American Water Works Association

Pacific Northwest Section – AWWA

2015 Conference

Managing Financial Risk and Declining Water Demand

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May 1, 2015

FCS GROUP
Solutions-Oriented Consulting

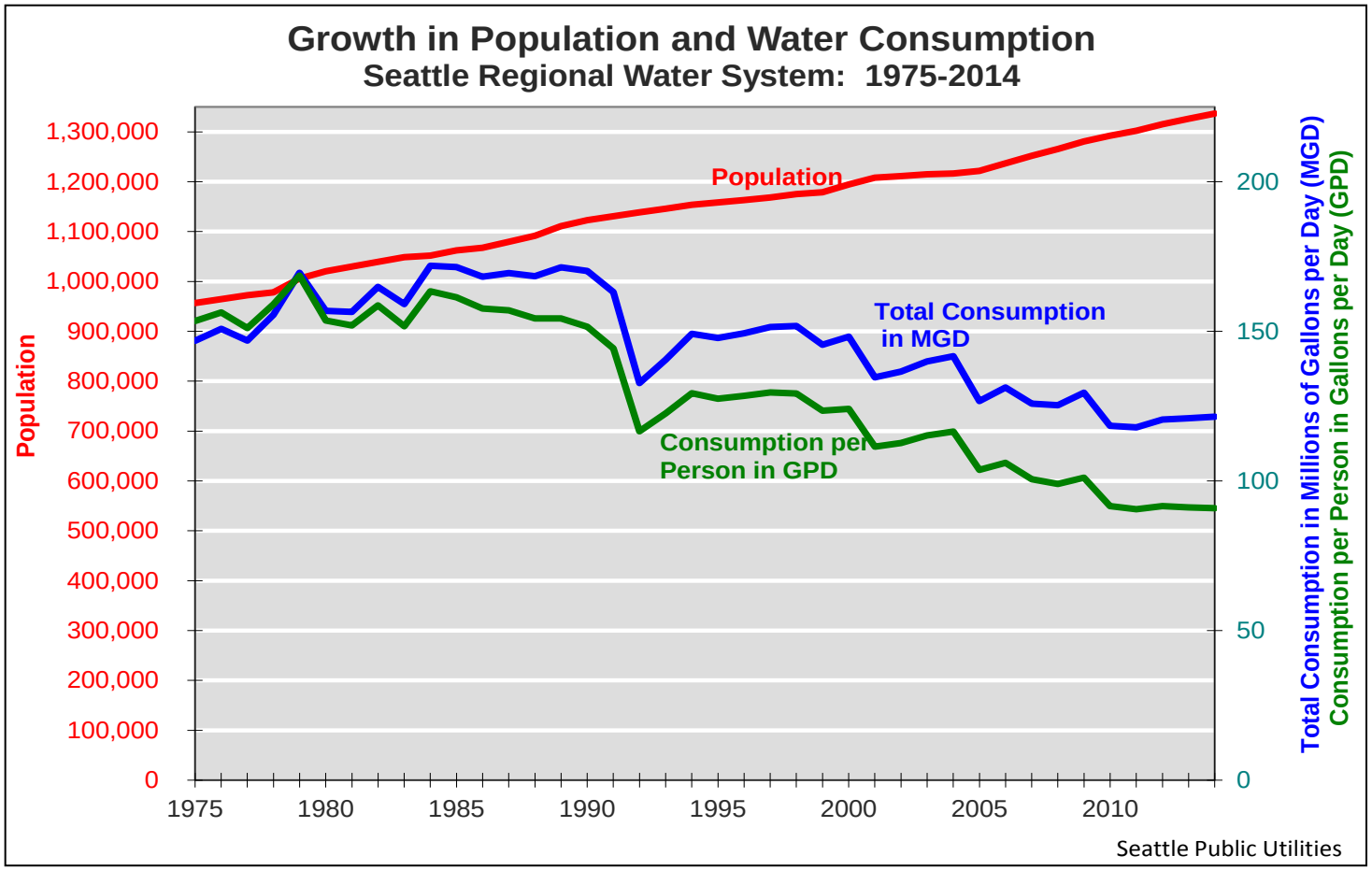
Presentation Outline

- **Evidence of Declining Demand**
- **Possible Explanations for Declining Demand**
  - Reasons
  - Conclusions
- **Managing the Financial Risk of Declining Demand**
  - Financial Planning
  - Reserve Policies
  - Rate Structure
  - System Planning

Is Demand Declining?

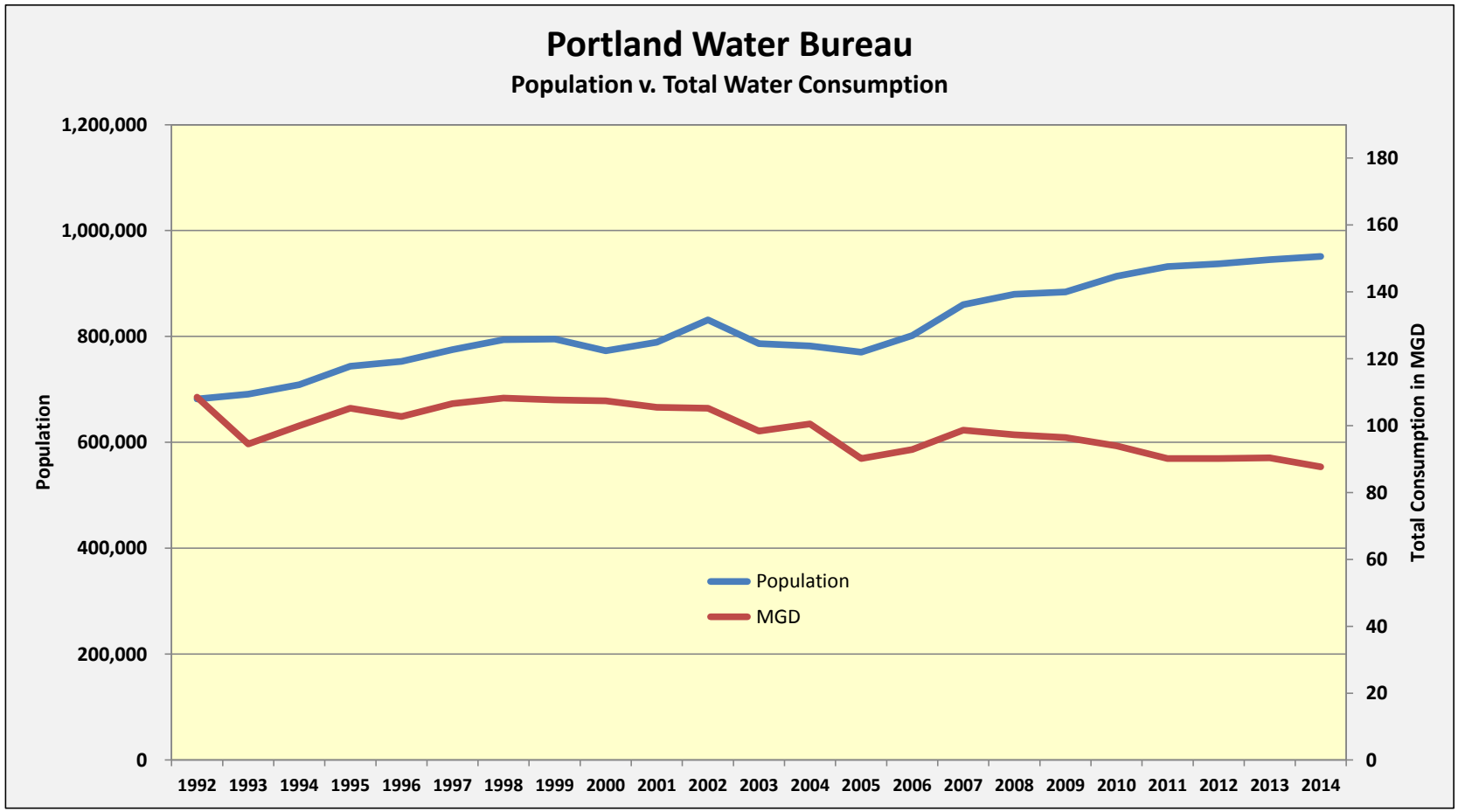
- **Regional Water Usage Below Expectations**
- **Anecdotal Information**
  - Rate increases with no accompanying revenue increase
  - Population growth without accompanying demand and associated revenue growth

Seattle Water



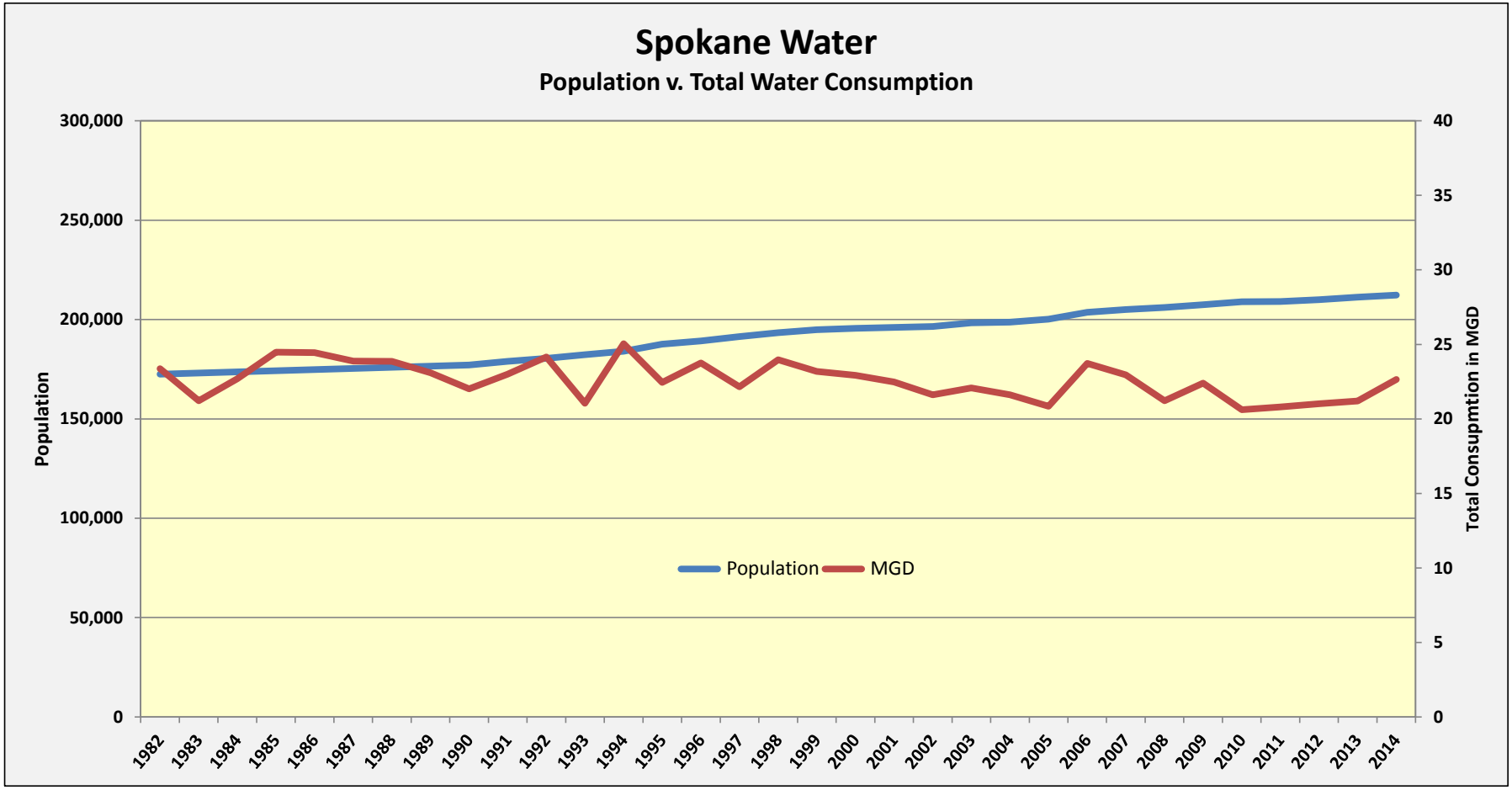
From Seattle Public Utilities

Portland Water Bureau



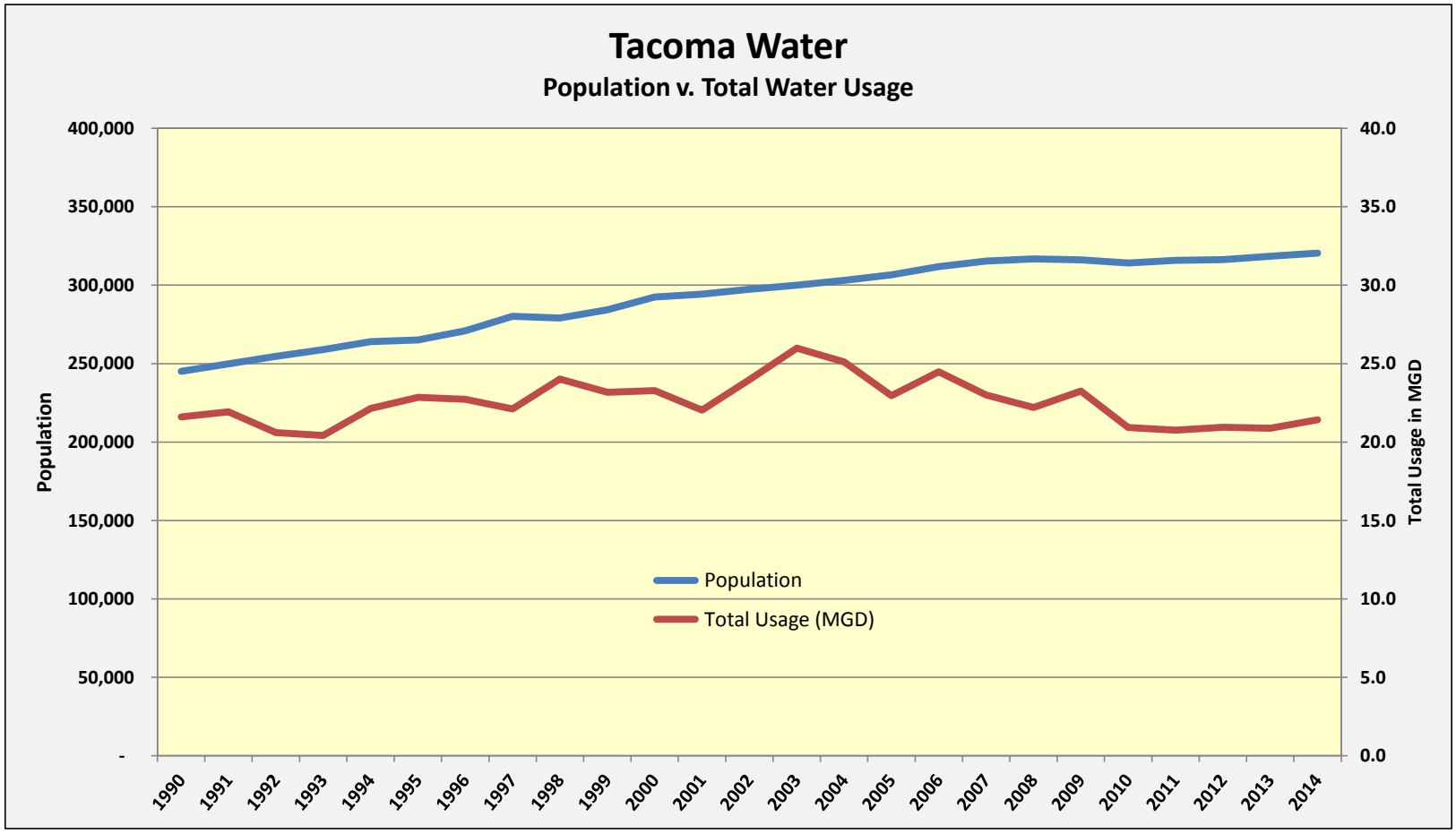
From Portland Water Bureau

Spokane Water



From City of Spokane

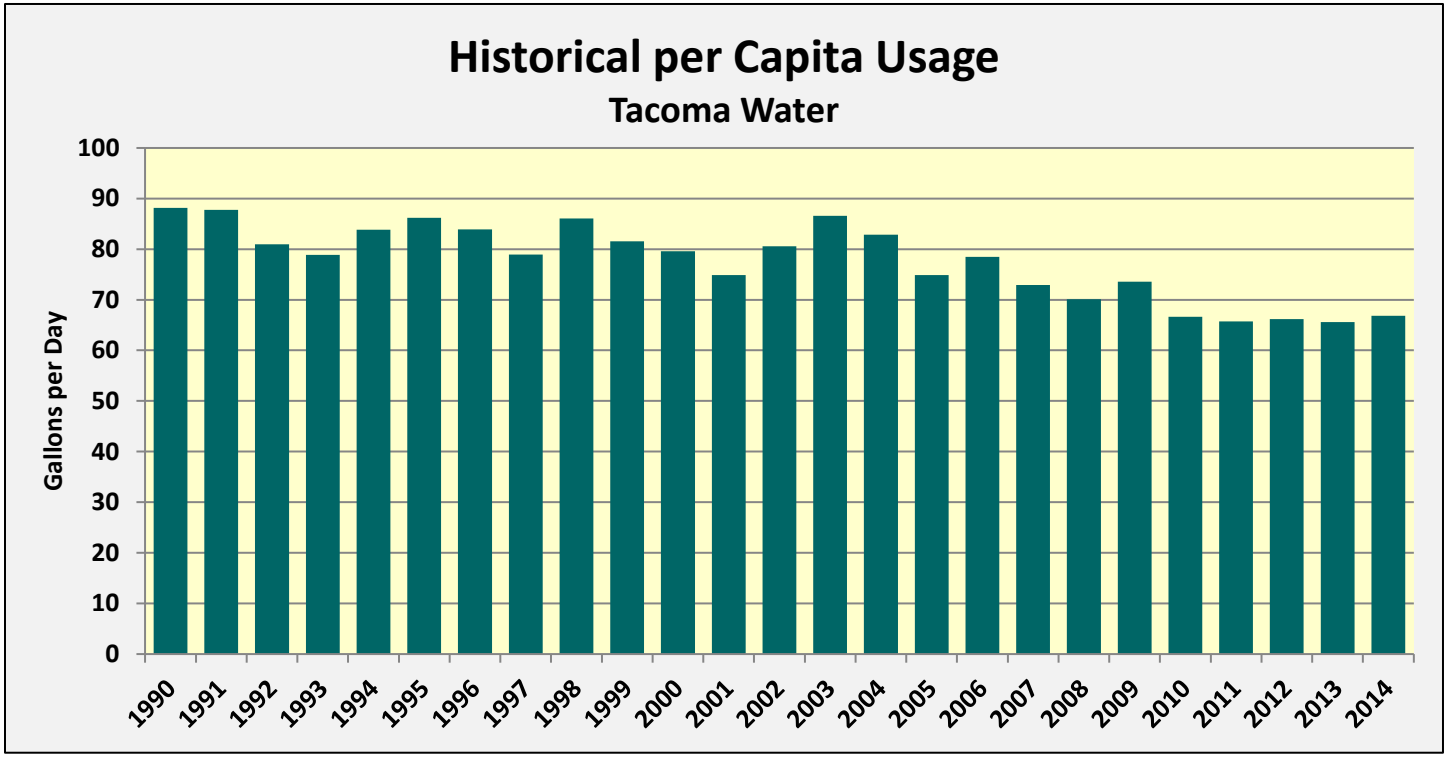
Tacoma Water



From City of Tacoma

Tacoma Water (continued)

Tacoma Water's per capita water use has dropped as follows:



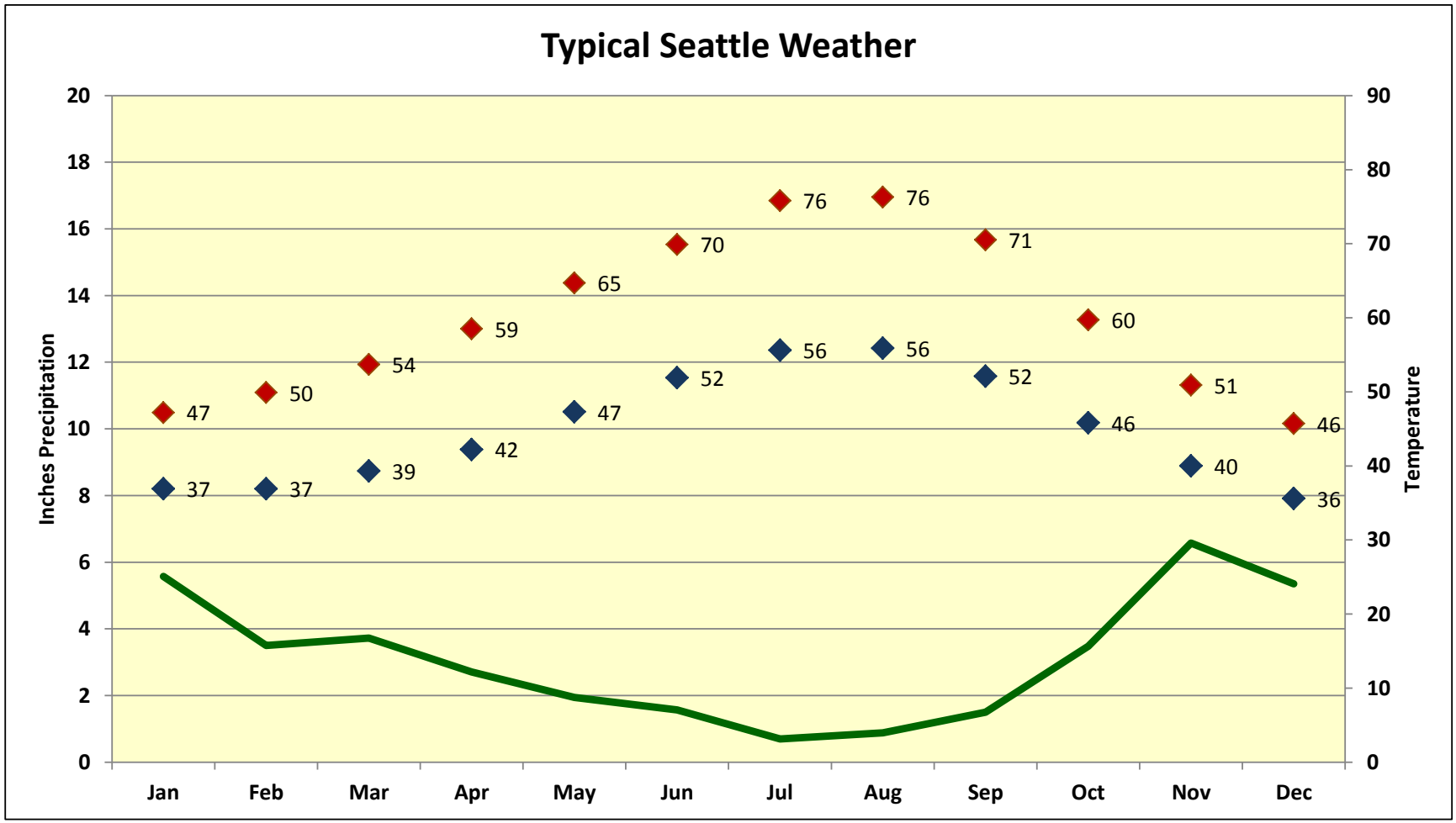
From City of Tacoma

Why Is Demand Declining?

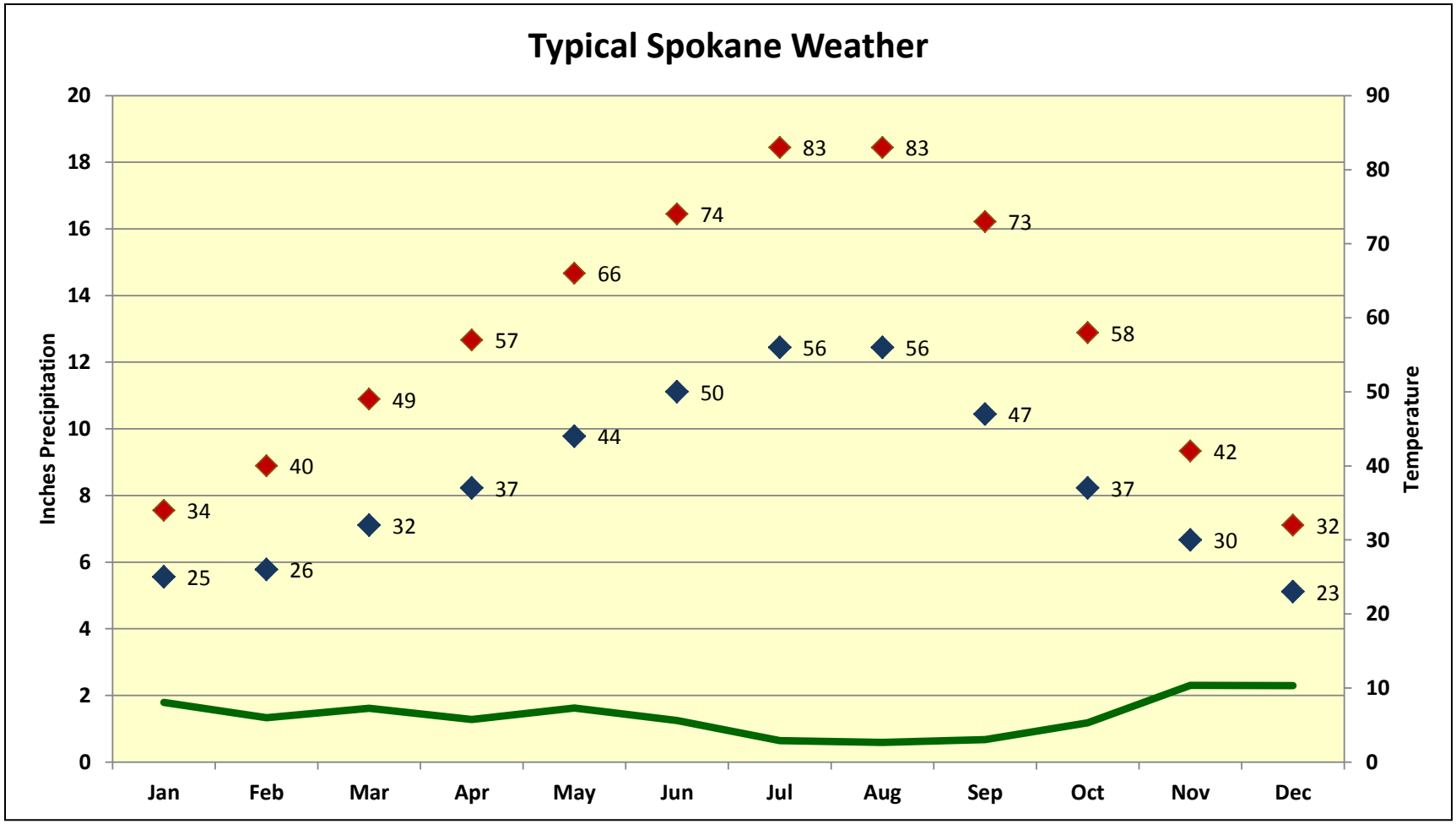
Potential Reasons for Declining Demand

1. **Weather**
2. **Economic Factors**
   - The recession
   - Structural changes in commercial / industrial sector
3. **Demographic Factors**
   - Declining household size
   - Densification
4. **Conservation**
   - Imposed – Building code changes
   - Improved – Technology / efficiency
   - Incentivized – Pricing
   - Informed – Education programs

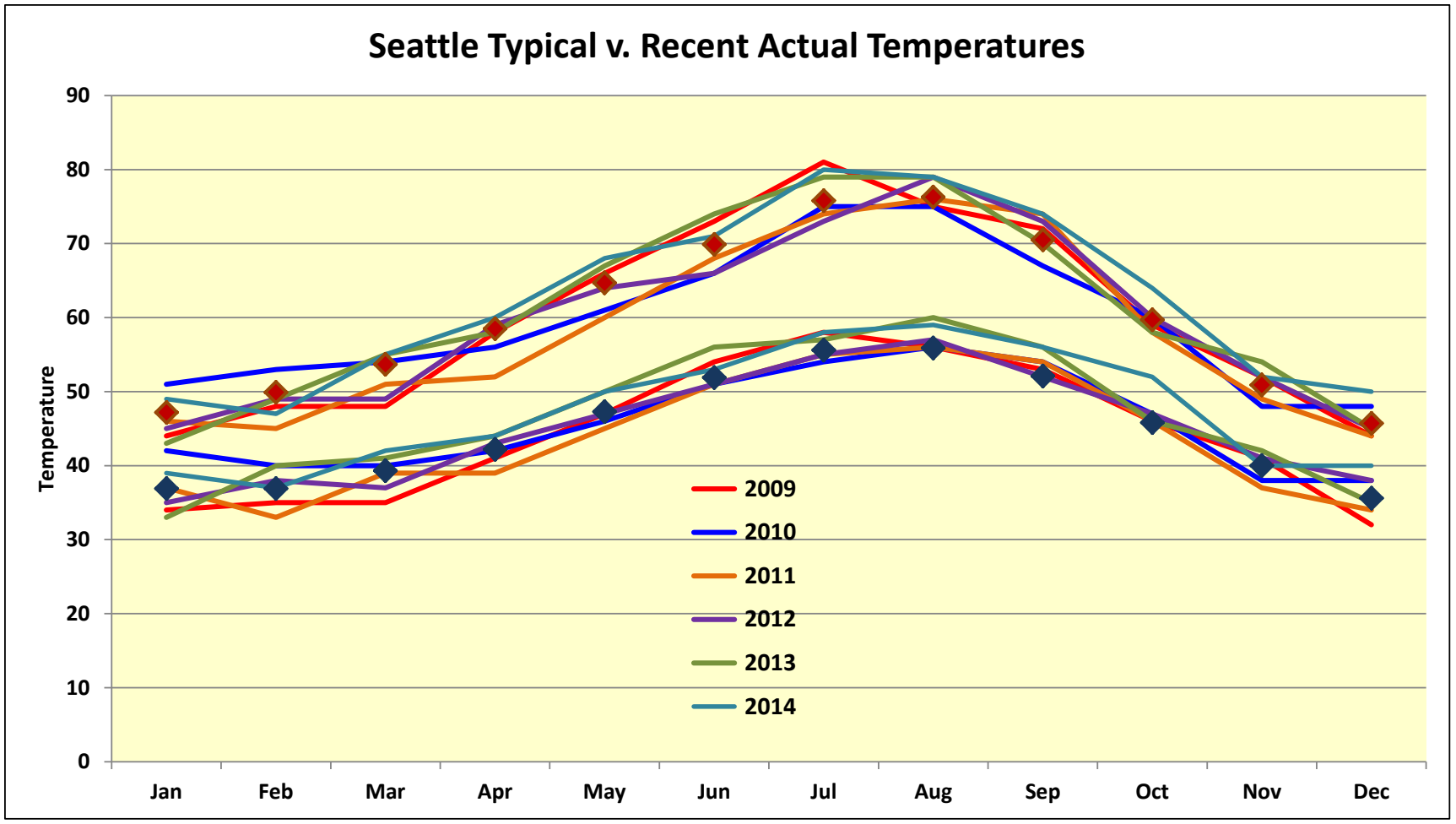
Typical Seattle Weather



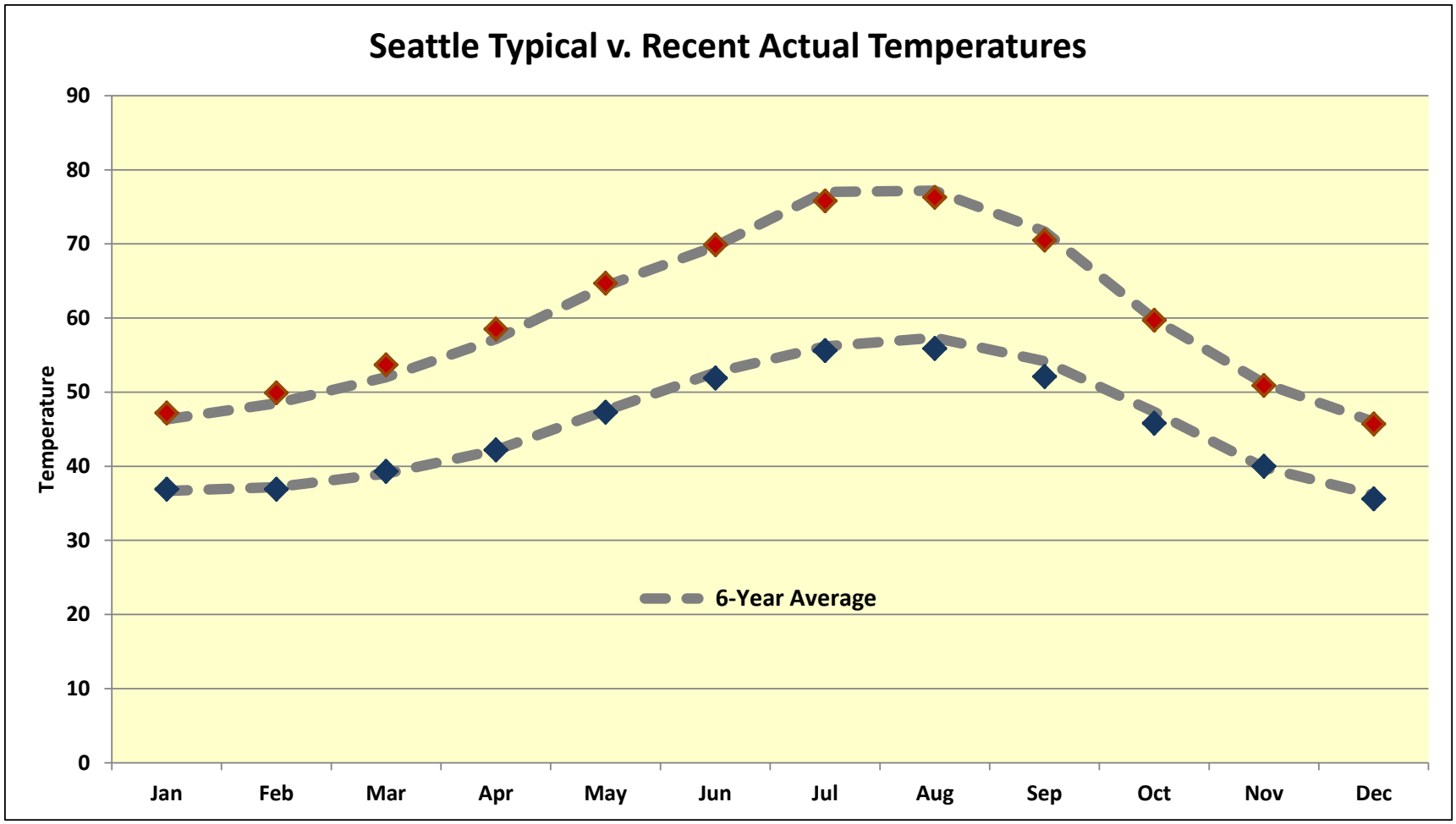
Typical Spokane Weather



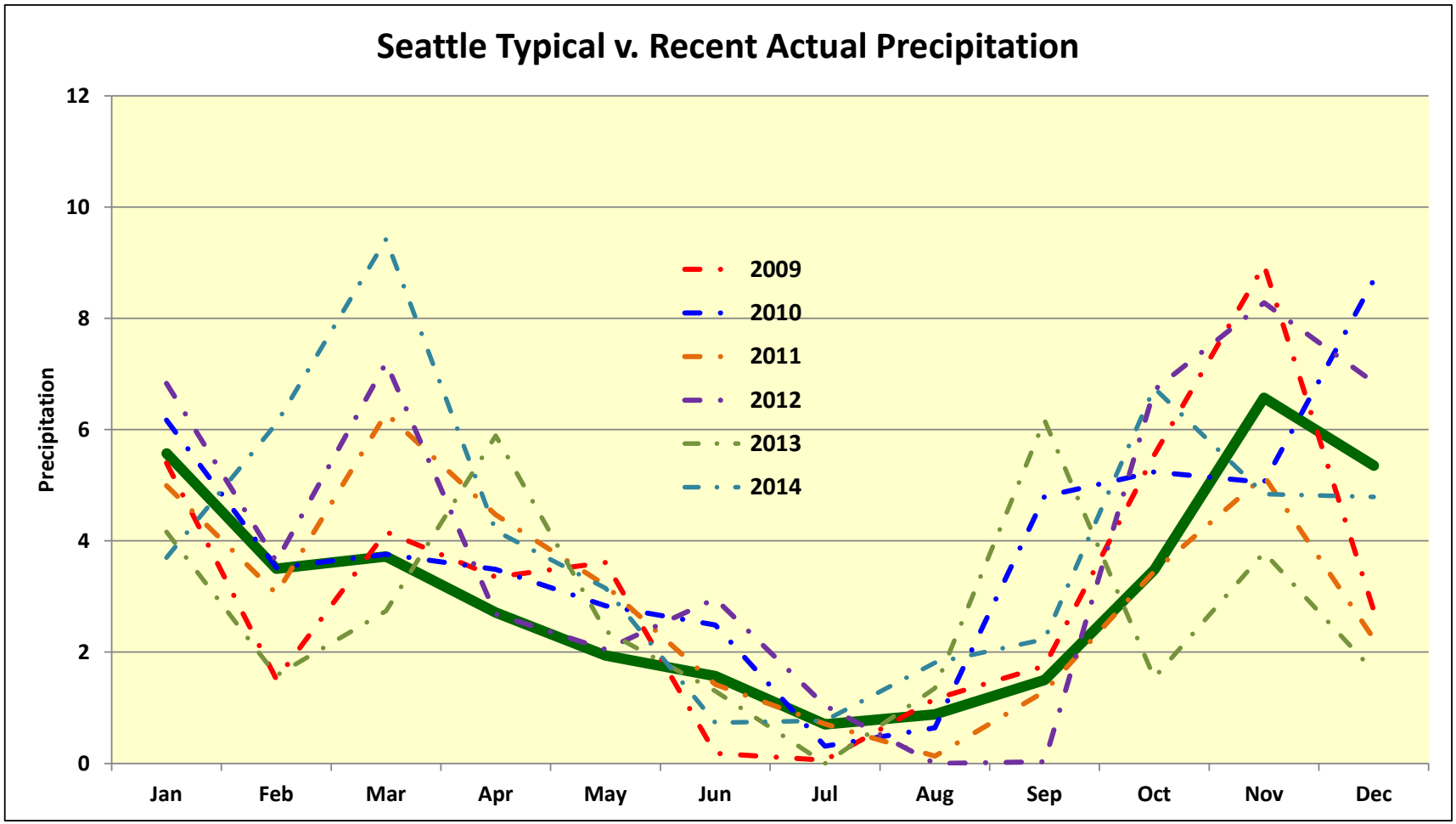
Typical v. Recent Weather



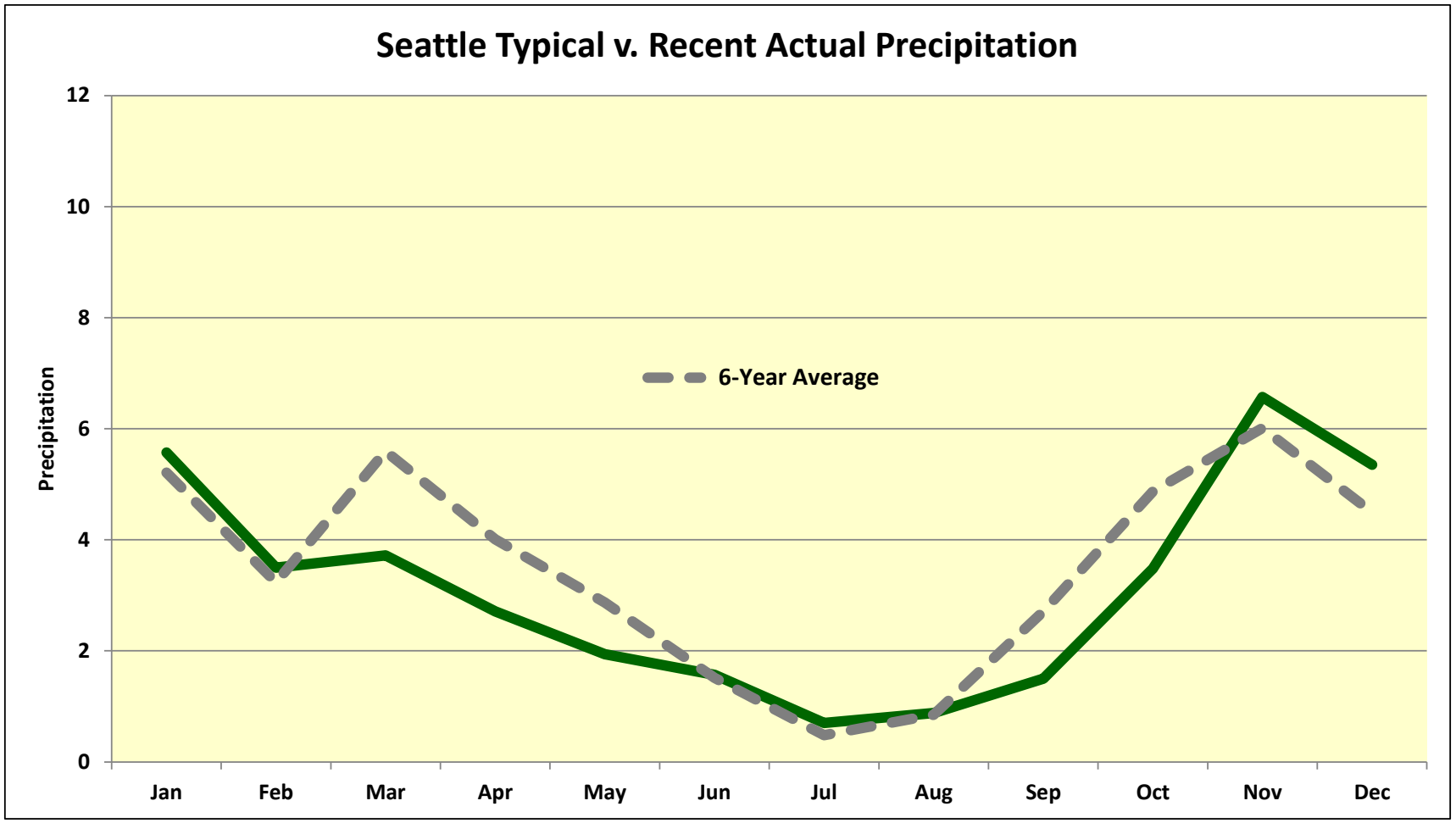
Typical v. Recent Weather (continued)



Typical v. Recent Weather (continued)



Typical v. Recent Weather (continued)



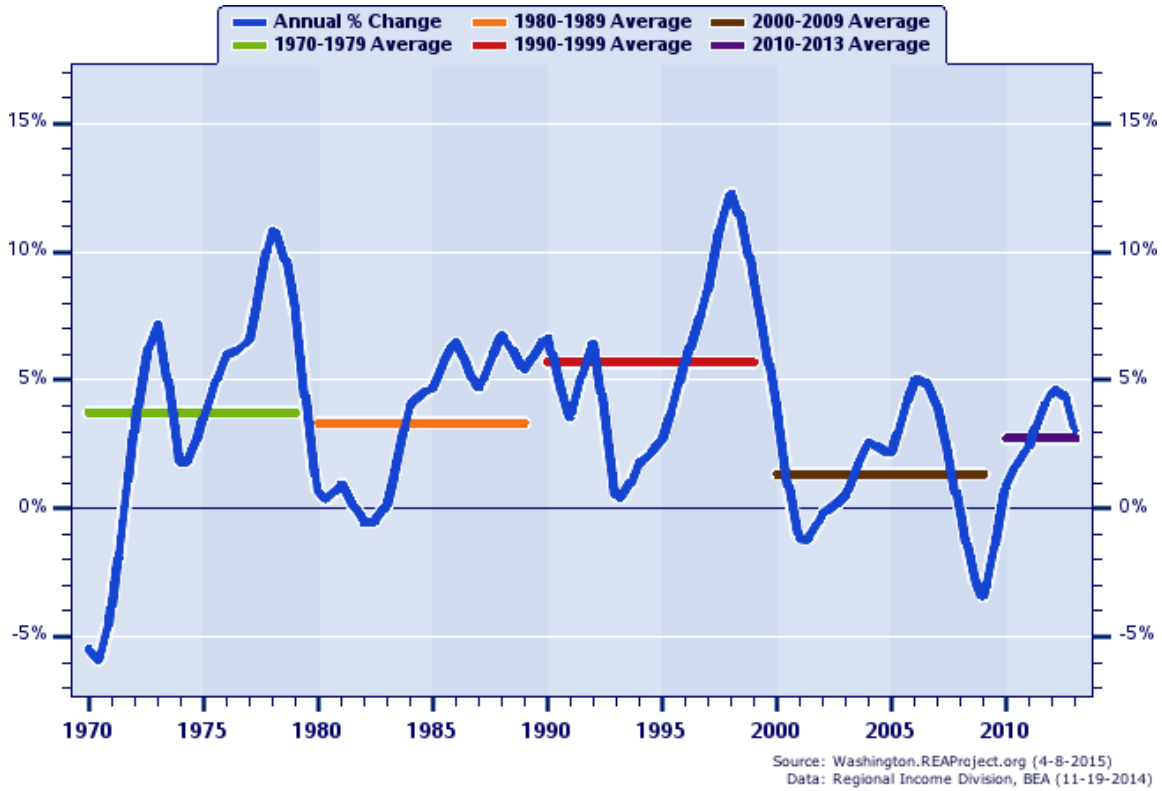
Typical v. Recent Weather (continued)

Period	Total Precipitation	% + / -
Average Year	**38.2 inches**	**NA**
2009	38.43 inches	+ .60%
2010	46.99 inches	+ 23.01%
2011	36.40 inches	- 4.71%
2012	48.26 inches	+ 26.34%
2013	32.56 inches	- 14.76%
2014	48.48 inches	+ 26.91%
6-Year Average	**41.85 inches**	**+ 9.55%**

Economics: Post-Recession

- Central Sound industry earnings have recovered past Recession levels in real dollars
- Growth of earnings has declined since 2012 while remaining positive
- 2010-2013 average percent change is 1.5% higher than 2000-2009 average percent change

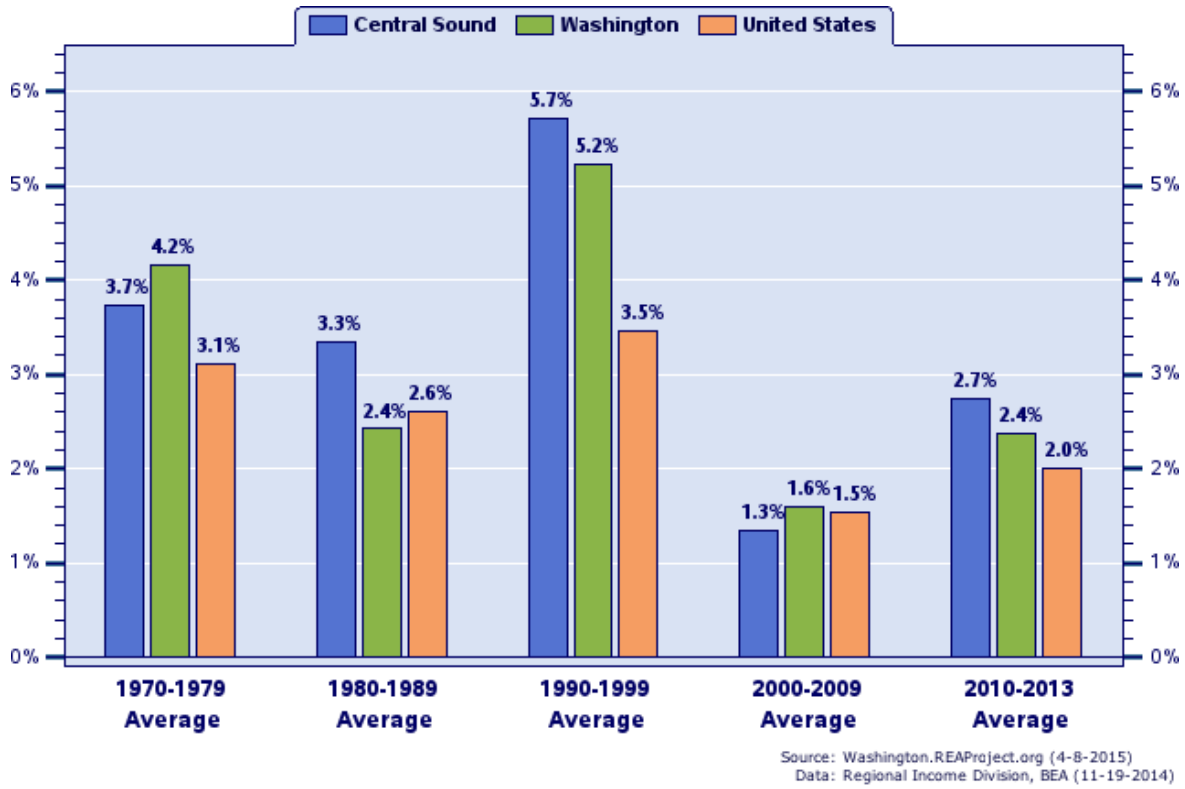
Central Puget Sound Historical Real Industry Earnings



Economics: Post-Recession (continued)

- Annual industry growth rates in Central Sound have exceeded Washington and the nation since 2010.
- Great Recession affected Central Sound more than rest of Washington and the nation

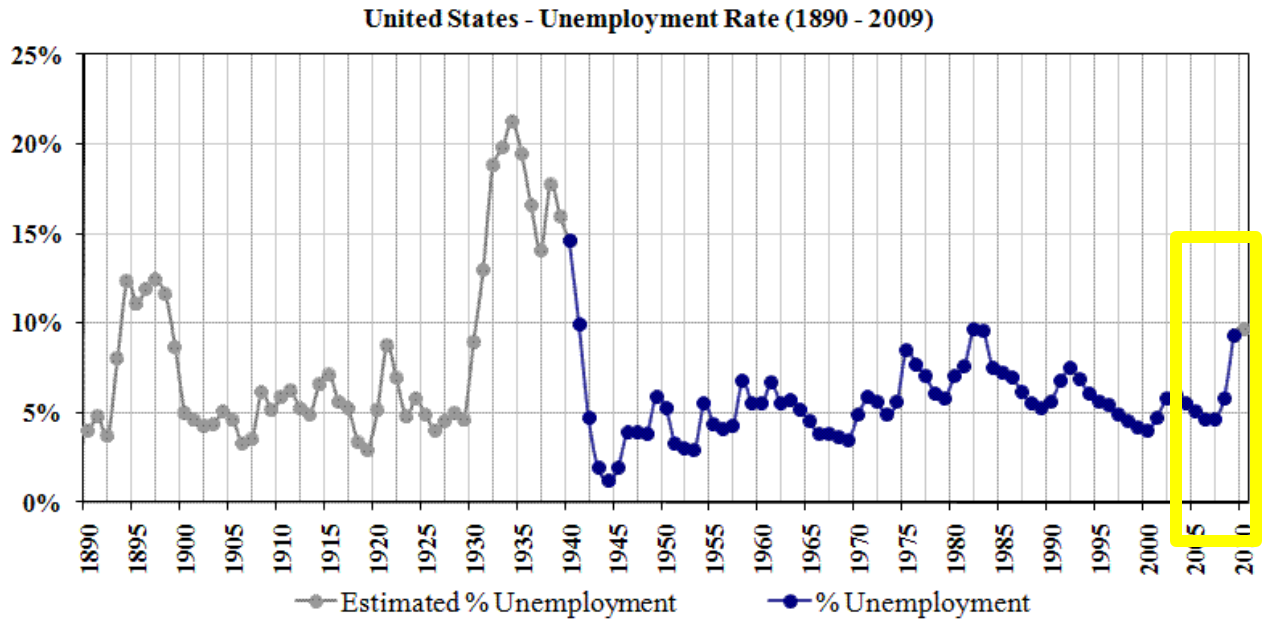
Comparative Real Industry Earnings



Source: Washington.REAProject.org (4-8-2015)
Data: Regional Income Division, BEA (11-19-2014)

Economics: The Recession

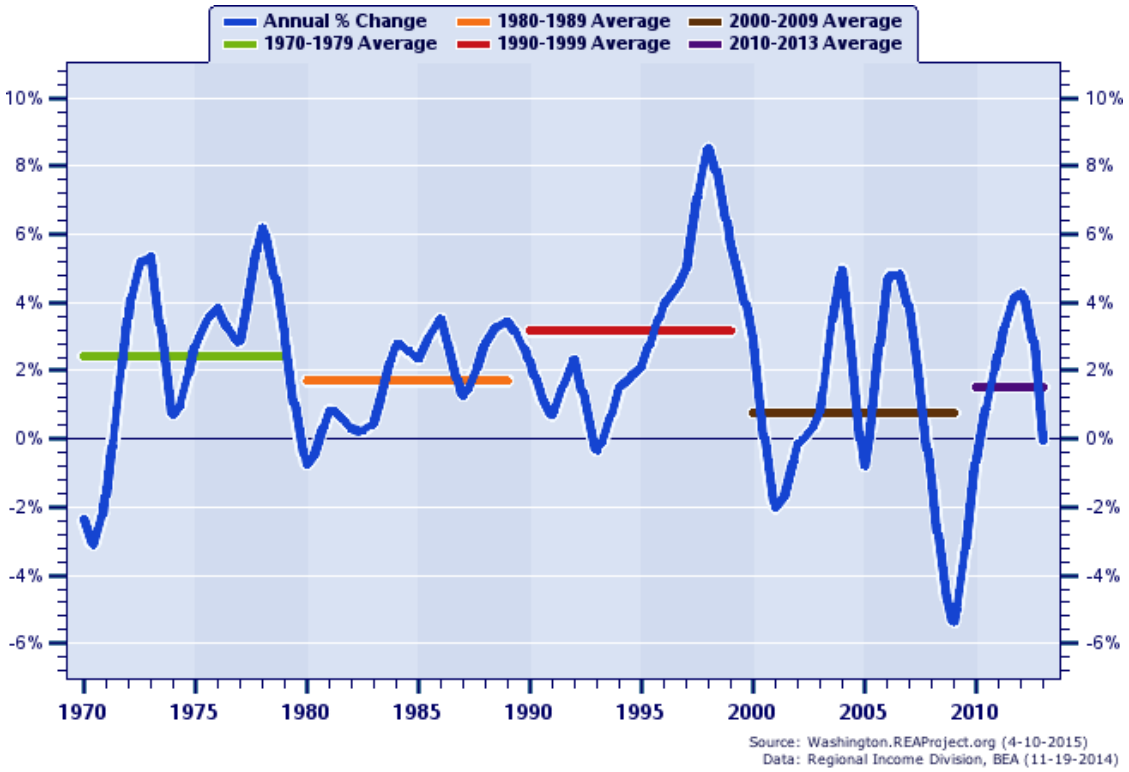
- **Since January 2007, the State of Washington unemployment rate has risen from 4.6% to a peak of 10.2% (from December 2009 to March 2010) and now rests at 6.3% (as of February 2015)**



Economics: Post-Recession

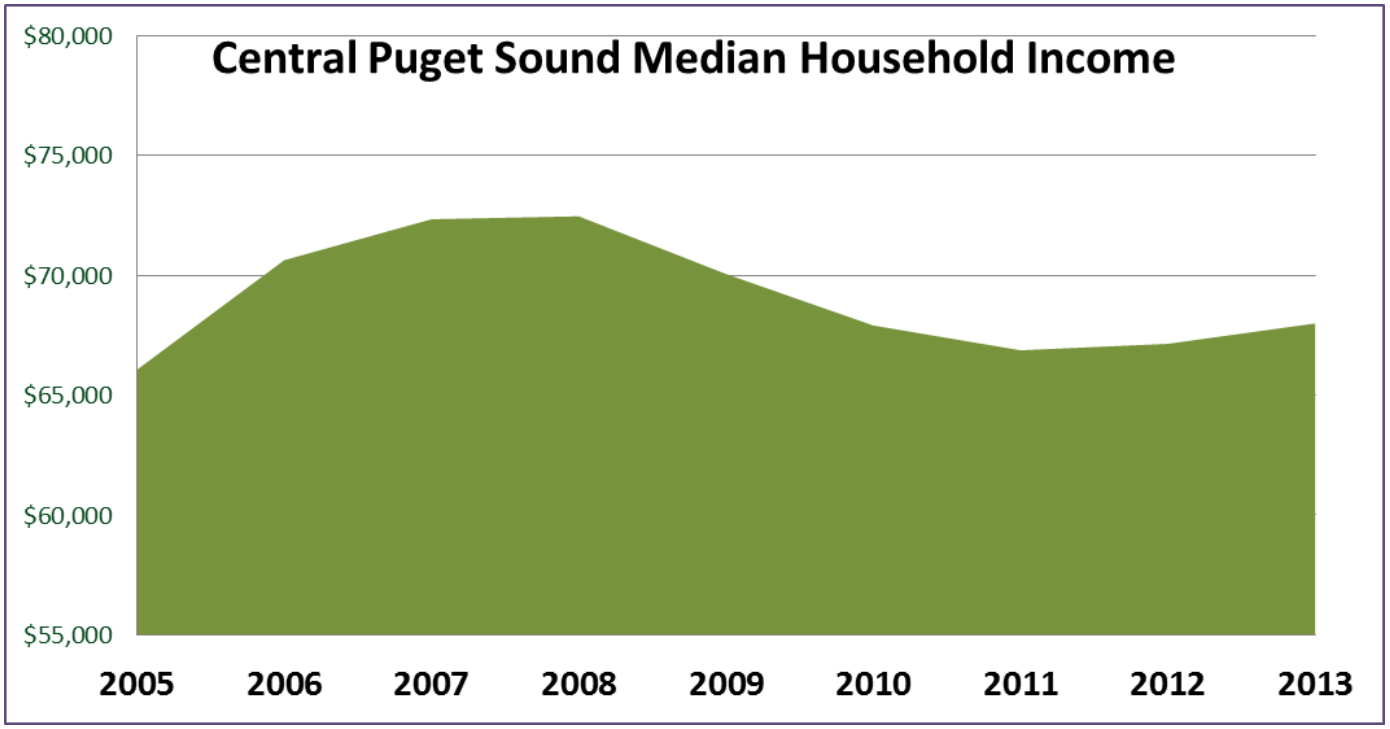
- **Annual per capita income declined during Great Recession**
- **Per capita income almost back to pre-Recession levels**
- **Per capita income stayed flat in 2013**

Historical Real Per Capita Income Percent Change



Economics: Post-Recession

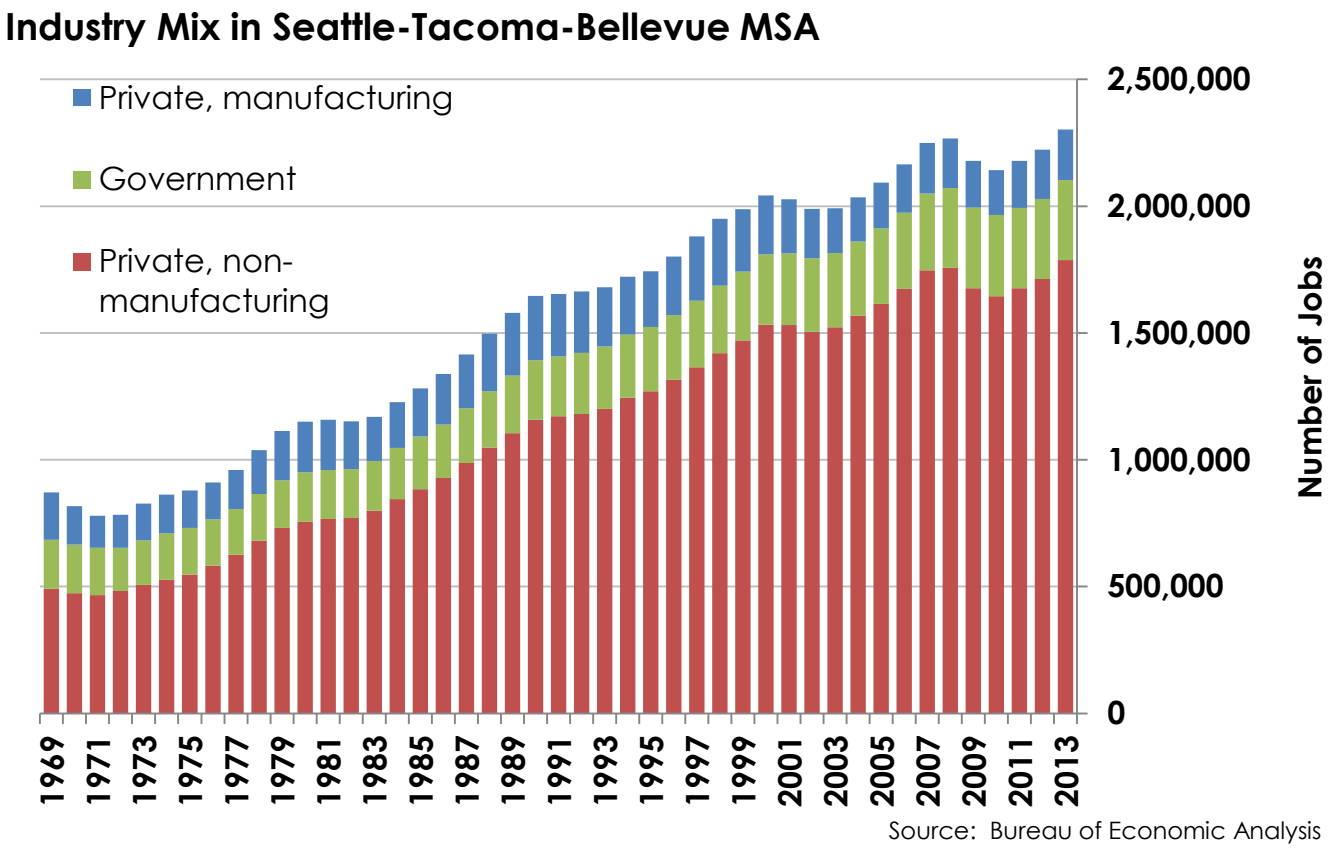
Central Puget Sound Median Household Income



- Estimates by the U.S. Census Bureau (with inflation adjustments by FCS GROUP) indicate Central Sound median household income increased by 2.9% between 2005 and 2013
- **This equates to a real annual increase of $242 per household** since 2005.

Economics: Structural Changes

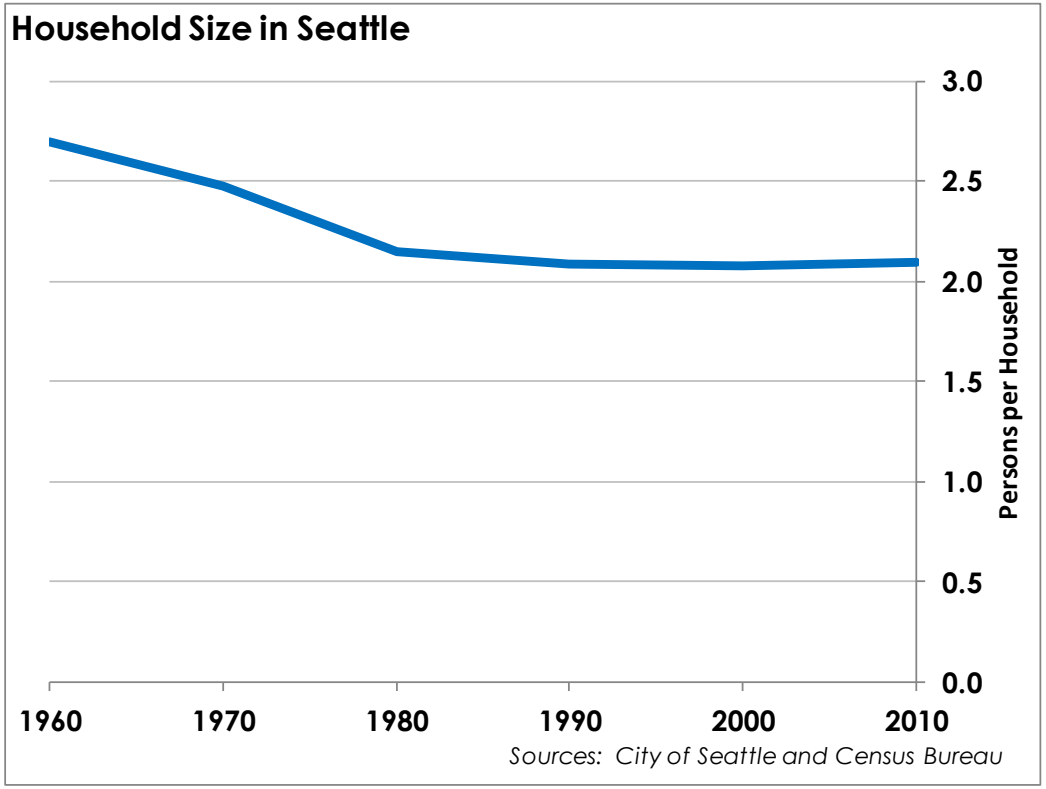
- **Water-intensive (industrial) businesses represent a declining share of the Seattle-area economy**
- **Private, non-manufacturing industry has historically grown the most**



Source: Bureau of Economic Analysis

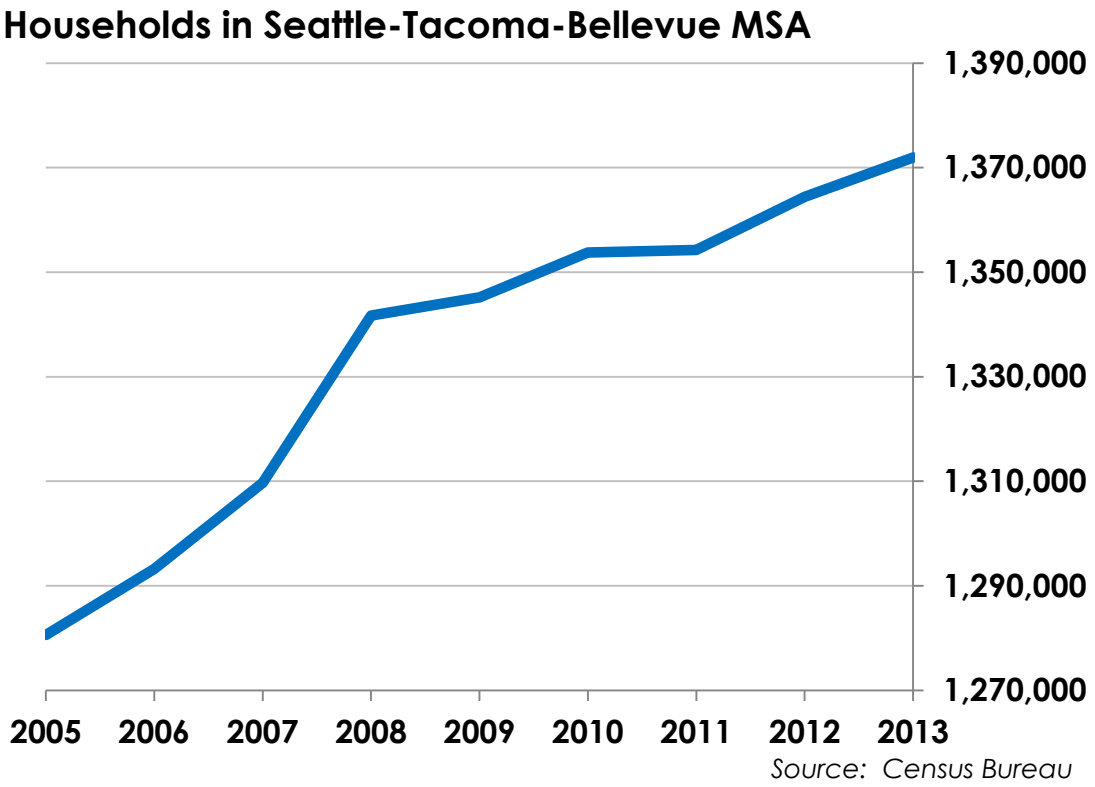
Demographics: Household Size

- In City of Seattle, household sizes declined from 1960 through 1990
- Since 1990, household sizes have stayed relatively flat

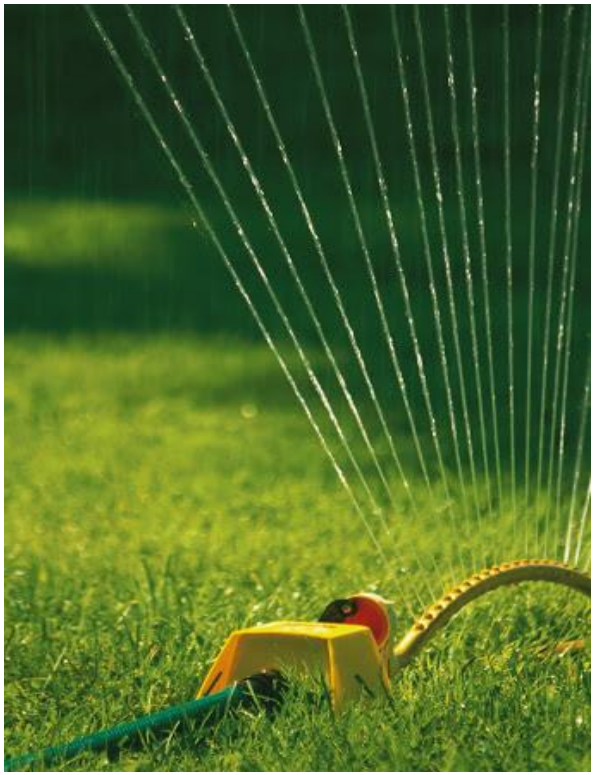


Demographics: Household Formations

- Household formations slowed in 2008 - 2009
- Household formations have increased since 2011
- Household formations slower than pre-Recession levels



Demographics: Densification



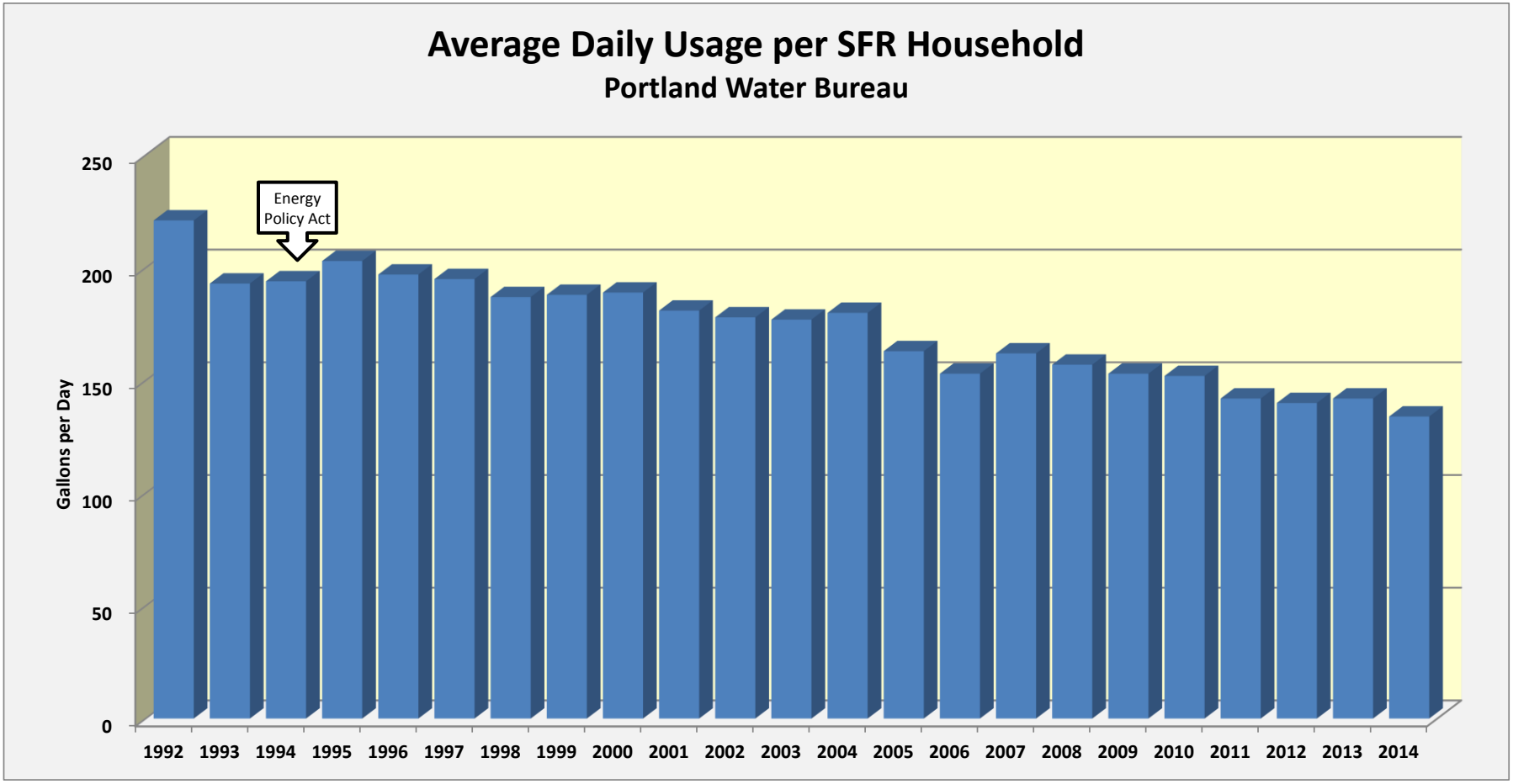
- Residential development utilizes smaller lots, reducing landscaping and corresponding irrigation needs
- Nonresidential development is performed more water-efficiently

Conservation: Code/Technology

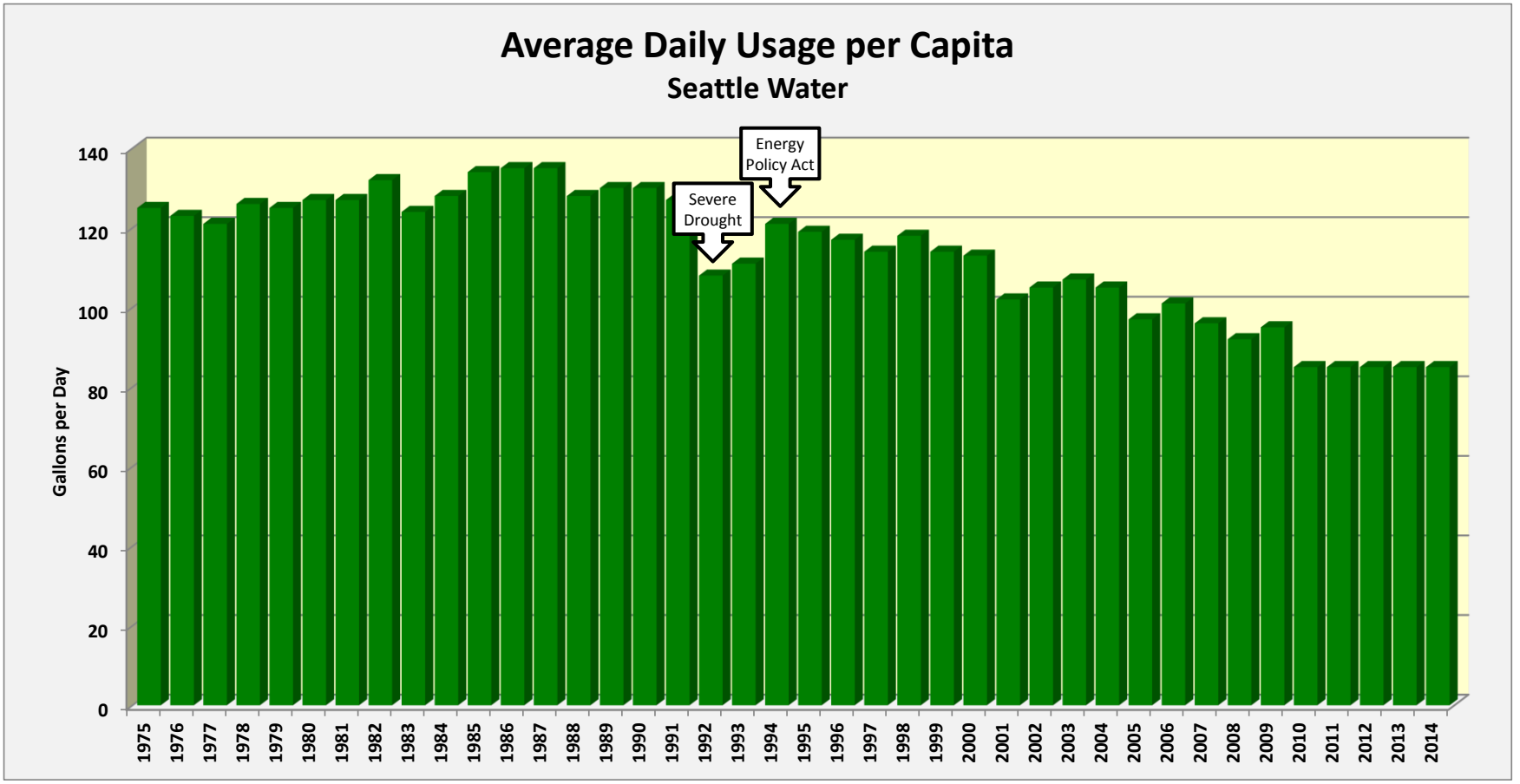
- **Energy Policy Act of 1992**
  - Effective in 1994 (1997 for toilets)
  - A family living in a house built after 1994 uses 10-13 fewer gallons per day than the identical family in an older house ("North American Residential Water Usage Trends Since 1992," Table 5.3)

- **New Technology (i.e., LEED standards)**
  - New buildings can utilize 70-82% less water
  - And 40-46% less energy than older buildings

Historical Household Demand



Historical per Capita Demand

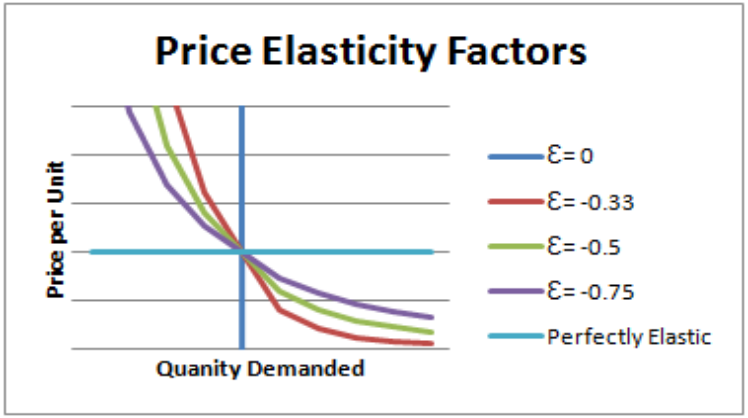


Conservation: Pricing

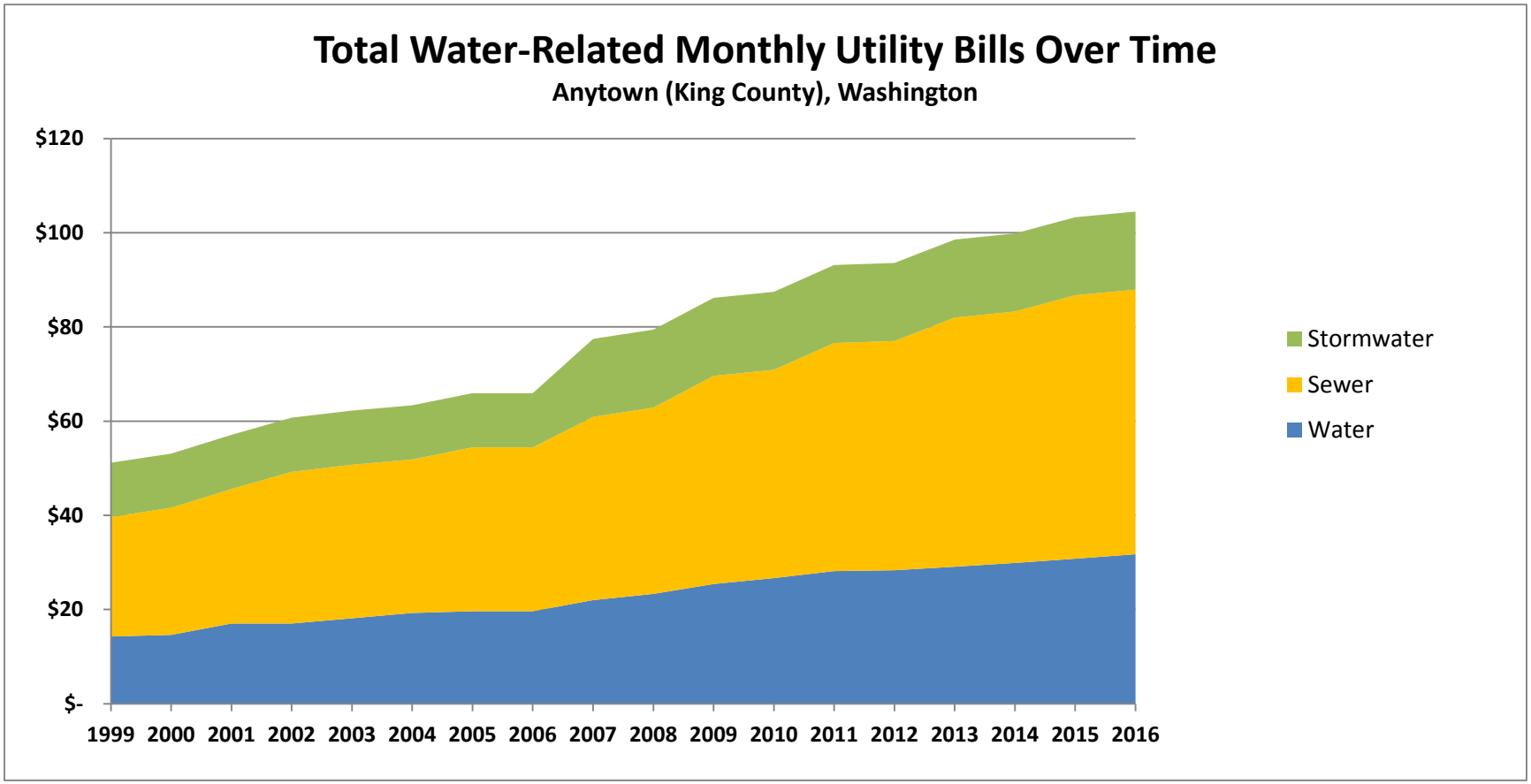
- **Conservation based rates now commonplace**
- **Impact of total utility bill**
  - Water
  - Wastewater
    - Rates have increased substantially
    - Usage-based residential rates
  - Stormwater
  - Other

Price Elasticity

- Causation is impossible to prove, but…
- Price elasticity analysis must be considered on a customer class basis
- Price elasticity factors may differ among customer classes and usage levels

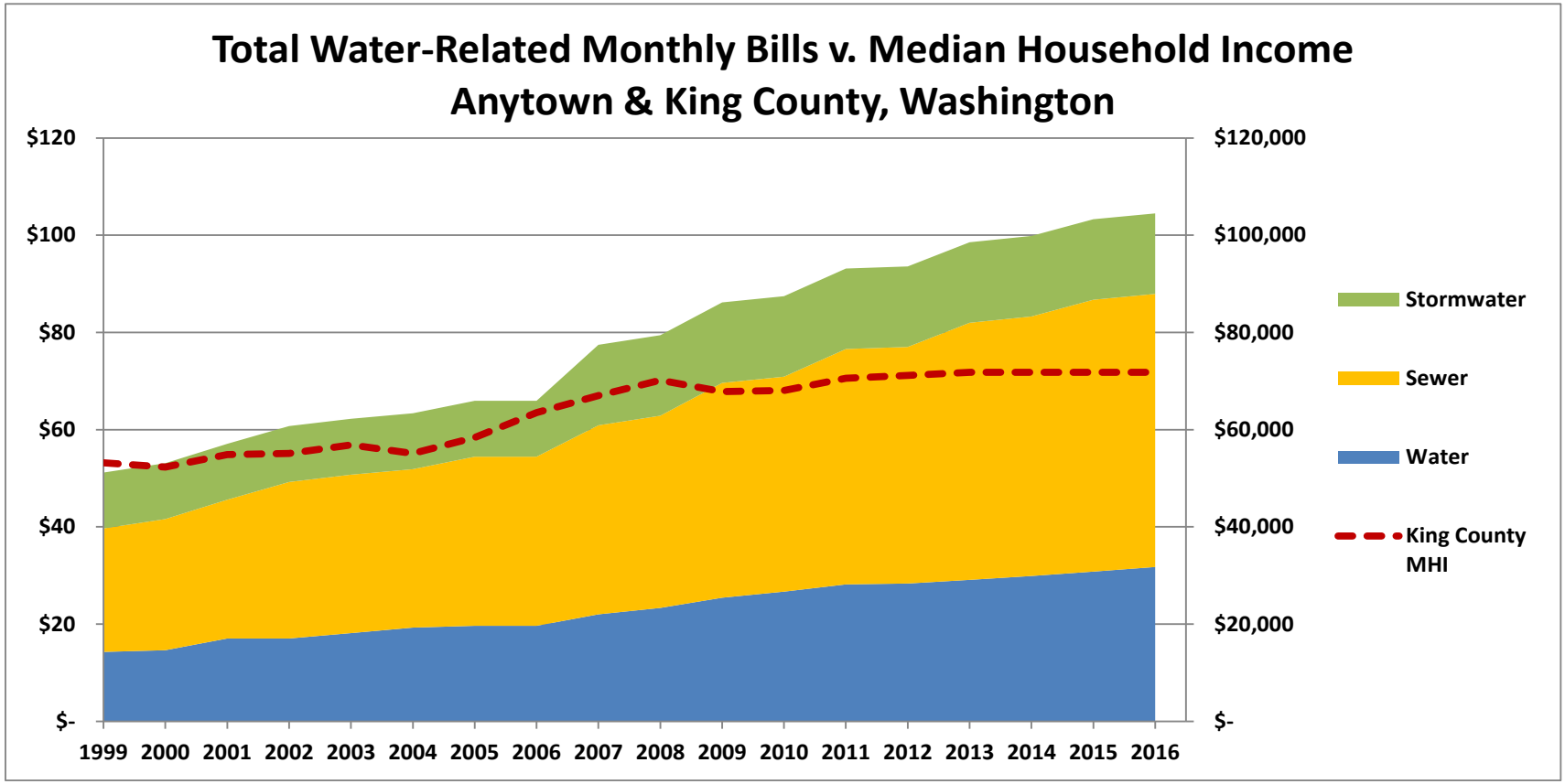


Total Utility Bills Impacts



Total water-related utility bill has doubled since 1999 for average residential customer

Utility Bills v. Median Household Income



King County median household income increased 35% for same period (not inflation adjusted)

Temporary or Permanent?

Reason	Assessment	Rate of Change
Weather		
• Short-term Cyclical	Temporary	Immediate
• Climate Change	Permanent	Long-range
Economic Factors		
• Recession	Temporary	Mid-term
• Structural Changes	Permanent	Long-range
Demographic Factors		
• Household Size	Permanent	Long-range
• Densification	Permanent	Long-range
Conservation		
• Code / technology	Permanent	Long-range
• Pricing	Permanent	Long-range
• Education	Permanent	Long-range

Conclusion

Financial risk factors are a mix of:

◆ Temporary	◆ Immediate
◆ Permanent	◆ Mid-term
	◆ Long-range

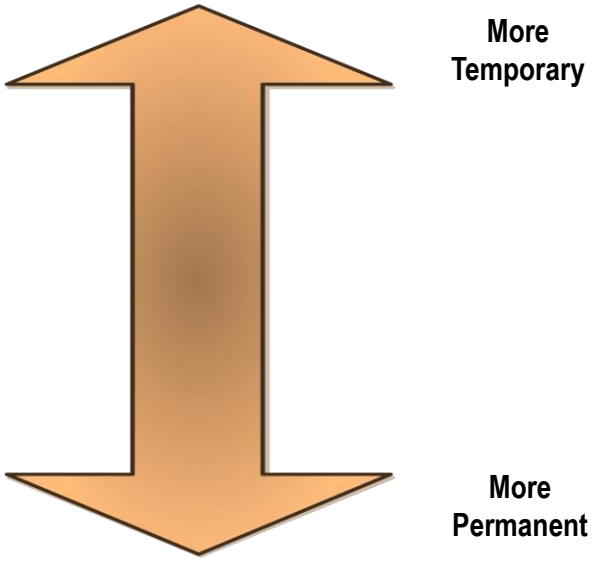
Management of financial risk must be holistic and comprehensive.

Managing Financial Risk

Managing Financial Risk

Strategies for Managing Financial Risk:

1. Fiscal Policies
2. Rate Structure
3. Long-Term Financial Planning
4. System Planning



What is Financial Risk?

Expenses

- Operating
- Capital
  - Pay-as-you-go
  - Debt service

Revenues

- Rates
- GFCs
- Miscellaneous

Fiscal Policies Review

- **Operating**
  - Covers temporary cash flow deficiencies due to timing of revenues and expenditures
- **Rate Stabilization**
  - Protects against unexpected multi-year fluctuations
- **Capital Funding Strategy**
  - Bonds versus Pay-As-You-Go
  - Reserves
  - Replacement Funding
- **Policy Debt Coverage**

Policy recommendations must be tailored to agency specific benchmarks and needs

Reserve Policies

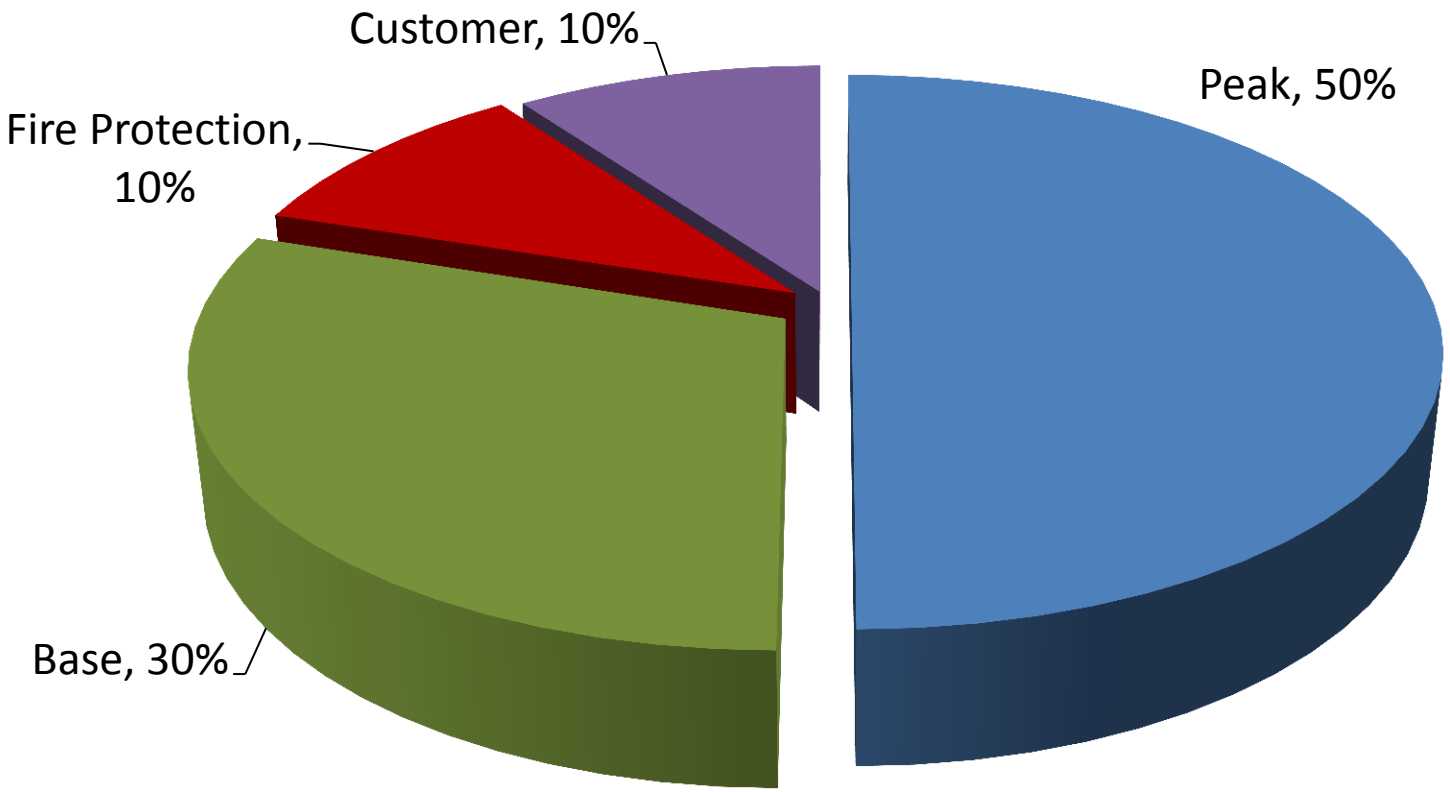
- **Reserve policies must be tied to system costs and revenue and expenditure fluctuations**
- **Operating reserve targets should be "right sized" based on rate structure attributes**
- ***Increasing Operating or Capital reserve "cushion" will mitigate short-term impacts, but generally leave long-term, structural impacts unaddressed***

Rate Structure Attributes

- **Use pricing as the mechanism to encourage appropriate water usage**
  - Rewards conservation and penalizes water wasters
- **Pricing structure recognizes "essential" vs. "discretionary" usage**
  - Targets summer peak/irrigation usage
  - Protect residential indoor usage and commercial usage
- **Fixed and variable rate components**
  - Many / most utility costs are fixed (capital, labor, etc.)
  - Most rate structures apportion a greater share of cost recovery to volumetric charge

The strength of conservation incentives must be balanced against the need / desire for revenue stability

Cost of Service Allocation Result



Discretion in Rate Design

- **$ Customer:** cost of administration and billing
- **$ Base:** all in the usage (per ccf usage)
- **$ Peak:** in the fixed charges (per meter capacity equivalent) and the usage charges (per ccf usage)
- **$ Fire:** all in the fixed charges (per meter capacity equivalent)

This mix can be adjusted, and remain consistent with "cost-of-service"

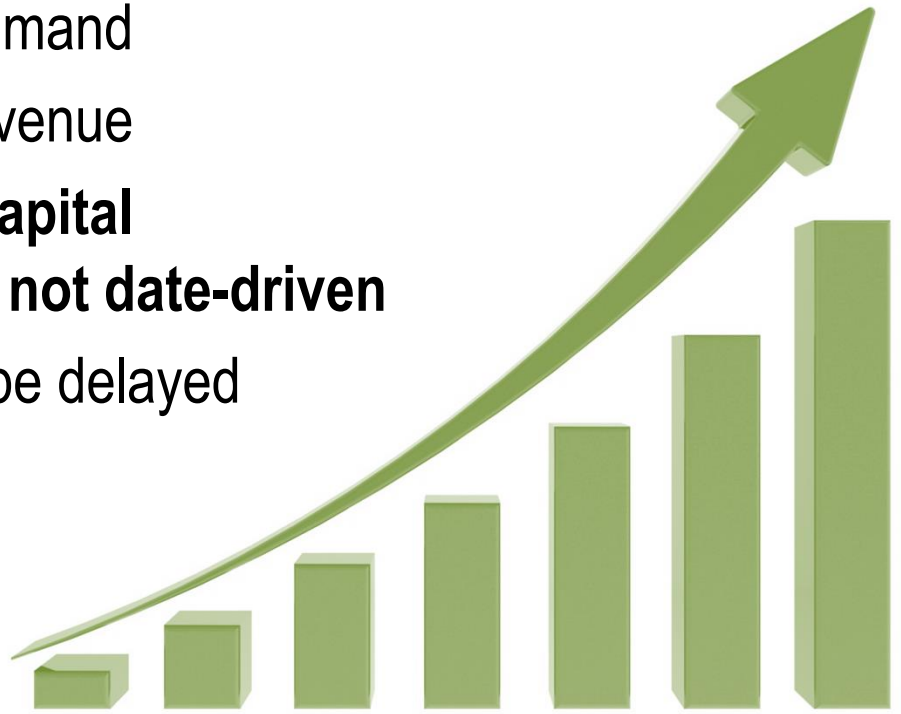
Financial Planning Objectives

- **Incorporate long-term operating & capital needs**
- **Evaluate financial impacts of CIP alternatives**
- **Evaluate impact of various growth scenarios**
  - Uncouple customer and demand "growth"
  - Uncouple customer and revenue "growth"
- **Maintain adequate fund reserves**
- **Develop flexible capital funding strategy**
- **Understand consequences of change**

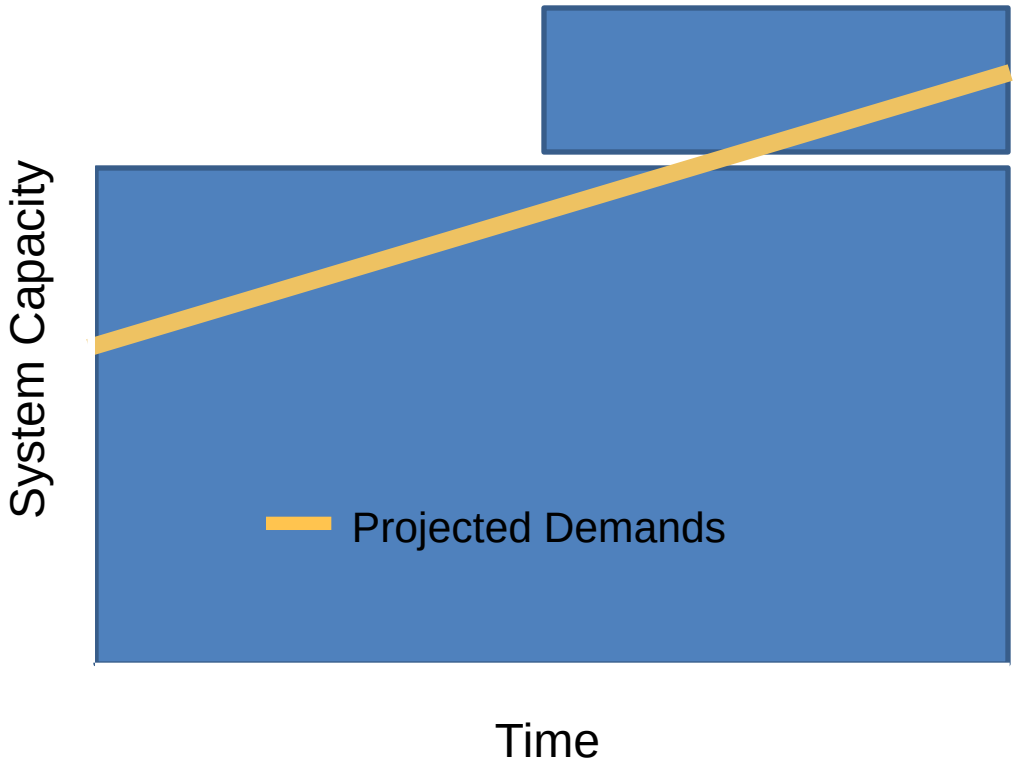
Financial plan serves as a roadmap for funding operating & capital programs, and maintaining long-term financial health

System Planning

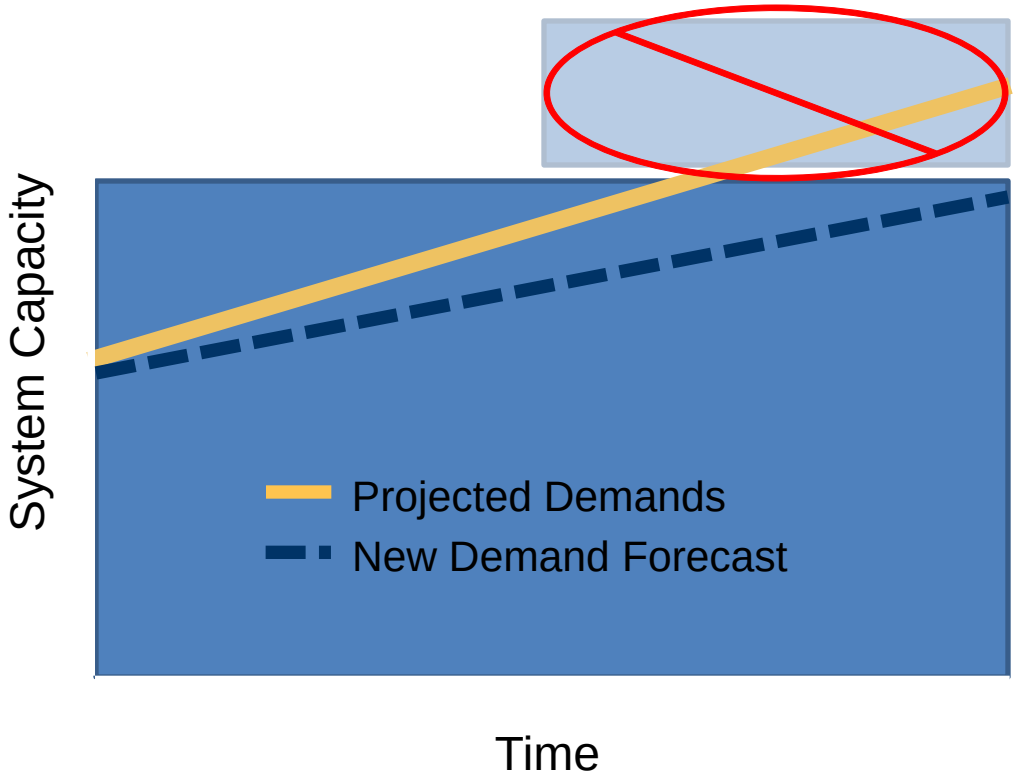
- **Revisit planning assumptions**
  - Uncouple growth and demand
  - Uncouple growth and revenue
- **Develop capacity-driven capital improvement schedules – not date-driven**
  - Projects for growth can be delayed



Deferral of Capital Expenditures



Deferral of Capital Expenditures (continued)

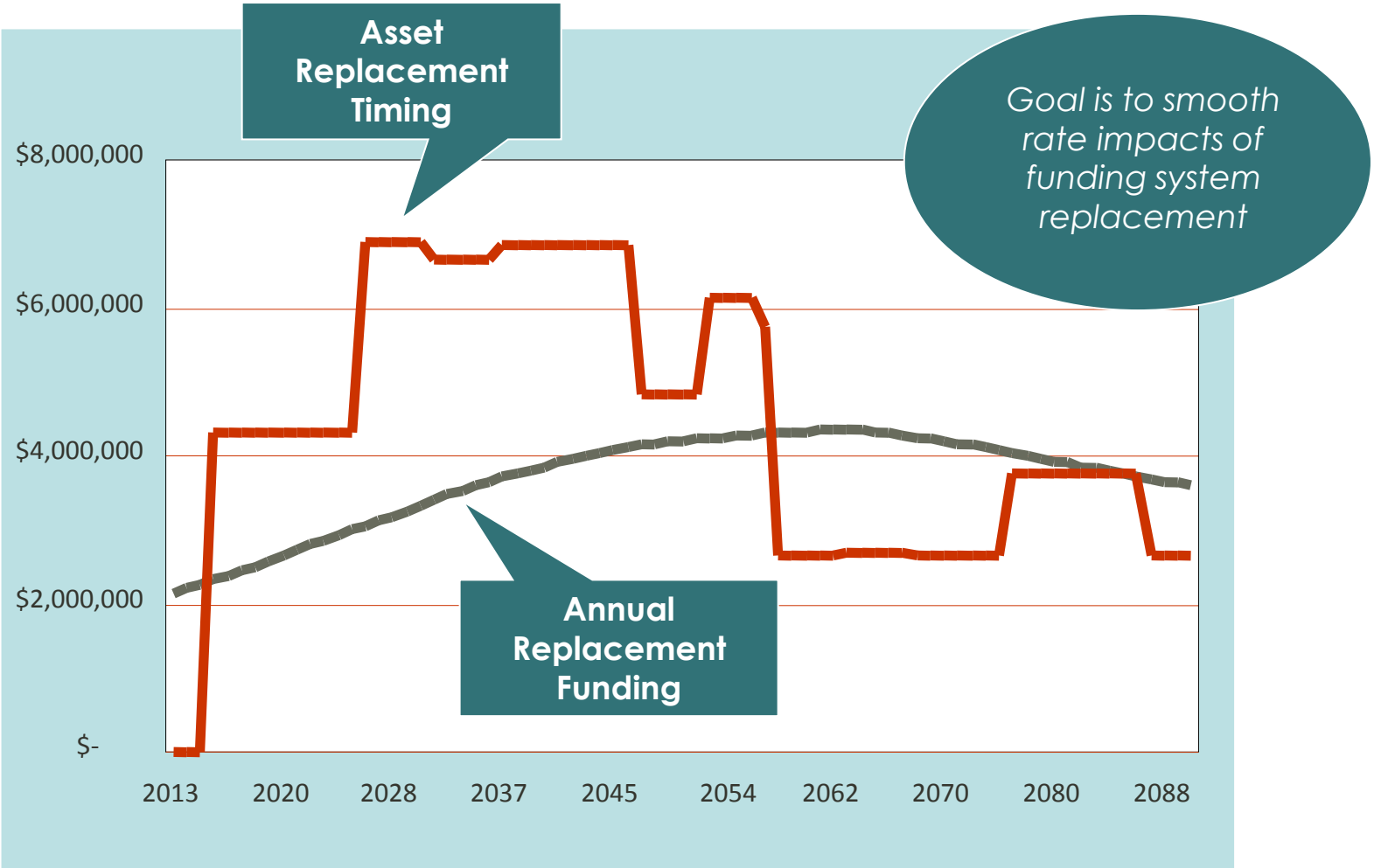


Renewed Emphasis on Replacement

- **Past capacity additions also served to replace system facilities to some extent**
- **Acknowledged lack of funding for system replacement**
  - ASCE Report card on infrastructure graded Washington as a "C"
  - Current cost of doing business is to provide something for future R&R of the system
  - Risk of not funding infrastructure
    - Equity (net assets) will erode
    - Debt capacity may not be available when needed
    - Rate spikes will prevail
    - Level of service delivered will decline

American Society of Civil Engineers (ASCE)

Replacement Funding Strategy



A Look at the Water Industry

Past

Where Were We?

- ✓ Assumed steady increases in water demands and wastewater flows
- ✓ Focus on short-term behavioral impacts
- ✓ Augment supplies and capacity in anticipation of growth

Present

Where Are We?

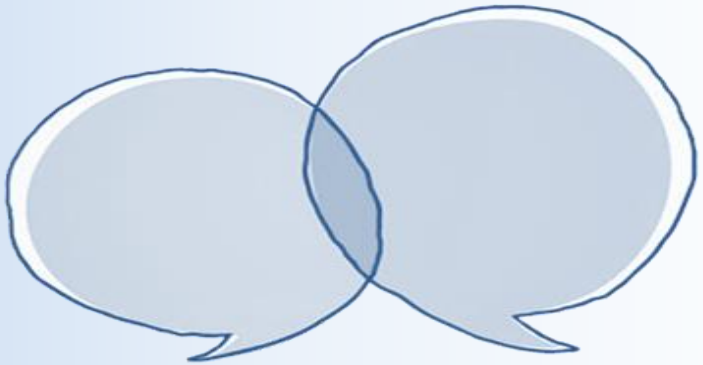
- ✓ Declining per capita water demand
- ✓ Re-evaluating system plans and demand forecasts
- ✓ Better understanding of impact of education and price elasticity

Future

Where Are We Going?

- ✓ Integrated system planning
- ✓ Predictive and risk based modeling
- ✓ Modular system planning
- ✓ Integrated capital and O&M to extend asset lives

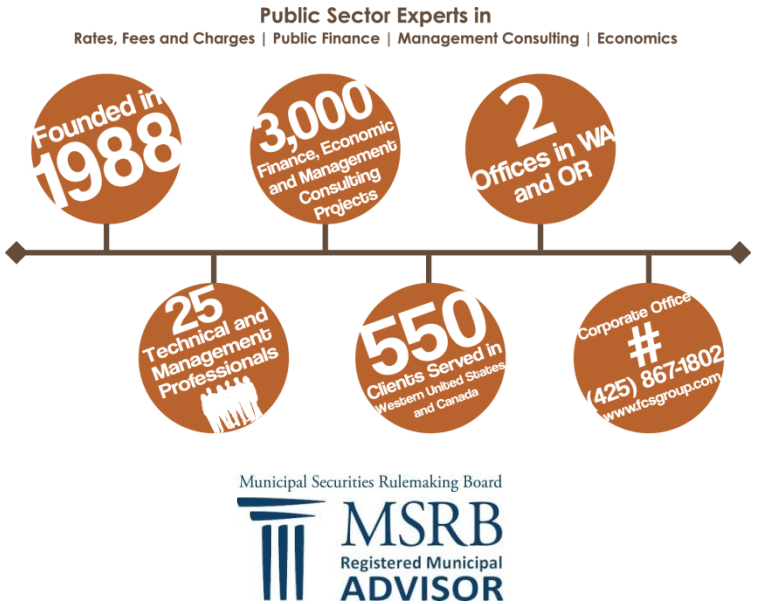
Questions and Discussion



Firm Profile and Speaker Bio

Who We Are:

- **Financial Consulting Solutions Group, Inc., dba FCS GROUP**
- **Founded in 1988 – 27 years in business**
- **Provide independent, objective, financial, economic and cost recovery consulting to address sustainable infrastructure and development**



John Ghilarducci, Principal

- M.P.A. in Organization and Management from University of Washington and B.S. in Economics from University of Oregon
- SEC-registered Municipal Advisor
- 27 years professional experience in utility rate and system development charges (SDC) studies, and financial rate studies
- Has developed water, sewer and stormwater rates, and transportation and parks charges for dozens of cities and special purpose districts throughout Washington and the Northwest
- Has had numerous speaking engagements at professional meetings and training seminars on topics such as rate study basics and SDCs

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