



Strategic Water Supply Assessment: Conservation

REGULAR BOARD MEETING

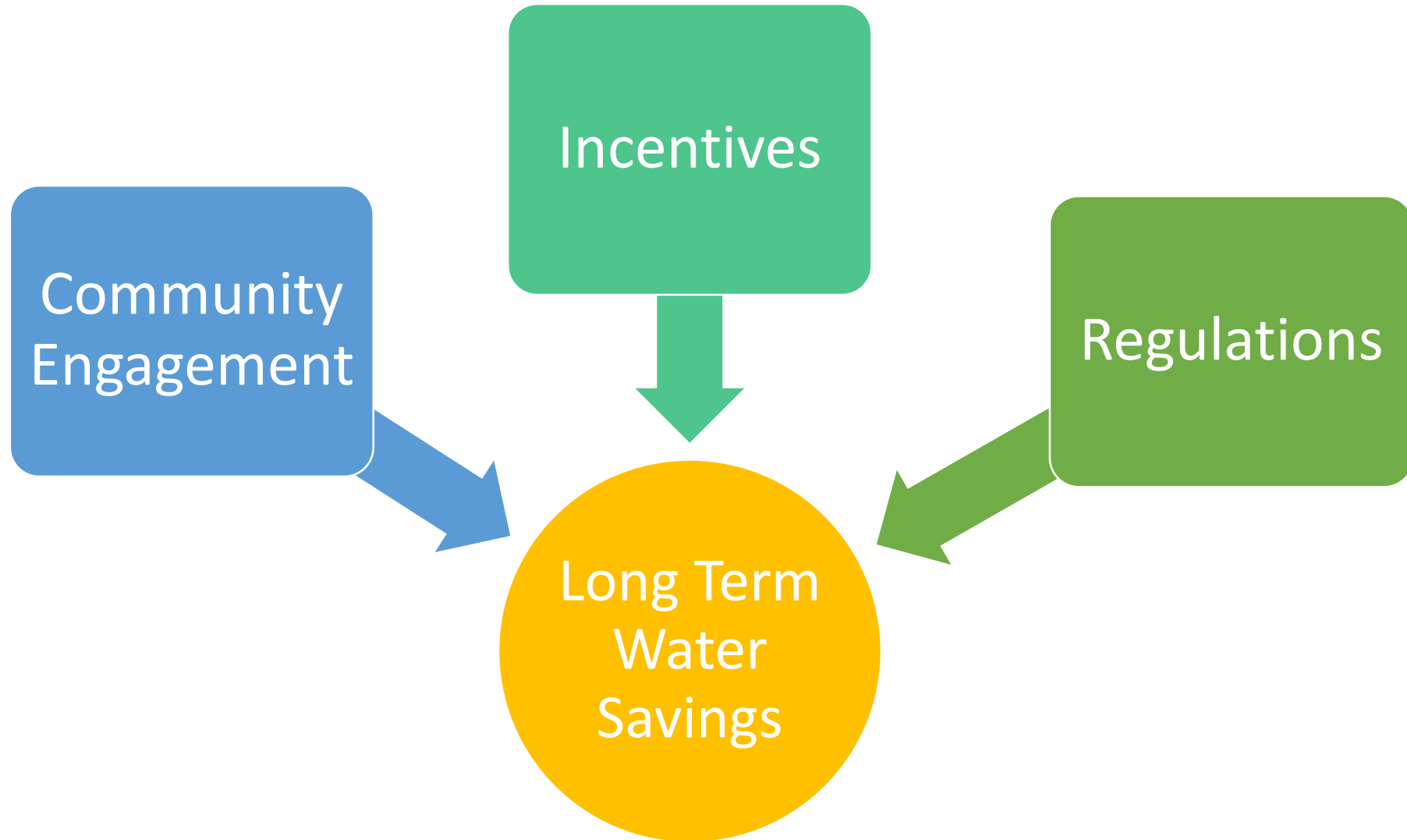
August 2, 2022



Strategic Water Supply Assessment: Overview

- Conservation Review
- Conservation as Water Supply
- Peer Review of Conservation as Supply and Other Options
- Next Steps

Conservation Review: Components of a Conservation Program



Conservation Review: Water Saving Incentives

- Turf Conversion Rebates
- Flume Smart Home Water Monitor
- Hot Water Recirculating System
- Pool or Spa Covers
- High Efficiency Clothes Washers
- High Efficiency Toilets
- Smart Irrigation Controllers
- Graywater: Laundry-to-Landscape kits
- Rain barrels and cisterns



Conservation Review: Policy and Regulations

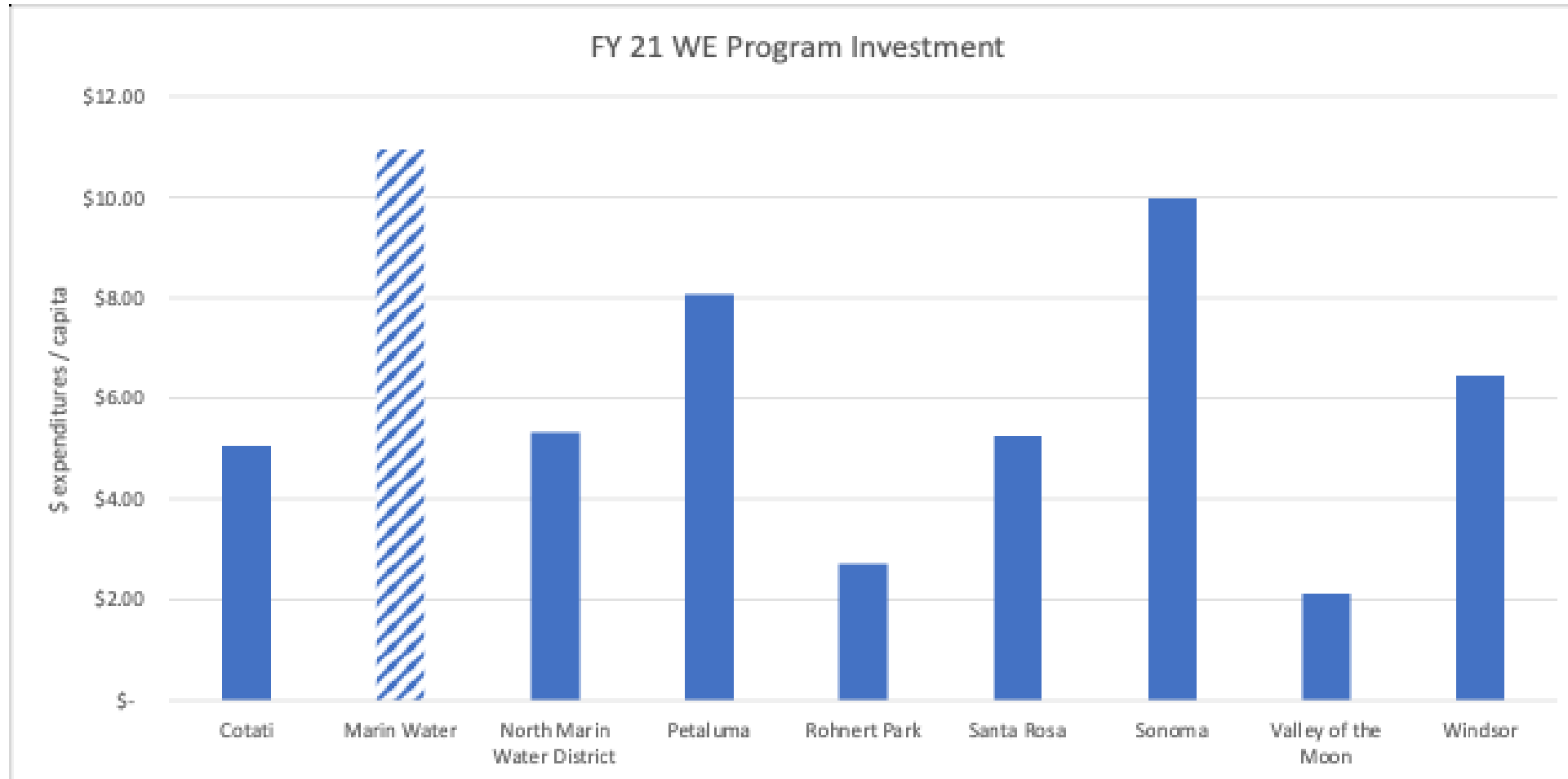
- Local Policy and Regulations
 - AMI
 - Landscape Plan Review
 - ADU
 - Indoor Fixture Standards
 - Graywater Requirement
 - Water Waste Prohibitions
 - Ongoing irrigation limitations
 - Overhead spray limited to 2 days/week
- State Regulations
 - SB606/AB1668: Water Use Objectives
 - Indoor Residential Targets
 - Outdoor Water Use Targets
 - CII
 - Water Loss Targets

Conservation Review: Outreach and Education

- School Education
- Residential and Commercial Water Use Surveys
- Marin-Friendly Garden Walks
- Eco-Friendly Garden Tour
- Watershed Approach to Landscaping
- Weekly Watering Schedule
- Workshops and Training Seminars



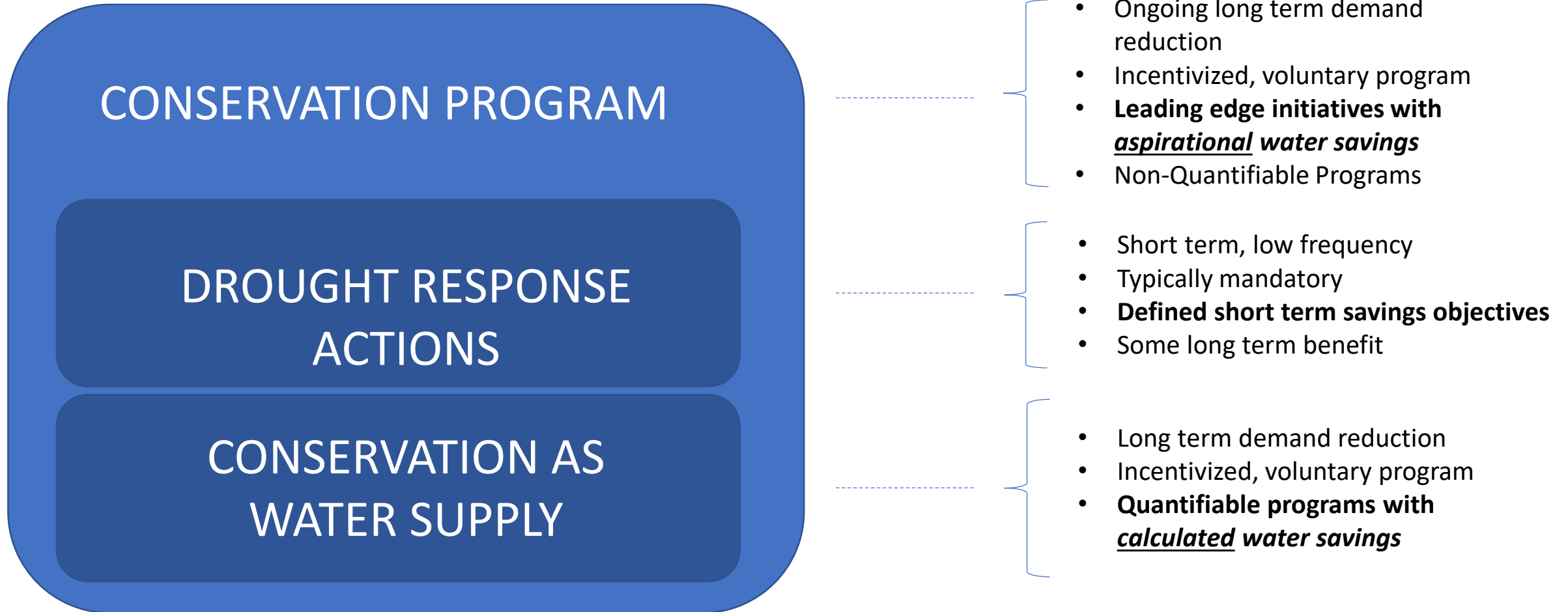
Conservation Review: Regional Water Efficiency Program Investments



Conservation Review: Conservation

- **GPCD** – *Gallons per capita per day* is average total water produced in a day divided by the *total population*.
- **R-GPCD** – *Residential Gallons per capita per day* is the daily average water delivered to *residential customers* divided by the total population on a given day.
- Both GPCD and R-GPCD are useful measures of water use efficiency.
- The District customer base is primarily residential therefore most of our conservation programs focus on reducing residential water use and *R-GPCD is of particular interest*.

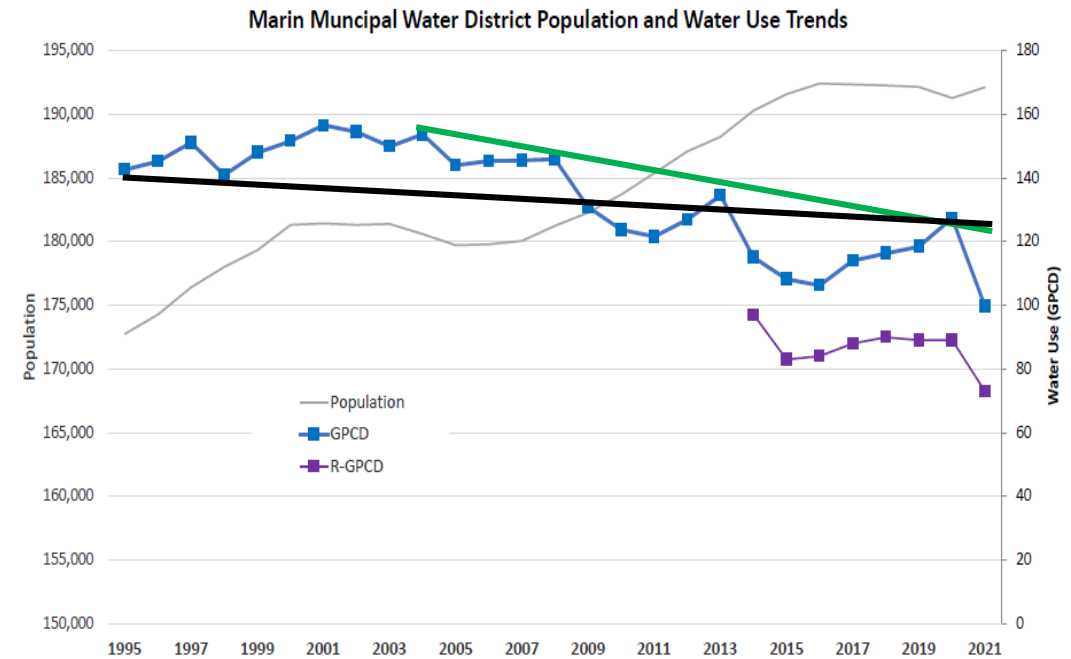
Conservation Review: Conservation Program



Conservation Review: Conservation Program and Conservation as Water Supply

- Understating demand may lead to shortage of water
- Over stating demand may lead to unnecessary water supply projects
- Conservation is challenging to forecast with any degree of accuracy

The level of conservation to be included in water supply planning must be based on empirical data to ensure a high level of confidence in achieving needed savings.



Very different forecasts of future conservation water savings can be drawn from GPCD trend analysis.

Development of Water Conservation as a Supply

Water Supply Assessment: Opportunities for Savings

- Single Family Indoor – Proposed State target of 42 indoor gpcd
- Residential Outdoor – Turf replacement, technology & efficiencies
- Landscape – Plant material, irrigation efficiencies, education
- Other – System losses
- Multi Family – Limited (similar to single family indoor)
- Industrial/Commercial – Largely indoor uses

Strategic Water Supply Assessment: Conservation as Supply

- Regulatory Savings
 - Natural replacement of water using appliances with newer high efficiency devices due to building code, plumbing code, and other regulatory requirements.
- Incentives include, but not limited to:
 - AMI Leak Letters: 1,250 notifications/year (increase will correspond with new AMI installations)
 - Non-Functional Turf Conversion: 70,000 sqft/year
 - Turf Conversion: 100,000 sqft /year
 - Rain Barrels: 15,000 gallons/year
 - Pool Covers: 90 covers/year
 - Laundry to Landscape Graywater Kits: 40 kits/year
 - Conservation Assistance Program: 500 site visits/year
 - SMART Irrigation Controllers: 100 controllers/year

Near-term incentive program designed based on best available technology.

Developing the SWSA Conservation as Supply Based on Historic Participation

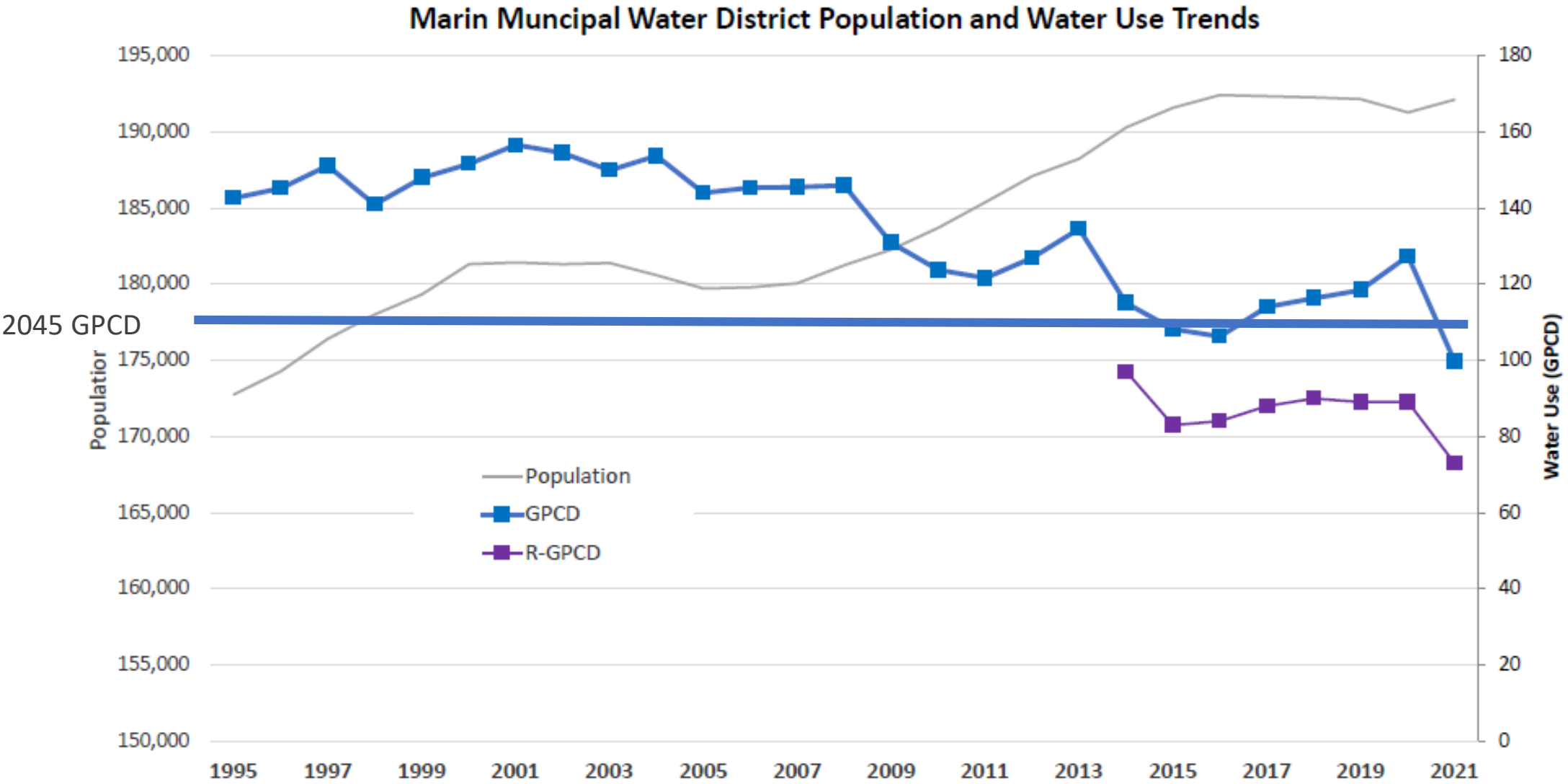
	SWSA Conservation Element	Past Annual Participation	
		Pre-Drought	2021 Drought
AMI Leak Letters (/yr)	1,250	1,140	1,601
Non-Functional Turf Conversion (sqft/yr)	70,000	0	0
Turf Conversion (sqft/yr)	100,000	7,736	410,000
Pool Covers (/yr)	90	12	399
SMART Irrigation Controllers (/yr)	100	50	480
Conservation Assistance Program (/yr)	500	195	667
Laundry to Landscape Graywater Kits (/yr)	40	5	44
Rain Barrels (gallons/yr)	15,000	460	43,497

Strategic Water Supply Assessment: Projected Demand and Savings

		Projected Annual Consumption w/ RHNA				
		2025	2030	2035	2040	2045
Single-Family	2020 15287	15575	17253	17702	18034	18392
Multi-Family	3311	3384	3722	3801	3849	3903
Commercial (Business/Industrial)	2282	2875	2922	2945	2952	2959
Institutional/Governmental	1323	1600	1627	1640	1643	1647
Landscape	1525	1659	1686	1700	1704	1707
Other & Non-Revenue Water	2794	2807	2810	2804	2912	2828
Projected Savings	0	-801.8	-1603.6	-2405.4	-3207.2	-4009
Total with Savings	26522	27098	28416	28186	27787	27427
Population (including RHNA)	191,269	202,510	218,444	223,251	227,005	230,996
Total GPCD	124	119	116	113	109	106

*SWSA uses the 5-year average consumption as the baseline.

Population and Water Use Trends

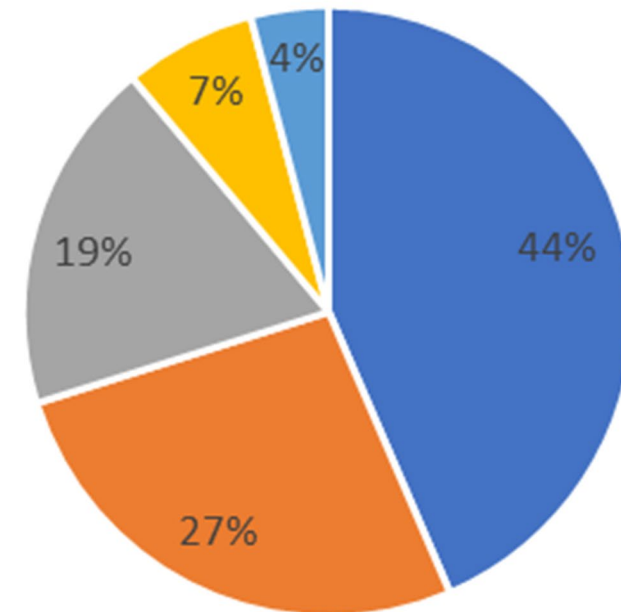


Water Supply Assessment: Potential For Water Use Savings By Sector in 2045

Calculated using the Alliance for Water Efficiency Conservation Tracking Tool

- Single-family Residential ~1,745 AF
- Multi-family Residential ~1,069 AF
- Commercial/ Industrial/ Institutional ~750 AF
- Landscape ~165 AF
- System Losses ~280 AF
- *Total Savings in 2045 – 4,009 AF*

Savings By Sector



■ SF ■ MF ■ CII ■ System ■ Landscape

Water Supply Assessment: GPCD Trends

- 2020 District-wide GPCD = 124 gallons per day
- 2020 R-GPCD = ~87 gallons per day
- 2045 District-wide GPCD = 106 gallons per day
- 2045 R-GPCD = ~73 gallons per day
- All proposed State Water Use Objectives will be met.
 - Proposed Residential Indoor target of 42 gpcd

SWSA Conservation as Supply

- 2045 Adjusted Water Use
 - 2045 demands: 27,427acft
 - 106 GPCD
 - 73 R-GPCD
- Cost to Fund Conservation as Supply
 - District Cost: \$2,951/acft
 - Annual Budget Estimate: \$2.1M for incentives and associated program management
 - Does not include School Education Program and other non-incentive based program expenditures
 - Customer Cost: \$2,883/acft
 - Estimated hardware, installation, and maintenance costs for each incentivized program

Peer Review of Conservation as Supply and Additional Options

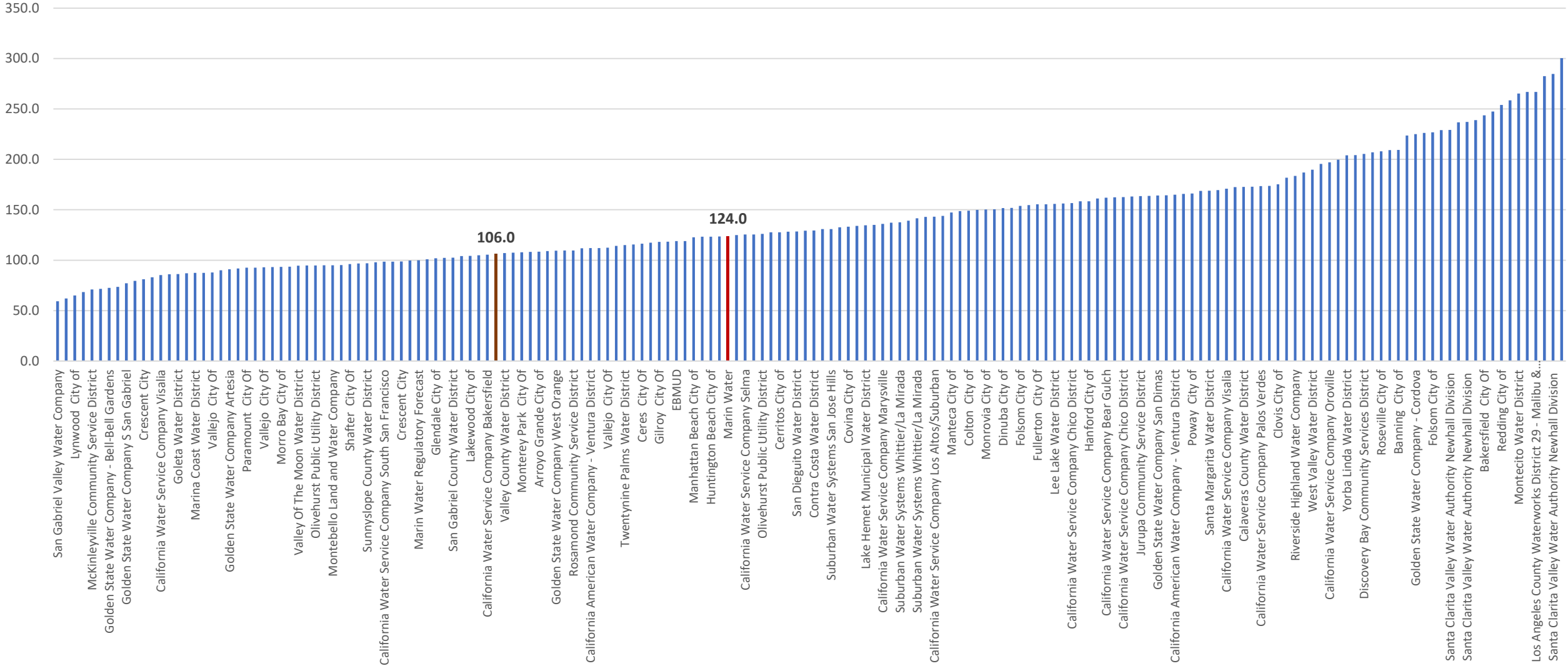
Review Questions

- Is the proposed conservation program reasonable and achievable?
- Is a more aggressive conservation program possible?
 - What would it require?

Proposed Long-Term Conservation Program is Substantive and Achievable

- Addresses key area for future savings
 - Leaks (AMI leak detection)
 - Outdoor use (turf conversions)
- Program budget is substantial and compares favorably
- Expect many adaptations and changes to the program between now and 2045
- Savings goal of 106 GPCD and 73 R-GPCD is meaningful and achievable

Total Per Capita - California

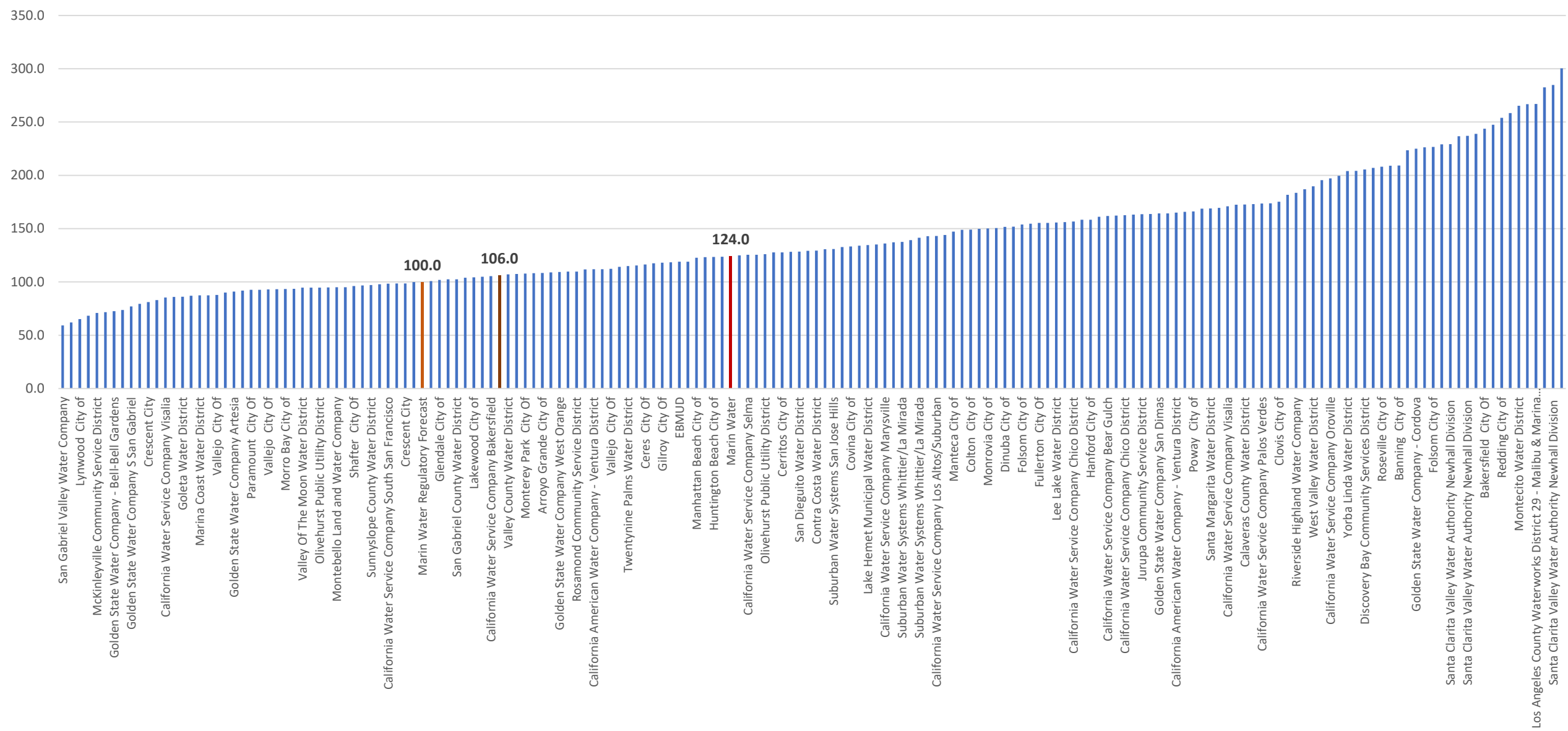


Is a more aggressive conservation program possible?

Policy and Regulations would need to be developed and would require:

- Enforcement of water budgets and penalties
- Expanded Water Efficient Landscape Ordinance regulations
 - Limit turf installations in all new development and remodels
 - Only allow low water use plants, drip irrigation in all new development and remodels
 - Prohibit non-functional turf in existing non-residential sites
 - Prohibit turf in front yards and limit allowable turf area in existing single-family homes
- Indoor fixture standards/requirements
- Retrofit on Resale and/or Change of Customer
 - Ensure fixture, landscape, and irrigation requirements are met.

Total Per Capita - California



Policy Driven Program

- Water Savings Estimate resulting from adoption of policies:
 - 2045 demands: 25,875 acft
 - 100 GPCD (vs 106 GPCD)
 - 69 R-GPCD (vs 73 GPCD)
- Cost to Fund a Policy Driven Program
 - District Cost: \$4,000/acft
 - Customer Cost: \$3,700/acft

Review Questions Answered

- Is the proposed conservation program reasonable and achievable?
Yes. The proposed program offers a reasonable budget, savings target, and suite of measures. Expect adaptation and changes over time.
- Is a more aggressive conservation program possible? - Yes
 - What would it require? - Regulatory conservation including water budgets, enforcement and strict landscape codes.
 - Consider community impact of deeper demand reductions particularly to landscapes and the non-residential sector.

Summary

- Districts existing conservation program leads the industry in terms of the array of initiatives, policies and funding
- Reviewed the how Conservation factors into the Strategic Water Supply Assessment
 - 2045 water savings 4009 AFY
 - District Cost \$2,951/AF
- Conservation is built-in to the Strategic Water Supply Assessment
 - Quantifiable & relative high level of confidence
- Continue to develop the District's long term Conservation Master Plan:
 - Leveraging innovation, technology
 - Explore removal of barriers to greater participation in onsite reuse such as graywater and rainwater harvesting