CONSERVATION AND THE RESILIENT WATER UTILITY

SHARLENE LEURIG
CERES

INVESTOR NETWORK

The Investor Network on Climate Risk (INCR) — over 100 members and more than $11 trillion in assets

Key members include

- CalPERS
- CalSTRS
- Illinois State Board of Retirement
- Illinois State Treasurer
- North Carolina Treasurer
- NYC Comptroller
- NY STRS
- Blackrock Financial
- TIAA-CREF
- State Street Global Advisors
- Prudential Investments

WHY WATER RATES KEEP RISING

COLUMBIA UNIVERSITY STUDY SHOWS THAT U.S. WATER INFRASTRUCTURE IS TRAPPED IN A RECURRING CYCLE OF DEBT AND RATE HIKES

RATES: 23%
AVERAGE INCREASE FROM 2000-2010

Rates increased over 100% at nearly 1/3 of the nation's utilities*

INFRASTRUCTURE

The nation's drinking water infrastructure is deteriorating and requires more than **$1 trillion** in investment to fix pipes over the coming decades.**

Debt increased over 100% at nearly 1/3 of the nation's utilities*

DEBT: 33%
AVERAGE INCREASE FROM 2000-2010

SO WHAT CAN BE DONE?

- IMPROVE OPERATIONAL EFFICIENCY AT THE NATION'S WATER UTILITIES
- CONSERVE OUR RESOURCES AND MANAGE FOR LONG-TERM SUSTAINABILITY
- CONSIDER ALL SOURCES OF REVENUE
- EXPLORE ALTERNATIVE RATE STRUCTURES

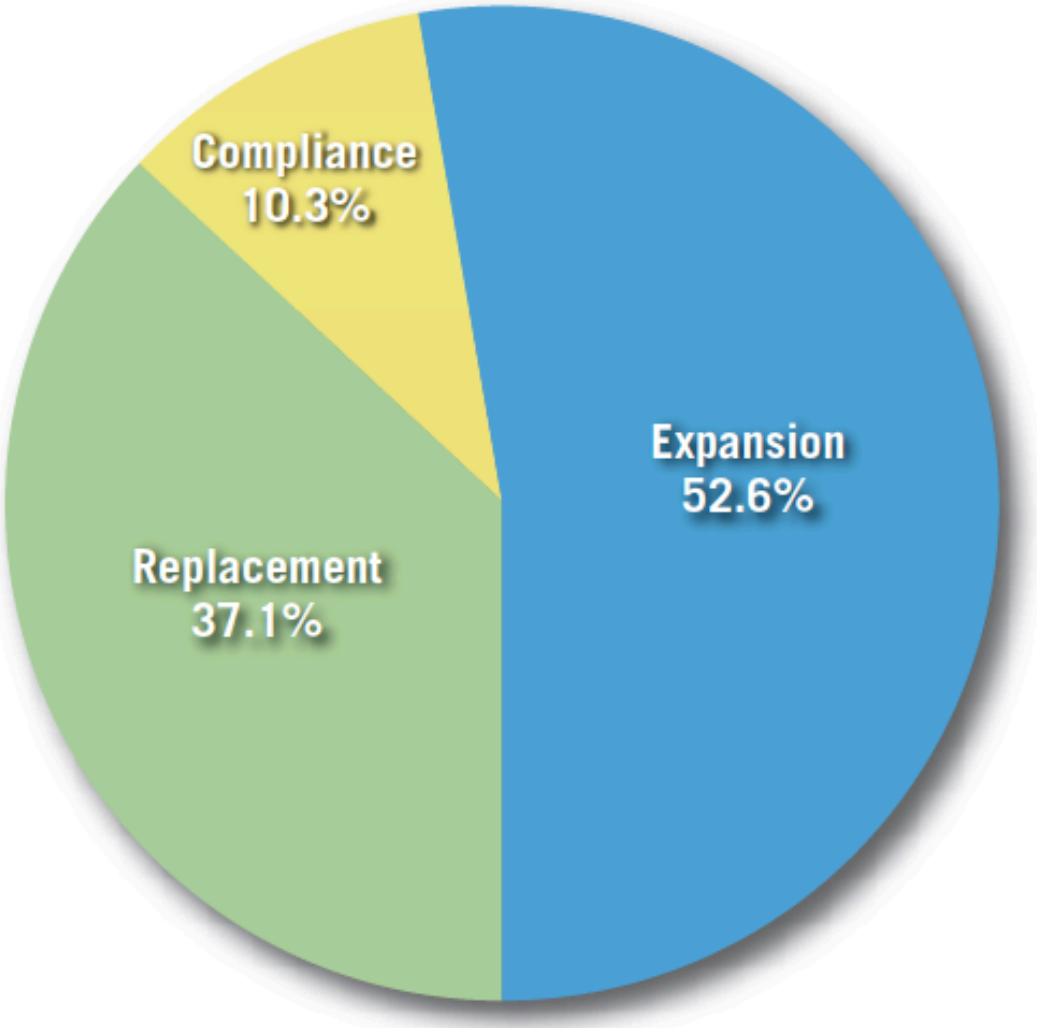
GrowingBlue™
Water. Economics. Life.

www.growingblue.com

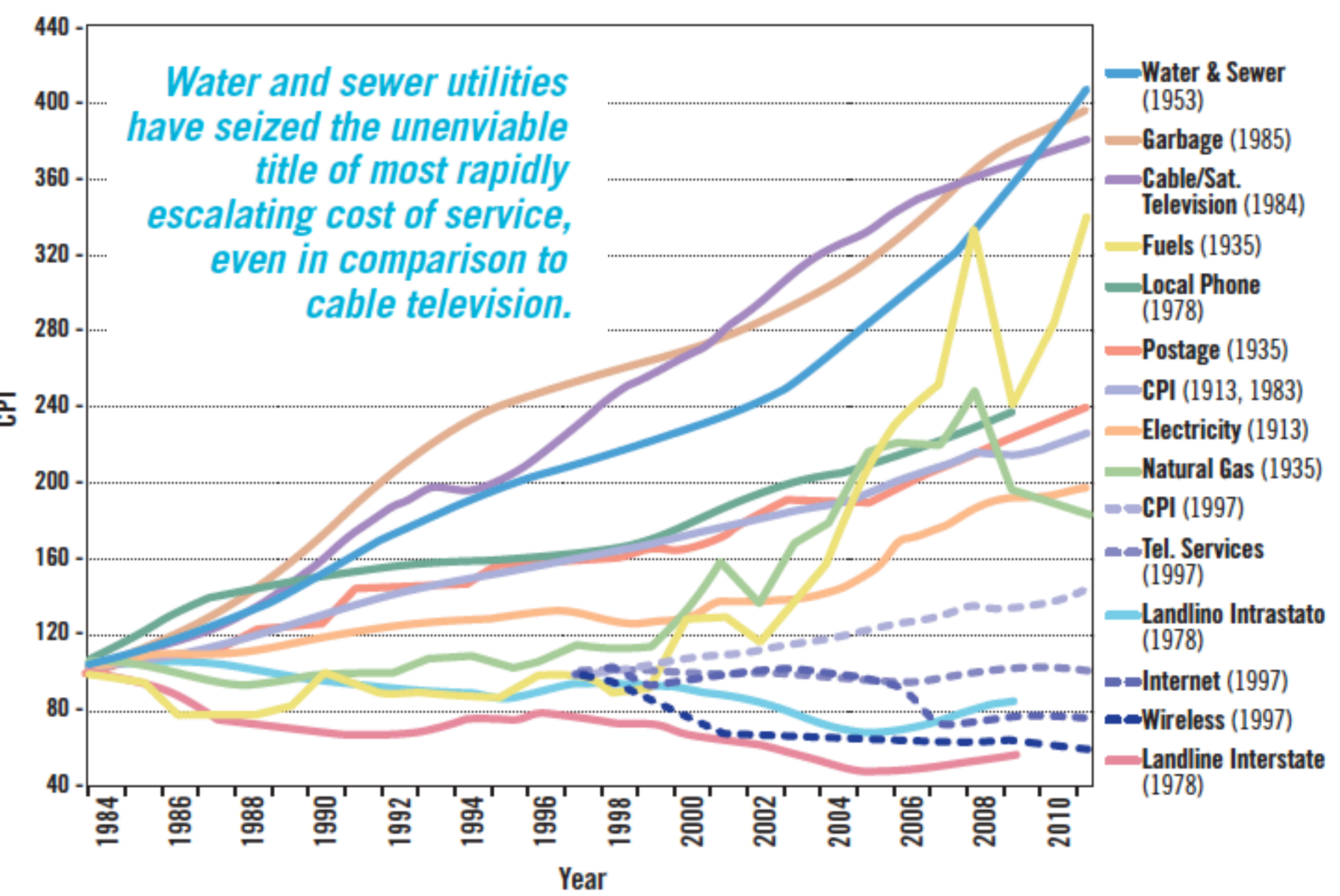
*As surveyed by the American Water Works Association (AWWA).
**American Society of Civil Engineers; annual scorecard.

Based on study released by Columbia University Water Center in conjunction with Veolia Environnement and Growing Blue.

In recent years, use of capital has primarily gone to water system expansion.

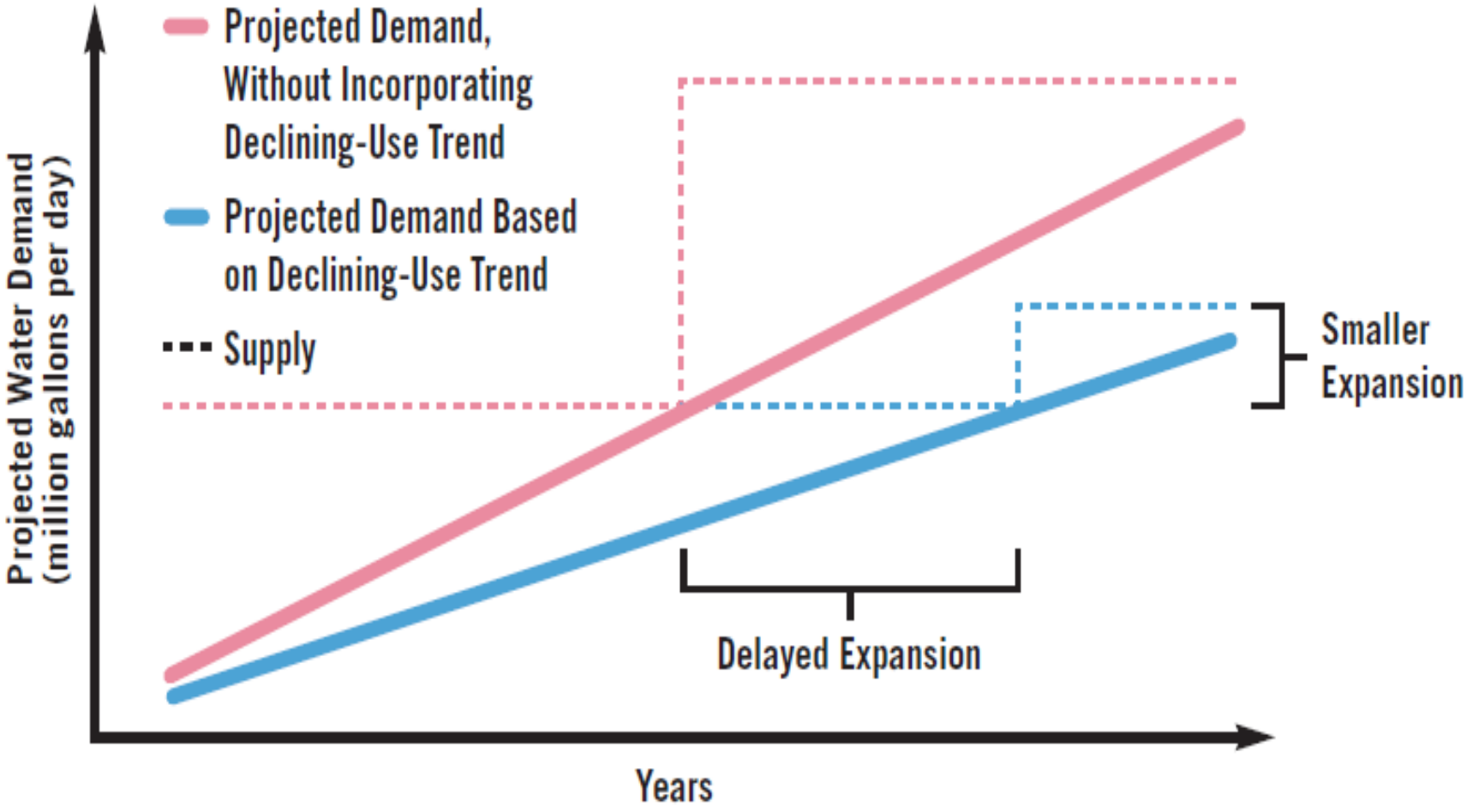


Source: U.S. Environmental Protection Agency, "2006 Community Water System Survey Report, Vol. 1 Overview," *Office of Water*, February 2009, http://water.epa.gov/infrastructure/drinkingwater/pws/upload/cwssreportvolume12006.pdf.



Source: Janice A. Beecher, Ph.D., "Trends in Consumer Prices (CPI) for Utilities Through 2011," *Institute of Public Utilities Regulatory Research and Education*, Michigan State University, March 2012, http://ipu.msu.edu/research/pdfs/IPU-Consumer-Price-Index-for-Utilities-2011-2012.pdf.

CONSERVATION MANAGES COSTS BY DELAYING EXPANSION



Source: Hunter, et al, Declining Residential Water Usage, 2011

SHORT TERM VS. LONG TERM

Effective demand management shifts the demand curve, defers capital expenditures and in the long-term saves ratepayers money. The challenge is getting ratepayers and policymakers to see the long-term cost savings in the face of short-term rate increases.

SHORT TERM DISINCENTIVES TO CONSERVATION

The Texas Drought: Quenching the Thirst

Special Report

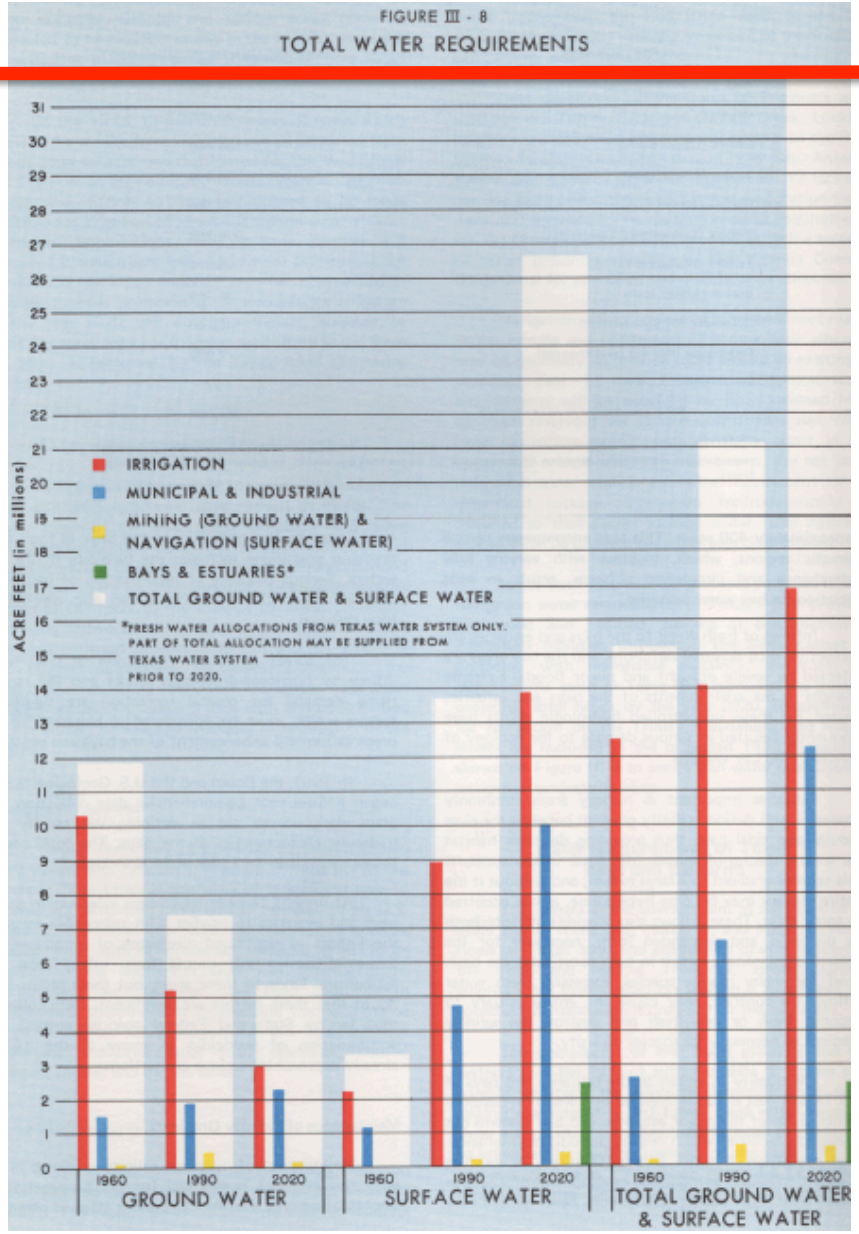
Water Utility Ratings Remain Intact: Texas utility ratings have endured the current Texas drought without significant negative effects to date. Most water utilities entered the drought with relatively normal to abundant supply sources, allowing them to meet rising consumptive demand in 2011 without significant usage restrictions. In addition, favorable winter and spring precipitation generally has alleviated the drought severity throughout most of the state. Utility financial performance for fiscal 2011 (most Texas utilities have fiscal years ending in the August–September timeframe) was largely favorable given most utilities' heavy reliance on a volumetric price structure and only moderate usage restrictions through the peak of the drought.

FitchRatings

Known unknowns

2020 Forecast

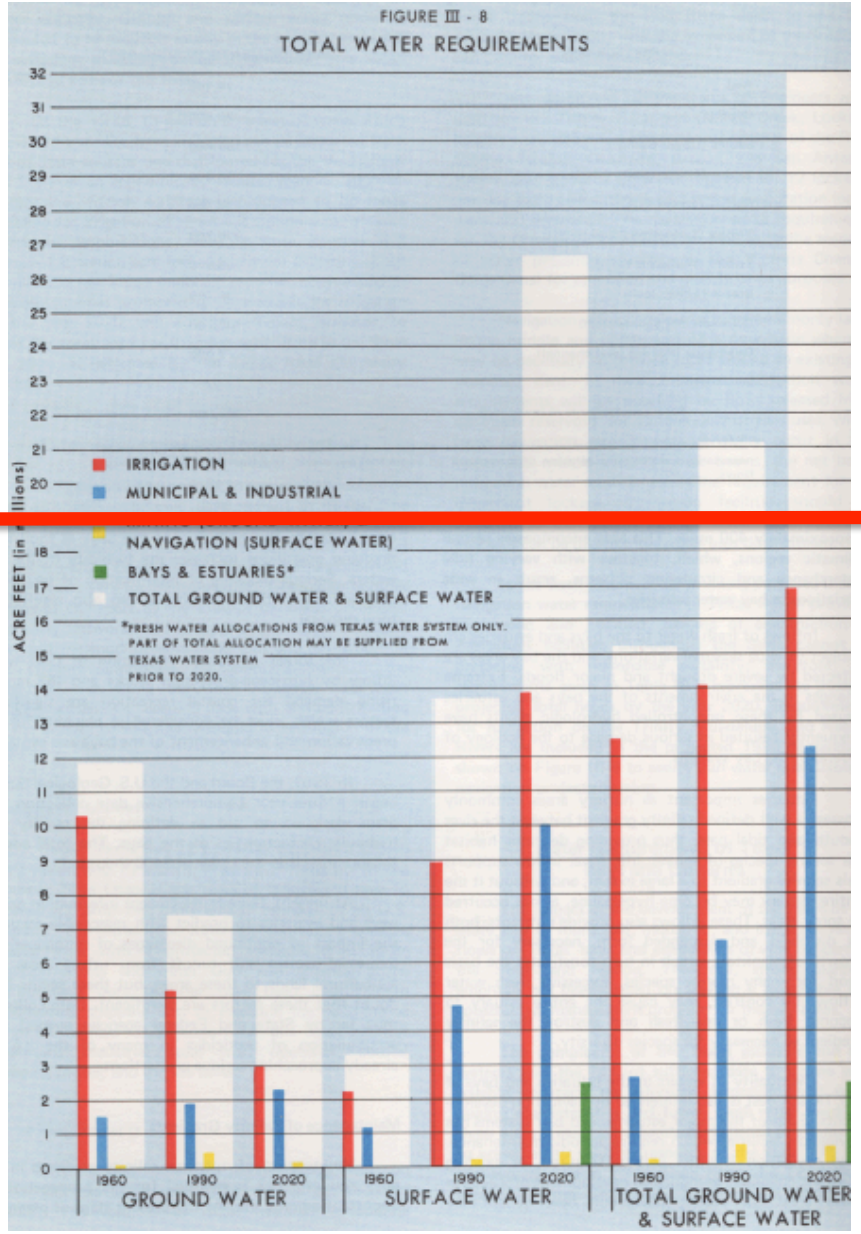
Projected Use : 32 million acre-feet



45 Years Later

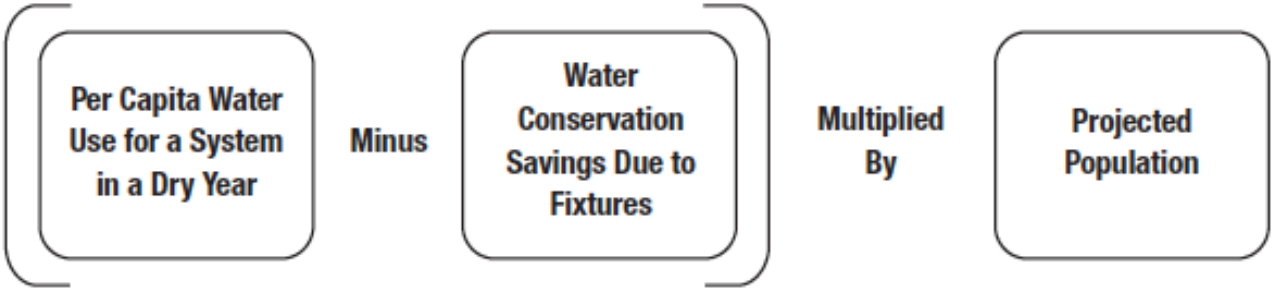
2020 Forecast

Actual Use 2012



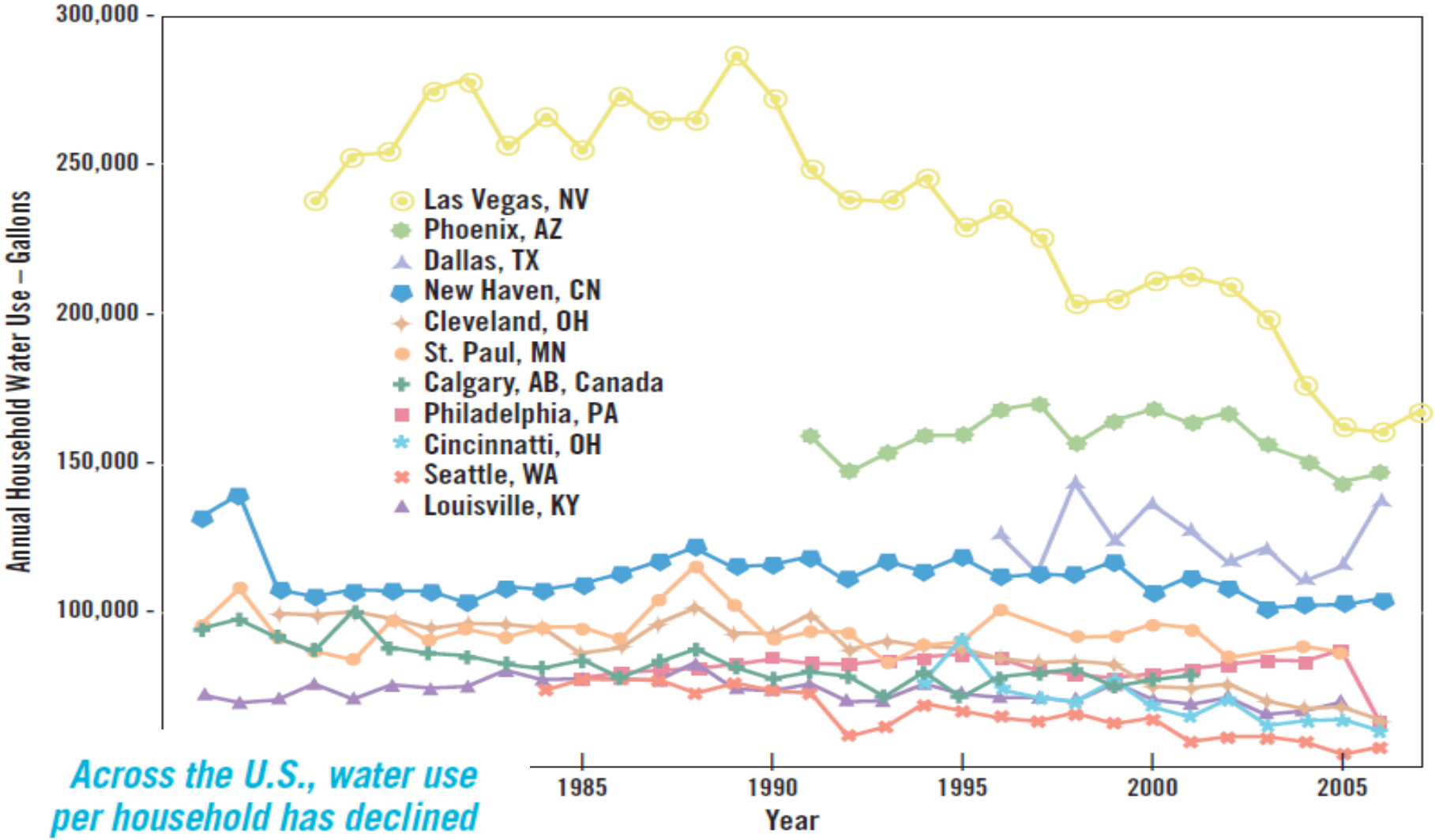
STATE WATER PLAN DEMAND MODEL

PROJECTED WATER DEMAND CALCULATION, 2010–2060



Source: State Water Plan 2012

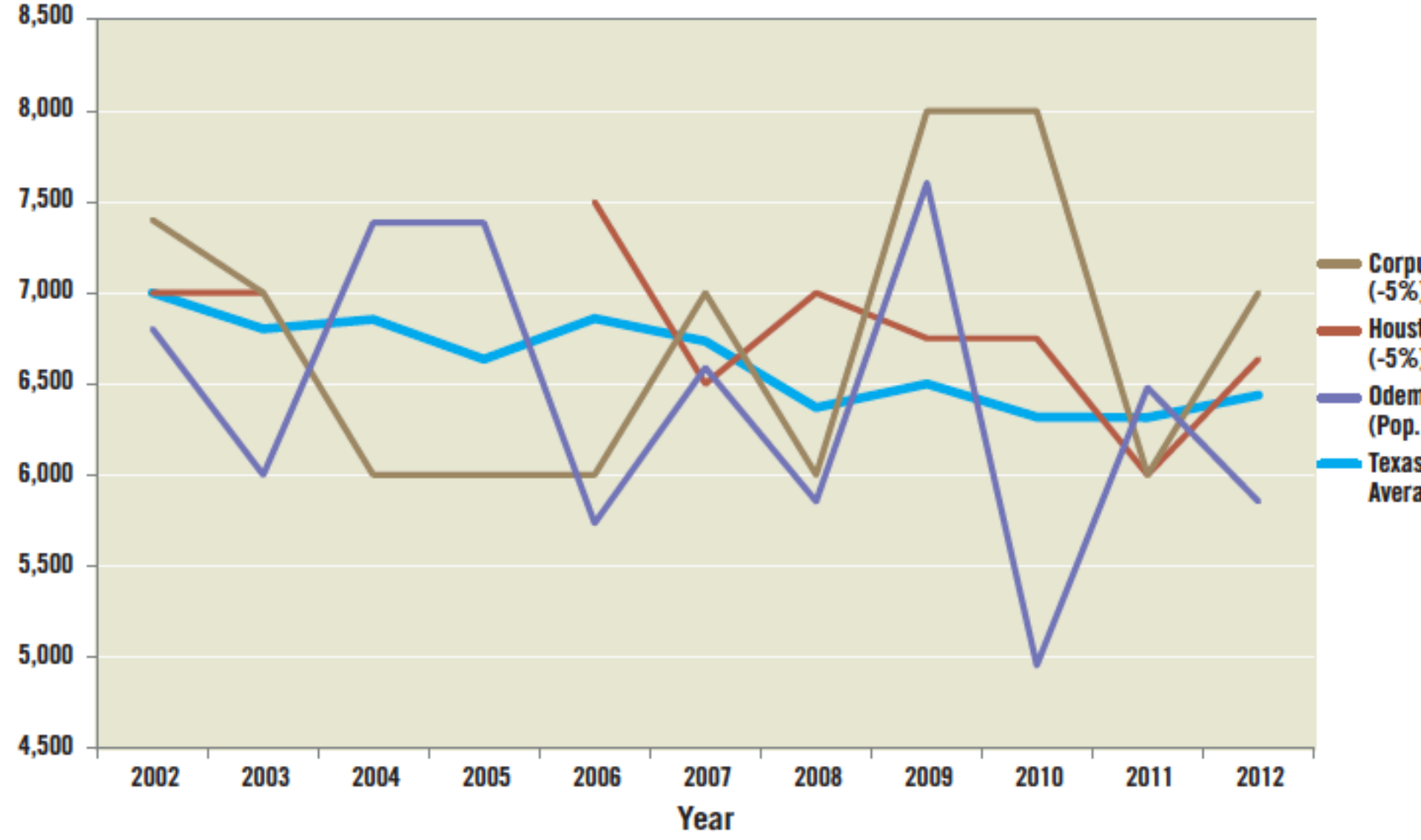
U.S. HOUSEHOLD WATER USE: 1975-2007



Across the U.S., water use per household has declined on average 13 percent since 1975—by far more in some places.

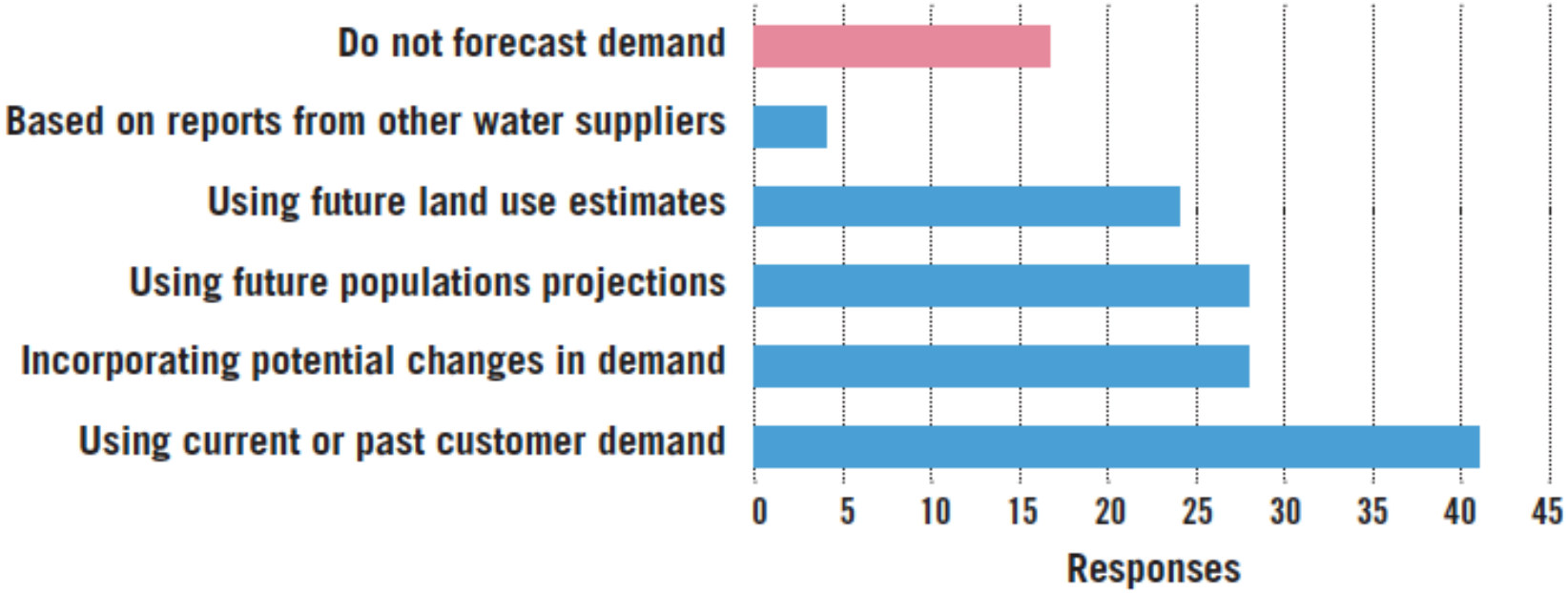
Source: P. Comes, North American Water Usage, 2010.

Figure 3: Average Household Water Use for the State of Texas & Selected Municipal Util
2002-2012 (Gallons per Month) (Texas annual *n* from 365 to 661)



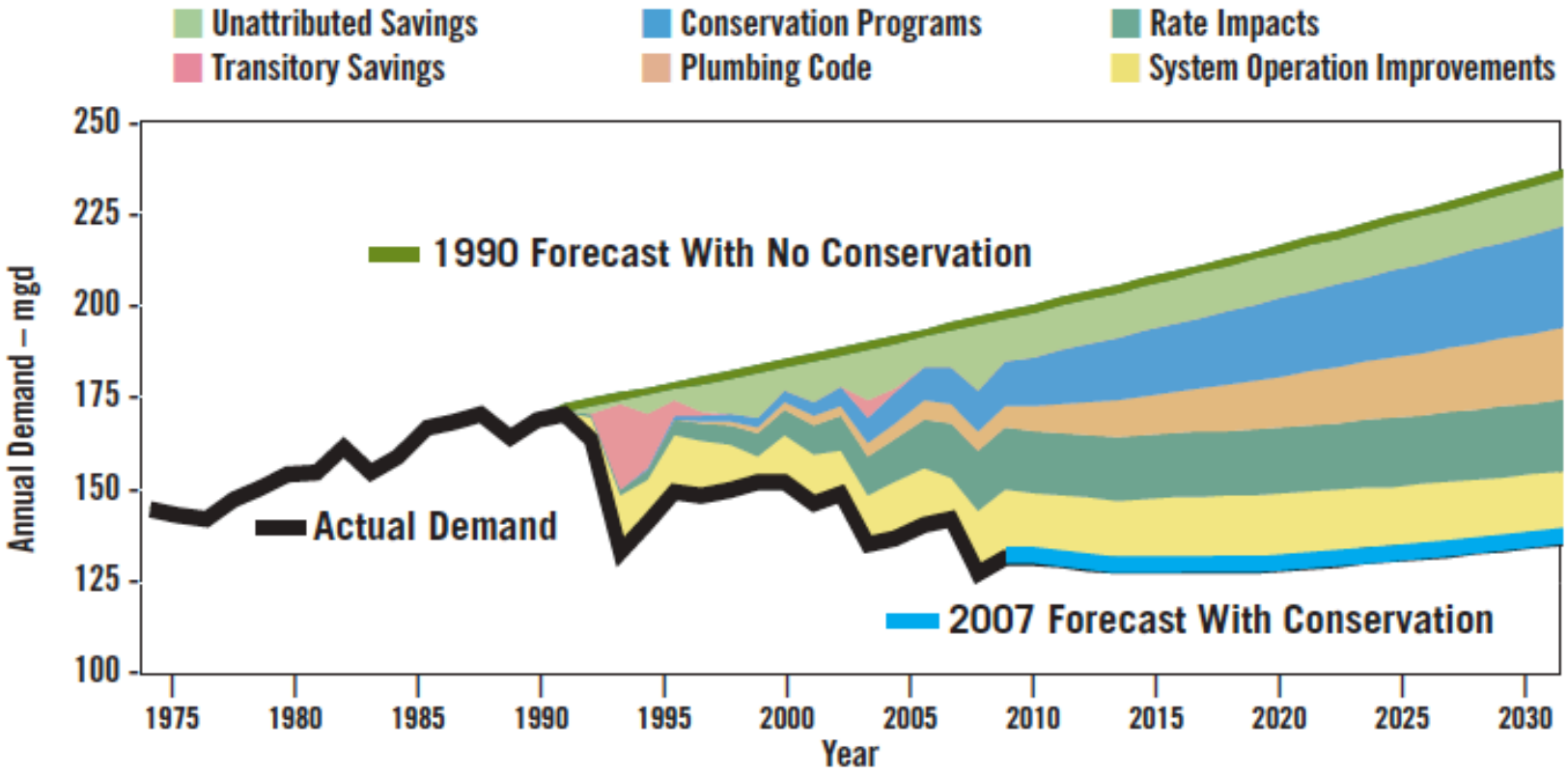
Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Data source: Texas Municipal League annual TX water and sewer rate surveys (self-reported).

How California Utilities Forecast Demand



Source: Juliet Christian-Smith. "Tools for Success: Forecasting Water Demand." Presentation, *Water Rates Workshop*. September 13, 2012. http://www.pacinst.org/reports/water_rates/tools_for_success.pdf.

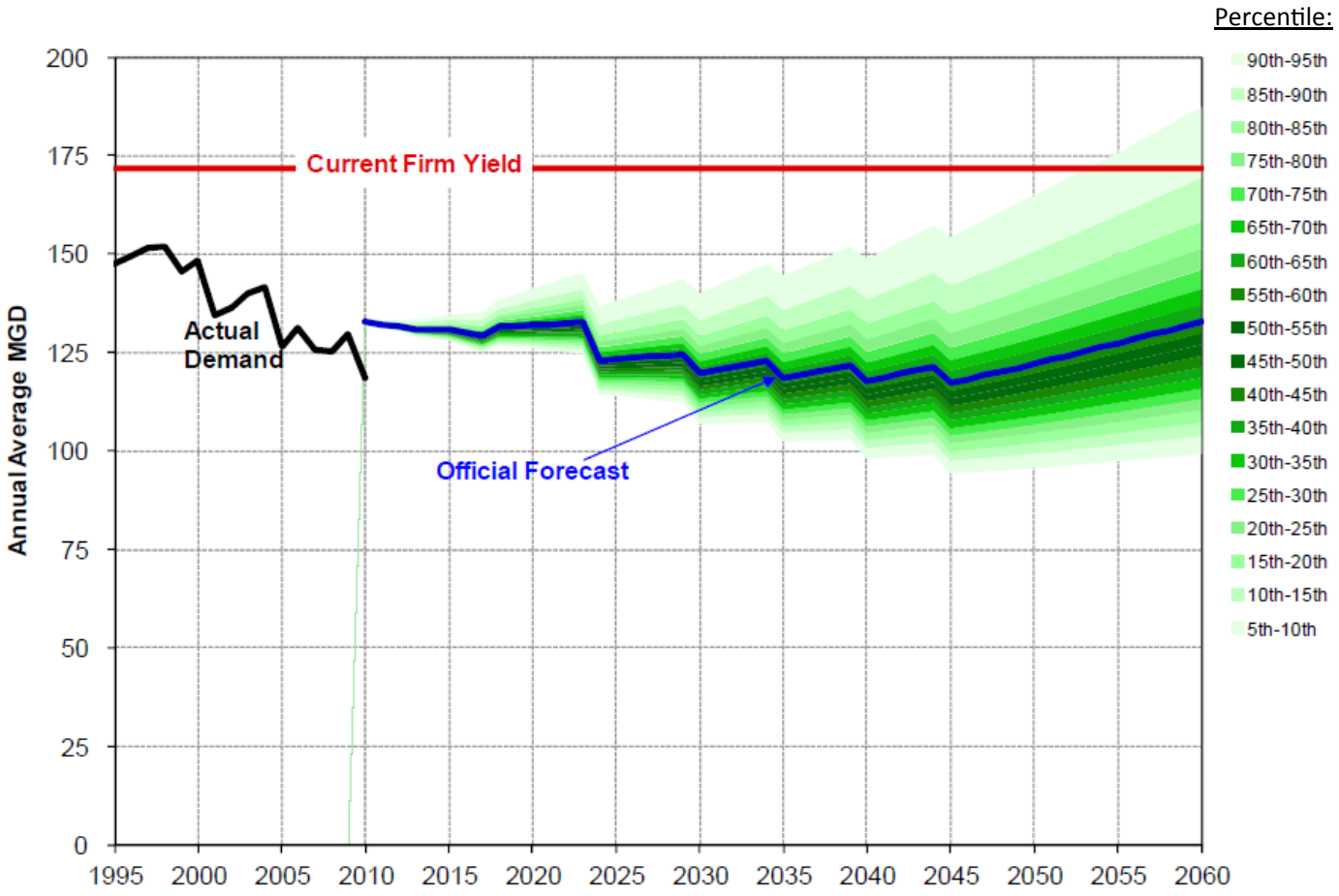
WATER DEMAND FORECASTS: SEATTLE



Source: The Johnson Foundation at Wingspread, "Charting New Waters: Financing Sustainable Water Infrastructure," *Convening Meeting by American Rivers, Ceres, and The Johnson Foundation at Wingspread*, January 2012, http://www.johnsonfdn.org/sites/default/files/reports_publications/WaterInfrastructure.pdf.

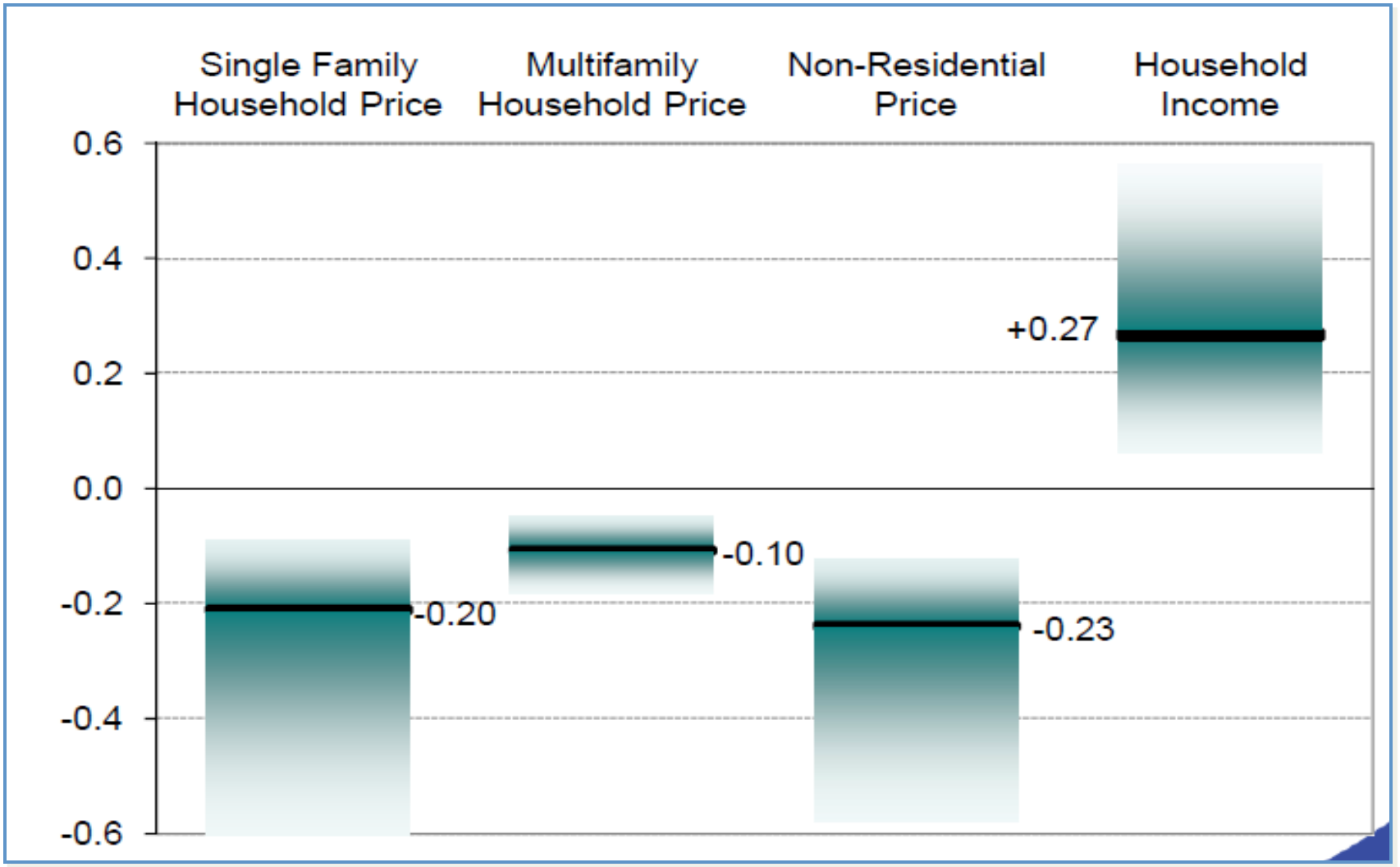
Forecasted demand can overshoot actual demand substantially.

RANGE OF UNCERTAINTY AROUND OFFICIAL DEMAND FORECAST: SEATTLE



Source: Flory, 2012

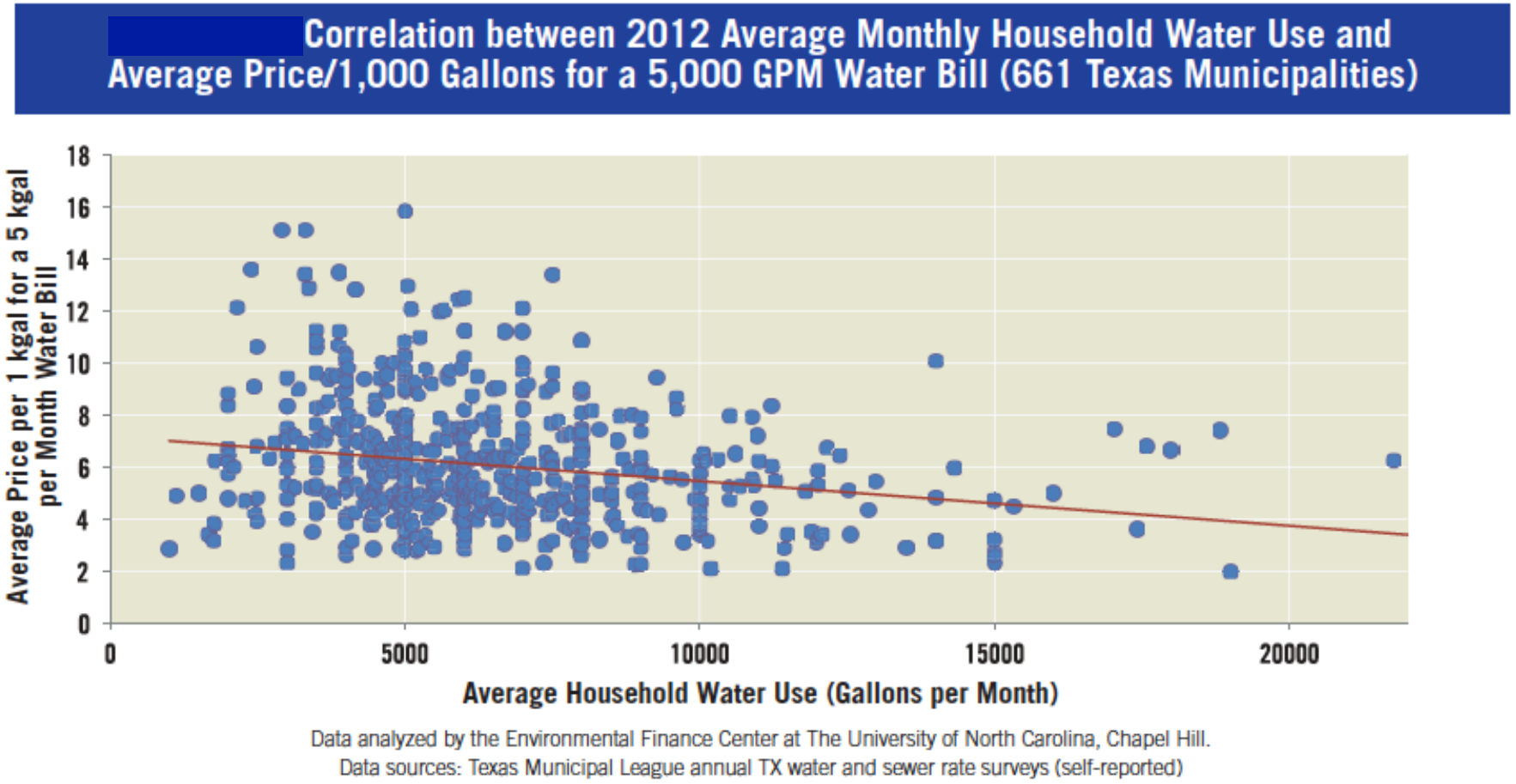
Price Elasticity: Seattle



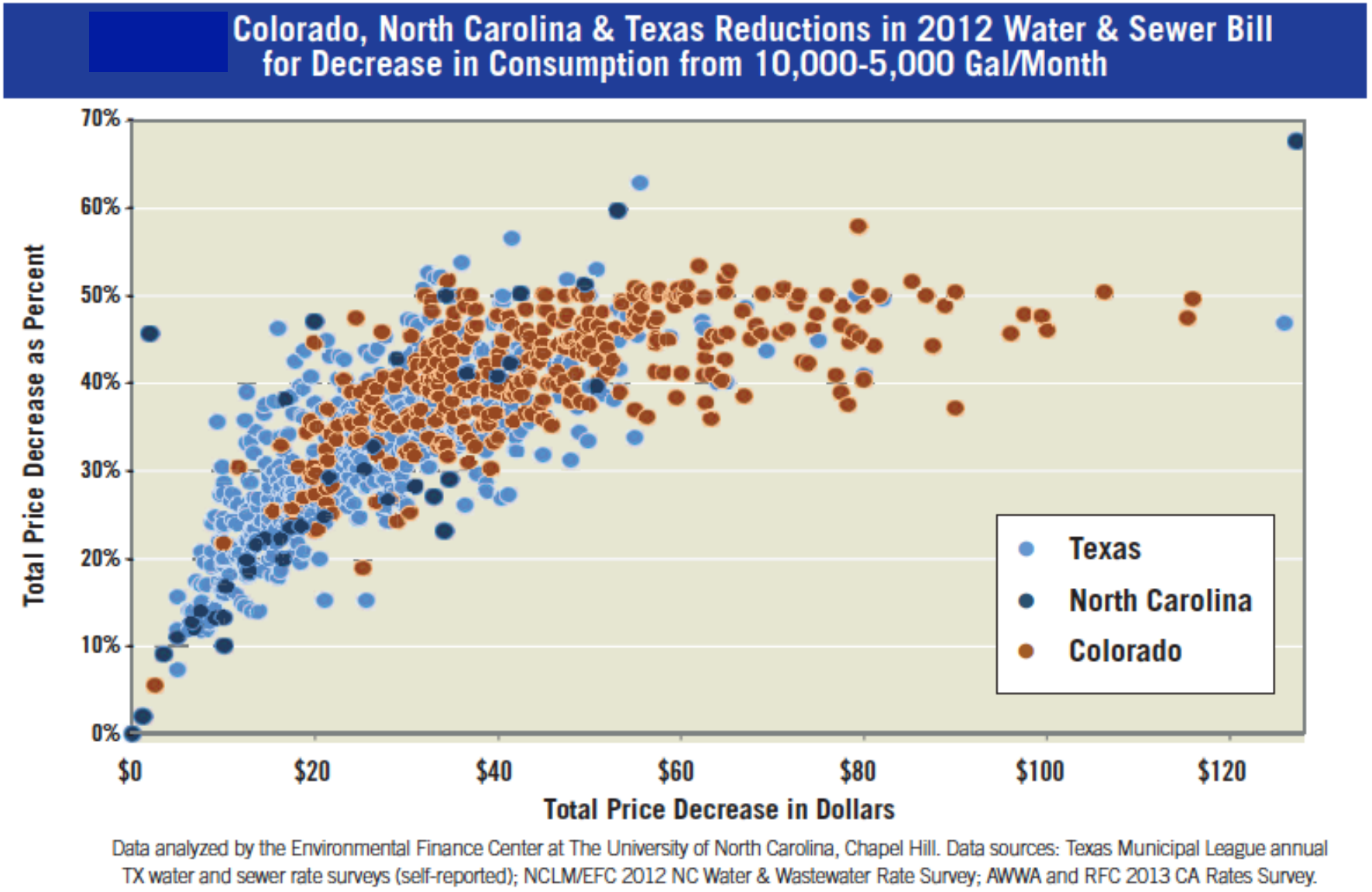
Source: Flory, 2012

Politics, rates and affordability

DEMAND IS A FUNCTION OF PRICE

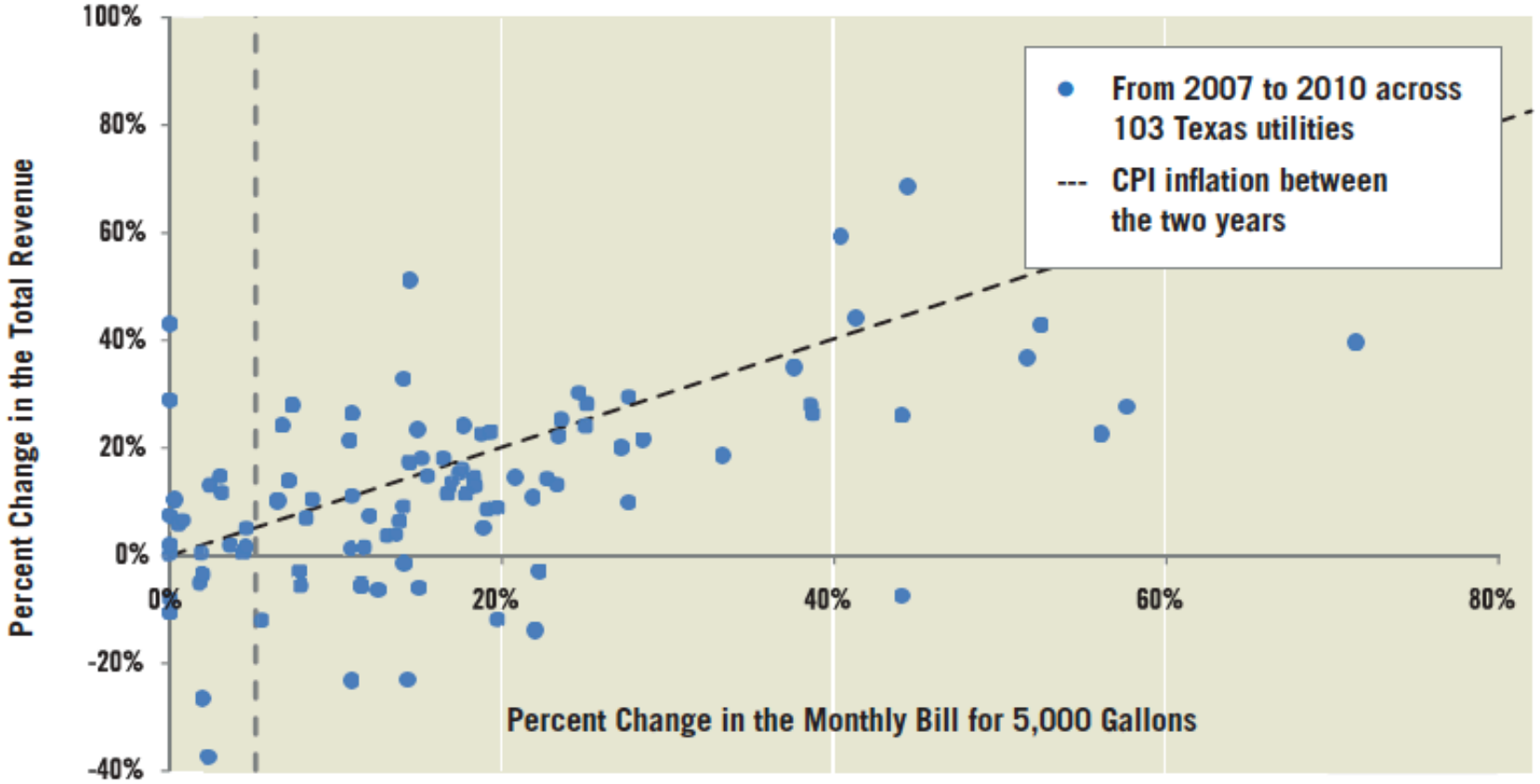


WE HAVEN'T REACHED THE LIMITS OF PRICING AS A TOOL



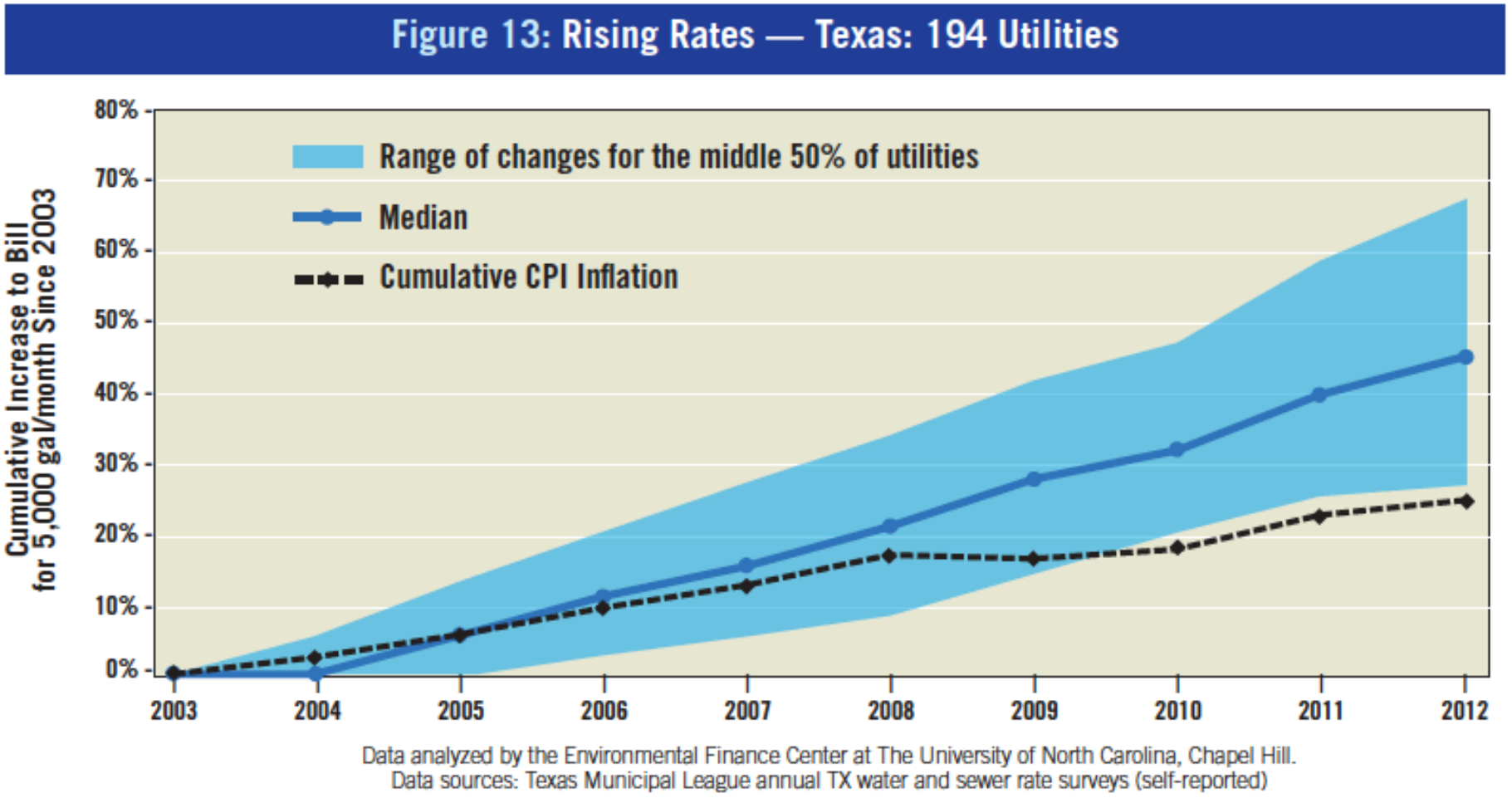
Data analyzed by the Environmental Finance Center at The University of North Carolina, Chapel Hill. Data sources: Texas Municipal League annual TX water and sewer rate surveys (self-reported); NCLM/EFC 2012 NC Water & Wastewater Rate Survey; AWWA and RFC 2013 CA Rates Survey.

WILL RAISING RATES RAISE REVENUE?



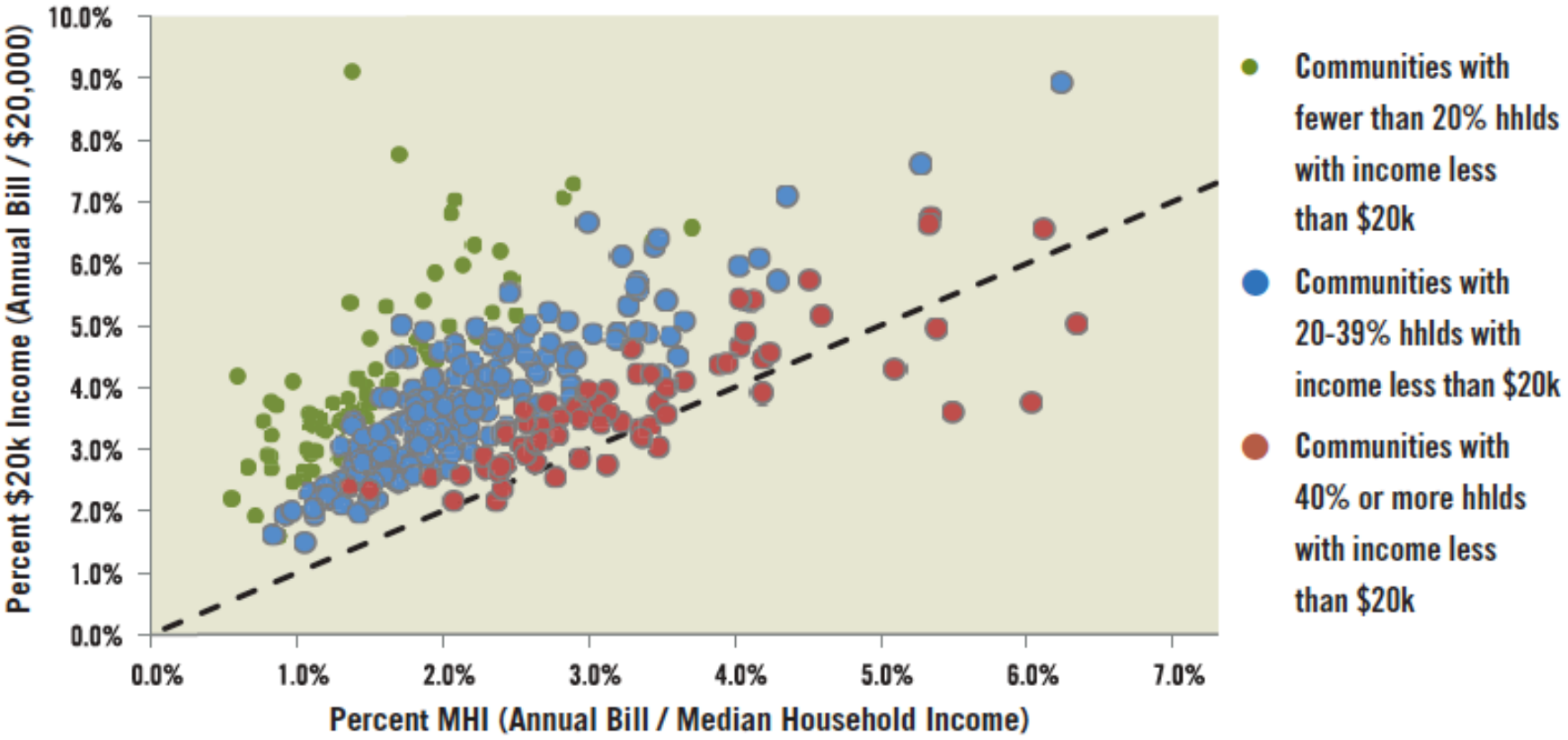
Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill. Data sources: Texas Municipal League annual TX water and sewer rate surveys (self-reported), Texas Water Development Board data from audited financial statements of utilities with outstanding loans.

RATE FATIGUE



AFFORDABILITY

Figure 14: Annual Water & Sewer Bills at 5,000 Gallons/Month in 2012 Compared to Community's Income Levels in 2011 in North Carolina (n=365 utilities)

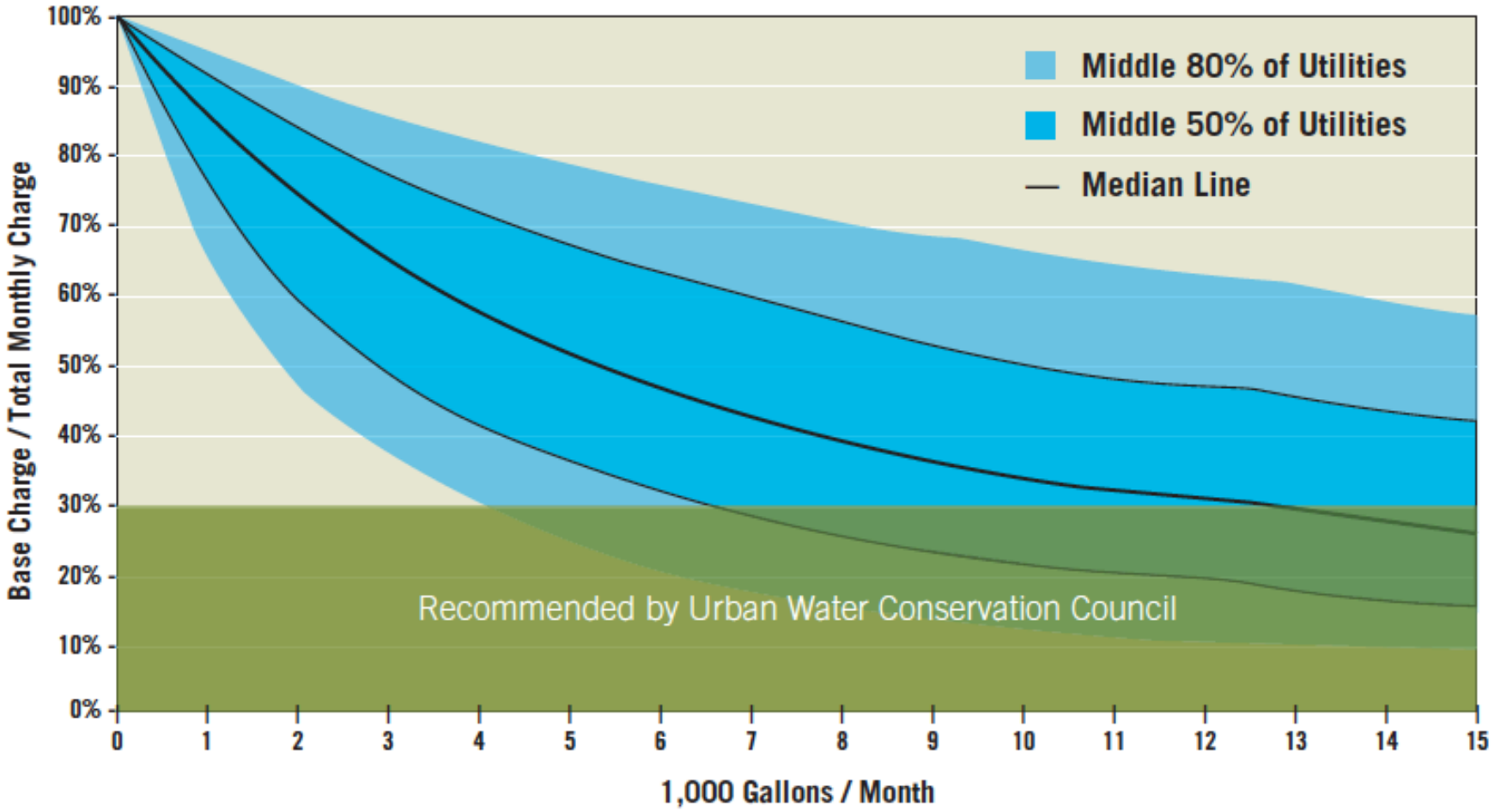


Analysis by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Data Sources: NCLM/EFC 2012 NC Water & Wastewater Rate Survey; U.S. Census Bureau 2007-2011 5-year American Community Survey.

One of the most important design parameters that drives pricing signals relates to how high a utility sets the fixed charge component of its bills.

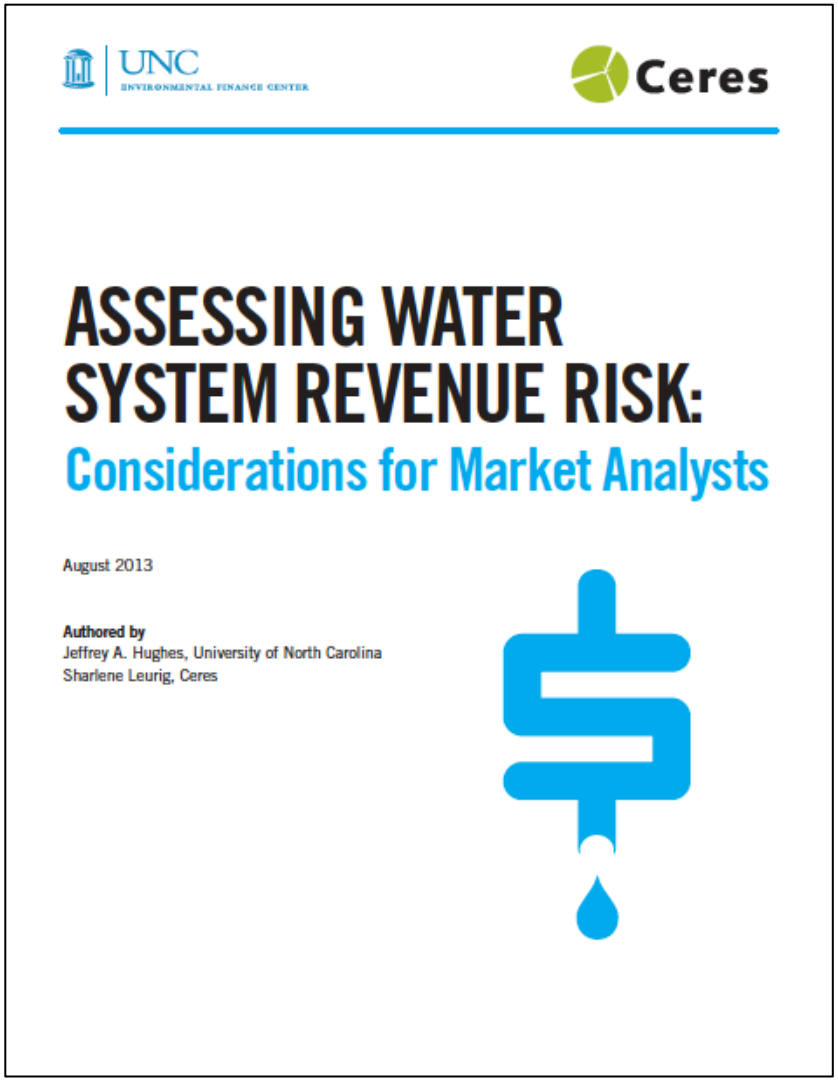
Unfortunately as this illustrates, the "optimal" approaches to conservation pricing and revenue stability are diametrically opposed.

Proportion of Fixed Charge on Monthly Bill for 85 California Utilities



Data analyzed by the Environmental Finance Center at the University of North Carolina. Data Source: AW WA and RFC CA Rates Survey, 2011.

METRICS



Competitiveness

Affordability

Revenue Sufficiency

Revenue Vulnerability

Pricing Signal

So where do we go from here?

THE CHECKLIST

- Integrate supply, conservation and financial planning
- Assess strength of pricing signal
- Assess resilience of your revenue stream to reduced consumption
- Understand your customers' pricing sensitivity
- Set an affordability goal for essential uses
- Match conservation program with right financing model

Pricing can be more palatable with Conservation Finance

- Water loss
- Indoor retrofits
- Urban irrigation
  - Irrigation meters / smart-irrigation systems
  - Lawn buyback programs
- Smart meters
- Commercial/industrial programs

What to fund should be based on cost/benefit

New conservation financing models

- Can use bonds if water conservation is defined as a public good (tax implications)
- Property Assessed Clean Energy Bonds (more appropriate for commercial/industrial)
- On Bill Financing
- Rebates + Credit Union Water Efficiency Partnerships