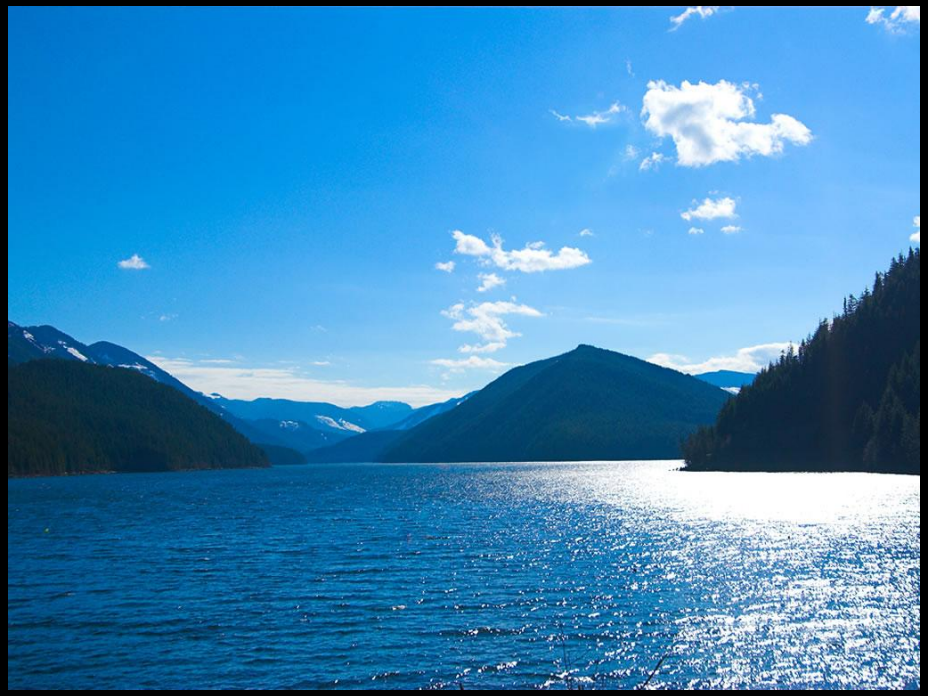


Urban Water Demand Roundtable

Arizona State University, Tempe, Arizona
April 18 & 19, 2013

Seattle Public Utilities

Why Are We Here?

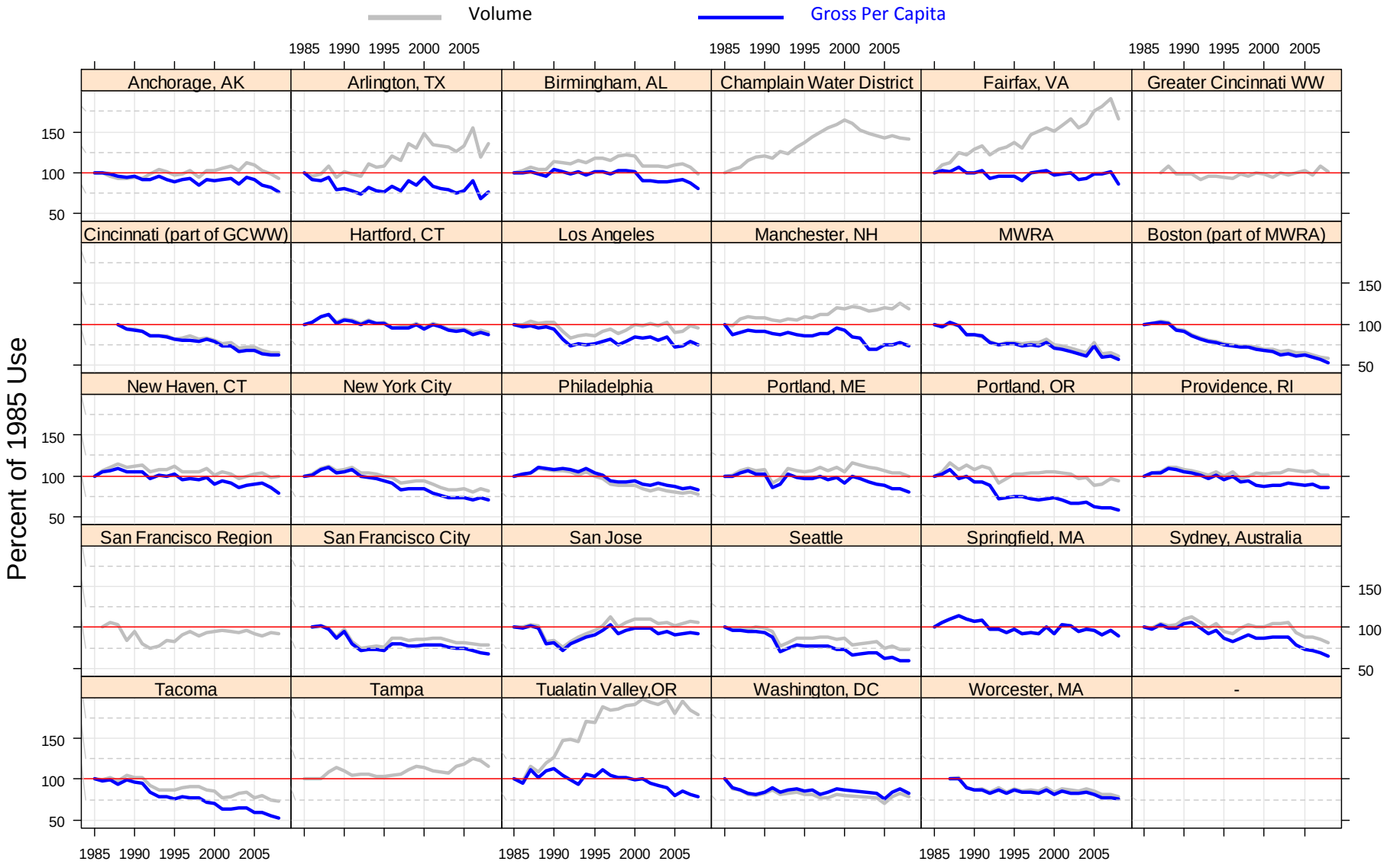
Bruce Flory

Principal Economist

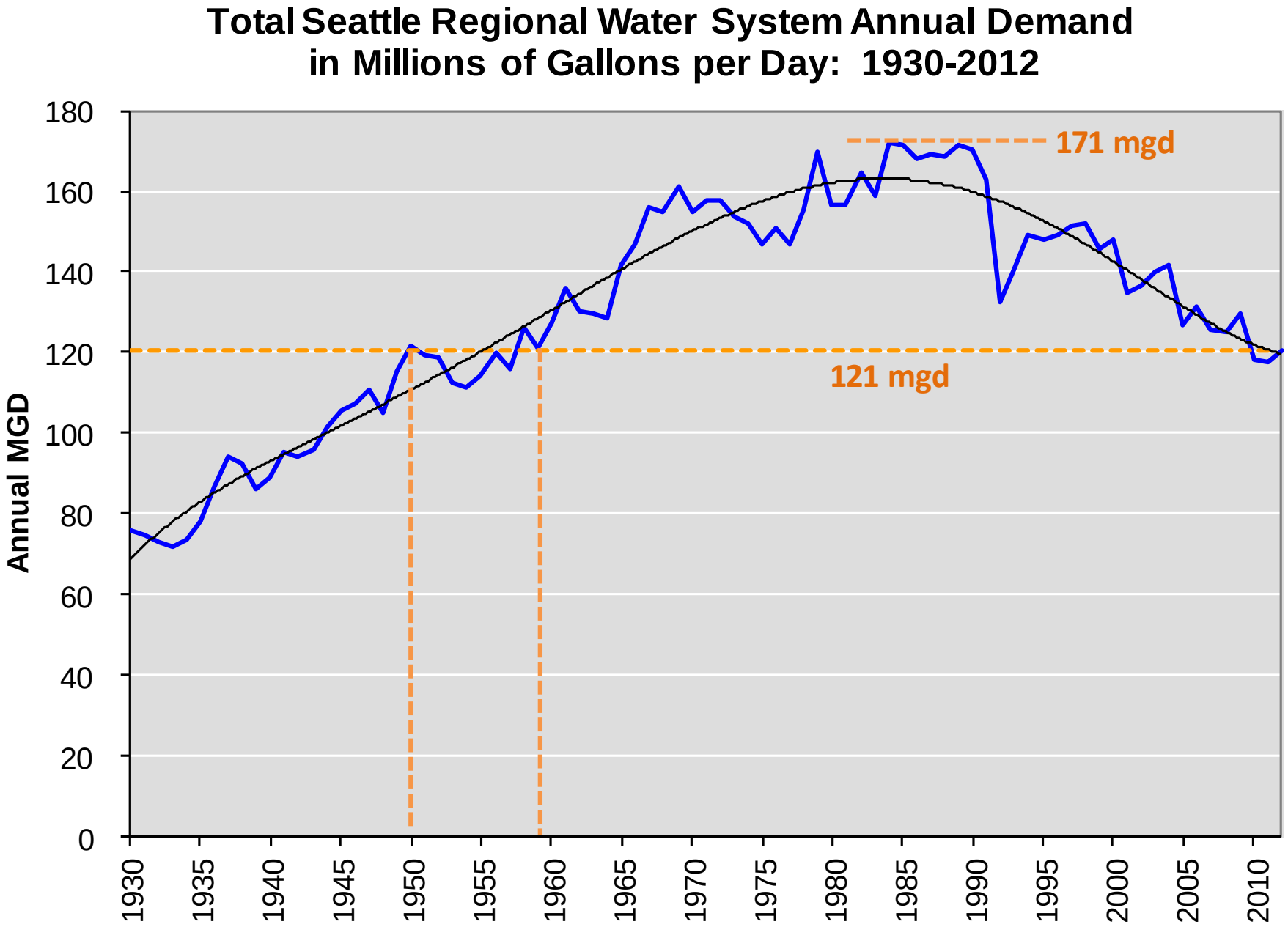
Seattle Public Utilities

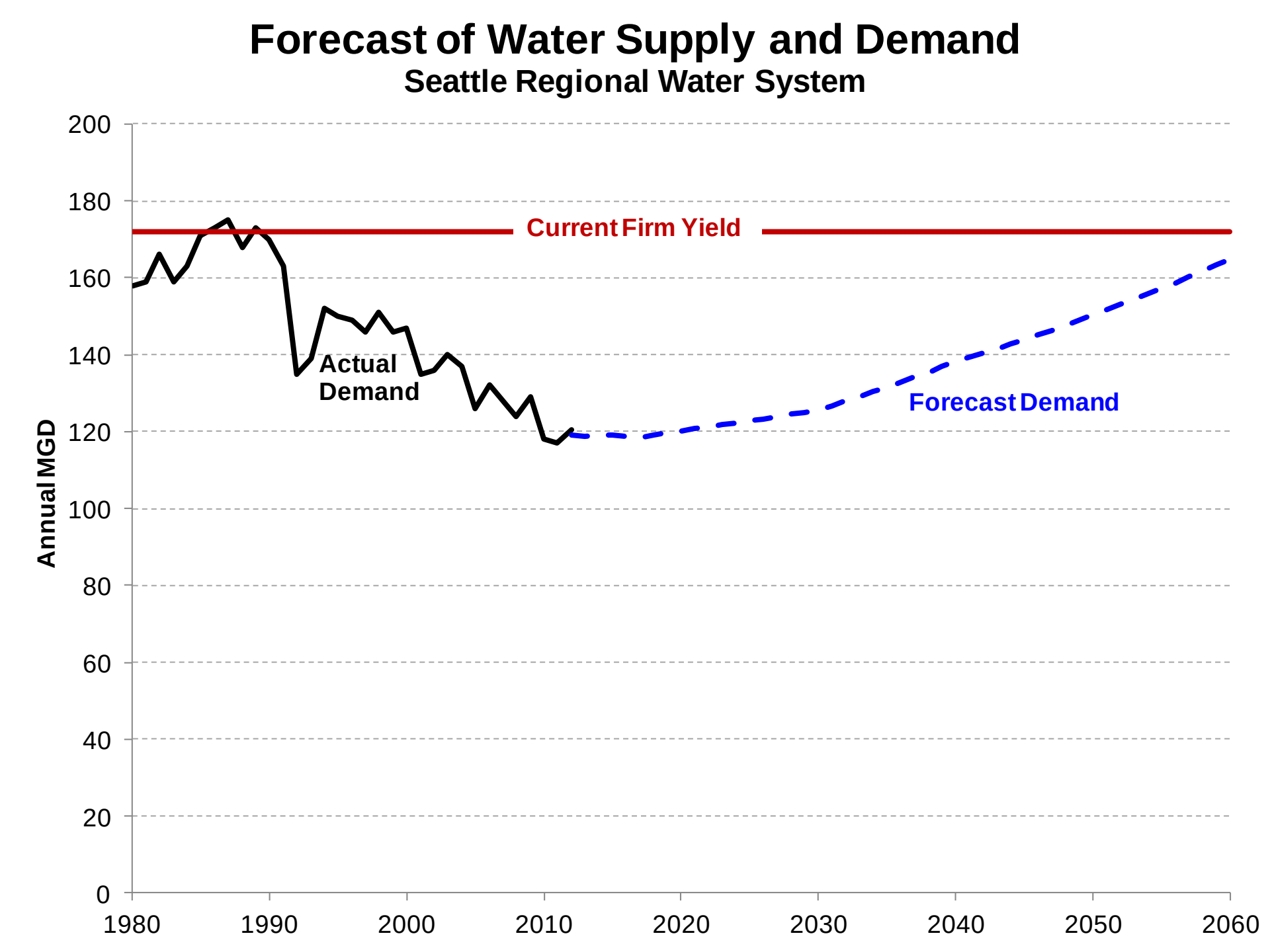
National Water Use Comparison

(Compiled by the Massechusetts Water Resource Authority)



** For a few cities where 1985 data was not available the indexing is on the earliest date provided.*


Total Seattle Regional Water System Annual Demand
in Millions of Gallons per Day: 1930-2012
Annual MGD
180
160
140
120
100
80
60
40
20
0
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
171 mgd
121 mgd


Forecast of Water Supply and Demand
Seattle Regional Water System
Annual MGD
200
180
160
140
120
100
80
60
40
20
0
1980
1990
2000
2010
2020
2030
2040
2050
2060
Current Firm Yield
Actual Demand
Forecast Demand

If Not Conservation, what?

- Demand Forecasting
- Rate Structure
- Politics of Rapidly Rising Rates

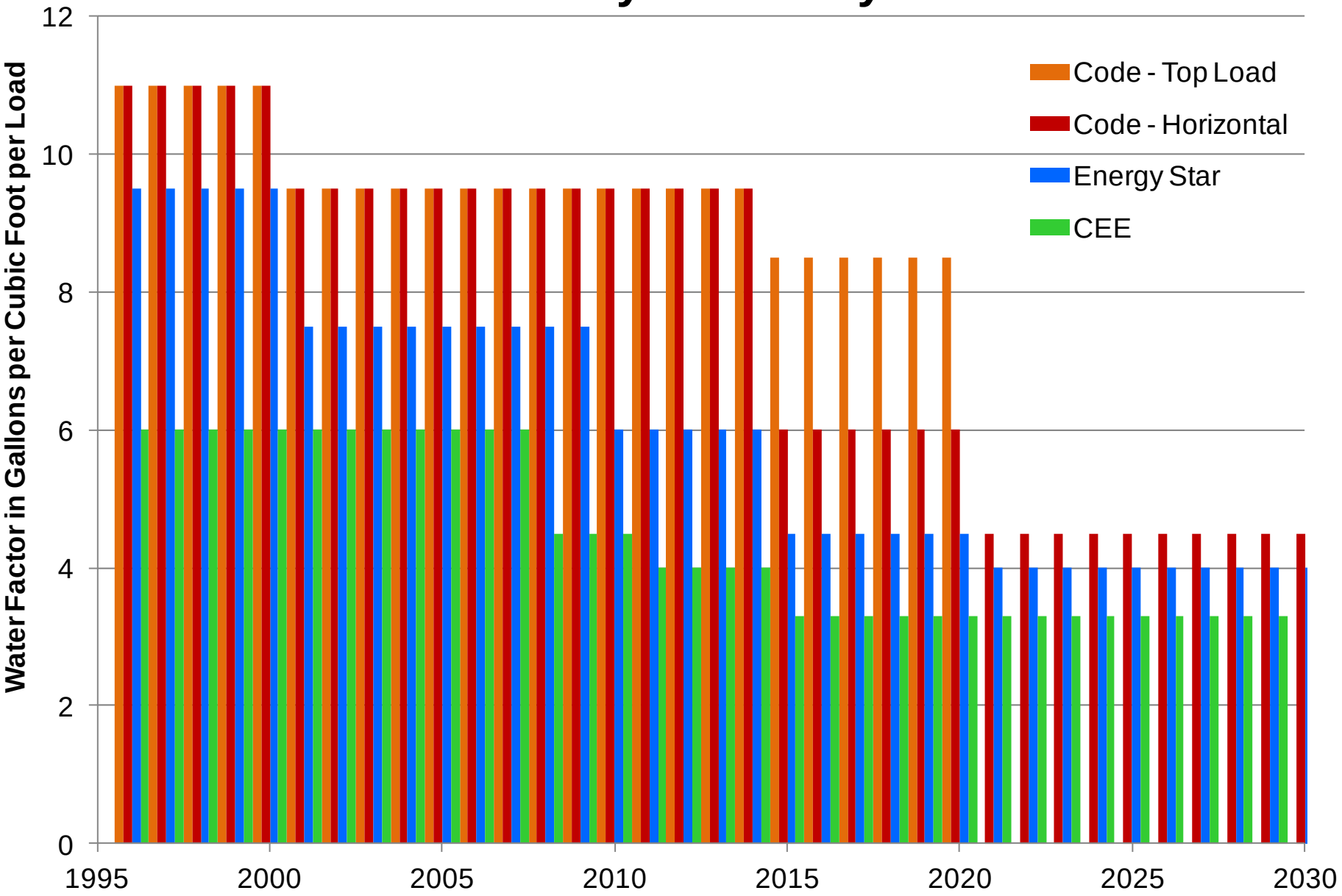
What's Driving Demand Down?

- Price Effects
- Conservation Programs
- Code Savings
- Market Transformation

Passive Savings

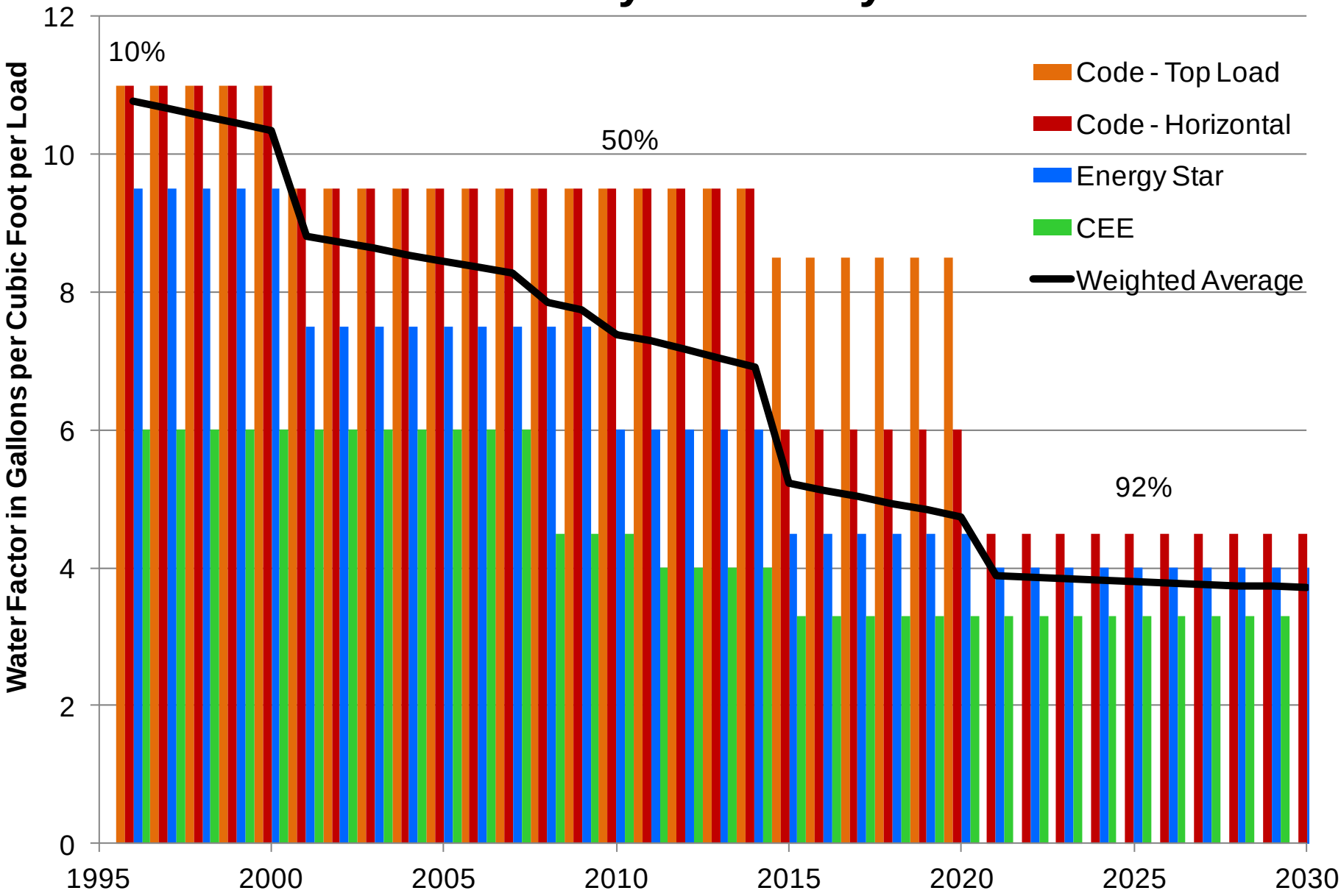
Washing Machine Water Factors

Code and Industry Efficiency Standards

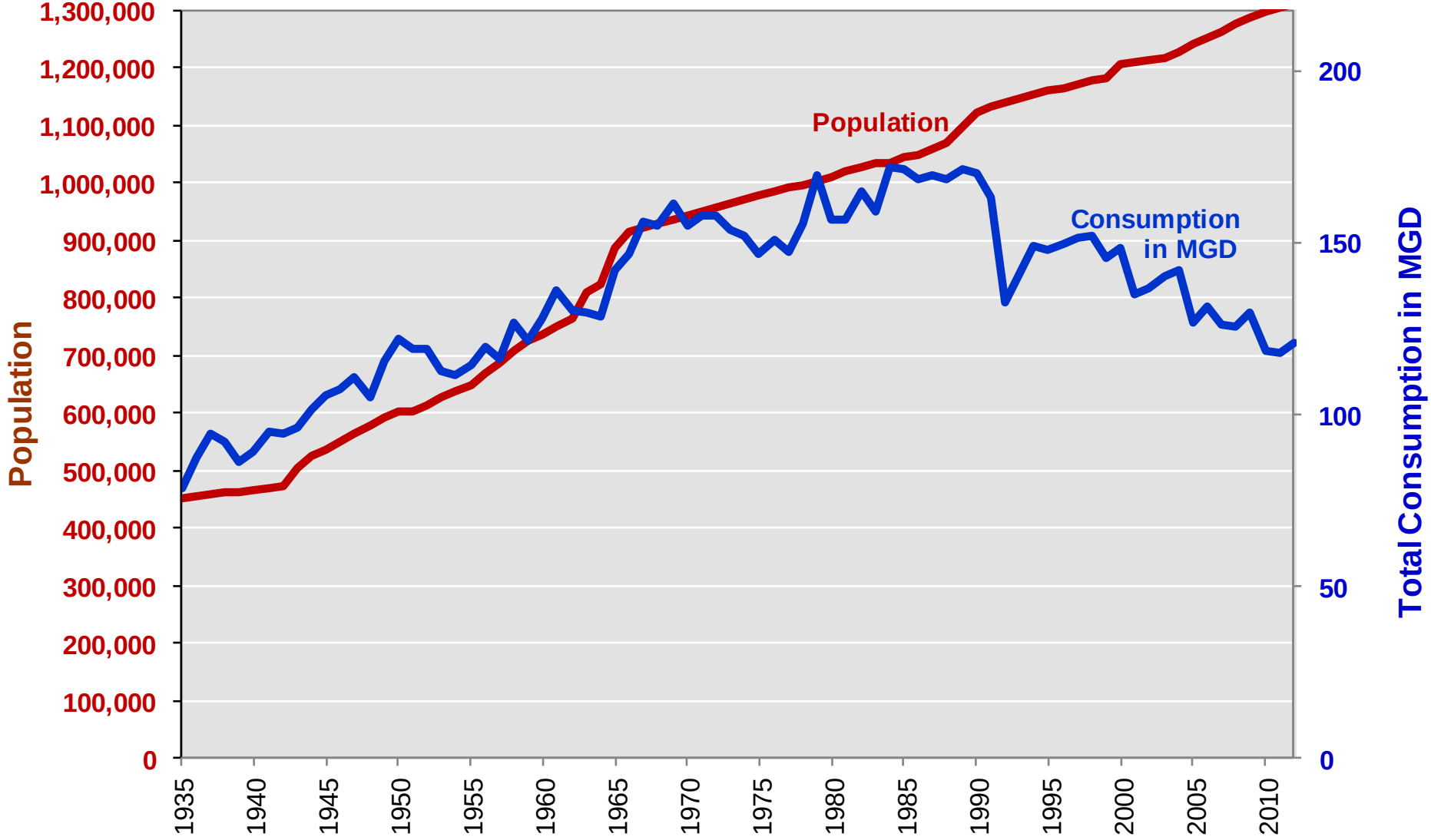


Washing Machine Water Factors

Code and Industry Efficiency Standards

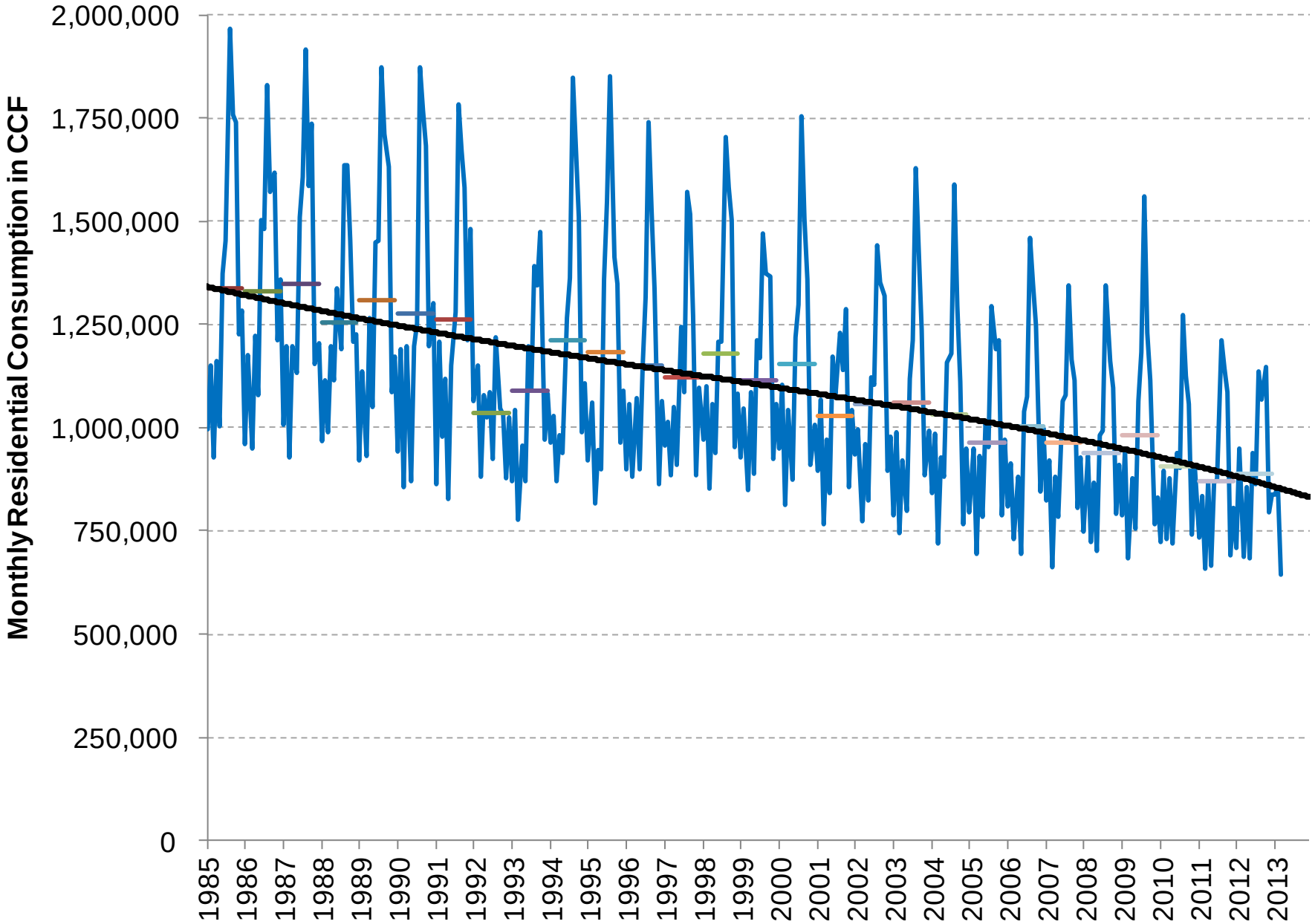


Growth in Population and Water Consumption
Seattle Regional Water System: 1935- 2012



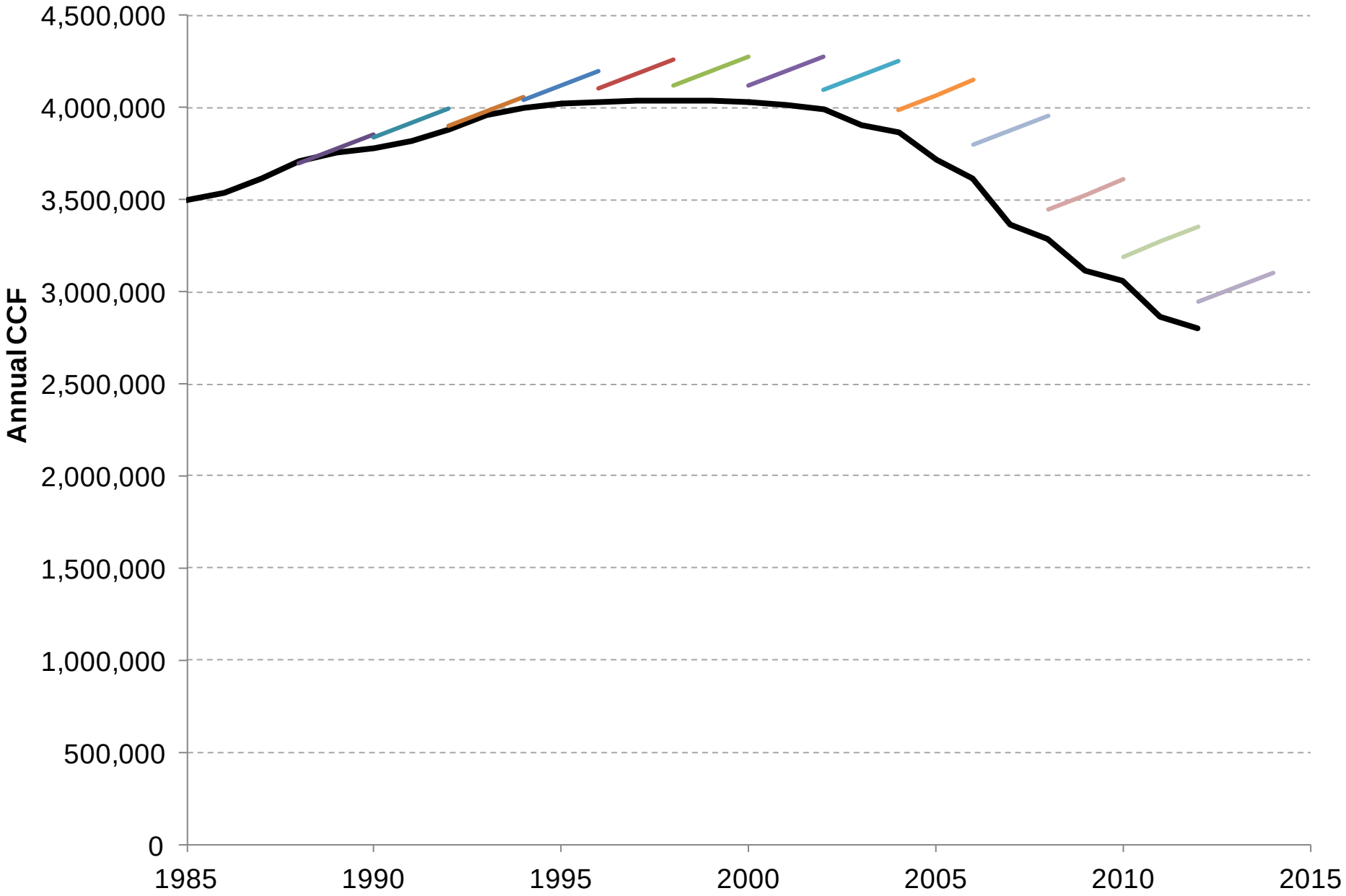

How low can you go?

Cyclical vs. Structural

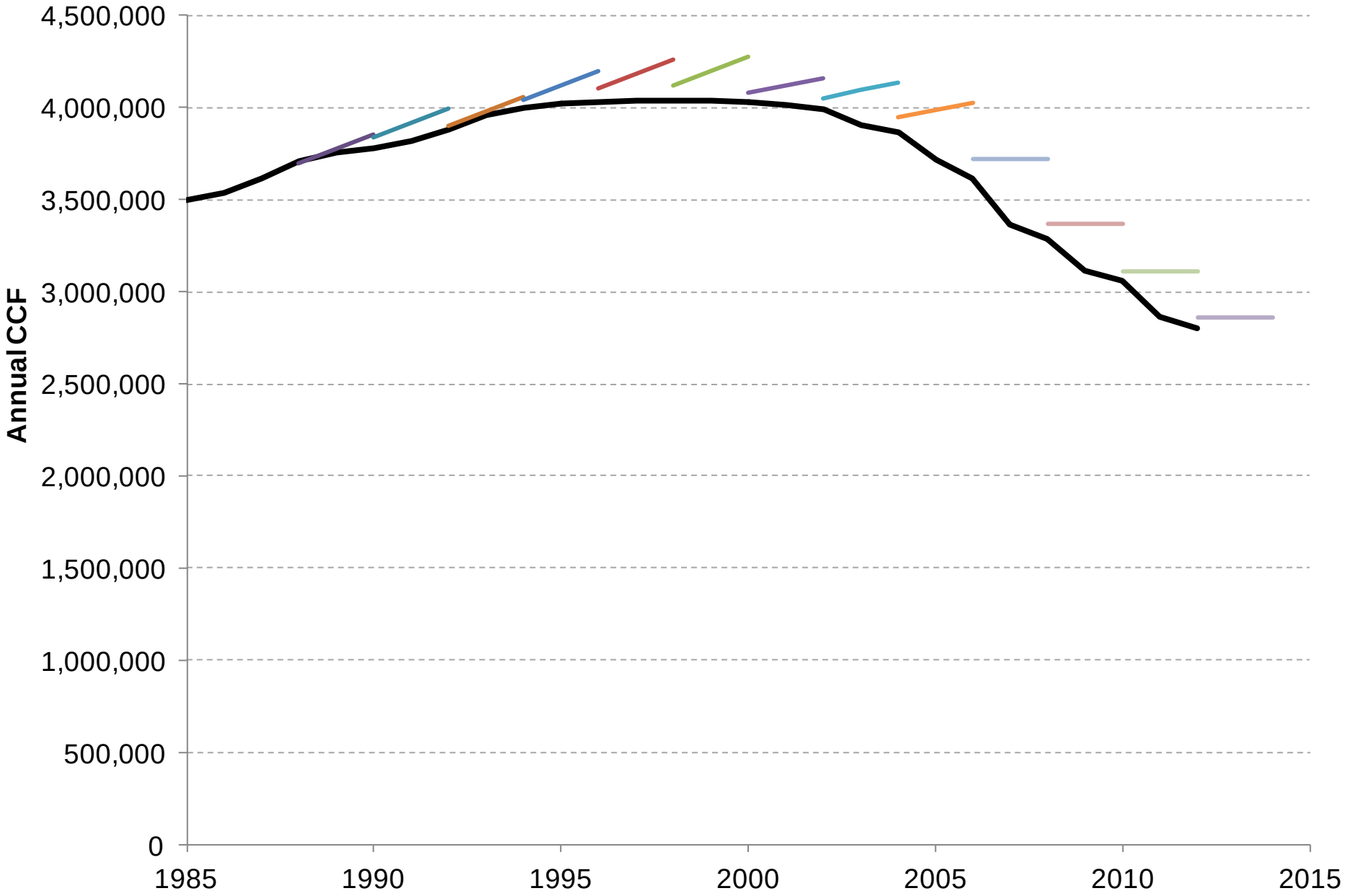


Different Forecast Methods

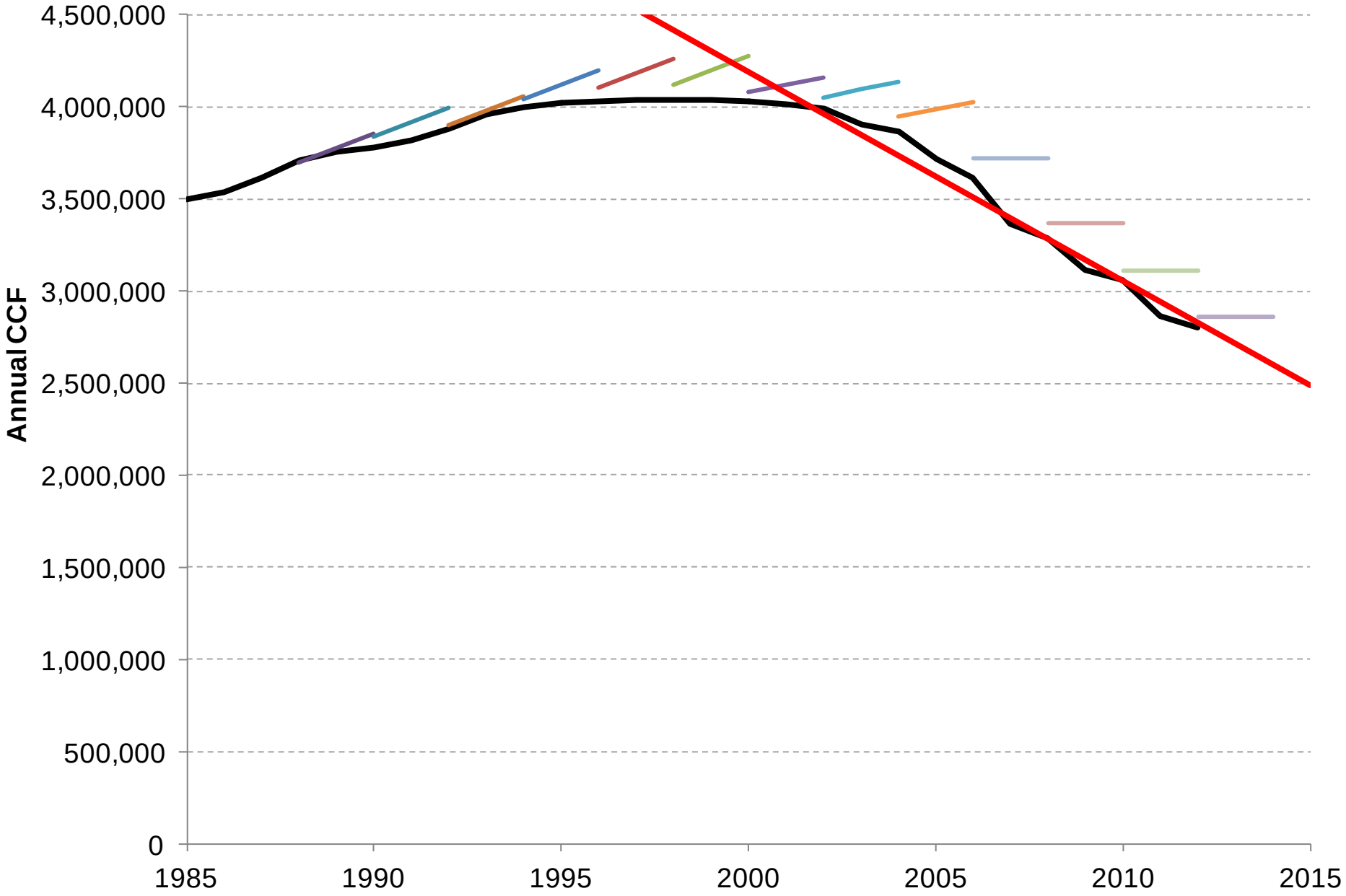
Fixed Flow Factor



No Growth

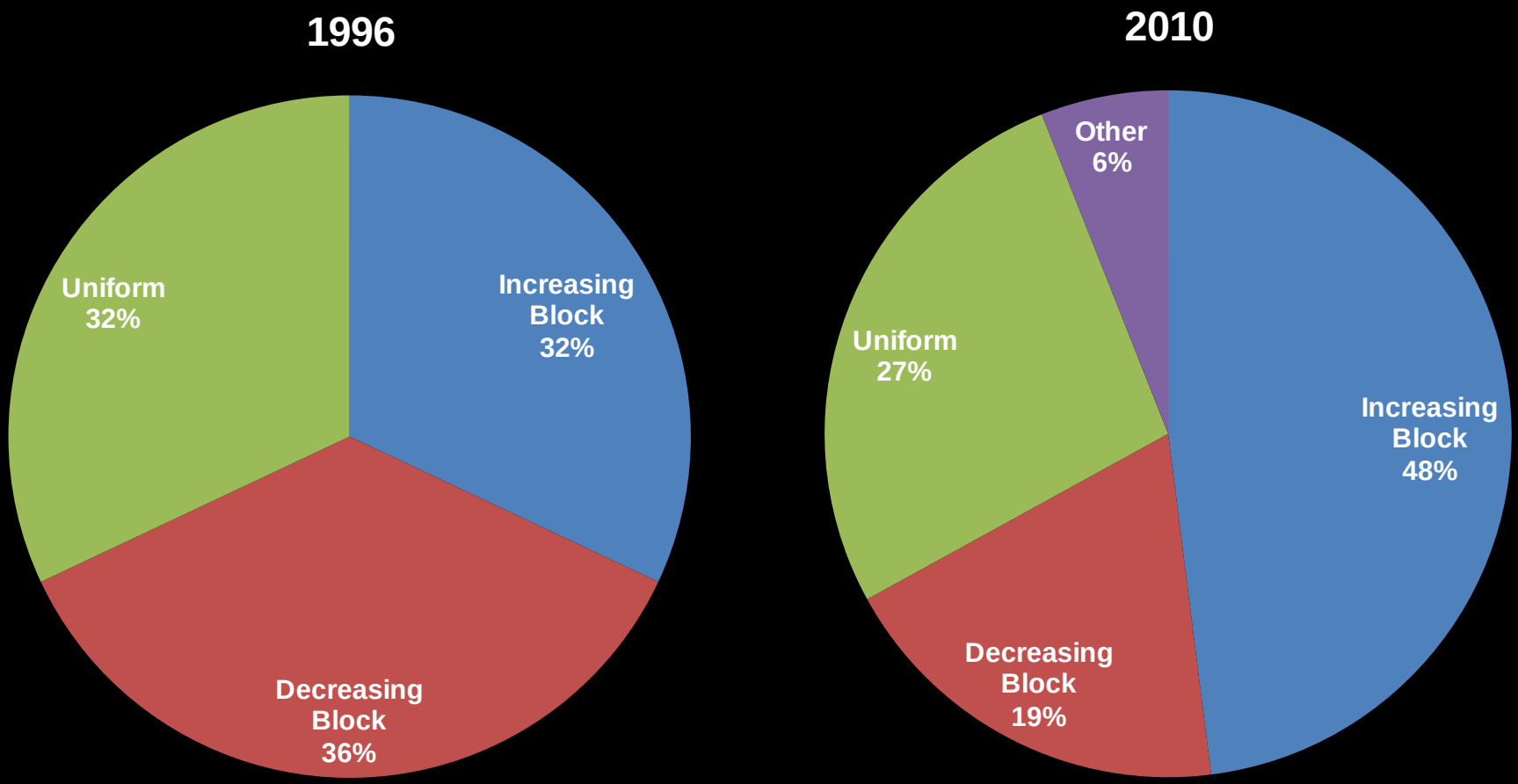

4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Annual CCF
1985
1990
1995
2000
2005
2010
2015

Trend


4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Annual CCF
1985
1990
1995
2000
2005
2010
2015

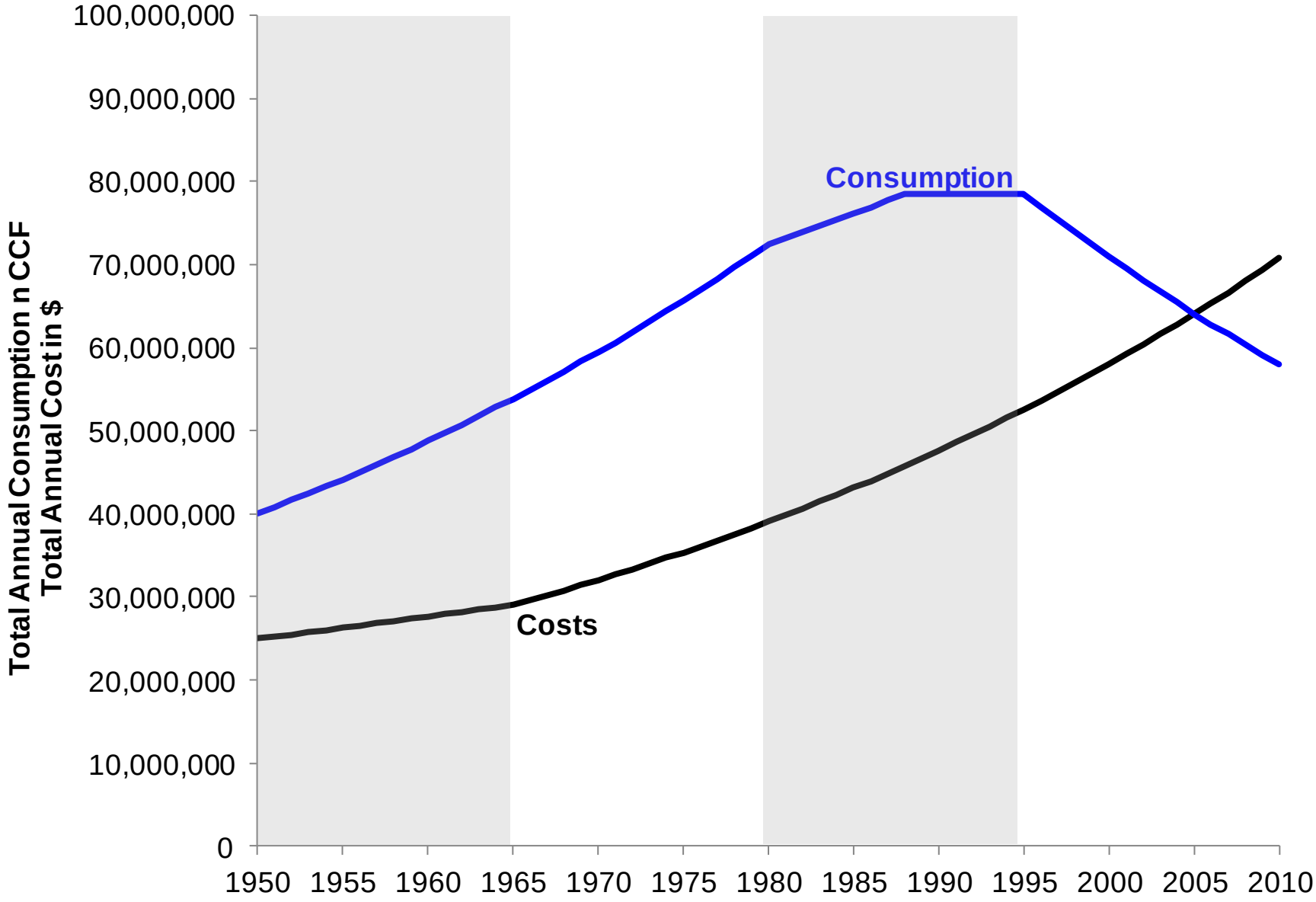
Conservation Rate Structures

Residential Water Rate Structures

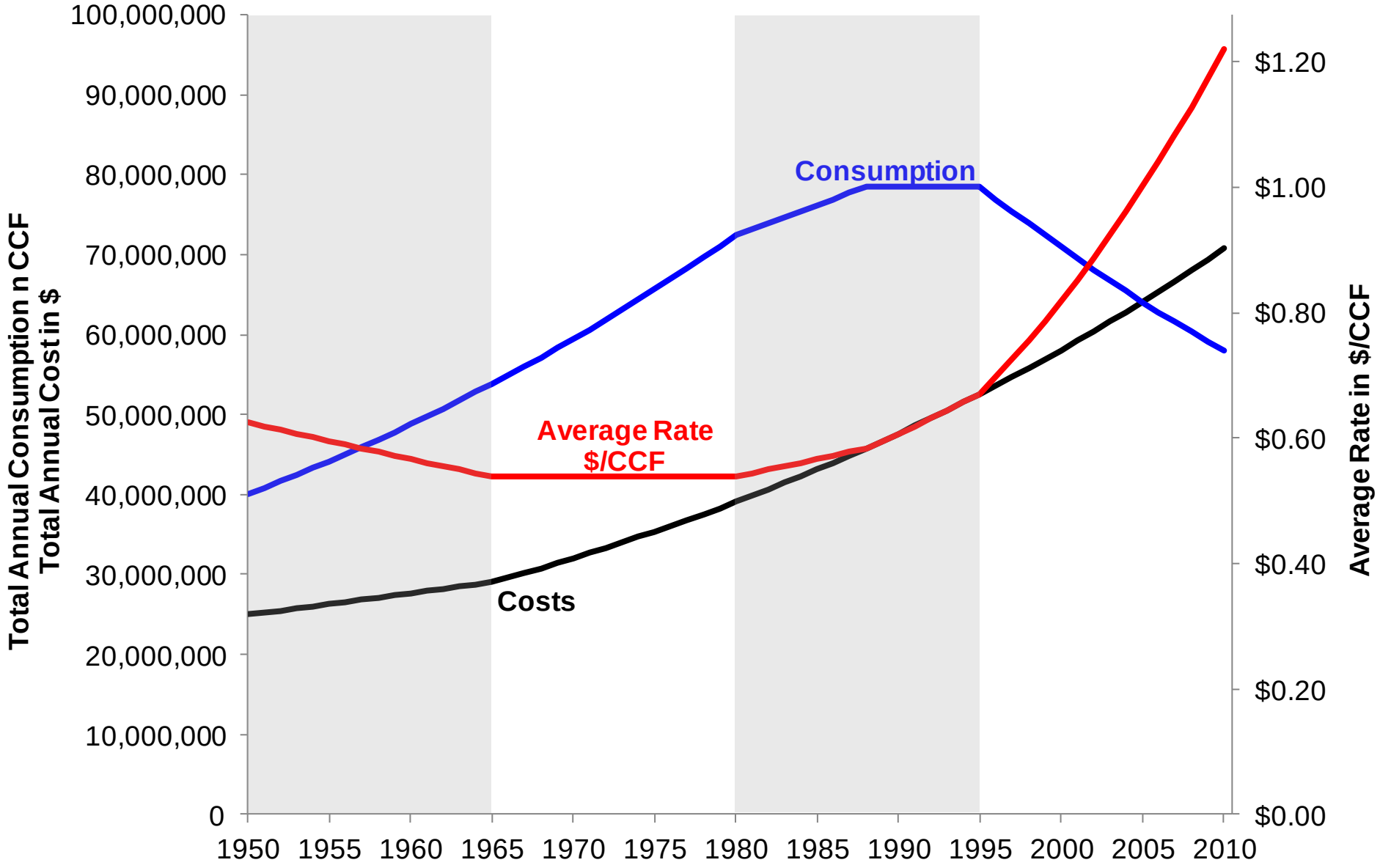


Source: AWWA & Raftelis Consultants

Costs & Consumption



Costs, Consumption & Rates



Business Portland social networking service Celly gets a cash infusion from investors **B3**
Editorial The state's latest revenue forecast is a kicker in the pants **B4**

2013

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The Oregonian
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NEWS FROM THE PORTLAND AREA AND THE NORTHWEST

2/19/13

Using less water boosts rates

With budgets pegged to volume, Portland's utility bureaus see revenue drop as people conserve

By BRAD SCHMIDT
THE OREGONIAN

Use less. Pay more?

It's a strange concept. But in Portland, lower consumption is having an unsettling consequence on water and sewer bills: higher rates.

Thanks to thoughtful habits and energy-efficient home appliances, water consumption here and nationally is in decline. But because a large chunk of utility costs are fixed, city officials say, they must raise rates to make up for the water that customers aren't buying to green the grass or flush the toilet.

So Portland, which already has among the highest water/sewer bills in the country, is set to ask customers to pony up more.

Reining in utility rates was a campaign theme for Mayor Charlie Hales. City residents now face rate increases of 7.8 percent for water and 7.85 percent for sewer and stormwater services, according to budget requests from the Portland Water Bureau and the Bureau of Environmental Services. Final numbers won't be set until May, however, and they'll face plenty of scrutiny before then.

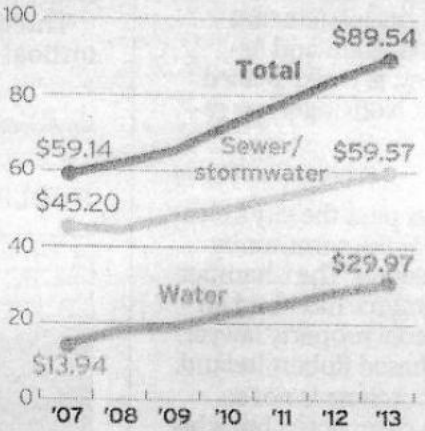
By no means is declining consumption the driving force behind the proposed hikes. Residents have reservoir projects and sewer repairs to thank for that. But consumption does carry a noticeable impact.

For water rates, about one-fifth of

Please see **WATER,** Page B6

Rising utility bills

Typical monthly water and sewer charges in Portland have jumped more than 50 percent in the past seven years.

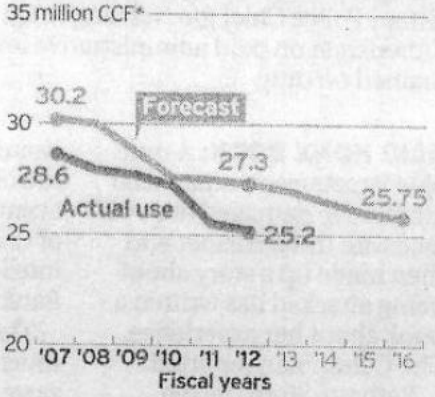


Note: Portland bills homeowners every three months. The water bill above is based on 600 cubic feet per month.

Source: City of Portland

Declining water demand

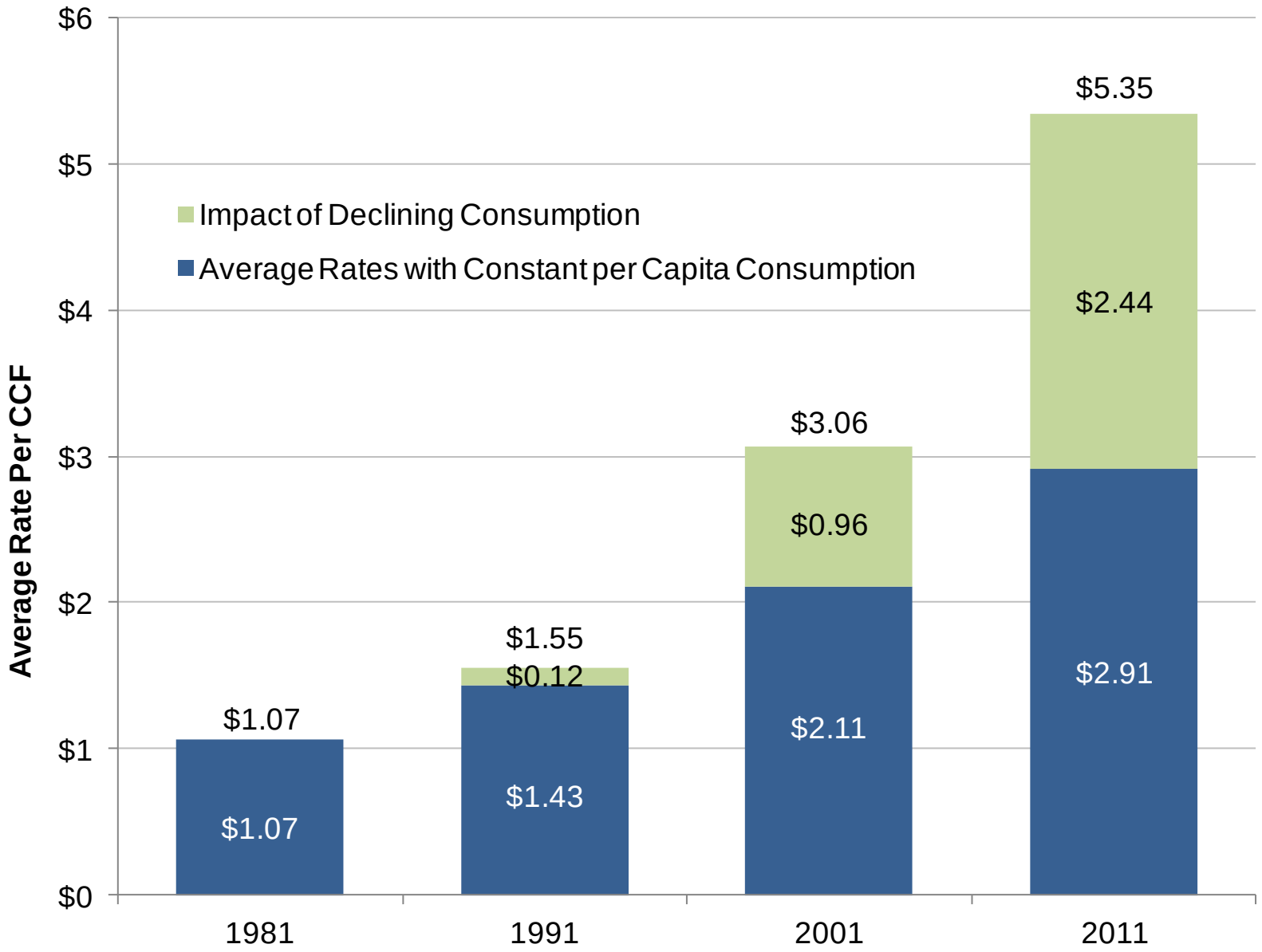
Retail water demand from Portland customers has declined 12 percent since fiscal 2007. Water Bureau officials are forecasting gradual declines in the next few years.



*One CCF equals 100 cubic feet

DAN AGUAYO/THE OREGONIAN

Average Rates in Constant 2011 $s



Convince Us

In Summary

- Not accounting for conservation
- More sensitive rate structures
- Political resistance

Research Needs & Questions

- Household Income and Water Use
- End Use Studies – esp. MF and CII
- Separating sources of conservation and accounting for overlap
- Modeling passive savings
- Future shock – what new technologies and trends can we foresee now?
- Technology tipping points
- Distinguishing cyclical from structural effects