

# This presentation premiered at WaterSmart Innovations

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# American Water Use Trends 1995-2015 and Future Conservation Potential

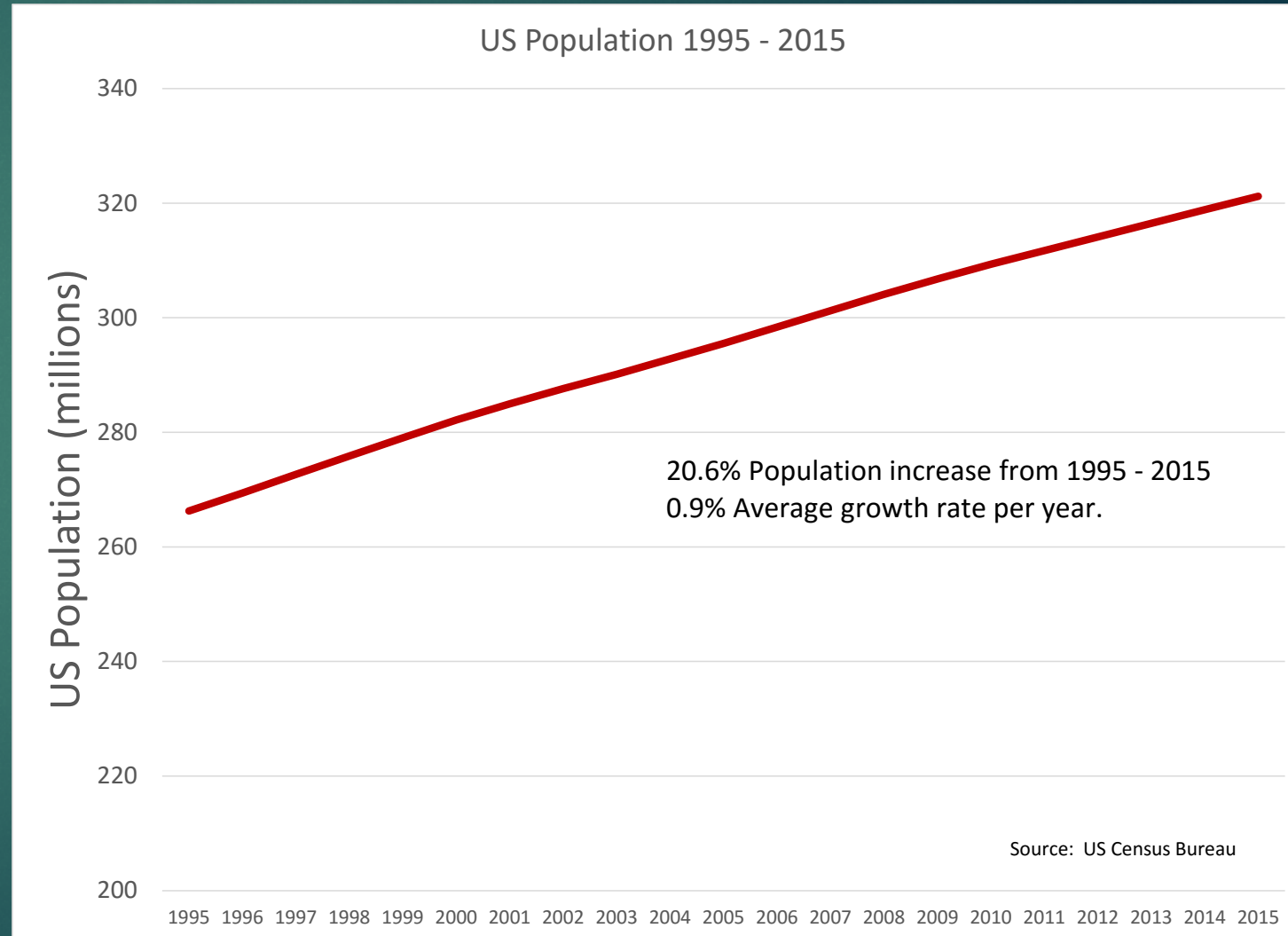
PETER MAYER, P.E.

WATER DEMAND MANAGEMENT



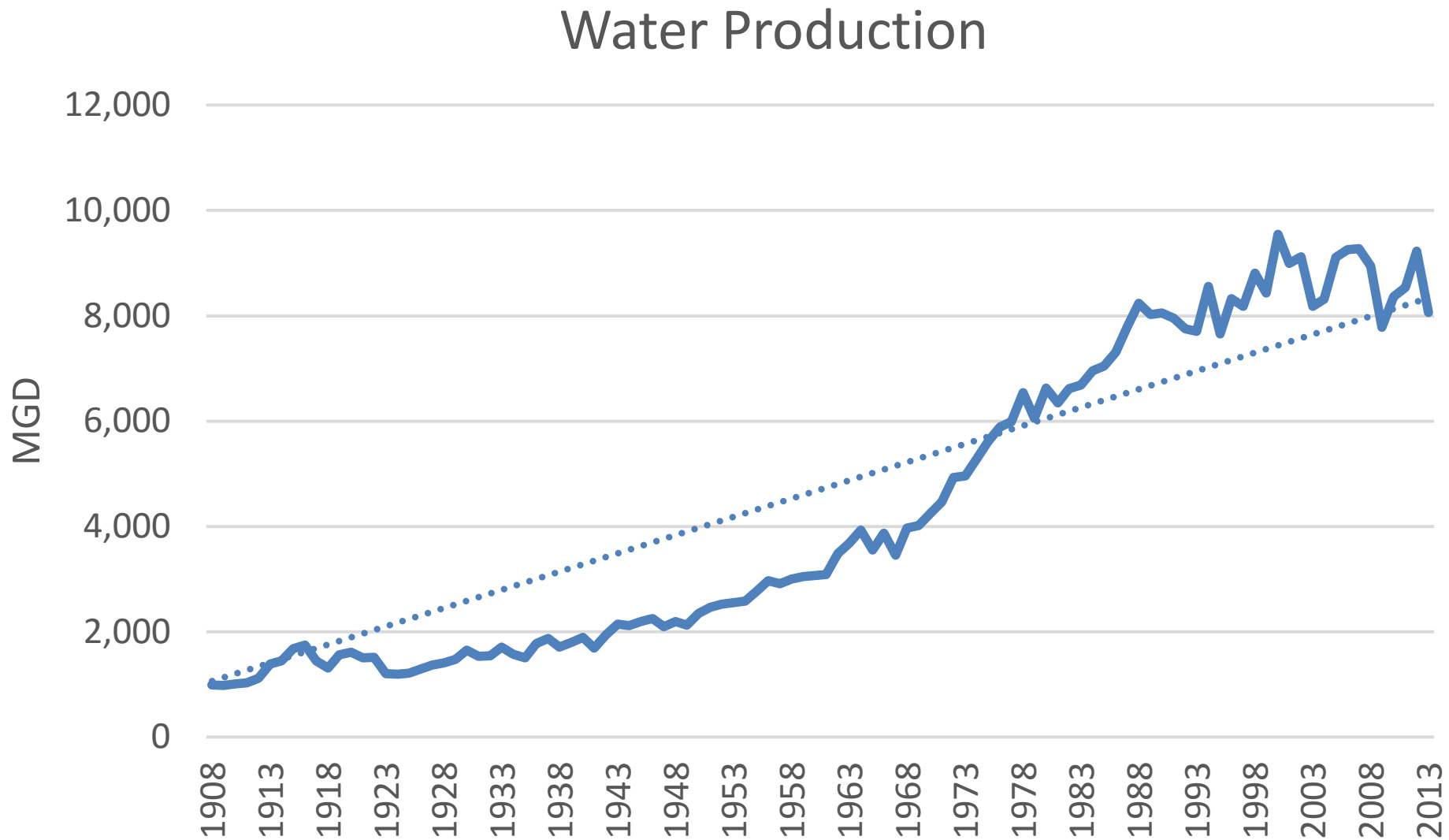
# Understanding Water Demand

- ▶ 1995 – 2015
  - ▶ American urban water demand changed.
  - ▶ Less predictable
  - ▶ Substantial efficiency gains
- ▶ 2015 – 2035
  - ▶ American urban water demand will continue to change.
  - ▶ Increased efficiency
  - ▶ More predictable

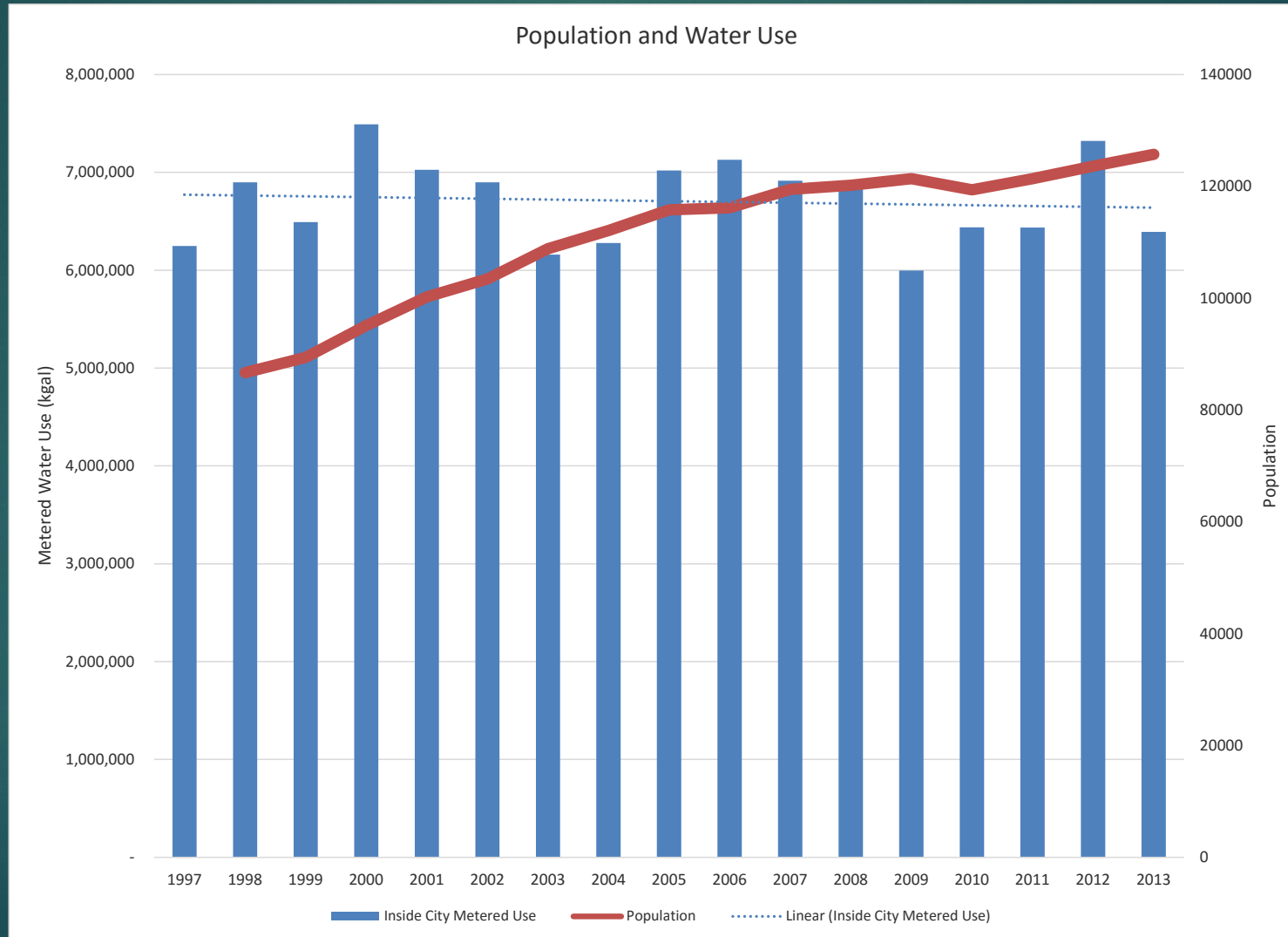




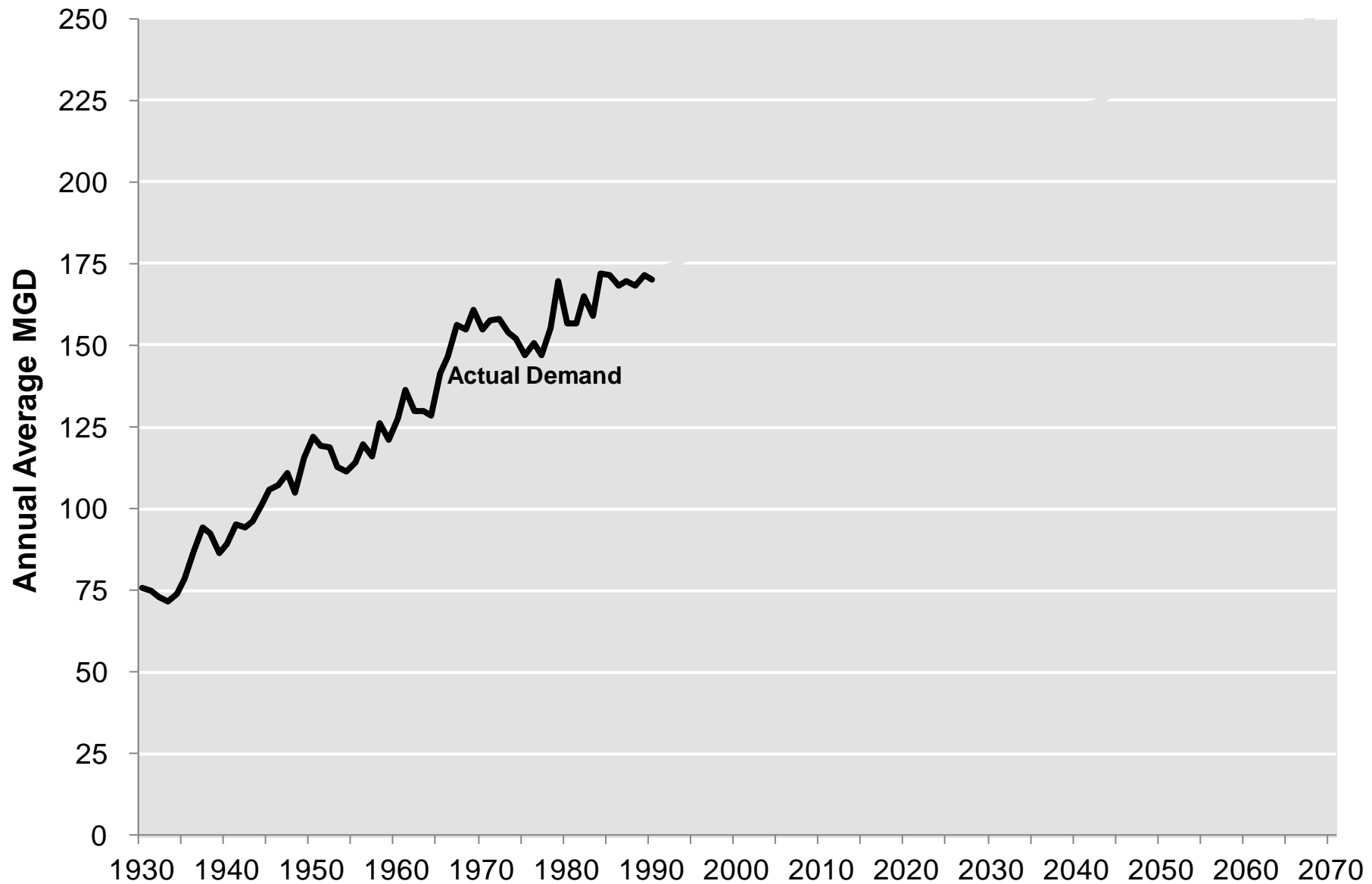
# Historic Demand – Greeley, CO



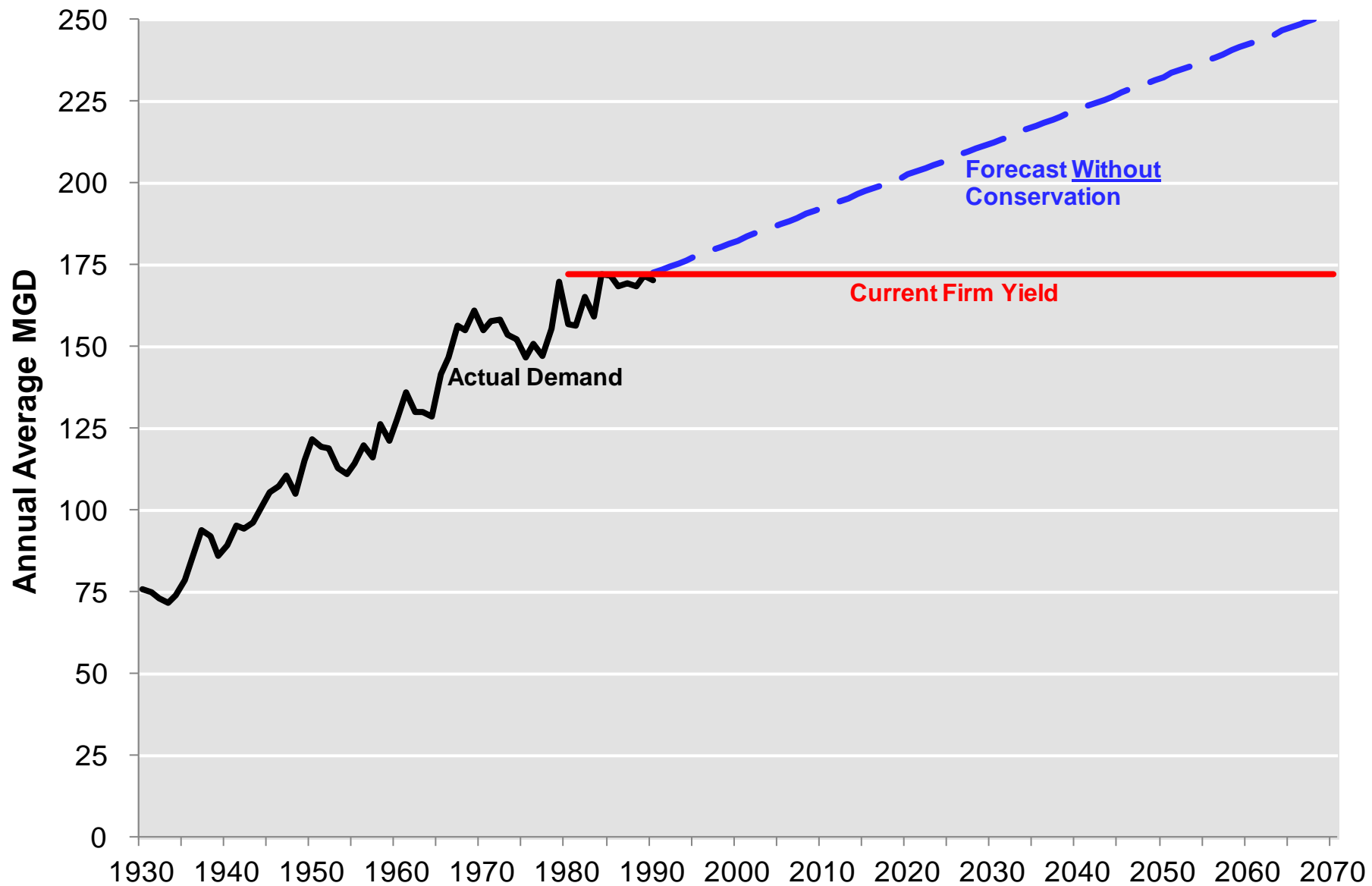
# 1997 – 2013 Greeley, CO



# Seattle Public Utilities - 1990

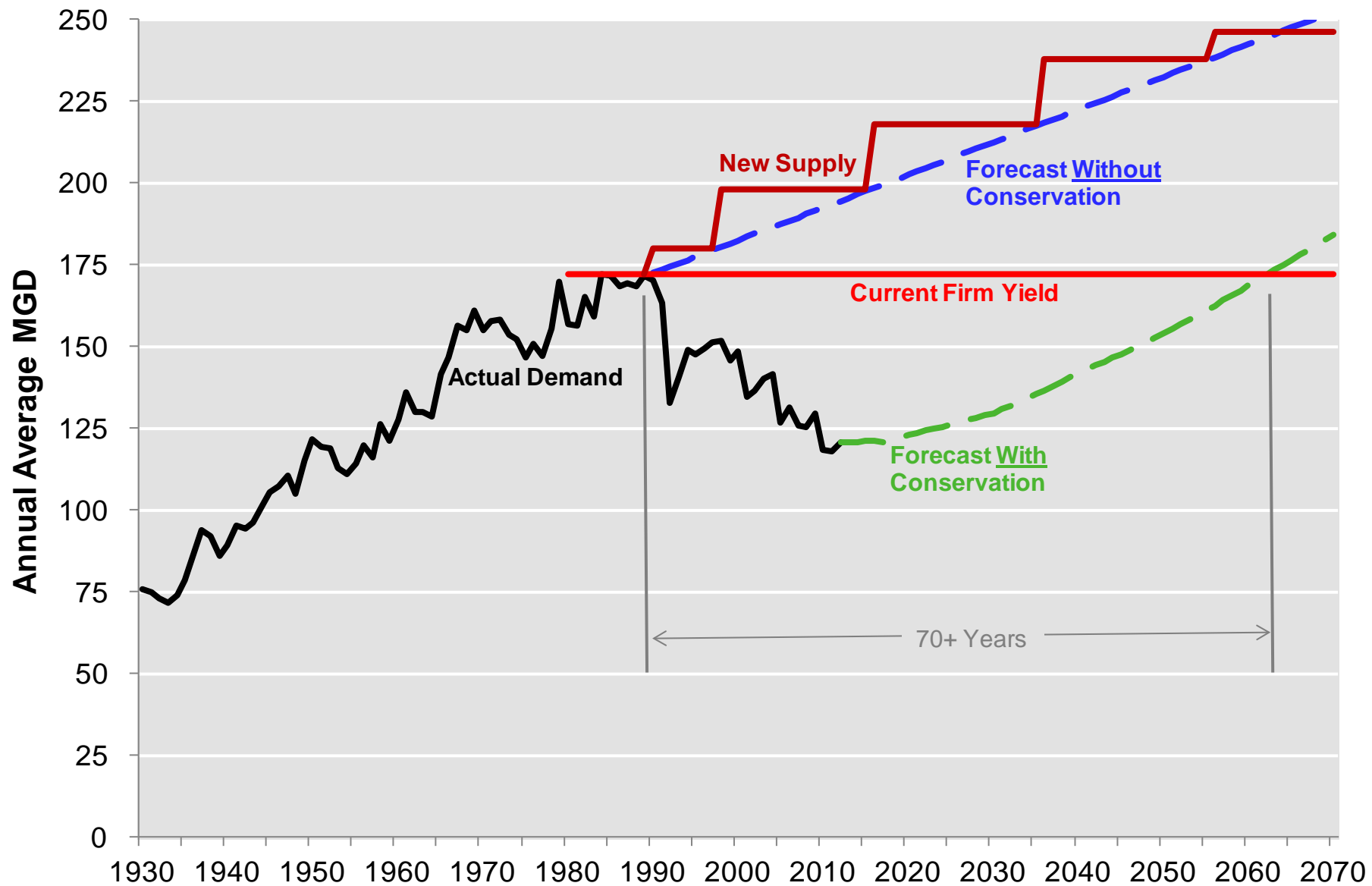


# 1990 – Drought and Demand Management



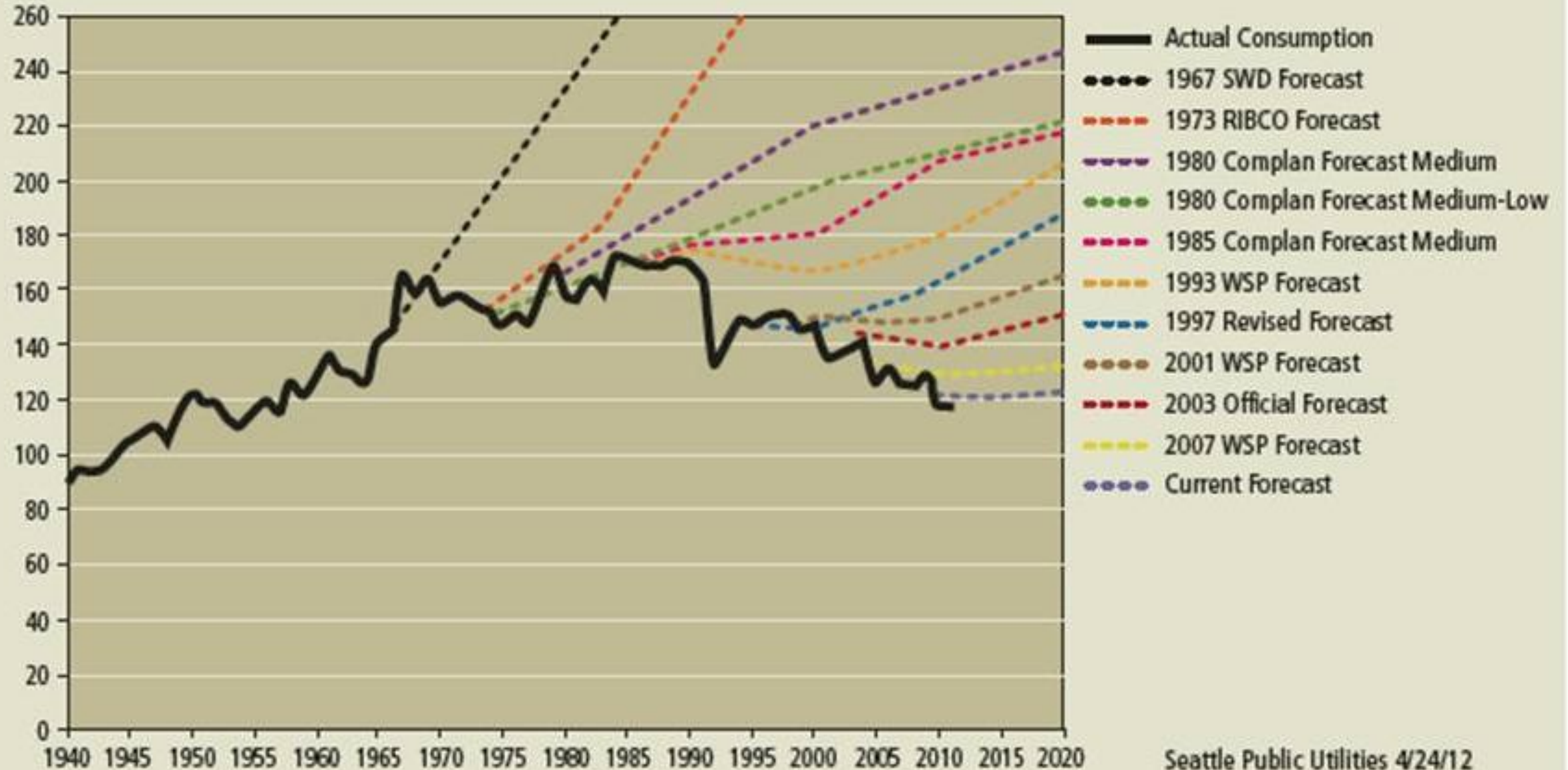


# Unpredictable Demand

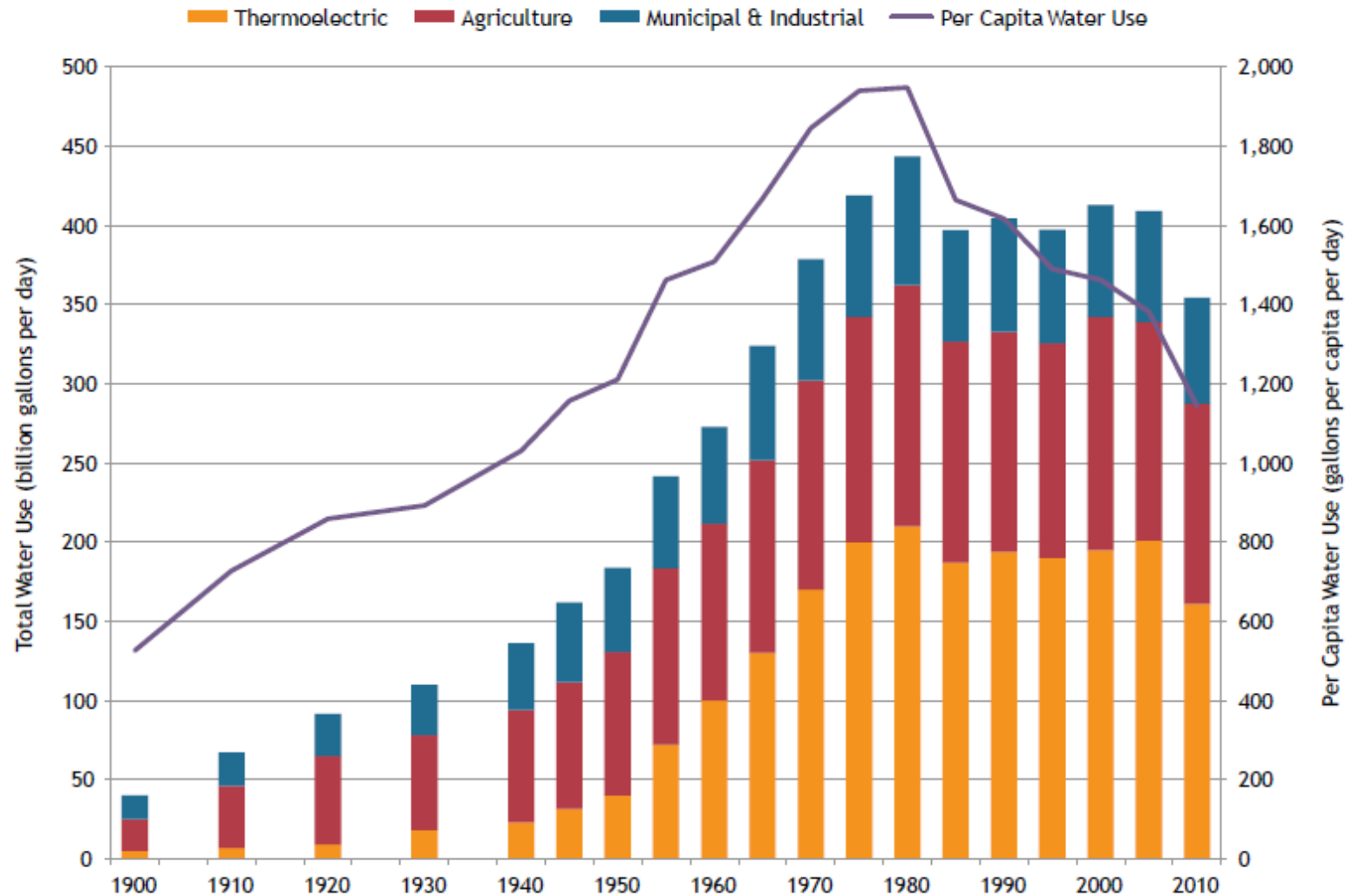




# Annual MGD

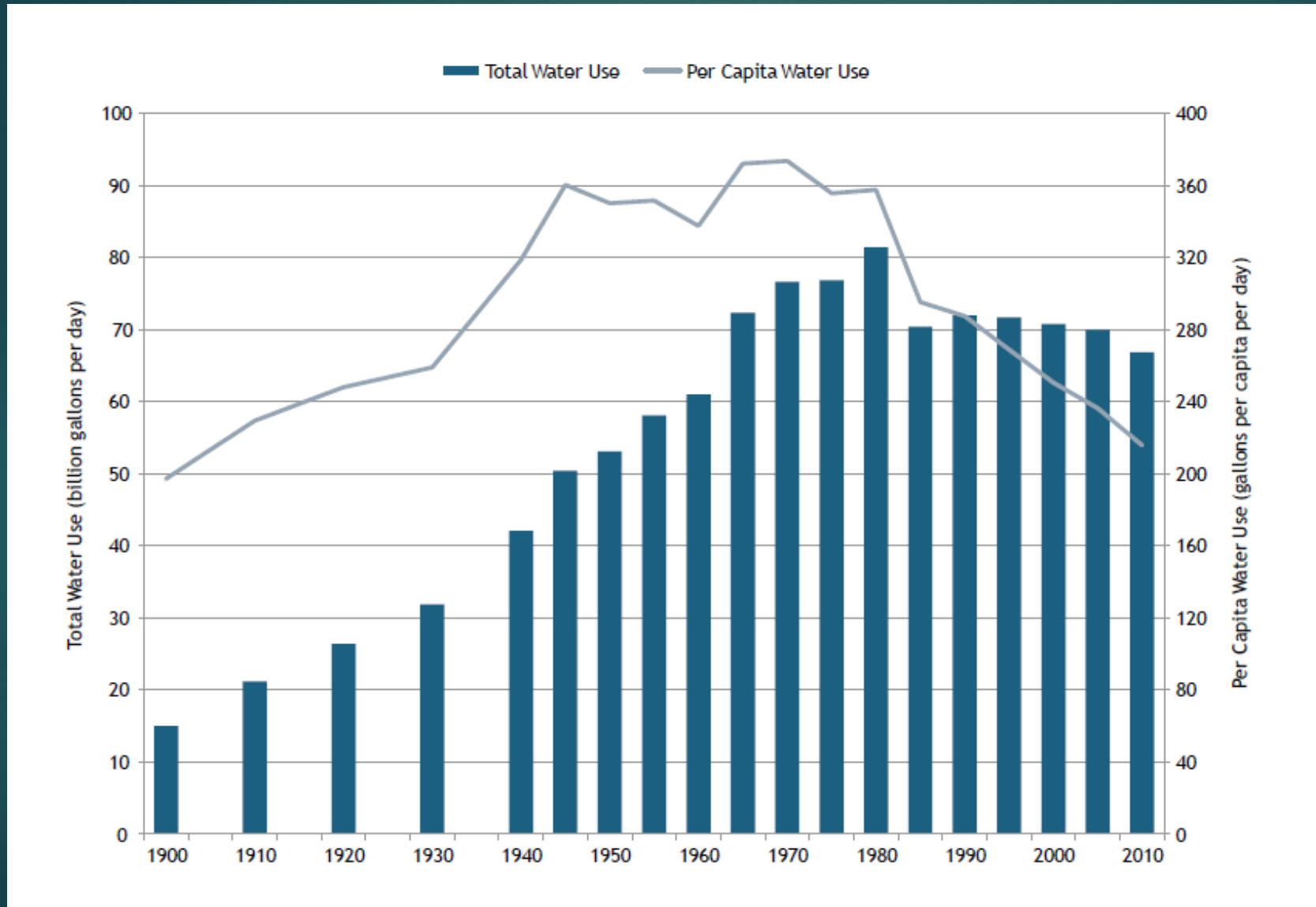


# Water Use in the US, 1900 - 2010



Includes fresh and saline water. Source USGS and Pacific Institute 2015

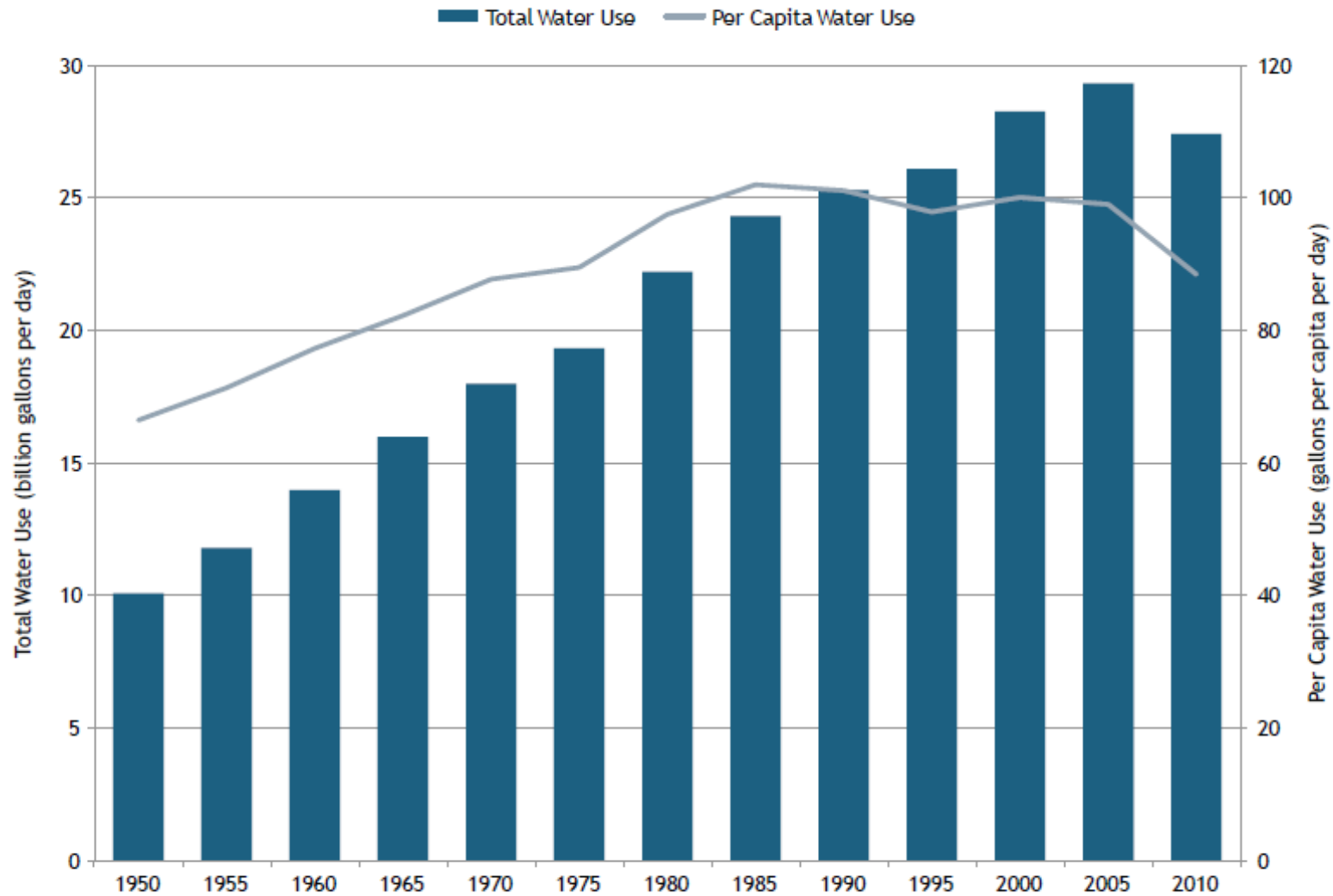
# M&I Water Use in the US, 1900 - 2010



Source USGS and Pacific Institute 2015



# Residential Water Use in US, 1950 - 2010

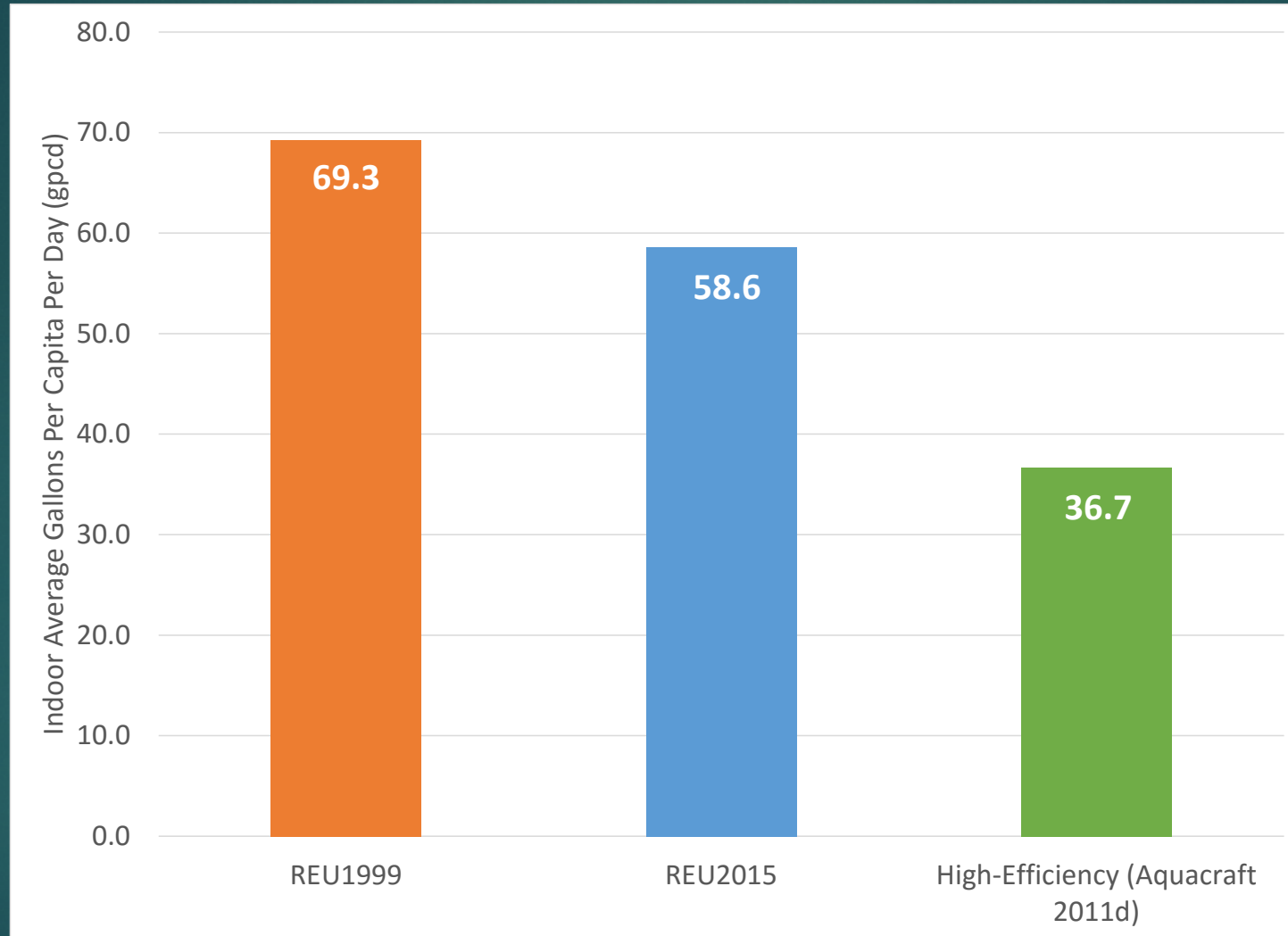


- Water Providers
  - Water Rates
  - Connection Fees
- Federal, State, and Local Codes and Standards

Source USGS and Pacific Institute 2015



# Residential Indoor GPCD

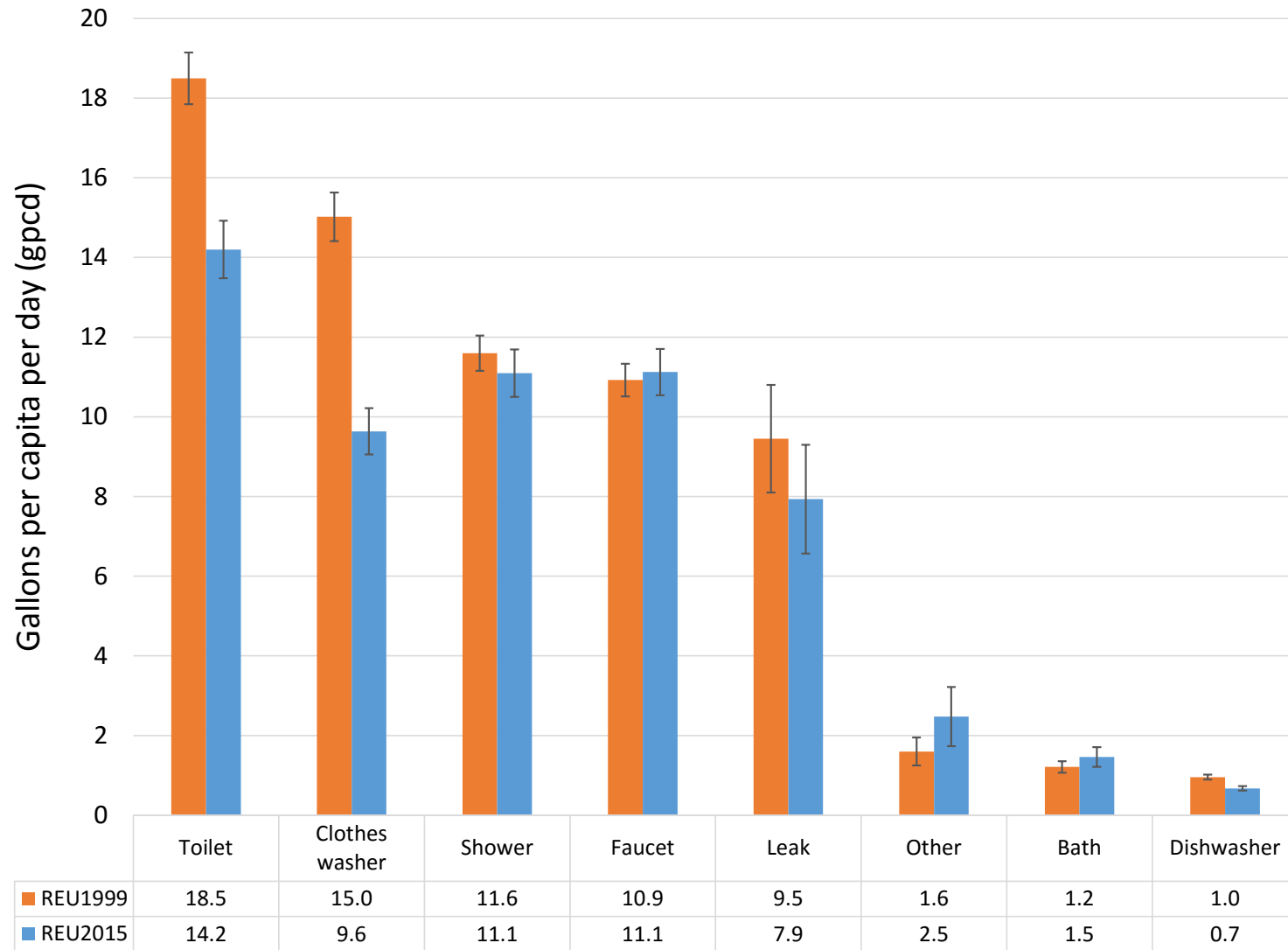


1999 vs. 2015 =  
15.4% reduction

2015 vs. HE =  
37.4% reduction

Source: Water Research Foundation (2015) Residential End Uses of Water Update – #4309. Denver, CO.

# Indoor GPCD Comparison



- Statistically significant reductions in:
- Clothes washer
  - Toilet
  - Dishwasher

Source: Water Research Foundation (2015) Residential End Uses of Water Update – #4309. Denver, CO.

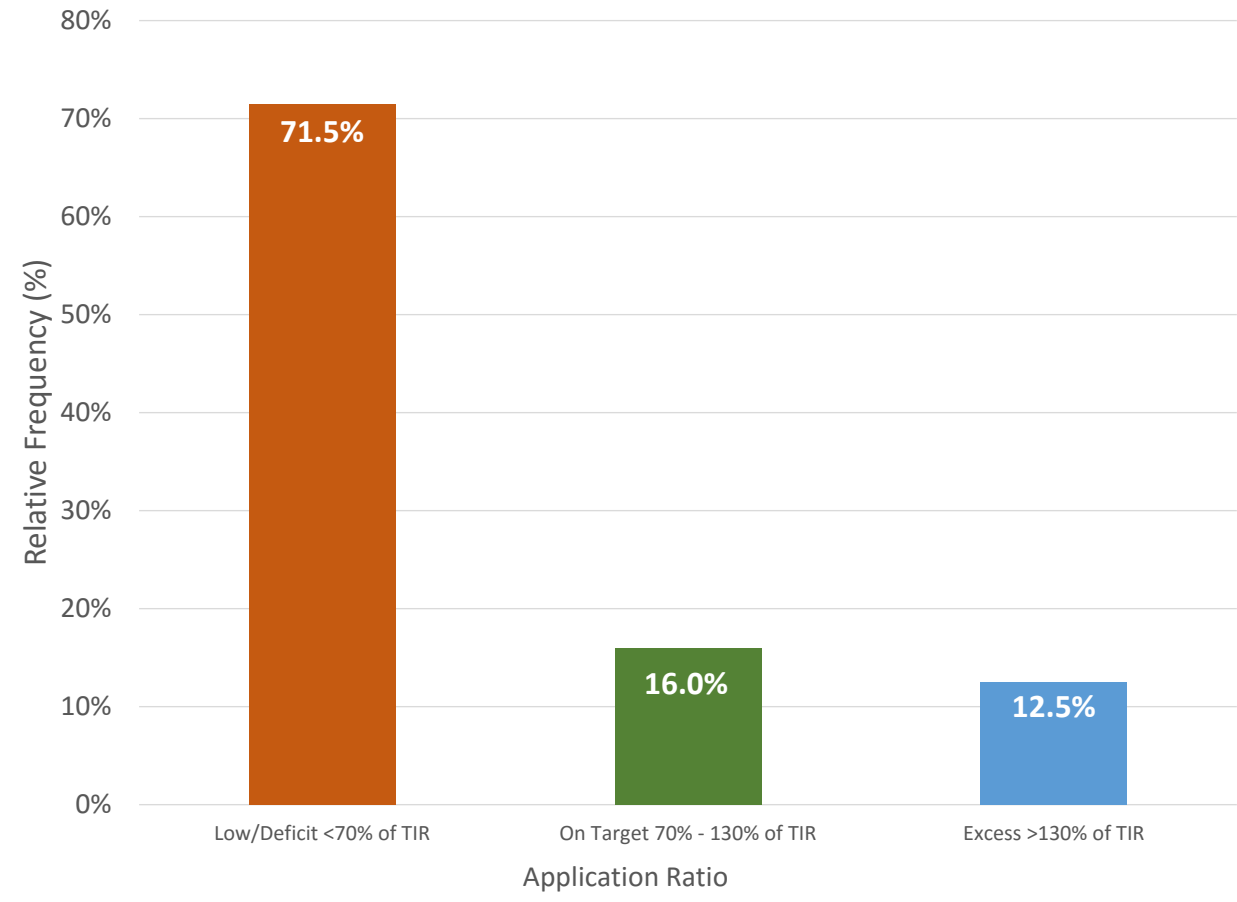
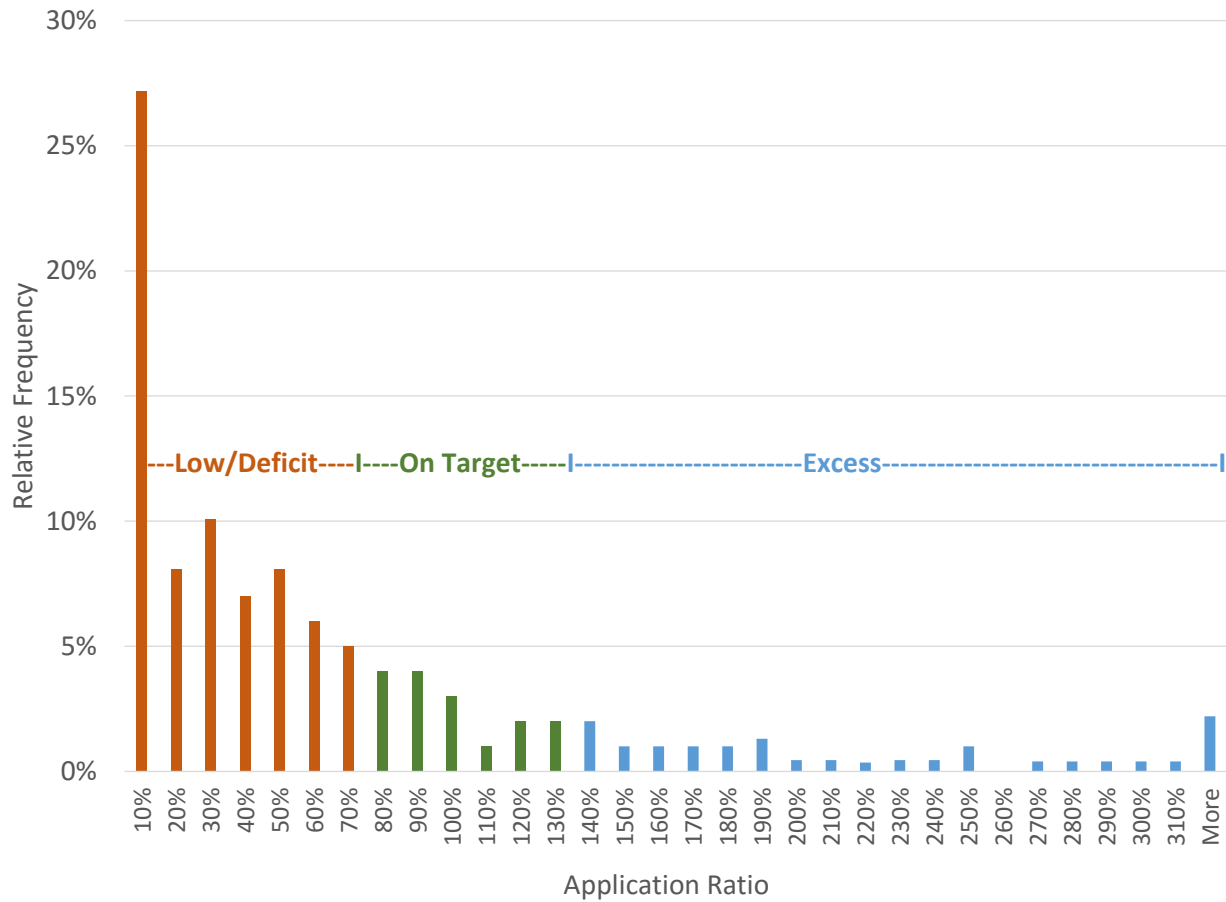


# Impact of HE Toilets and Clothes Washers

- ▶ Clothes washers – 5.4 gpcd savings
  - ▶ 591.3 billion gallons per year (assuming 300,000,000 people in US)
- ▶ Toilets – 4.3 gpcd savings
  - ▶ 470.85 billion gallons per year
- ▶ Combined annual savings volume (1.06 trillion gallons) = 1/9 total volume of Lake Mead



# Residential Outdoor Water Use



Source: Water Research Foundation (2015) Residential End Uses of Water Update – #4309. Denver, CO.



# Other Urban Demand Sectors Have Increased Efficiency

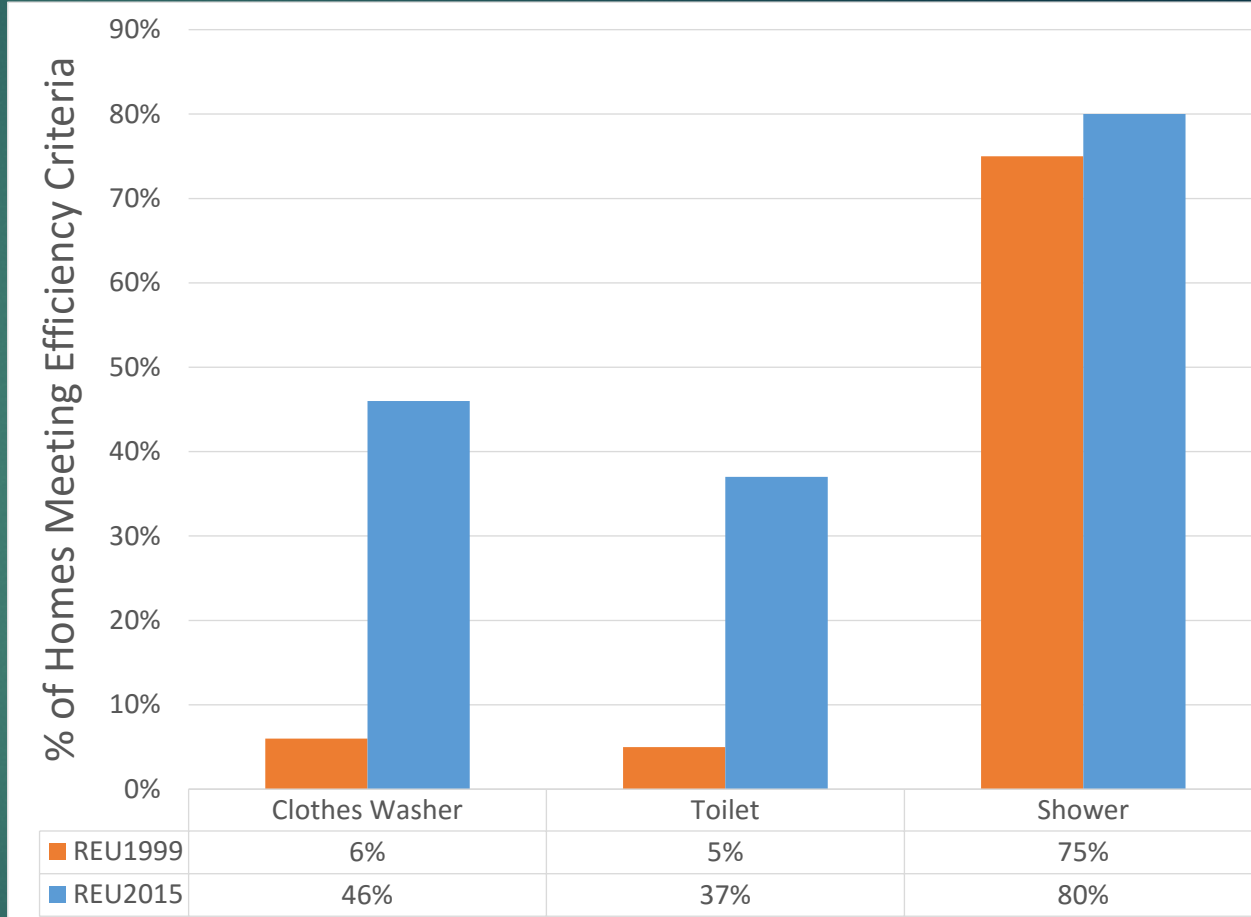
- ▶ Commercial
  - ▶ Institutional
  - ▶ Industrial
  - ▶ Landscape/Agriculture
  - ▶ Water loss
- 
- Water Rates
  - Connection Fees
  - Federal, State, and Local Codes and Standards





# Future Conservation Potential

- ▶ A lot.
- ▶ We're almost...half way there!
- ▶ New technology
- ▶ Outdoor efficiency
- ▶ Leak detection
- ▶ Advanced metering
- ▶ Customer engagement through data and information



Source: Water Research Foundation (2015) Residential End Uses of Water Update – #4309. Denver, CO.

Average Efficiency Criteria: Clothes washers  $\leq 30$  gallon per load  
Toilets  $\leq 2.2$  gallons per flush  
Showers  $\leq 2.5$  gpm



# Future Trends

- Technological change
- Behavioral change
- More intense and frequent drought
- Water demand management at the retail level
- Water budgets
- More predictable





# 1995 – 2015 – 2035 and beyond...

- ▶ 1995 – 2015
  - ▶ American urban water demand changed.
  - ▶ Less predictable
  - ▶ Substantial efficiency gains
- ▶ 2015 – 2035
  - ▶ American urban water demand will continue to change.
    - ▶ Expect indoor and outdoor reductions from residential and other sectors.
  - ▶ Increased efficiency
  - ▶ More predictable





Thank You

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