



Water Efficiency in the City of Ashland DSS Model Outcomes

Water Efficiency Program Review

JULIE SMITHERMAN, WATER CONSERVATION SPECIALIST

LISA MADDAUS, P.E., MADDAUS WATER MANAGEMENT

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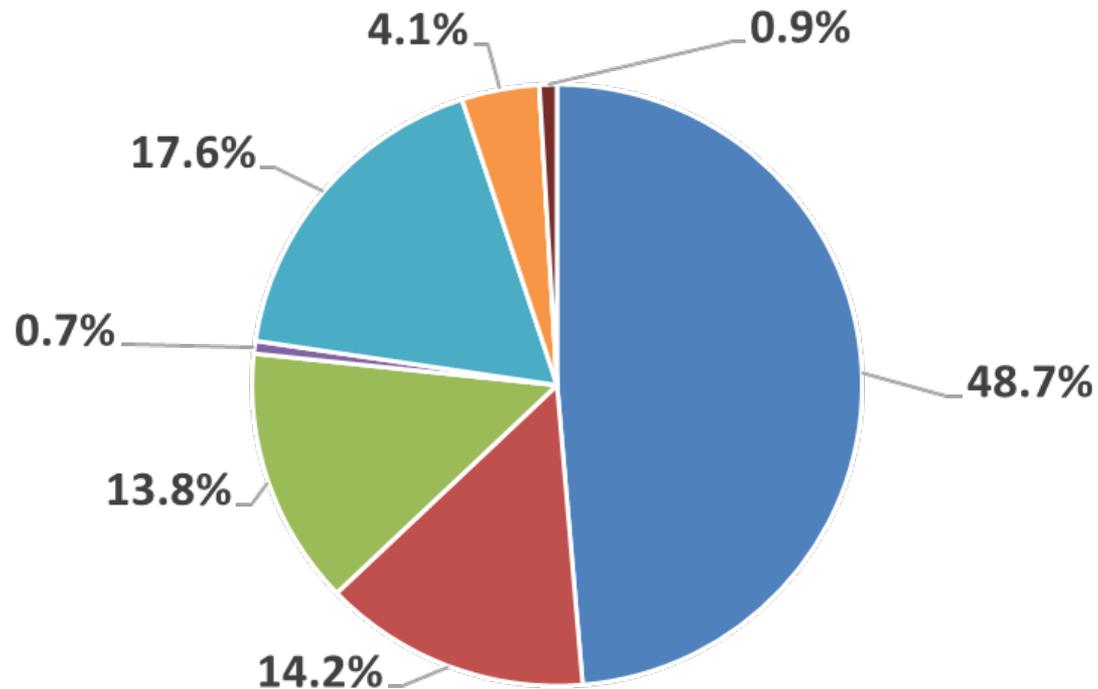
Project Goals and Objectives

- Evaluate and quantify the City's remaining long-term water conservation potential;
- Determine which set of measures and implementation strategies represent the best approach to achieve future water savings; and
- Produce a conservation plan as a subset of the water master plan, to guide the City in carrying out future water conservation programs.

Program Design Overview

- **Review Individual Measure Details**
 - Benefit-cost ratios
 - Cost of savings per unit volume (mg)
 - Differences between “utility vs. community” perspectives
- **Build Program Scenarios**
 - Overall savings for “suites” of measures
 - Total benefit-cost ratio
 - Estimated total cost
 - Comparing Scenarios
 - Illustrating the point of diminishing returns
- **Finalize Optimal Program Design**
 - Add scenarios
 - Refine details
 - Seek feedback
 - Select Recommended Preferred Program Scenario

Water Use by Sector (2016)



■ Single Family

■ Multifamily

■ Commercial

■ Municipal

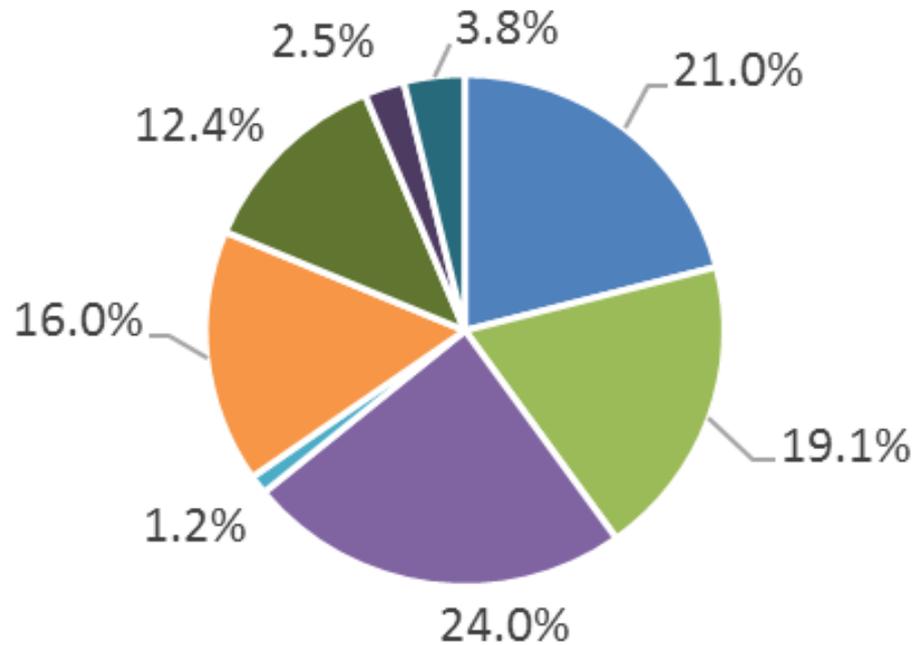
■ Irrigation

■ Governmental

■ Industrial

■ Commercial/Residential

SF Indoor Water Use



■ Toilets

■ Faucets

■ Showers

■ Dishwashers

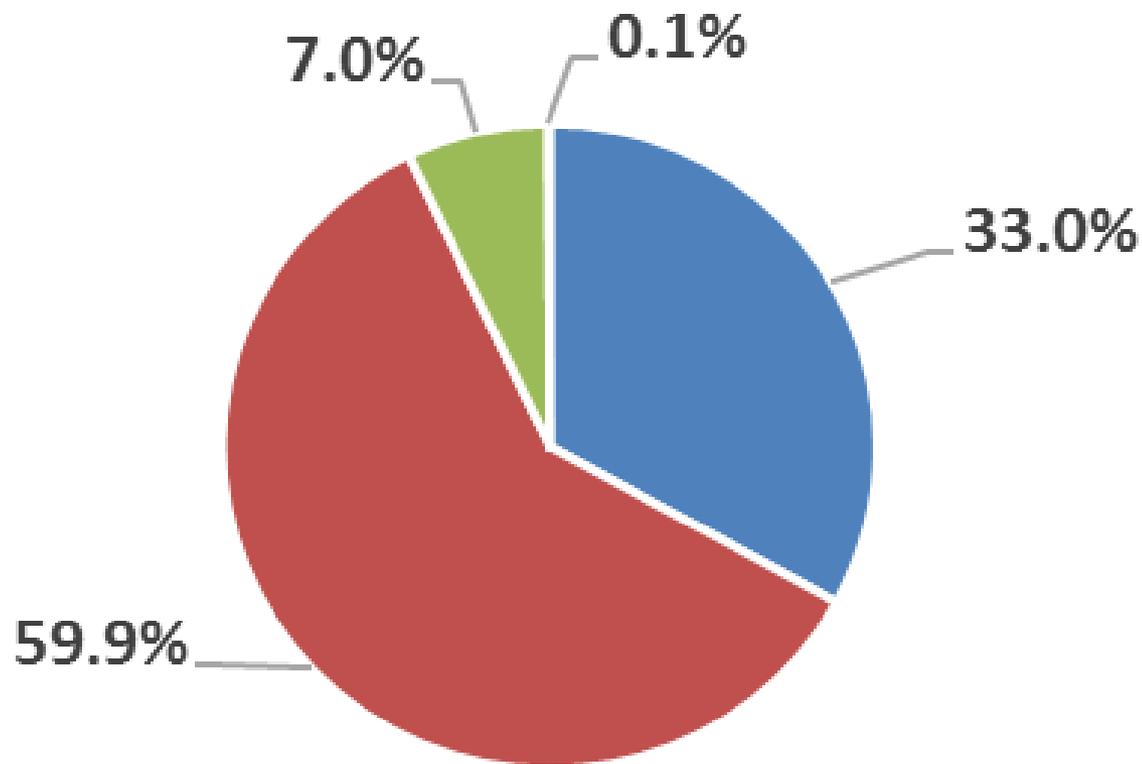
■ Clothes Washers

■ Internal Leakage

■ Baths

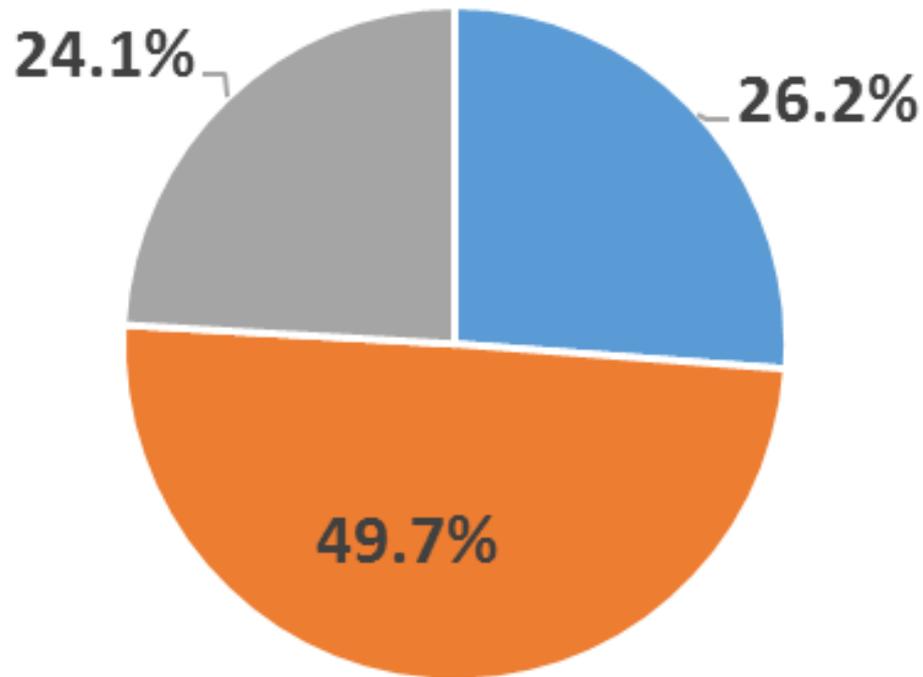
■ Other

Multi - Family Toilets



- High Use Toilet
- 1.6 gpf ULFT
- 1.28 gpf HET
- 1 gpf Toilet
- 0.8 gpf Toilet

Single Family Washing Machines



■ Efficient Front Loader ■ Medium Efficient Front Loader ■ Top Loader

Water Efficiency Program Development

- **All Customer Sectors**
 - SF, MF, Com, Gov, Mun, Irr, Com/Res
- **Measure Categories**
 - Landscape & Irrigation
 - Indoor fixtures
 - Commercial Equipment
 - Education & Outreach
 - Utility operations programs



Program Comparison

Program A: Current

- Irrigation Evaluations
- Lawn Replacement
- Water-Wise Landscaping Website
- Toilet, Washer, Dishwasher
- Indoor Evaluations
- Education & Outreach
- Soil Moisture Meter
- Showerhead & Aerators

Program B: Current Programs Plus

- Pressure Reduction Valve Rebate
- Landscape Equipment-Conversion
- Leak Repair – Low Income
- Graywater Indoor & Outdoor
- Rainwater Catchment
- Smart Controller
- Awards Program
- Water Waste Hotline

Program Comparison

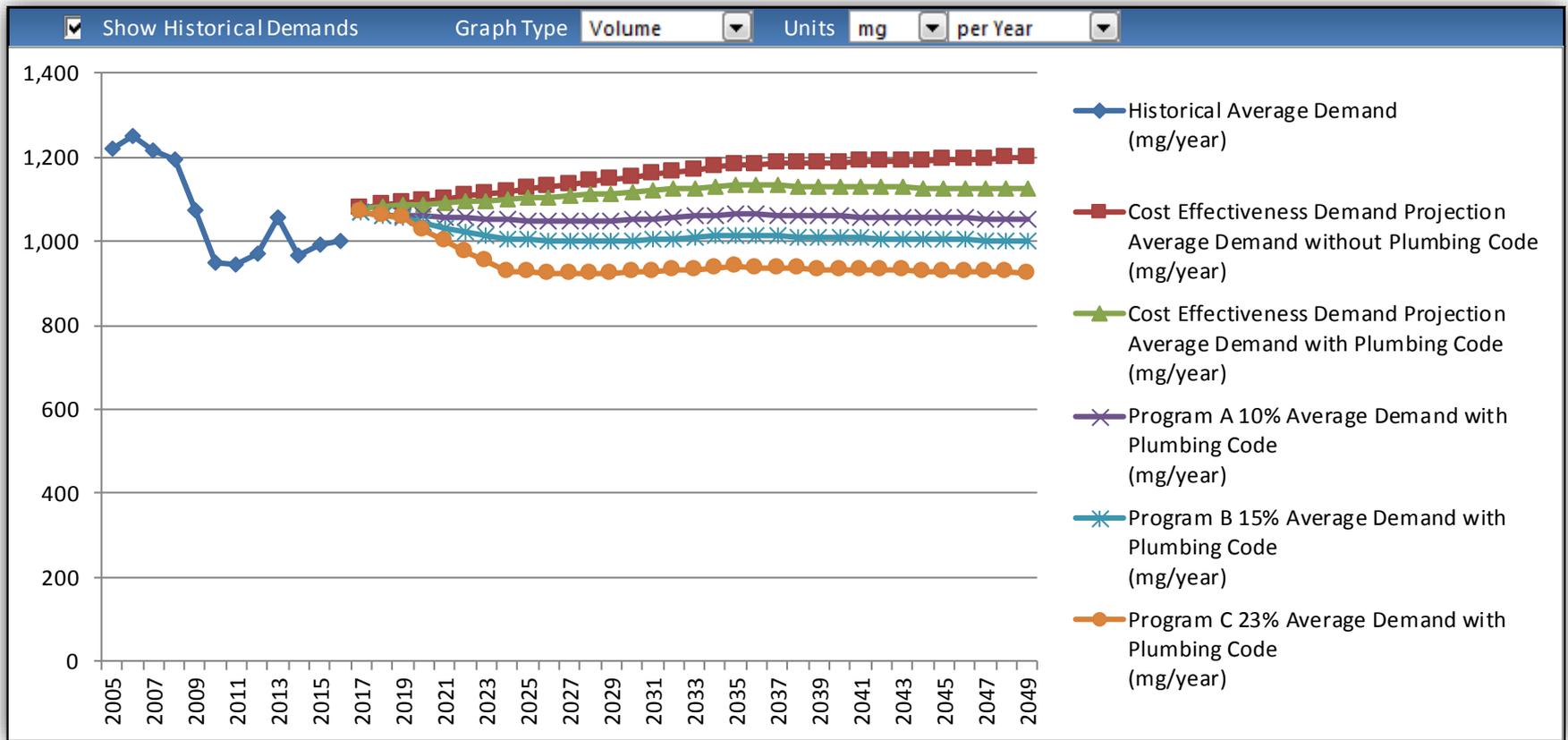
Program C: Includes A & B Programs Plus the following

- Rain Sensors
- Hot Water on Demand
- Sub-metering
- Commercial Washer Rebate
- Customer Water Use Report Software
- Large Commercial Rebates
- Urinal Rebates
- School Retrofit Program

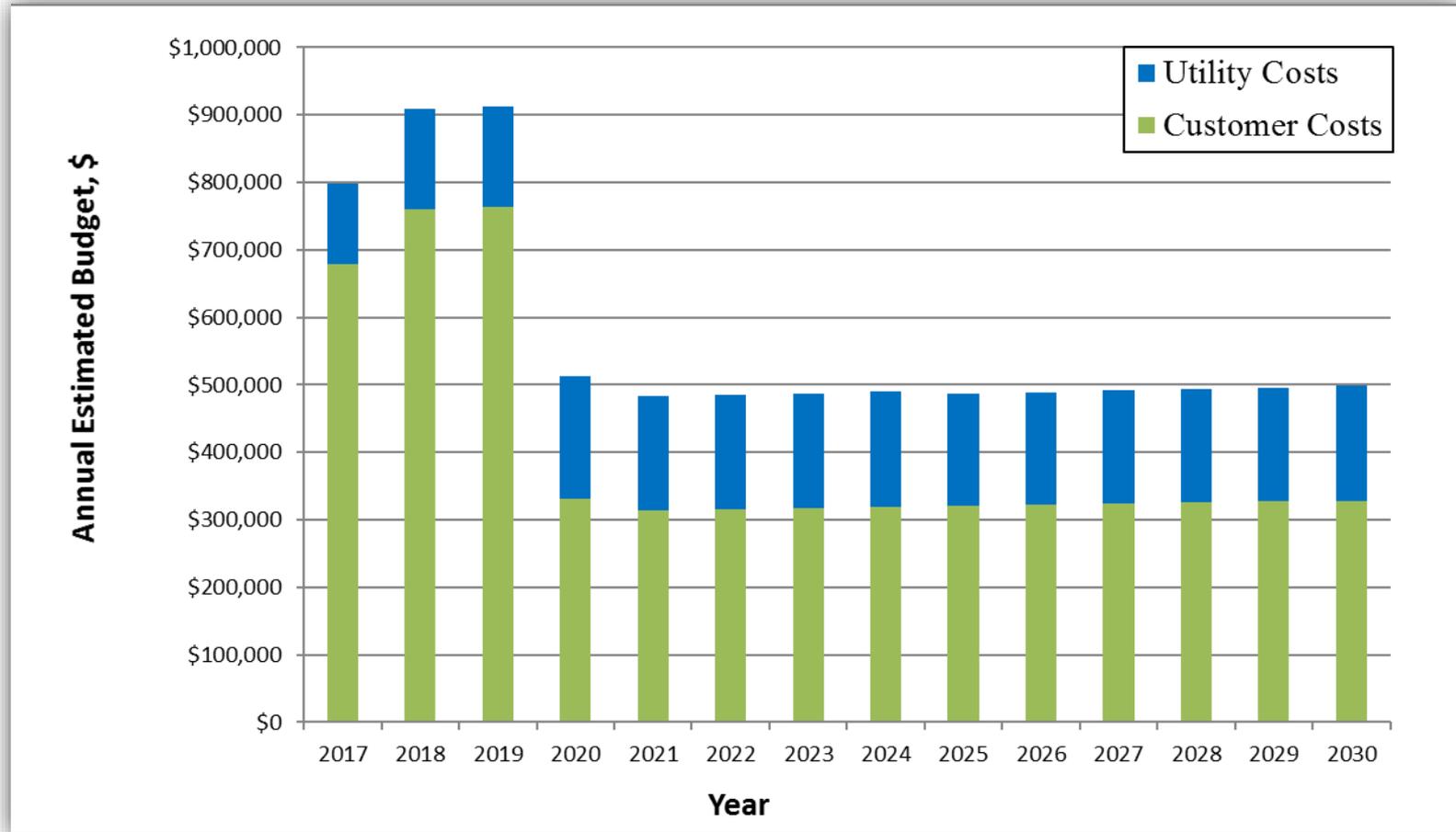
Projected Water Demands & Program Savings

Year	Projected Water Demands	Demands with Plumbing Code	Water Conservation Program A	Water Conservation Program B	Water Conservation Program C
2020	1,096	1,088	1,059	1,042	1,026
		8.31	37.28	54.04	70.21
		0.8%	3.5%	5.1%	6.8%
2030	1,152	1,118	1,051	1,002	926
		34.8	101.6	150.5	226.7
		3.1%	9.4%	14.7%	23.5%
2050	1,199	1,124	1,052	1,000	924
		75	147	199	275
		6.5%	13.5%	19.4%	28.6%

Projected Water Demand Scenarios



Recommended Program B Utility and Customer Costs



Program A, B, & C Results

Conservation Program Long Term Water Savings

Water Savings (mgy)	2020	2025	2030	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio
Program A 10%	29	52	67	0.42	0.48
Program B 15%	46	99	116	0.49	0.46
Program C 23%	62	175	192	0.61	0.70

Conservation Program Comparison

Conservation Program	Present Value of Water Savings	Present Value of Utility Costs	Water Utility Benefit/Cost Ratio
Program A 10% with Plumbing Code	\$1,100,799	\$2,614,881	0.42
Program B 15% with Plumbing Code	\$1,768,029	\$3,607,300	0.49
Program C 23% with Plumbing Code	\$3,028,516	\$4,929,419	0.61

Revised Water Demand Baselines, Projections & Targets

2012 Master Plan

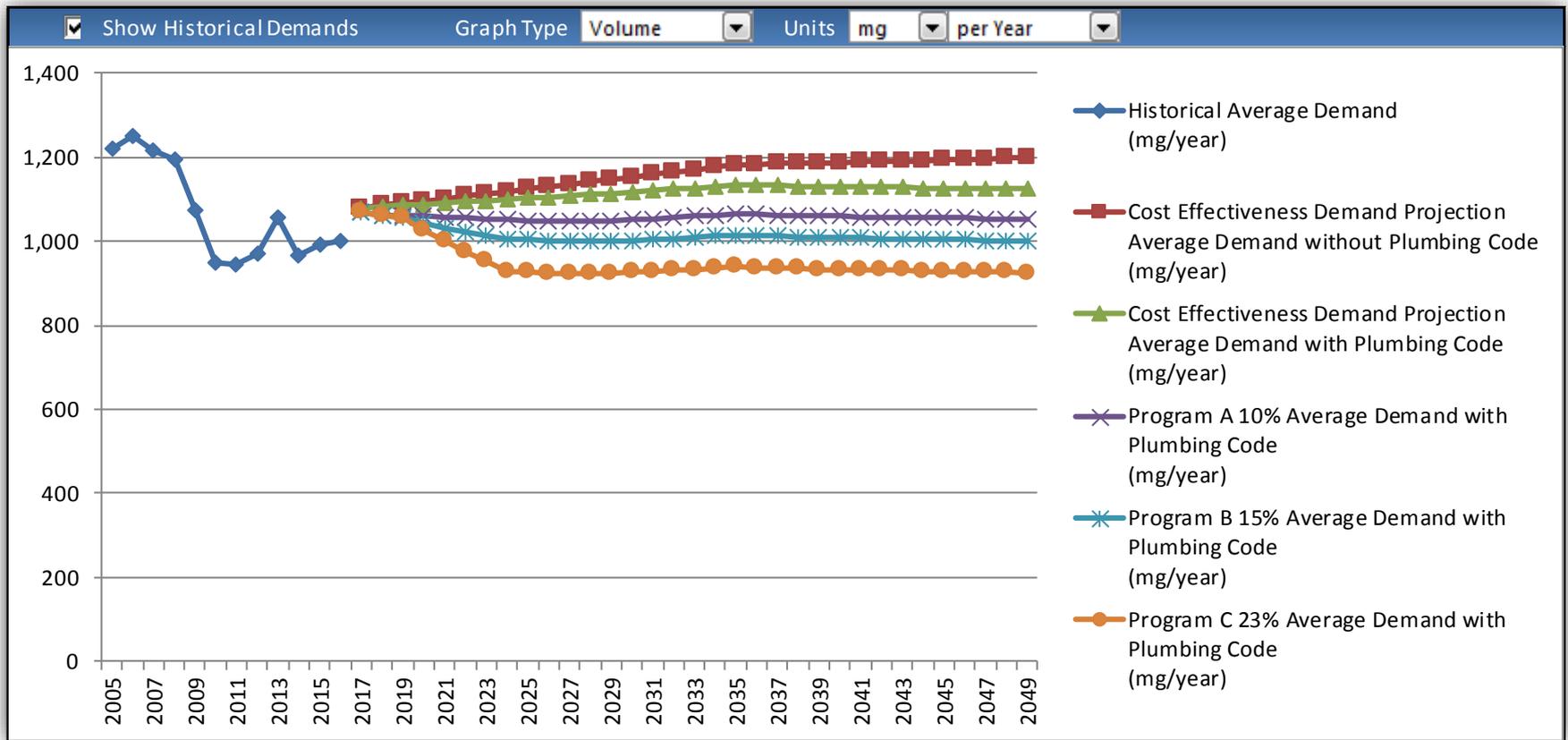
Measurement Method	2012 Demand Baseline	2030 Target 5%	2030 Target 10%	2030 Target 15%	Actual 2016 Demand
Million Gallons per Year (MGY)	1,192	1,118	1,051	1,002	1,000
Gallons per Capita per Day (GPCD)	157	149	141	133	134

2017 Master Plan

Measurement Method	2030 Projected Demand	2030 Target 3% *	2030 Target 10%	2030 Target 15%	2030 Target 23%
Million Gallons per Year (MGY)	1,152	1,118	1,051	1,002	926
Gallons per Capita per Day (GPCD)	144	139	131	125	115

* Demands with Savings, Plumbing Code Only – No Active Conservation Program

Projected Water Demand Scenarios



Next Steps : AWAC Feedback

- Finalize Demand Scenario
 - Original Baseline followed the 2012 Master Plan
 - Need to re-establish the baseline to move forward?
 - Is AWAC comfortable moving forward with new baseline?
 - Current proposed starting point is 1,080 MGY
- Optimize Program Design
- Looking for feedback on Programs and Measures
- Select Recommended Preferred Program Scenario