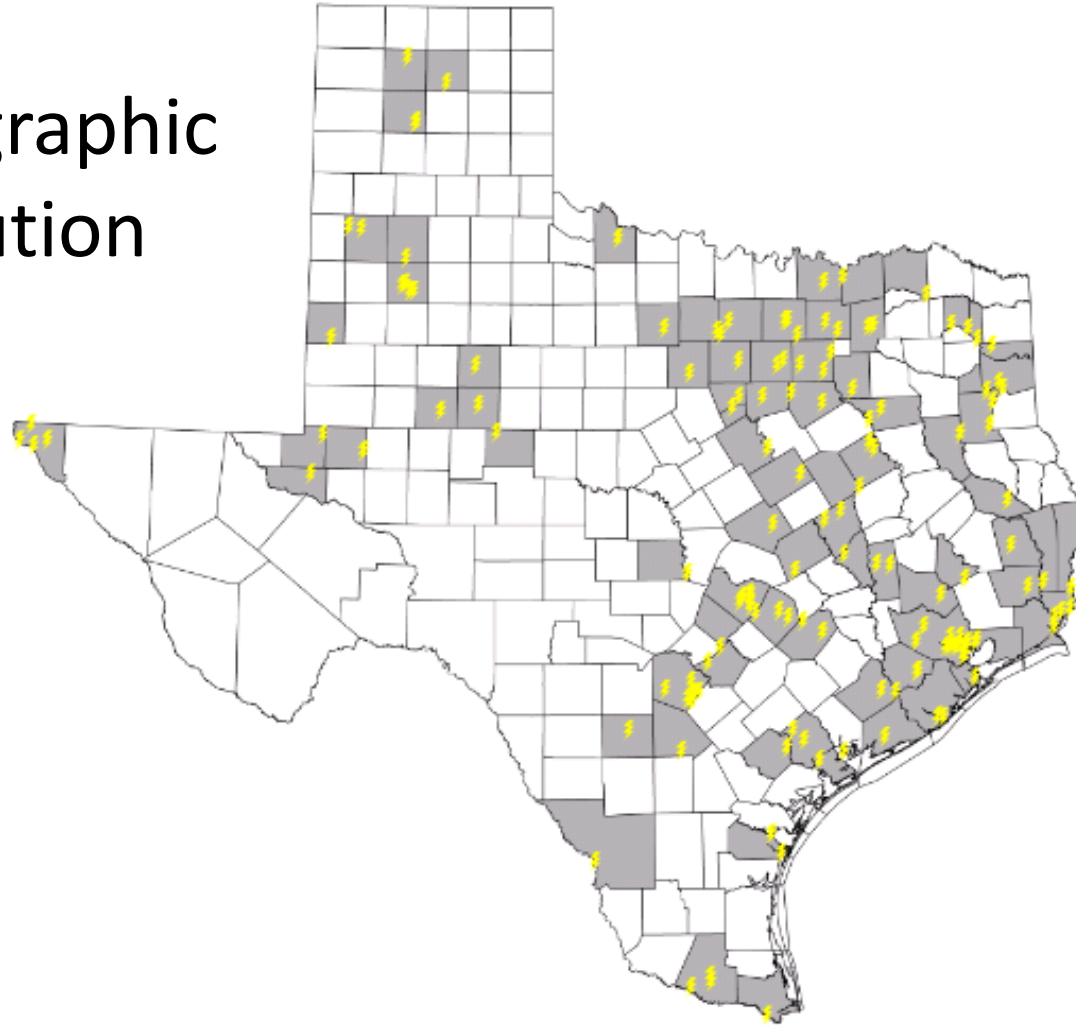Texas Water
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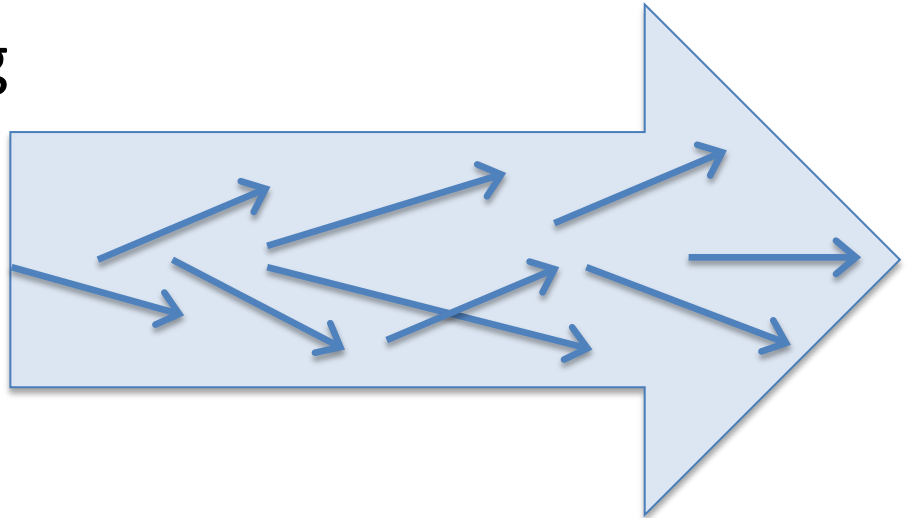
Why Constant Demands After 2020?

3. Characteristics of Facility Water Use
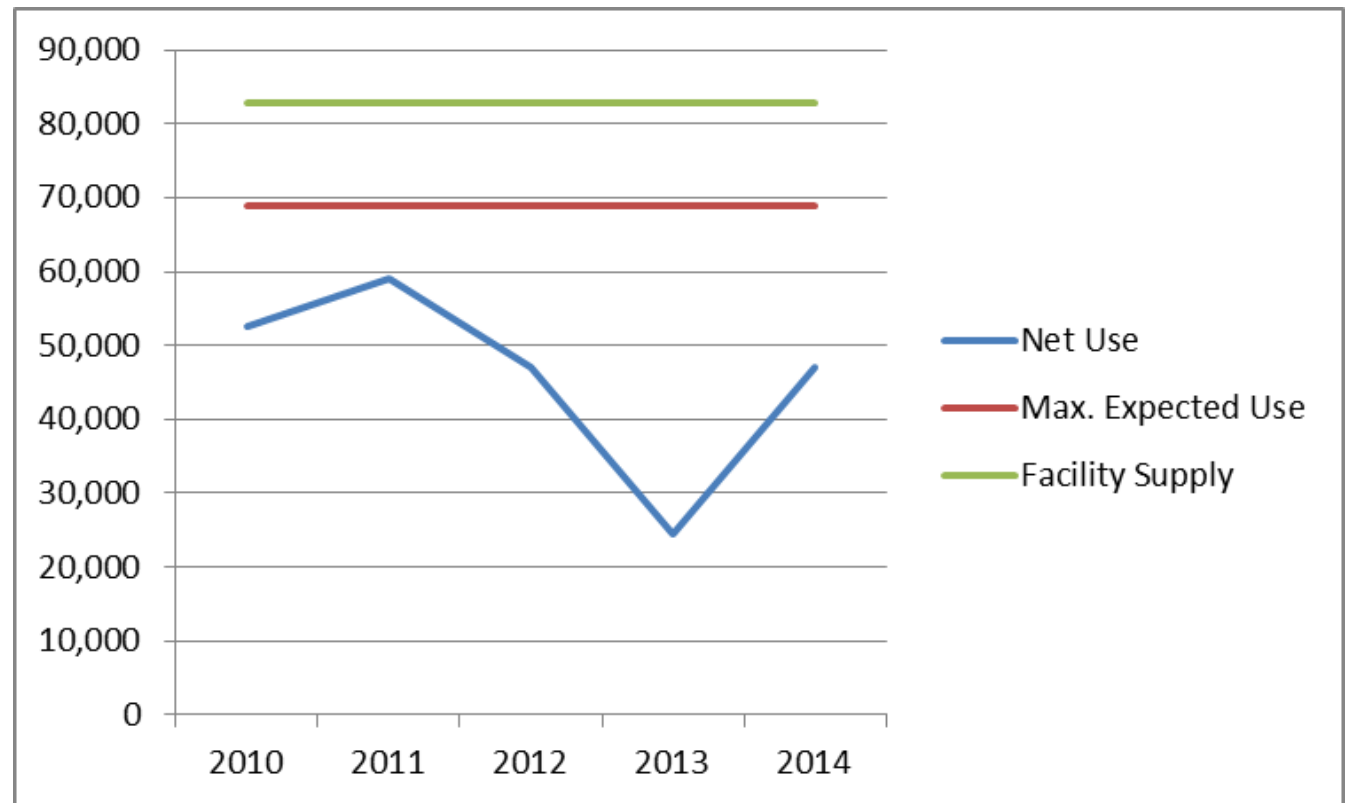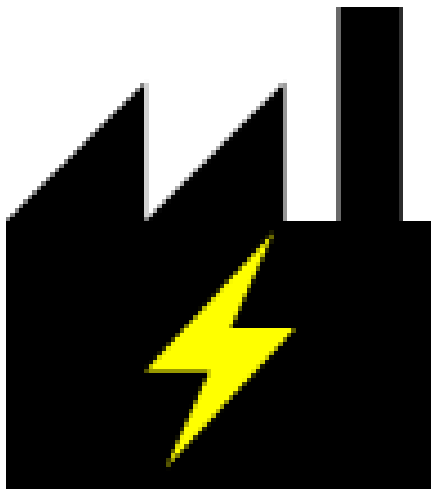
Why Constant Demands After 2020?

4. Geographic Distribution

Steam-Electric Power Change Criteria

1. A facility is not included in draft projections

2. Local information regarding facility construction or retirement

3. Documentation to support a long-term water demand of a facility or county that is different that TWDB draft projections

4. *Evidence that an existing facility experienced its dry-year water use beyond 5 years, but not more that 10 years*

Reuse in Water Use Estimates and Demand Projections

- Irrigation
  - In draft projections
  - 2014 estimate ≈ 56,600 acre-feet
- Livestock
  - Per change request
- Manufacturing
  - In draft projections
  - 2009-2014 average ≈ 21,900 acre-feet
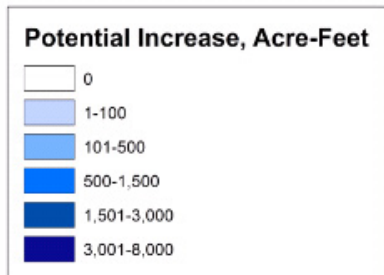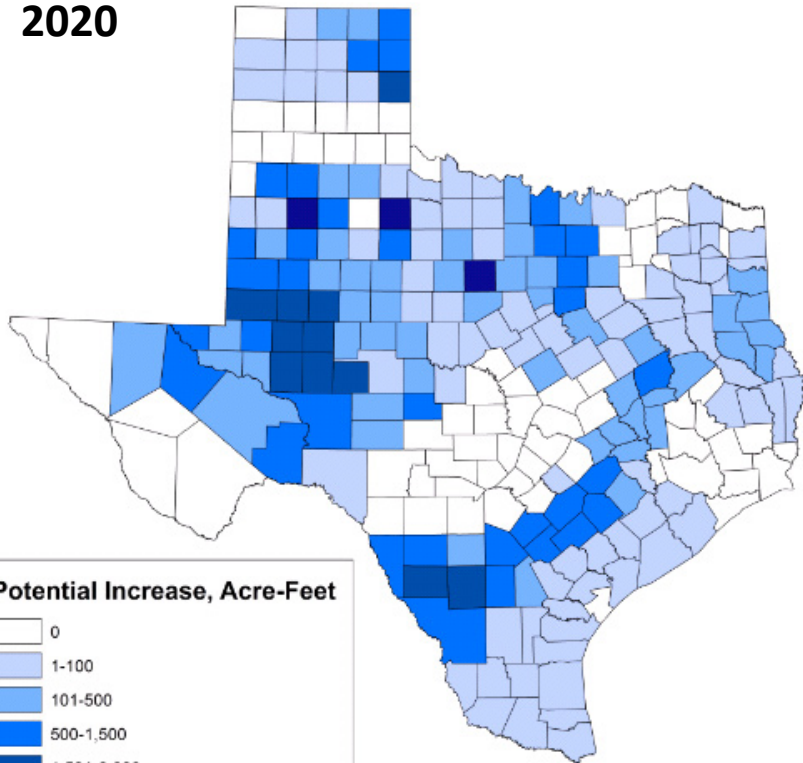
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Reuse in Water Use Estimates and Demand Projections

- Municipal
  - Per change request
  - 2014 reported reuse ≈ 159,000 acre-feet
- Mining
  - Per change request
- Steam-Electric Power
  - In draft projections
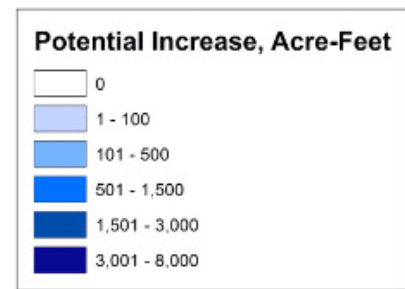 - 2009-2014 average ≈ 31,000 acre-feet

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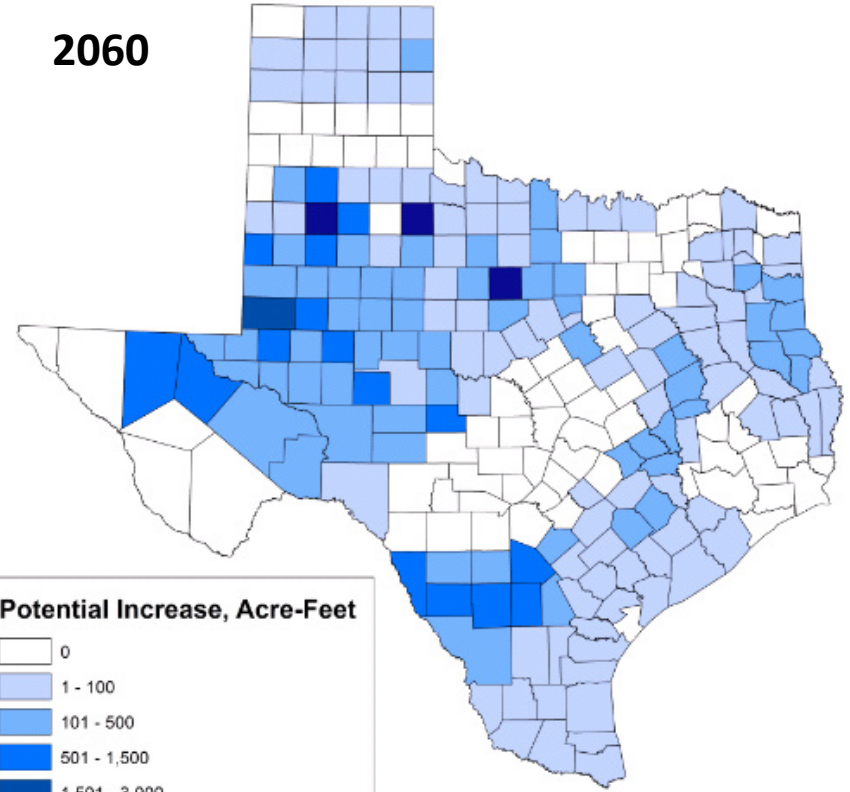# Reuse & Brackish Groundwater Potential Increase In Mining Demands

Thanks For Attending

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