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# Case Studies and Highlights of the New AWWA Conservation Planning Manual M52

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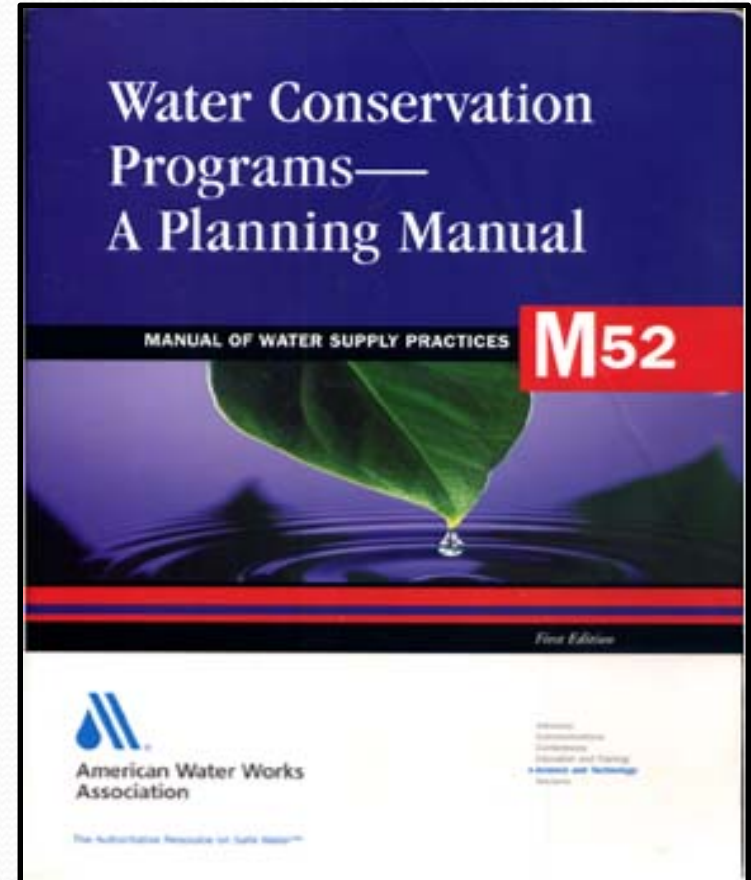


# Agenda

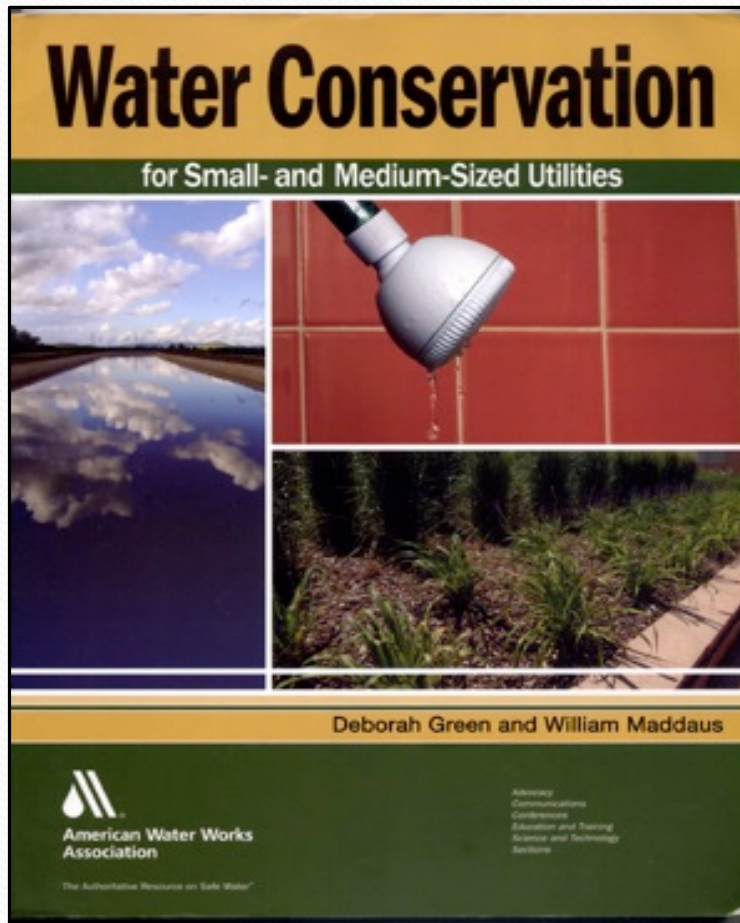
1. History of the Conservation Planning Manual & Revision Process
2. 10 Steps to a Conservation Plan
3. Manual Overview & Highlights
4. Sample Case Studies
5. Questions

# History of the AWWA Manual M52

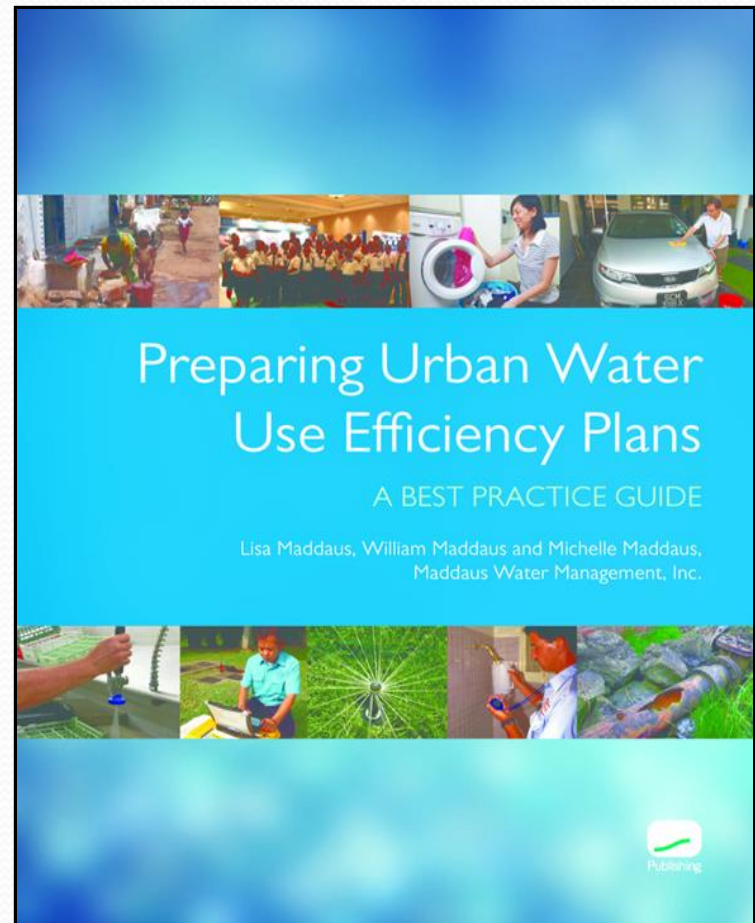
- Published AWWA Conservation handbooks in 1981 and 1986
- First edition Manual M52 published in 2006 was 149 pages
- Provides examples on how to screen conservation measures and create a conservation plan
- Water efficiency often the quickest and most cost-effective option to meet new demands



# Additional Resources



AWWA Small and Medium Sized Utility Handbook, published 2010 (utilities under 100,000 people)



International Water Association 25 case studies, published 2013 (metric units)

# Collaborative Update Process

- 24 very involved committee members
- 2 year update process
- Held meetings approx. every 2 months to discuss manual content and coordinate manual contributors

East	Central	West	Canada
<ul style="list-style-type: none"><li>▪ Town of Cary, NC</li><li>▪ Cobb County, GA</li><li>▪ Philadelphia, PN</li><li>▪ New York, NY</li><li>▪ Tampa Bay, FL</li></ul>	<ul style="list-style-type: none"><li>▪ City of Waukesha, WI</li><li>▪ City of Austin, TX</li></ul>	<ul style="list-style-type: none"><li>▪ Fort Collins, CO</li><li>▪ City of Sacramento, CA</li><li>▪ Seattle Public Utilities, WA</li></ul>	<ul style="list-style-type: none"><li>▪ City of Abbotsford, British Columbia</li><li>▪ City of Guelph, Ontario</li></ul>

National: AWWA, Alliance for Water Efficiency, EPA WaterSense

Consultants: Maddaus Water Management Inc., CH2M Hill, PRMG Inc., CBconserve

# What's new in the manual?

- 3 brand new Chapters
- 14 new Case Studies
- 50 pages of additional content & 50 photos
  - Updated Water Loss (consistent with new Manual M36)
  - Updated Pricing (consistent with Manual M1)
  - Added AMI, Landscaping, Commercial information
  - Added information from Alliance for Water Efficiency, EPA WaterSense
  - Expanded section on identification and evaluation of water use efficiency measures
  - Expanded section on evaluation of cost-effectiveness of measures
  - Added how can water efficiency be financed?
  - Implementation planning and public participation
  - Conservation Performance Measurement, Tracking, Reporting

# Manual Contents

- Chapter 1 Introduction
- Chapter 2 Understanding Conservation and Setting Goals
- Chapter 3 Analysis of Water Use and Water Savings
- Chapter 4 Evaluation of Benefits and Costs
- Chapter 5 Creating a Formal Water Conservation Program Plan
- Chapter 6 Stakeholder Involvement, Rate Setting, and Getting the Plan Adopted
- Chapter 7 Plan Implementation, Monitoring and Evaluating Performance
- Appendix A Case Studies
- Appendix B Stakeholder Approaches
- Appendix C Data Collection



# 10 Steps to a Conservation Plan

1. Review detailed demand forecast
2. Review existing water system profile and descriptions of planned facilities
3. Evaluate the effectiveness of existing conservation measures
4. Define conservation potential
5. Identify conservation measures
6. Determine feasible measures
7. Perform benefit–cost evaluations
8. Select and package conservation measures
9. Combine overall estimated savings
10. Optimize demand forecasts



# 14 Case Studies

East	Central	West	Canada
<ul style="list-style-type: none"><li>▪ Education program</li><li>▪ Long term supply / Demand Management Plan</li><li>▪ Water Loss</li><li>▪ Commercial Hotel Program</li></ul>	<ul style="list-style-type: none"><li>▪ Comprehensive Municipal Water Conservation Plan for a Mid-Size Suburban Community</li><li>▪ A Mature Conservation Program Shifts Focus from Rebates</li></ul>	<ul style="list-style-type: none"><li>▪ Landscape home surveys</li><li>▪ Engaging Stakeholders in Water Conservation Planning</li><li>▪ CII Program</li><li>▪ Public Involvement and Rate Setting</li><li>▪ Water Conservation Performance Measurement, Tracking, and Reporting</li></ul>	<ul style="list-style-type: none"><li>▪ Using Advanced Metering Infrastructure to Enhance Conservation Efforts</li><li>▪ Greywater Reuse and Rainwater Harvesting Rebate Programs</li></ul>

Guide also includes additional Box Story Examples and links to online and resources

## CASE STUDY 1: Fort Collins, Colorado Landscape Water Assessment Leads to Customer Action

- Utility offers sprinkler audits to homes and HOAs since 1999
  1. 3,500 homes audited to date
  2. Homeowners learn their systems including programming the controller
  3. Utility hires 4-5 seasonal auditors who work mid-May to mid-September
- Results
  1. Water use tracking average annual savings of 20% of outdoor use
  2. Audits cost \$40-\$50



## CASE STUDY 2: City of Sacramento, California

### Engaging Stakeholders in Water Conservation Planning

- Developed plan to meet state's target of 20% reduction in per capita targets by 2020 and alternative for Master Plan CIP
- City set up a Water Conservation Advisory Group (SWCAG) – 29 public members, plus staff and consultants
- Process conducted over 12 months with key timed meetings
- SWCAG provides input and refinement on:
  - Planning goals
  - Preliminary list of water conservation measures
  - Results of benefit cost analysis
  - Final measures for implementation
  - Final Plan

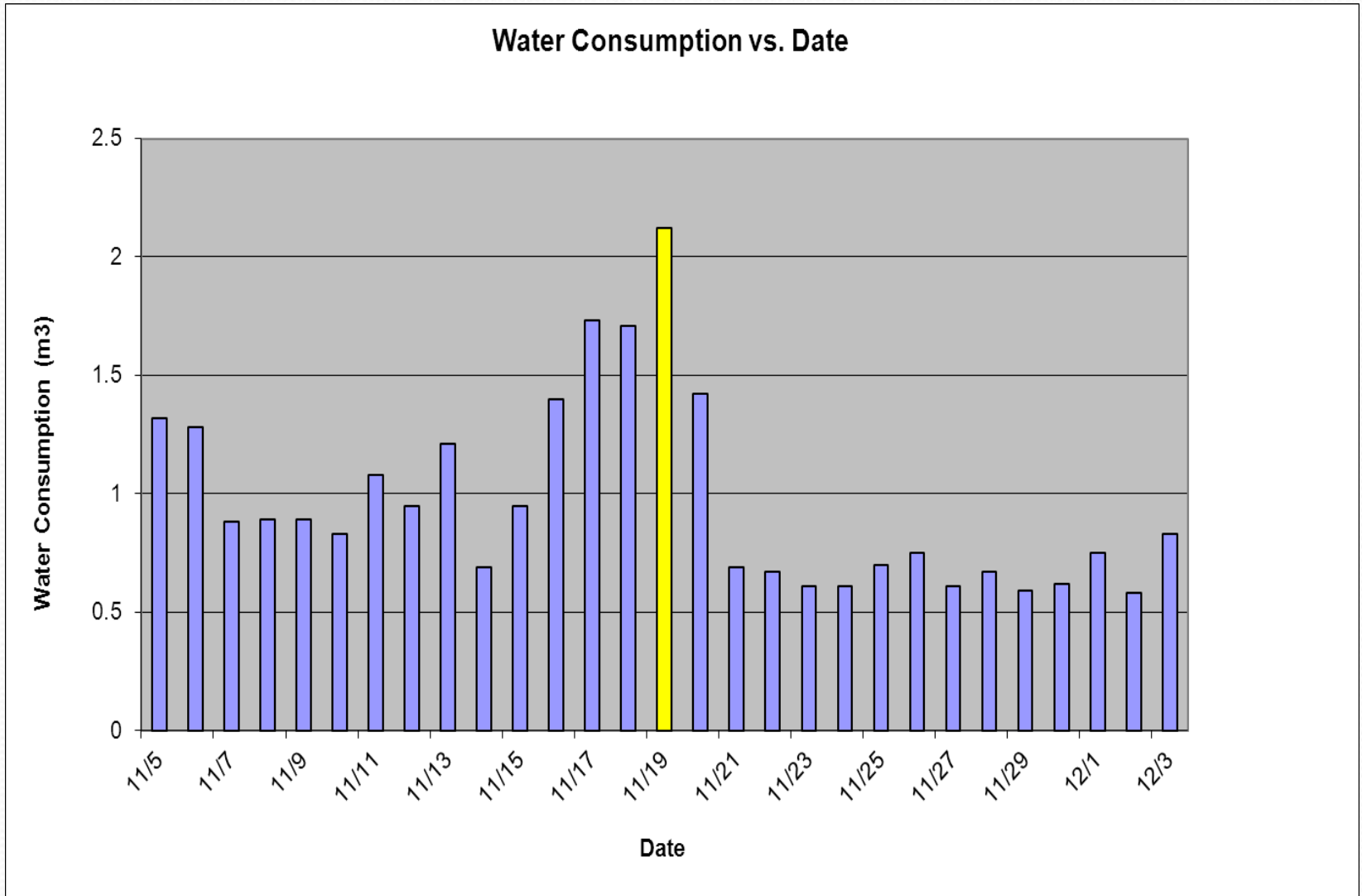
## CASE STUDY 3: City of Abbotsford, British Columbia, Canada Uses AMI To Enhance Conservation Efforts

- Installed AMI System in 2011
  1. Installed on all meters ~135,000 residents + businesses
- Benefits that enhance conservation:
  1. Switched from annual bills to bi-monthly bills
  2. Implemented volumetric rates
  3. Identified leaks and sent 3,000 letters
  4. Measured water savings

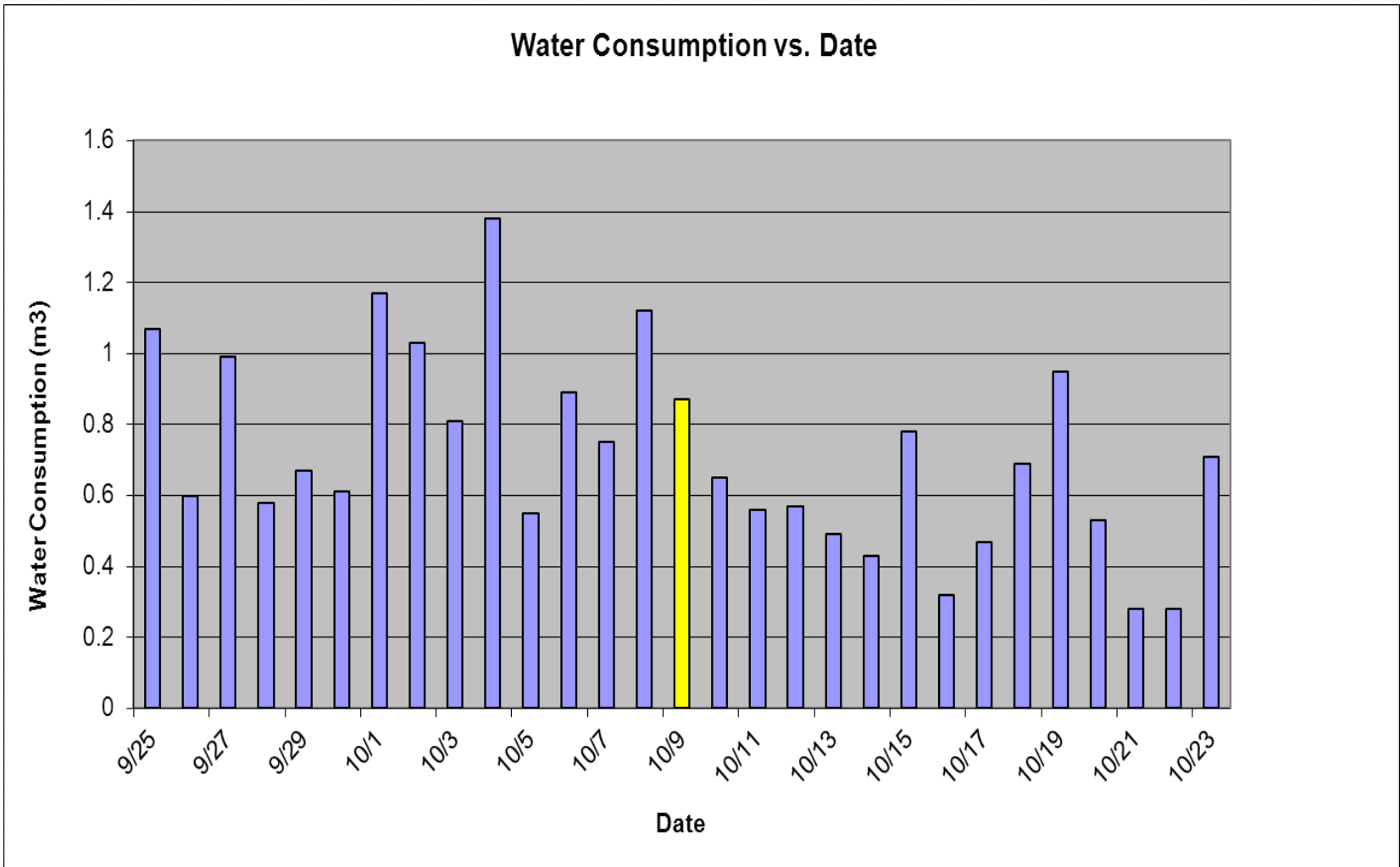


Itron Automated Meter  
End Point

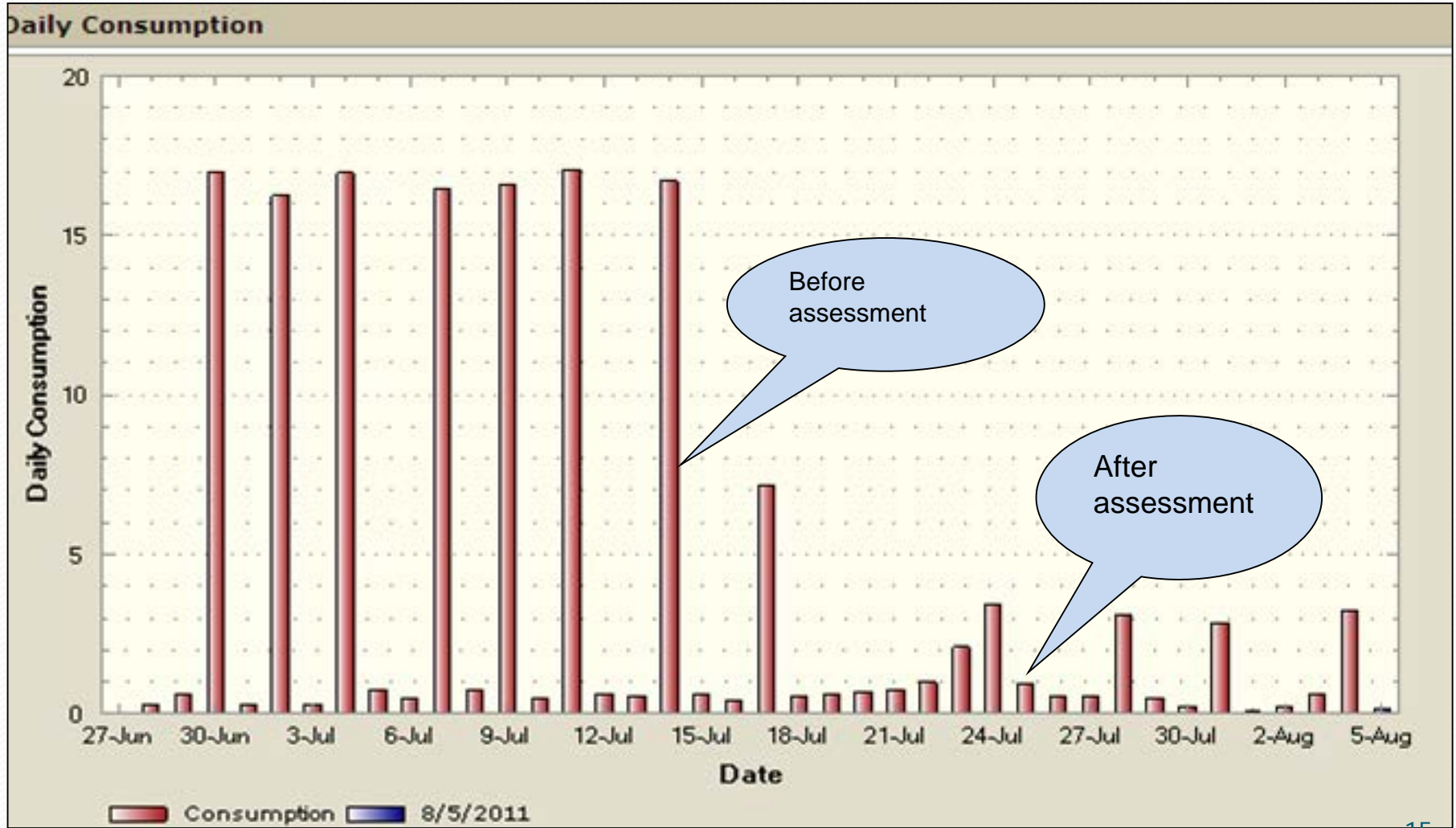
# 30% Reduction with a High Efficiency Toilet HET (yellow bar indicates installation date)



# 19% Reduction with a High Efficiency Washing Machine (yellow bar indicates installation date)

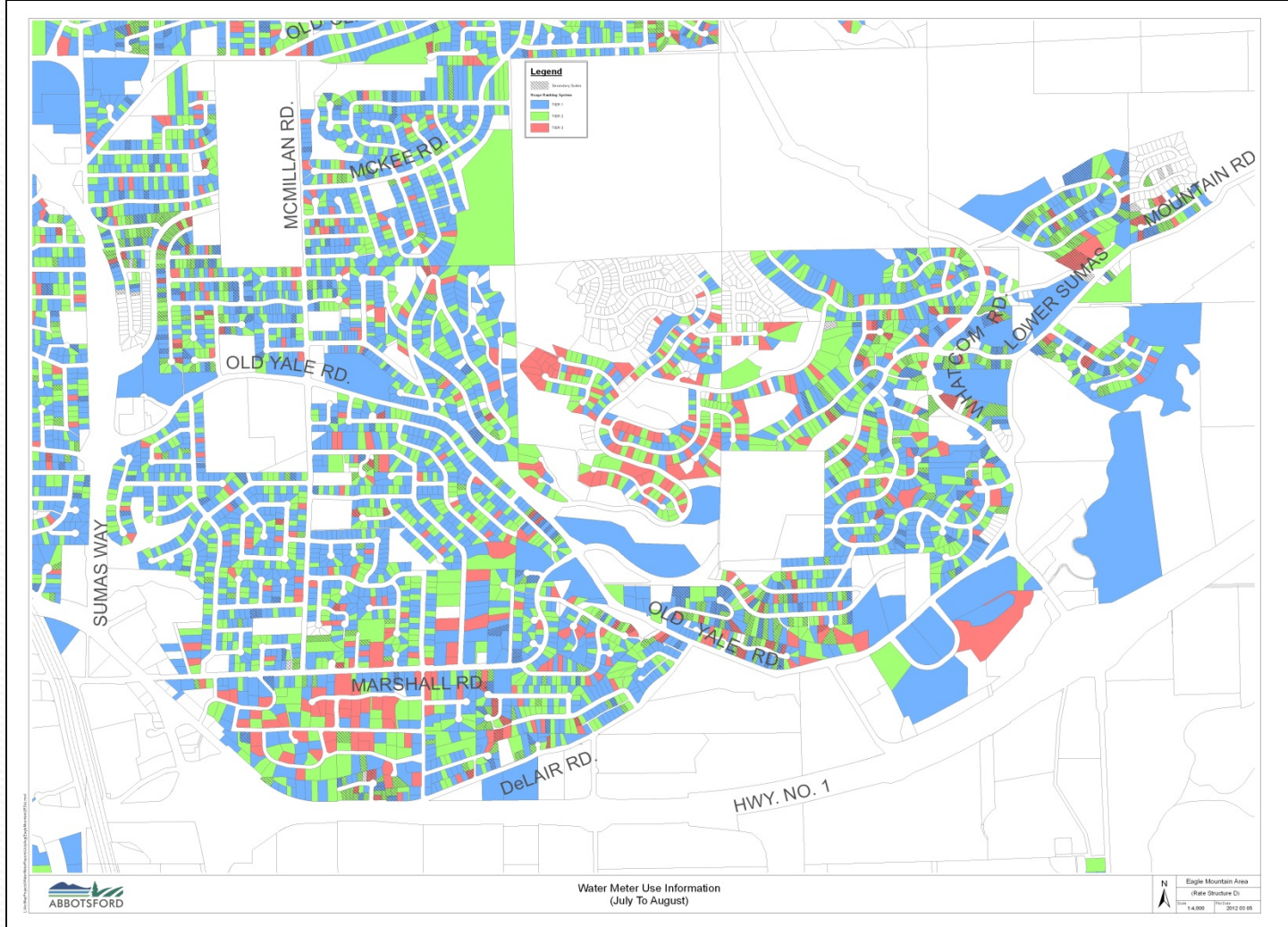


# Reduction in Water Use from an Irrigation Assessment



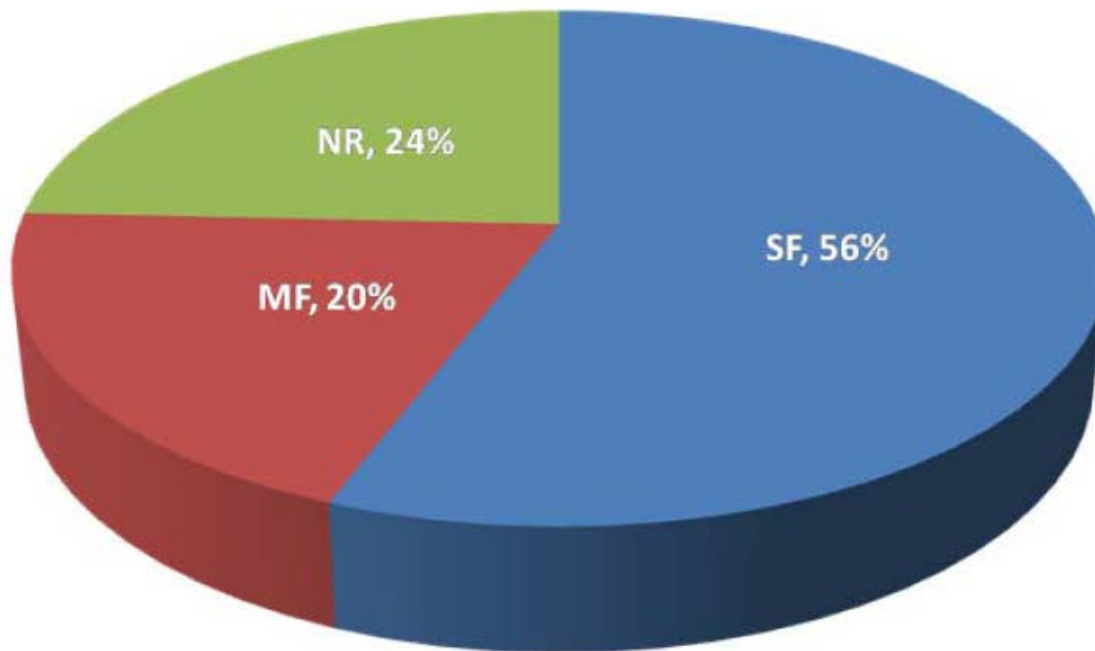


# Summer Consumption in a heavily irrigated neighborhood (Green and Red represent high water use)



## CASE STUDY 4: Tampa Bay Water, Florida Long Term Supply and Demand Management Plan (2013)

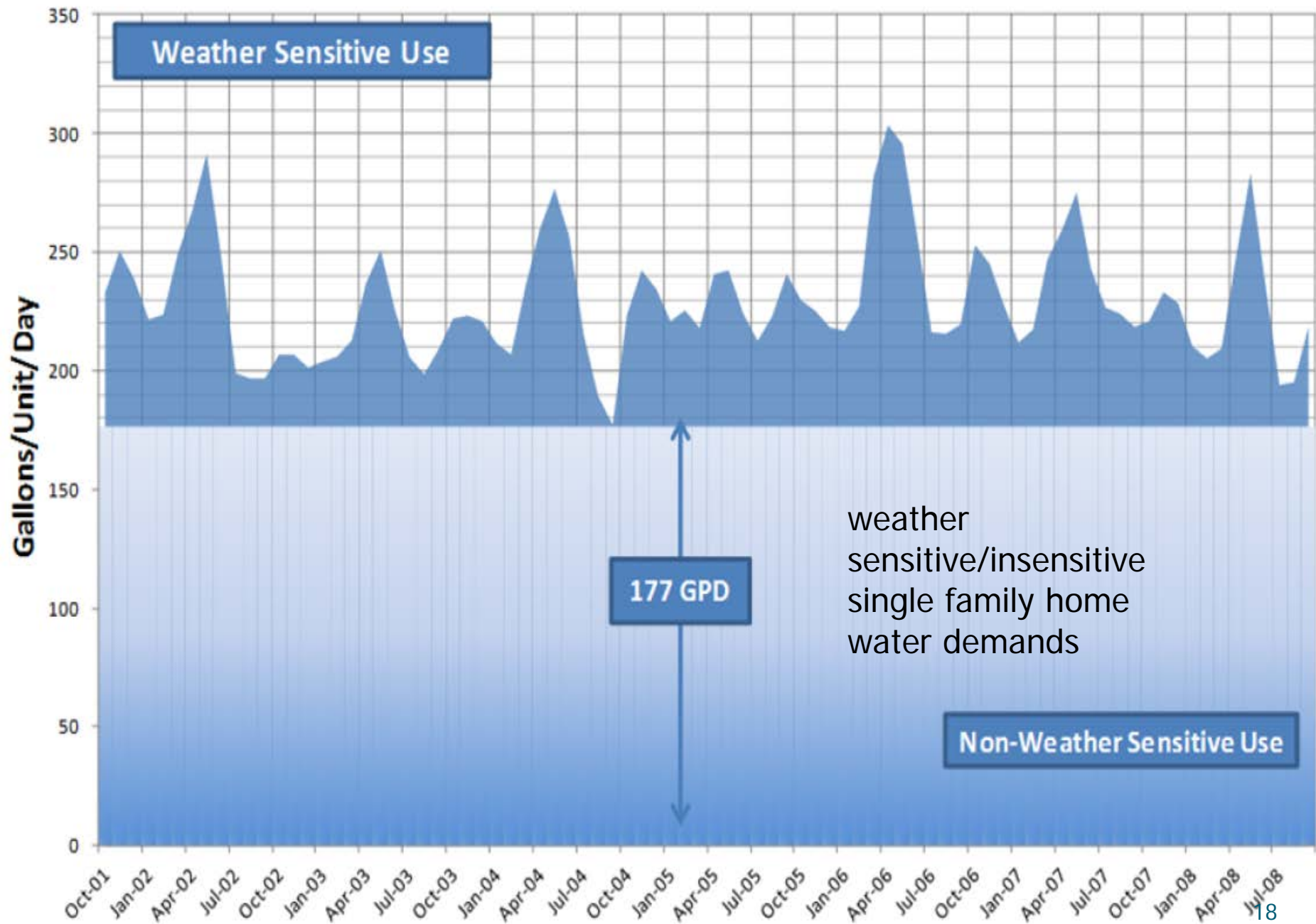
- Regional Plan for 2.3 million people
  1. Distribution of regional water demand by sector



NR = Non Residential, MF = Multi Family, SF = Single Family

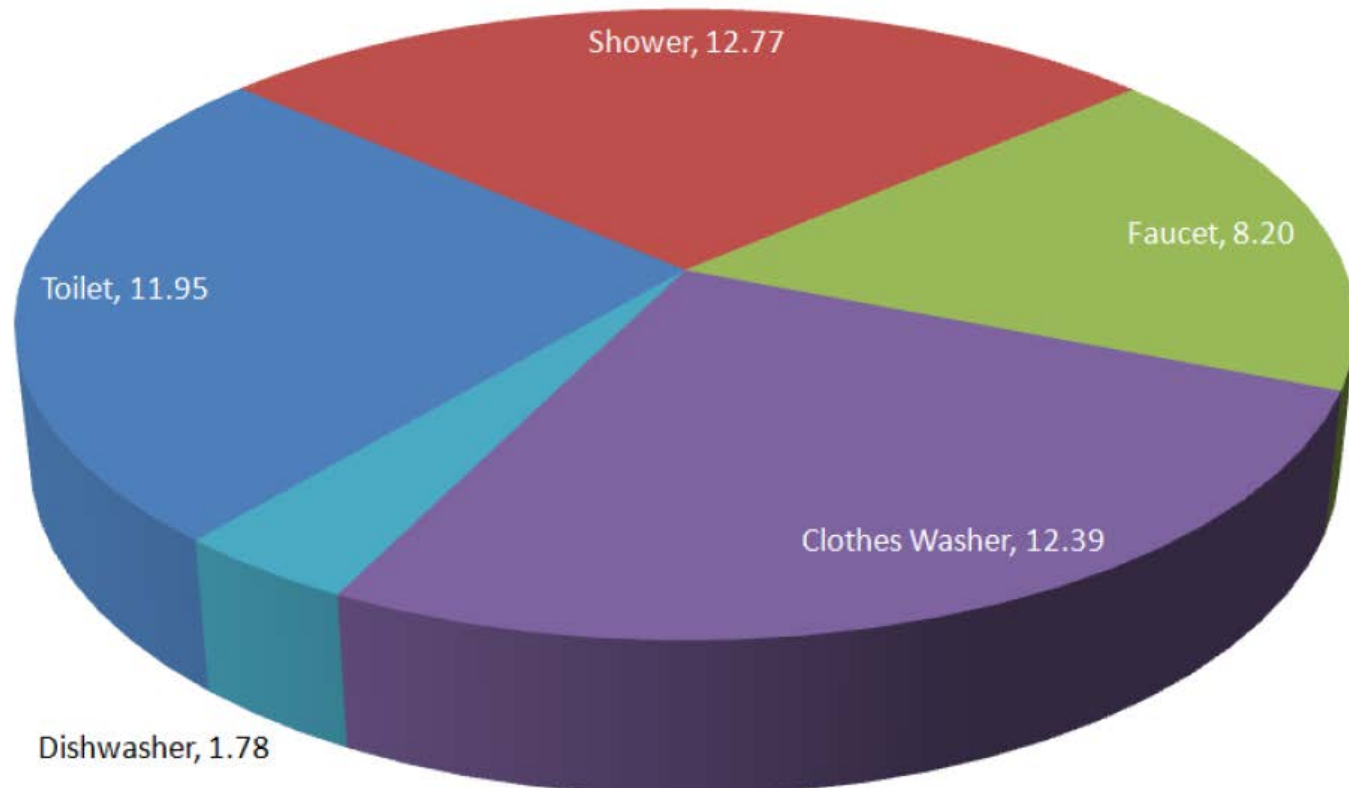
Tampa Bay Water Average Monthly

Non-seasonal Use - Min Month Across All Water Years



## CASE STUDY 4: Tampa Bay Water, Florida Long Term Supply and Demand Management Plan

- Estimated Distribution of Regional Single-Family End Uses of Water in Gallons/Capita/Day



## CASE STUDY 4: Tampa Bay Water, Florida Long Term Supply and Demand Management Plan

- Economic Analysis of Demand Management Strategies

### Net Present Value (NPV ) of Avoided Costs

	PV Cost (\$M)	PV Benefit (\$M)	NPV (\$M)	BCR
Life of Savings to 2065	\$32.5	\$60.6	\$28.1	1.85
Life of Savings to 2035	\$32.5	\$42.0	\$9.5	1.29

PV = Present Value

NPV = Net Present Value

BCR = Benefit Cost Ratio

(to be cost effective BCR should be greater than 1.0).

## CASE STUDY 5: City of Austin, Texas

### Mature Conservation Program Shifts Focus Away from Rebates

- Program Goals

1. Reduce peak demand 1% per year over 10 years
2. Reduce per capita demand to <140 gpd
3. Save money on supplemental water purchases

- Rebates

1. Phased out toilet & washer rebates in 2011
2. New initiatives
  1. Updated city codes
  2. Commercial facility irrigation assessment
  3. Enforce watering violators
  4. CII Equipment rebates
  5. Regional utility water audit / leak repair

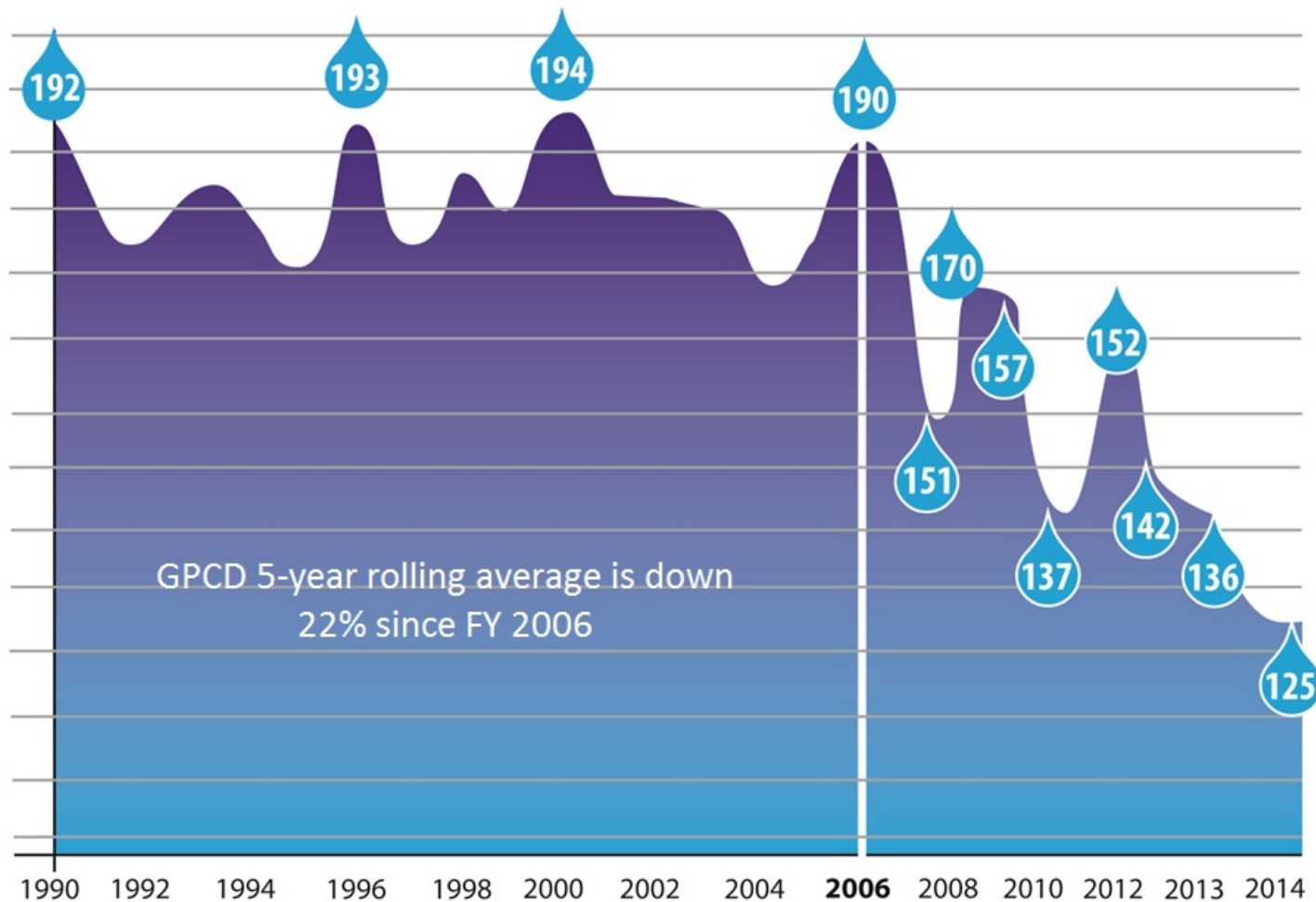


City of Austin Water Use  
Compliance Vehicle 21

# CASE STUDY 5: City of Austin, Texas

## A Mature Conservation Program Shifts Focus from Rebates

Annual Gallons Per Capita Per Day Usage Shows Steady Downward Trend



# Concluding Remarks

- Manual will be available in 2016
- New and exciting ideas and technology in conservation discussed with additional emphasis on landscape, commercial, metering, data collection
- Good news - A lot has been accomplished in 10 years! (10 years since manual was last published 2006-2016)
- The United States and Canada has a lot of really great information to share on the experiences in conservation
- Supported by AWWA Water Conservation Division's Planning Evaluation and Research Committee



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