

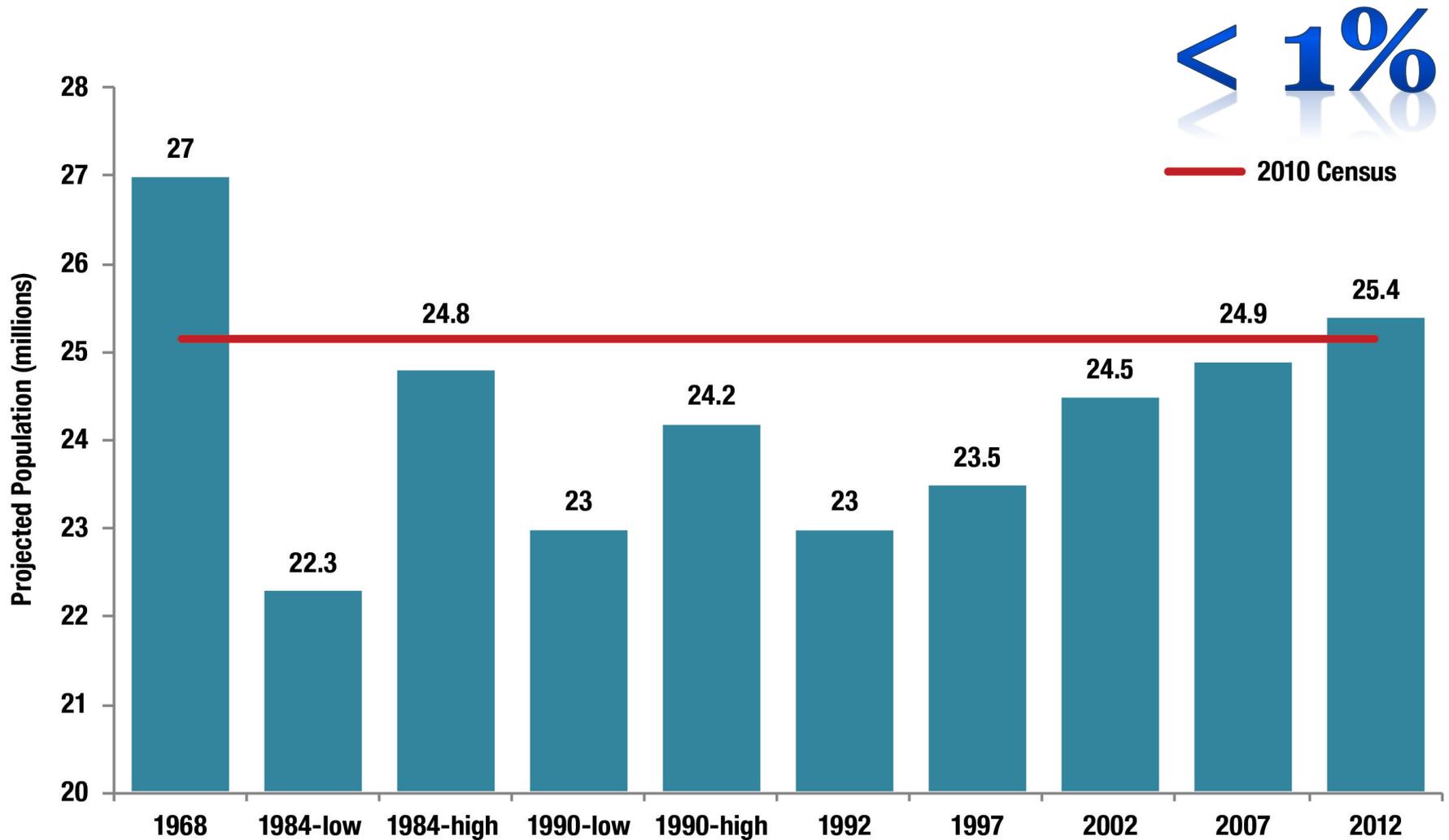
Population and Water Demand Projections

2016 Regional Water Plans &
2017 State Water Plan



1. 2010 Population
2. Population Projections, County
3. Population Projections, Water Use Group Entity
4. Municipal Water Demand Projections
5. Adjustments To Projections
6. Data Available To Planning Groups

1) 2010 POPULATION



*In some of the past water plans, both a high and low projection series was analyzed.

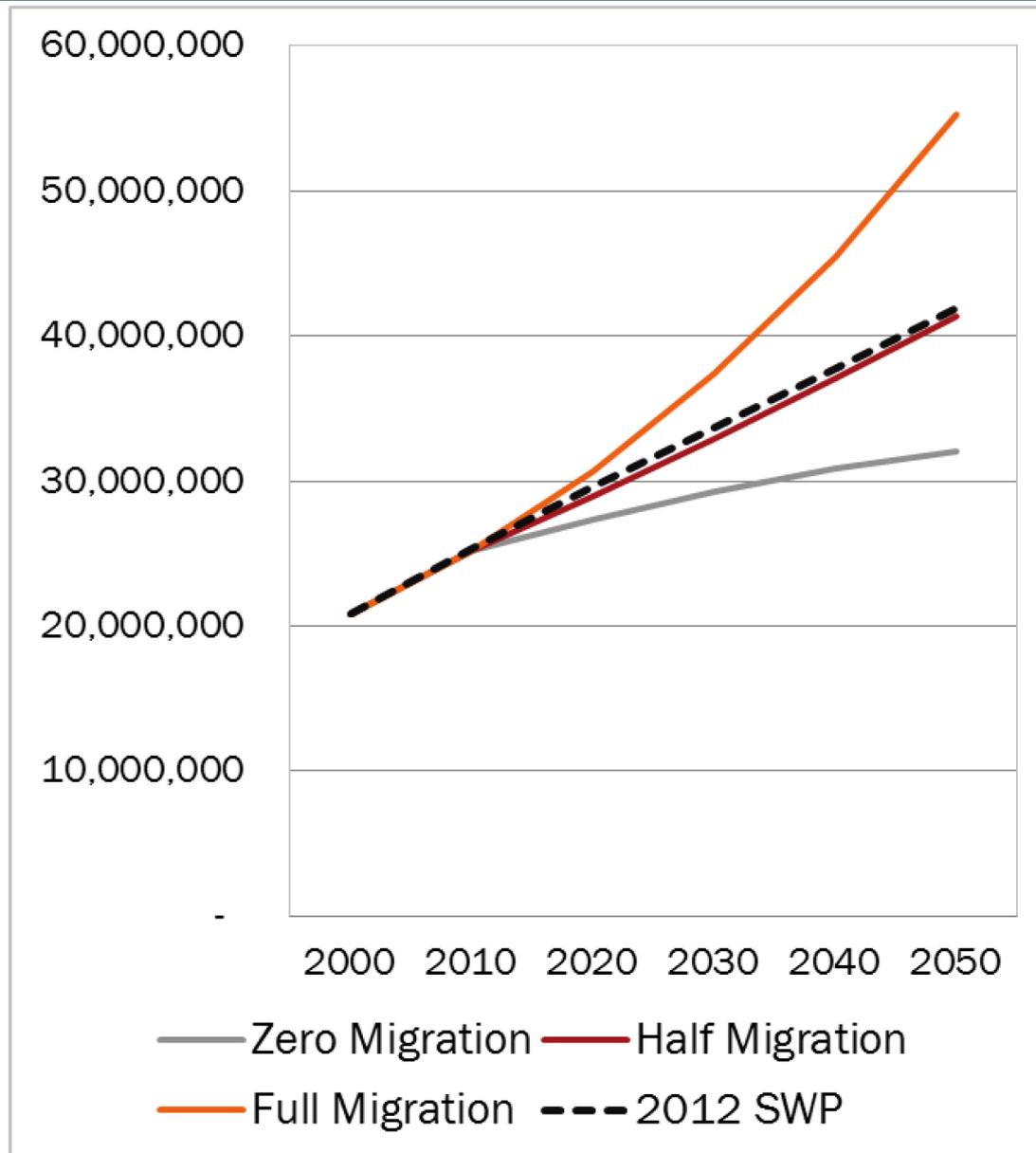
2) POPULATION PROJECTIONS, COUNTY

- County projections developed by the Texas State Data Center/Office of the State Demographer
- Projections generated using Cohort-Component Model:
 - ❑ A cohort is defined by the combination of age, gender and racial/ethnic group.
 - ❑ Components of change: Births, deaths, migration
 - ❑ $\text{Future population} = \text{base population} + \text{natural changes (births and deaths)} + \text{net migration (positive or negative)}$

Three Projection Scenarios:

- Natural Increase** - assumes no migration, all change due to natural increase or decrease.
- Half-Migration** - assumes migration by population cohort at half the rate estimated to have occurred between 2000 and 2010.
- Full Migration** - assumes migration by population cohort at the same rate estimated to have occurred between 2000 and 2010.

MIGRATION SCENARIOS



State Data Center

- Cohort-Survival Method & 3 Migration Scenarios
- Project to 2050
- County Projections

Regional/State Water Plans

- Drafts based on SDC Projections
- Project to 2070
- Sub-County Projections
- Project county, basin & region portions
- Includes other agencies & planning groups

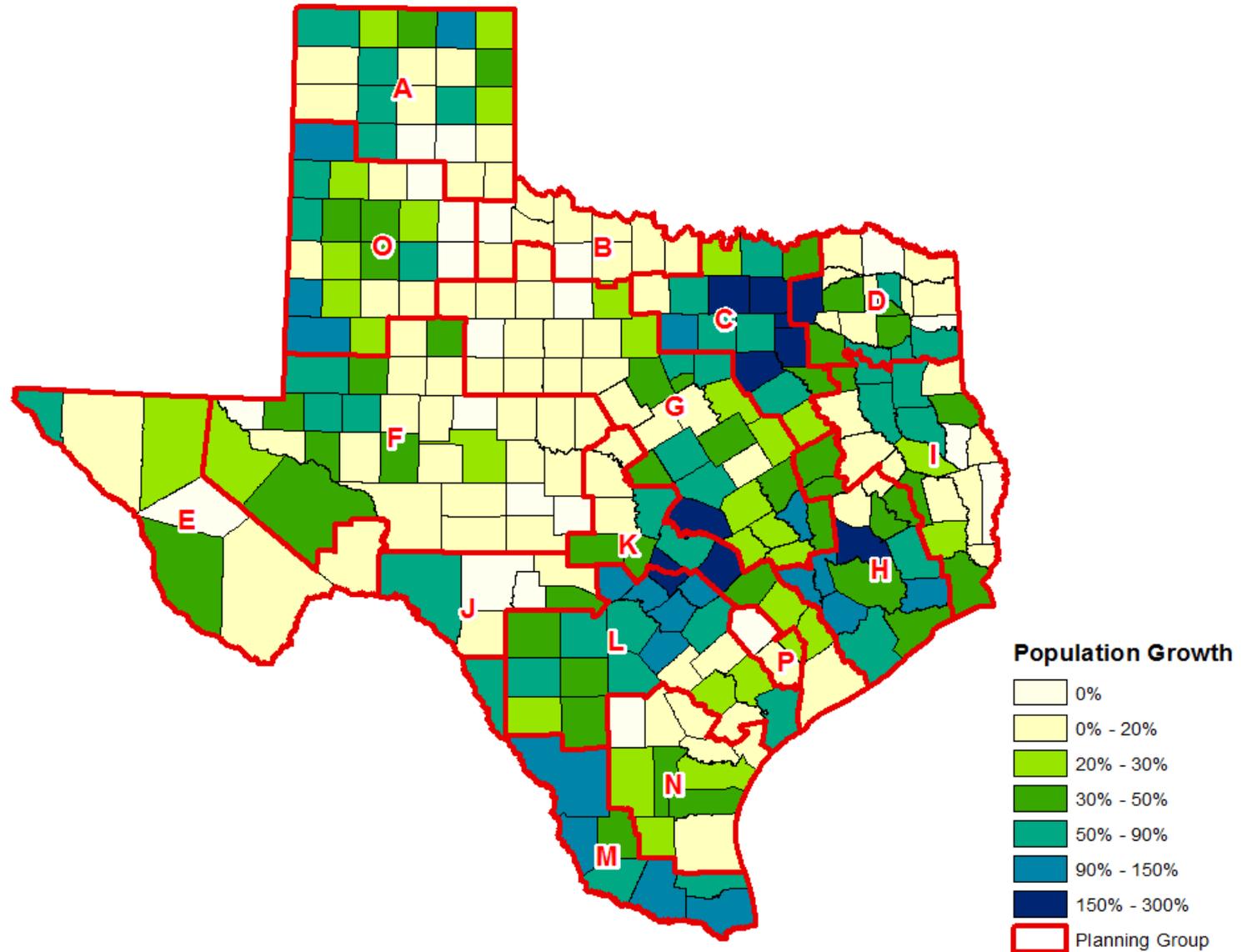
ADAPTATION OF COUNTY PROJECTIONS

- TWDB Applied the Half-Migration Scenarios For Majority of Counties. Reasons Include:
 - Recommended by SDC for Long-Term Planning
 - Close Correlation Between SWP 2012 and Half-Migration
 - Nation Growth Rates Lowered Due to Sharp Decline in Birth Rates After 2007
- Full or a Composite Migration Scenario Applied in Some Cases

ADAPTATION OF COUNTY PROJECTIONS

- Projections extended to 2060 and 2070
 - Trend of average annual growth rate
- Hold Declining Counties (60) Constant
 - Small Impact (21,987 difference in 2050)
 - Constant System Requirements
 - Opportunity To Bounce Back

DRAFT PROJECTED GROWTH RATES



3) POPULATION PROJECTIONS, WUG ENTITY

➤ **Water User Group Types:**

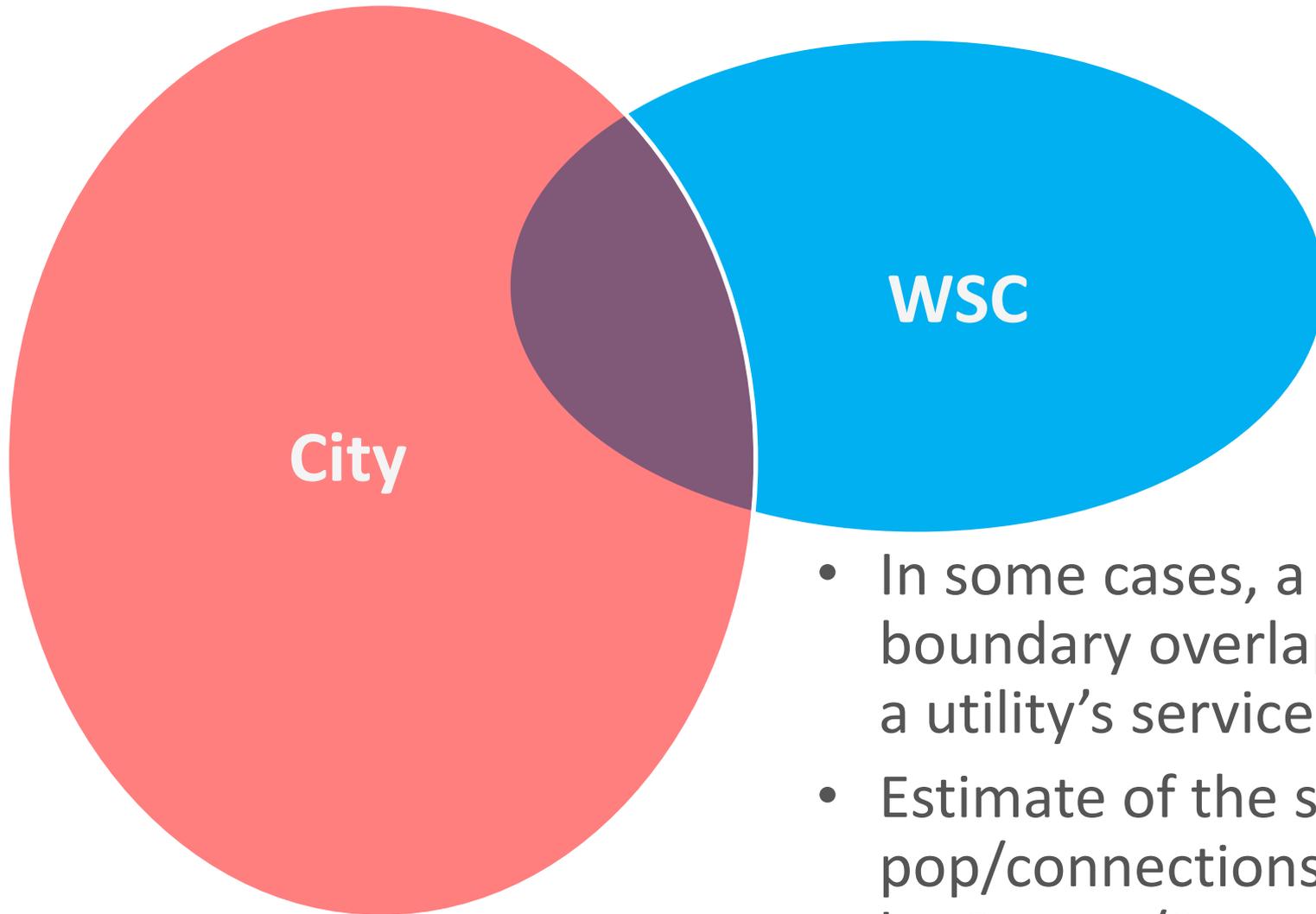
- Cities:** population greater than 500 (CDPs projected only for military bases and counties with no cities)
- Utilities:** Utilities providing more than 280 acre-feet per year (excluding service areas in cities)
- Collection of Utilities:** 3 or more utilities with common source
- County-Other:** Any remaining population in a county

WUG PROJECTION METHODOLOGY

After the County projections were drafted, Water Use Group projections were developed in 1 of 3 methods:

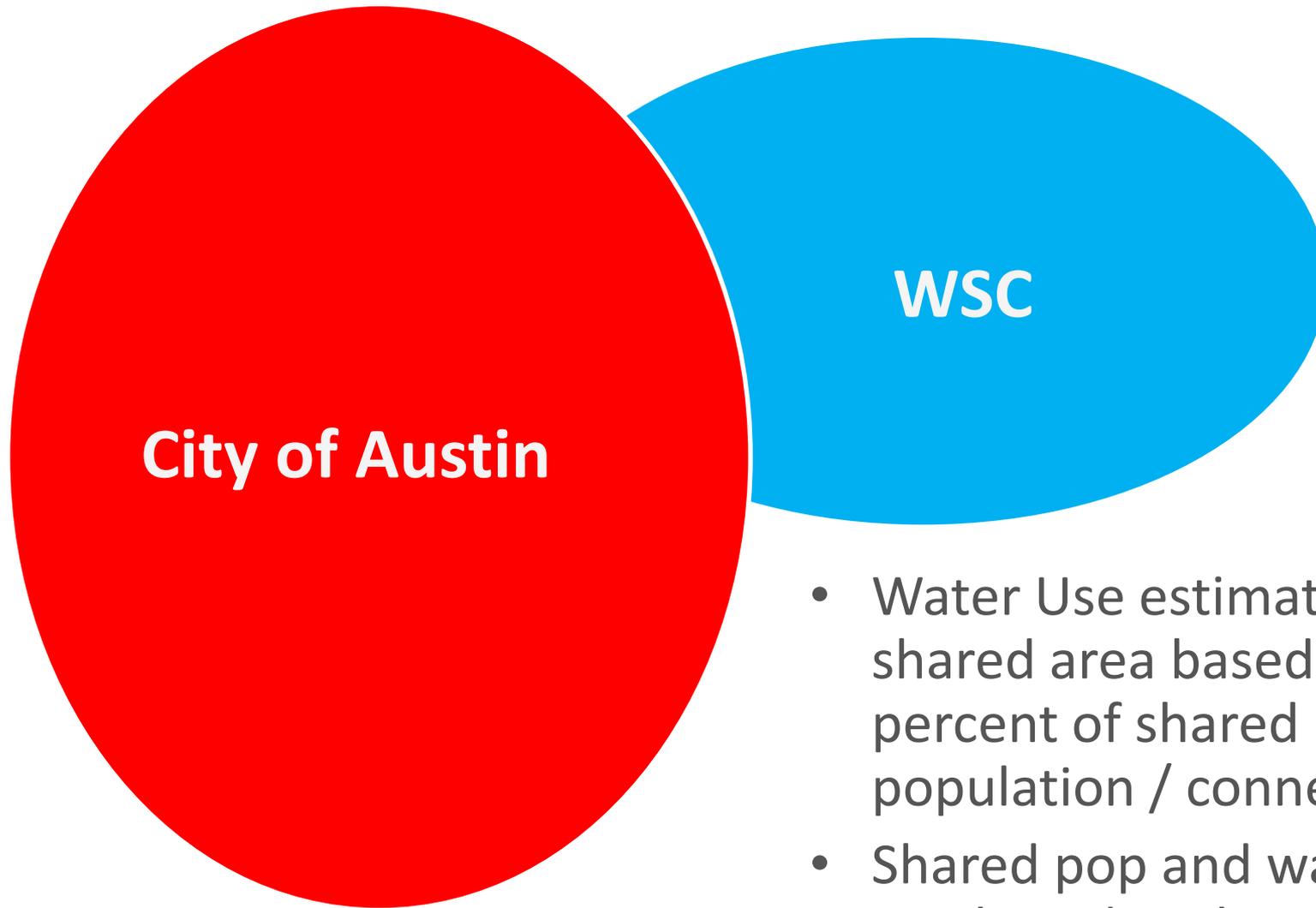
- Share Of Growth:** applying the water user group's historical (2000-2010) share of the county population to projected county population
- Share Of Population:** applying the water user group's historical (2000-2010) share of the county's growth to future growth
- Constant Population:** applied to military bases, and other water user groups that had population decline between 2000 and 2010 in a county with overall population growth

OVERLAPPING BOUNDARIES



- In some cases, a city boundary overlaps with a utility's service area.
- Estimate of the shared pop/connections made by Census/Survey data.

OVERLAPPING BOUNDARIES



- Water Use estimate of shared area based on the percent of shared population / connections.
- Shared pop and water use attributed to the city.

3) MUNICIPAL WATER DEMAND PROJECTIONS



Population
Projections

X



Dry-Year
Gallons Per
Capita Daily
(GPCD) 2011

MINUS



Efficiency
Savings

CALCULATING THE 2011 GPCD

- 2011 water use data - annual water use survey of water systems
- 2011 Survey Response Rate: 79% (76% municipal surveys)
- Population – 2011 Census Bureau Estimate or Survey Pop/Conn

Calculation :

Sum of Intake Volumes

Minus

**Sum of Sales Volumes to
Mun. Wholesale &
Industrial**

Divided By

Population

POPULATIONS NOT INCLUDED



Populations Not Included:

- Commuters
- Vacationers / Hunters
- Winter Texans
- Temp. Gas Rig Crews

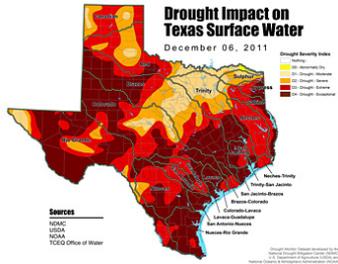


Water Use Is Included In:

- Employer's water use
- Water use of hotels, restaurants, attractions...
- Municipal use or surveyed MHPs
- Water use of hotels, restaurants, municipal sales to camps,...



WHY 2011 AS THE BASE YEAR FOR DEMANDS?



- Worst Single-Year Drought On Record



- Most Recent Water Use Data

- Most Current Water Use & Conservation Patterns



- Higher Accuracy of Population Estimates After Census



Round Rock



San Marcos

APPLIED WATER-EFFICIENCY SAVINGS

- Toilets & Showerheads (1995) - 16 GPCD



- High Efficiency Toilets (2010/2014) – 1.63 GPCD



- Dishwashers (2010 & 2013) – 1.83 and 1.93 GPCD



- Clothes washers (2014 & 2018) – 6.45 GPCD



5) ADJUSTMENTS TO PROJECTIONS

- Population Projections - County-Level

Criteria:

- Census population adjustments
- Evidence of different 2010-2020 migration rate
- Statistically different survival or fertility rates

ADJUSTMENTS TO PROJECTIONS

- Population Projections - Water Use Groups, Criteria:
 - Census population adjustments
 - 2005 – 2010 Growth Rate significantly more than 2000-2010 growth
 - Annexation or service area expansion
 - Build-out limitations

ADJUSTMENTS TO PROJECTIONS

- Population Projections – General Criteria:
 - Any requested increase in population projections for a county or water user group must be accompanied by a matching decrease in projections for another – **no increases in regional population projection totals will be considered.**

ADJUSTMENTS TO PROJECTIONS

- Municipal Water Demand Projections, Criteria:
 - Evidence of data errors in calculation of 2011 water use
 - Evidence that 2011 water use was abnormal due to temporary physical infrastructure constraints.
 - Evidence of select instances where rapid growth and commercial/institutional development may increase per-person use.
 - Evidence of a different fixture installation schedule

6) DATA AVAILABLE TO PLANNING GROUPS

- Historical intake values and water sources by system (aka “HistMuni” and “HistIndi”)
- Historical water use and GPCD for 2016 RWP WUGs (2006-2010)
- Detailed breakdown of 2011 County-Other
- Water system/WUG allocations
- WUG Entity GPCD Detail (under review)

- Informal discussions regarding data and potential changes.
- Regional planning groups review the draft projections and submit documentation to support requested changes.
Completed by August 16, 2013
- TWDB Staff consults with other agencies to develop consensus recommendations for final projections:
 - Texas Commission on Environmental Quality
 - Texas Parks and Wildlife Department
 - Texas Department of Agriculture
- Board Adopts Final Demand Projections

QUESTIONS?

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