



Municipal Water Conservation

Tim York, PLA, CLIA

Manager of Water Conservation, Aurora Water



AURORA
WATER

Agenda

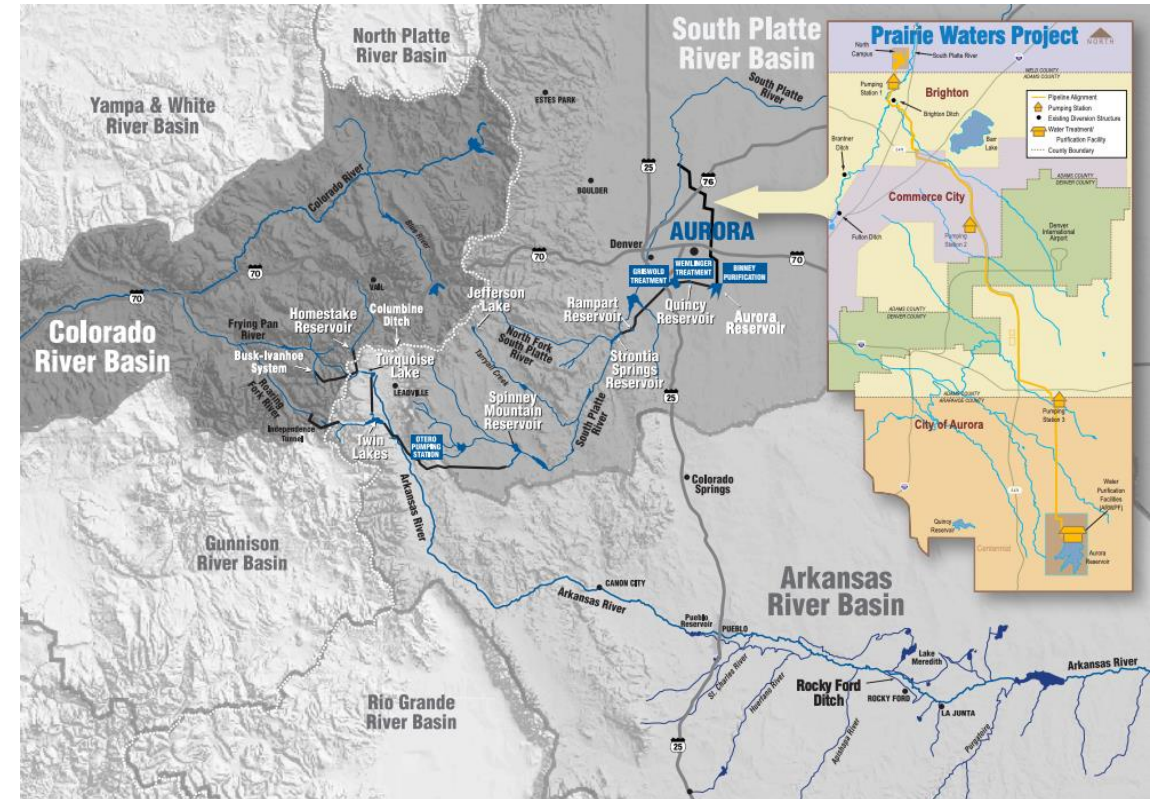
- Supply & Demand & Drought
- Municipal Conservation in Aurora
 - History
 - Programs
 - New vs. Existing Development
 - Success!



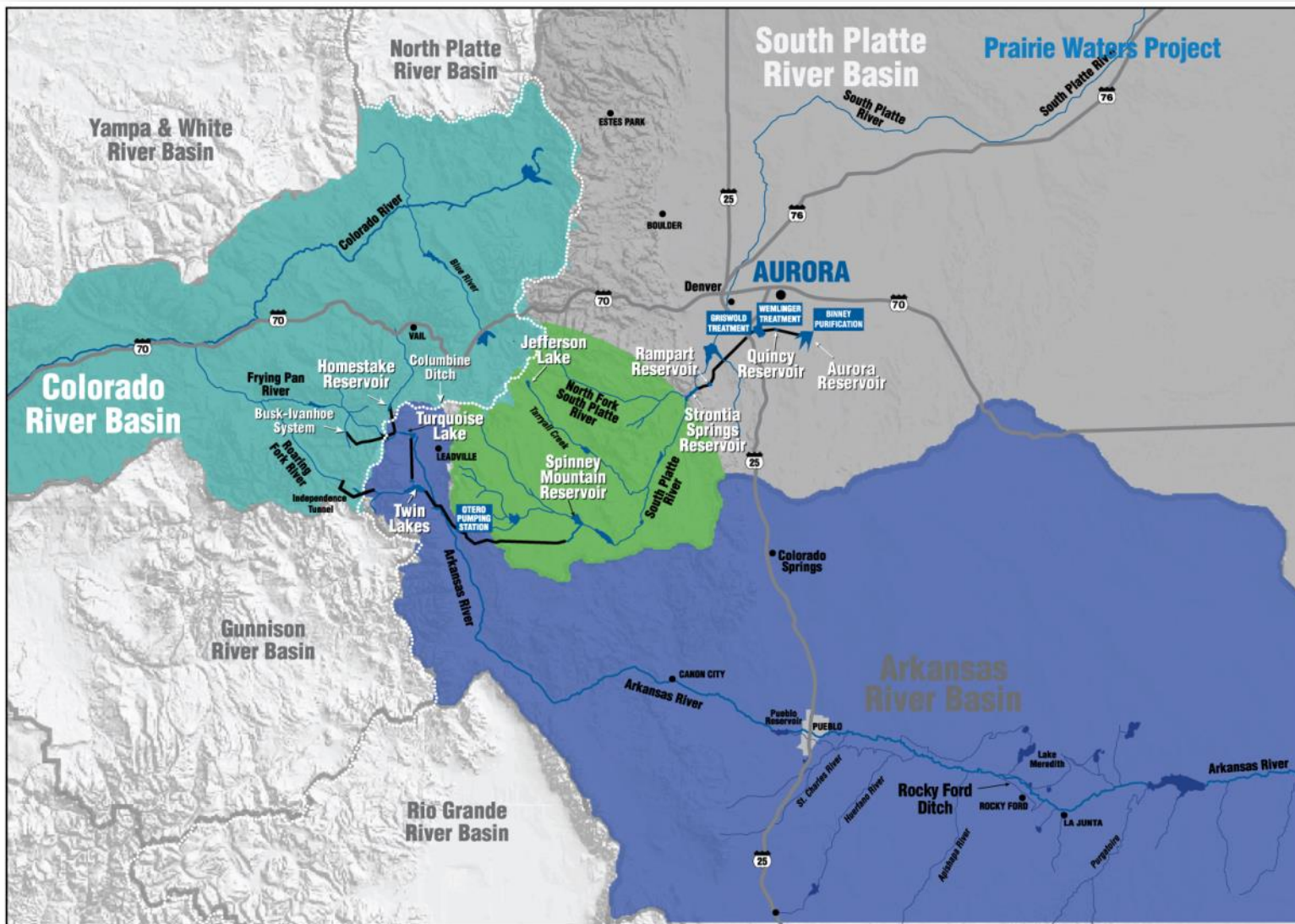
AURORA
WATER

About Aurora

- 400,000 population served
- 210 MGD treatment capacity
- Supplies come from three major watersheds:
 - Colorado River
 - South Platte River
 - Arkansas River
- 156,400 acre-feet reservoir storage
- Major investments in water reuse
 - Prairie Waters Project (\$800M!)
 - Sand Creek WRF (\$50M!)
- Acquiring new water supply is extremely expensive



AURORA
WATER



- 25% Colorado River Basin
- 25% Arkansas River Basin
- 50% S. Platte River Basin
- 12 reservoirs across the state
- Water can travel up to 180 miles



AURORA WATER ♦ Water Supply

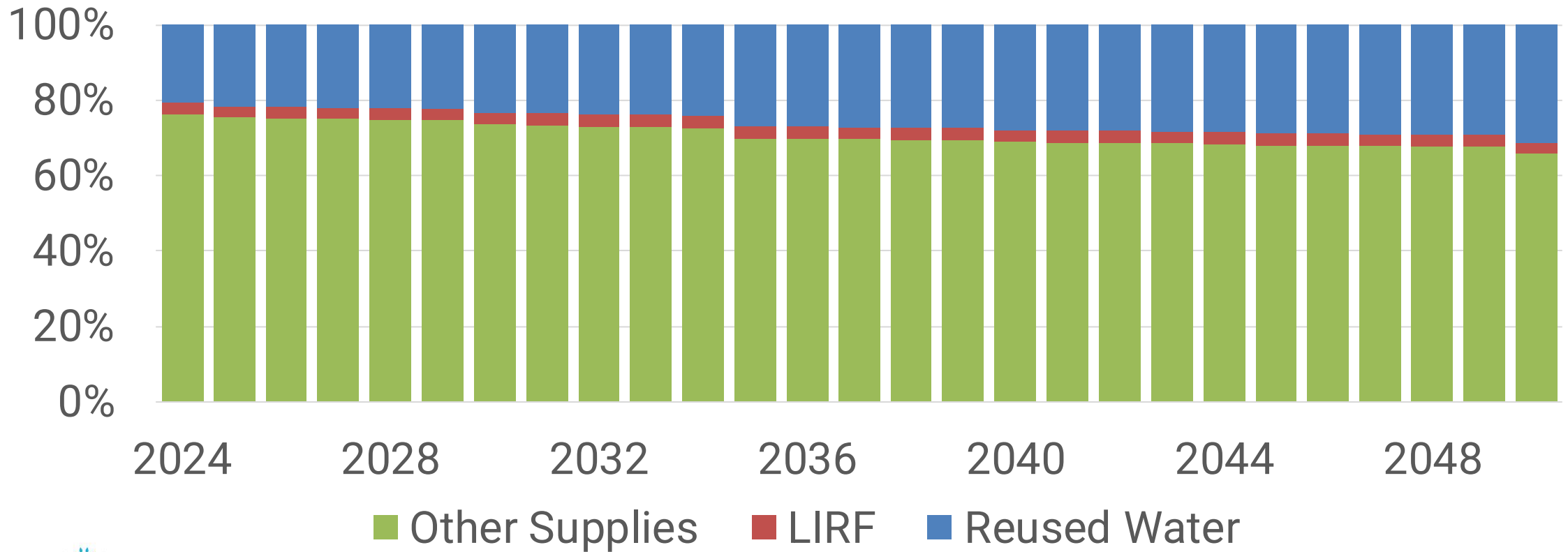
— Aqueducts, diversion tunnels, pipelines — Streams, canals, reservoirs
 — Major roads, highways — Continental Divide



AURORA
WATER

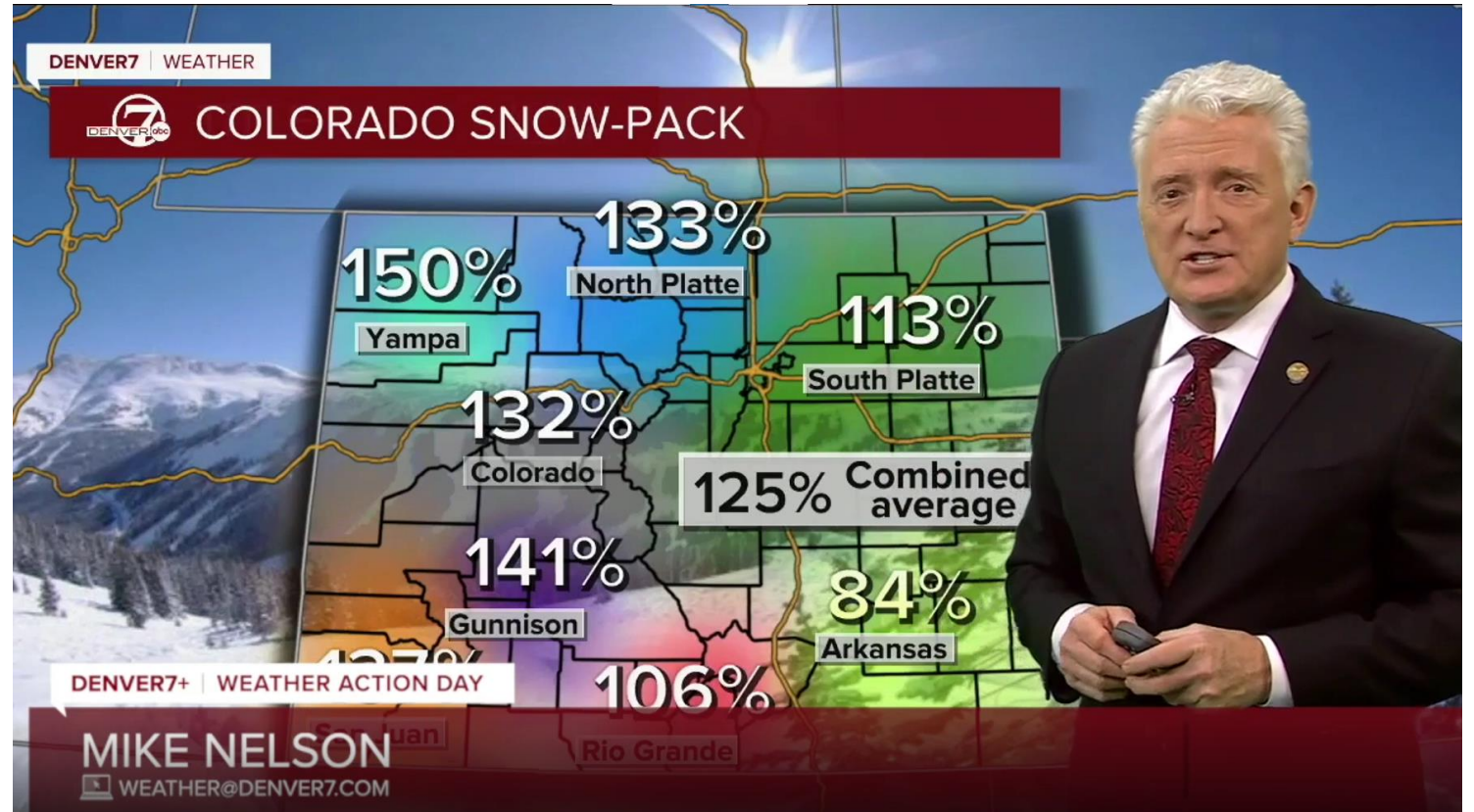
Water Reuse is Crucial to Aurora

Reuse Water as % of Total Supplies

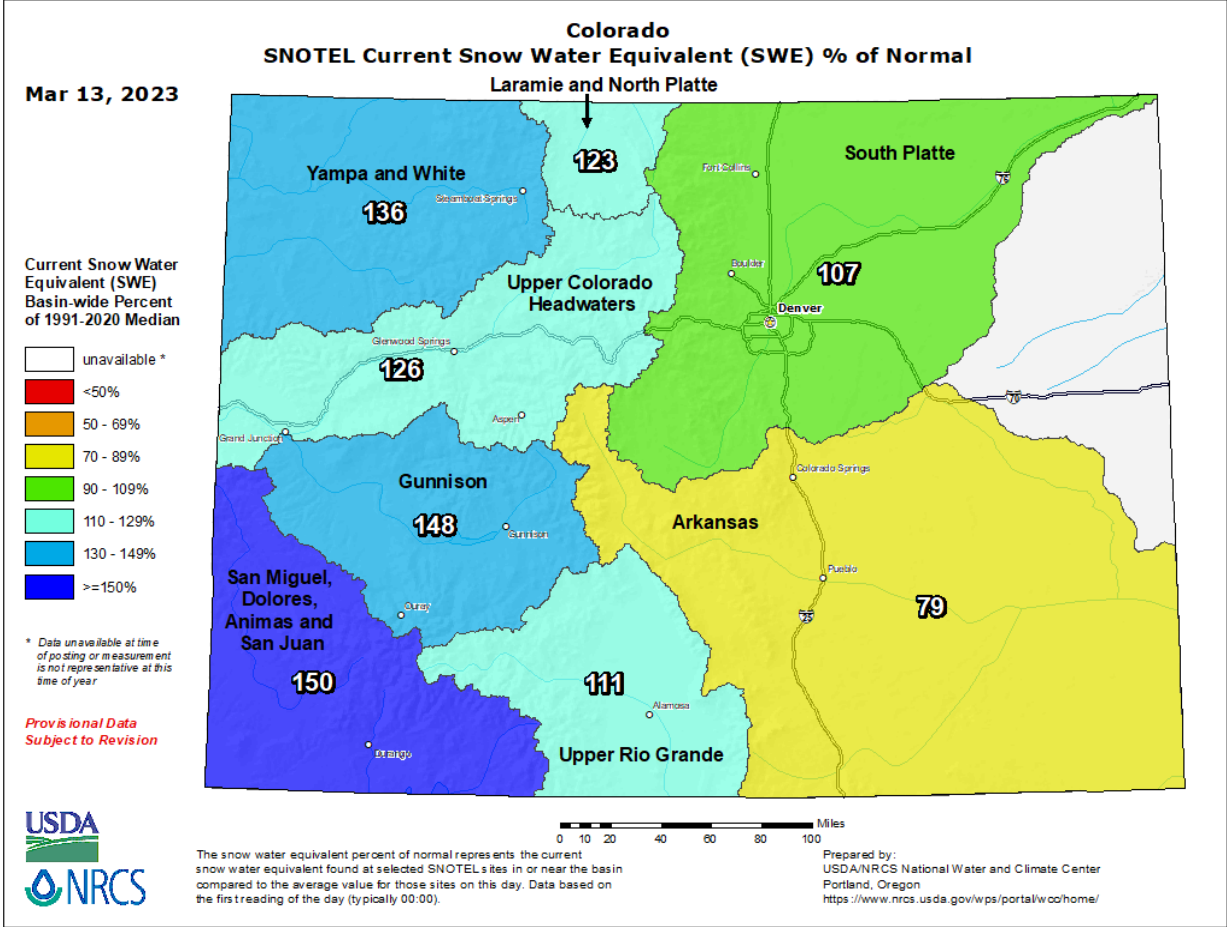


How can we be in drought?

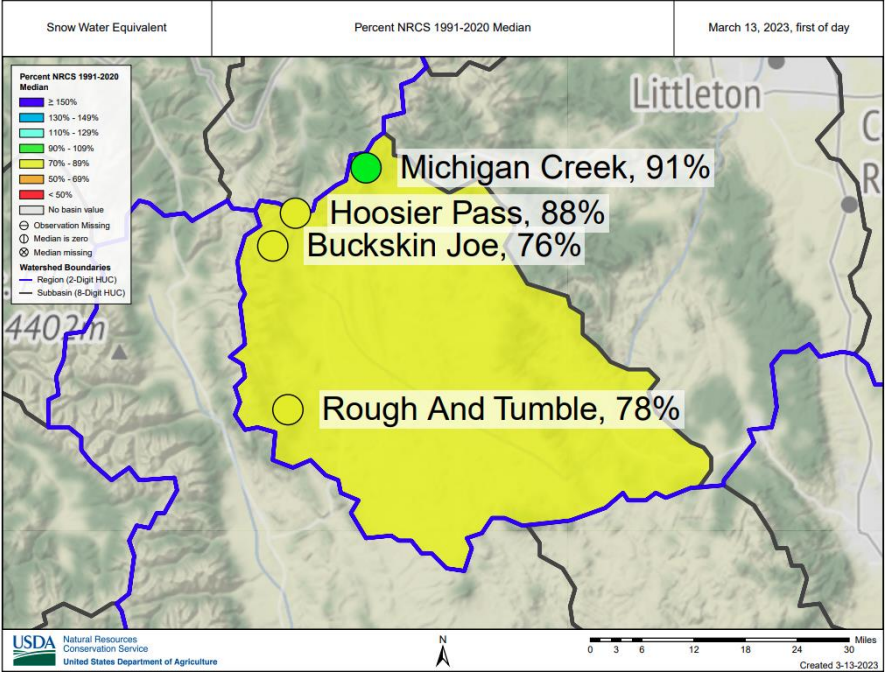
- Media reports on a statewide/basin wide averages
 - 114 snow measurement stations across Colorado
 - Aurora relies on is only 16 of the SNOTEL sites



Snowpack



Upper South Platte SNOTEL sites (AVG: 84%)



For 40 days and 40 nights, almost

Phot Credit: Tim York, South Platte River, 2023

Adjusted (I'll explain) In-City April – October
Precipitation (inches)

- 2019 – 4.43
- 2020 – 4.42
- 2021 – 6.83
- 2022 – 6.04
- 2023 – 2.97 (April – May Only)

Actual In-City April – October Precipitation
(inches)

- 2019 – 7.38
- 2020 – 6.39
- 2021 – 10.53
- 2022 – 10.22
- 2023 – 9.94 (April – May Only)



[This Photo](#) by UnknownAuthor is licensed under [CC BY-SA-NC](#)



AURORA
WATER

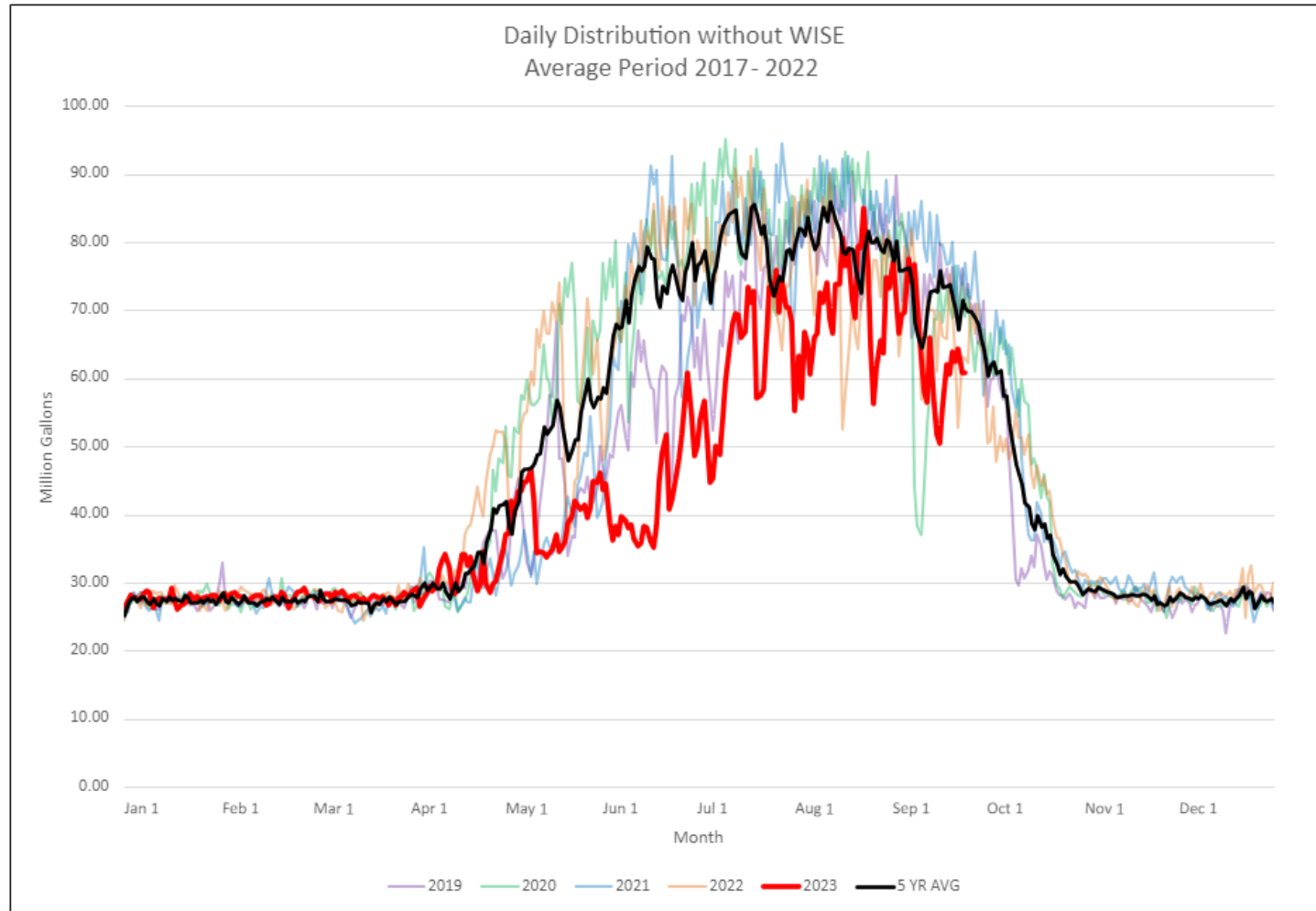
Happy Farmers



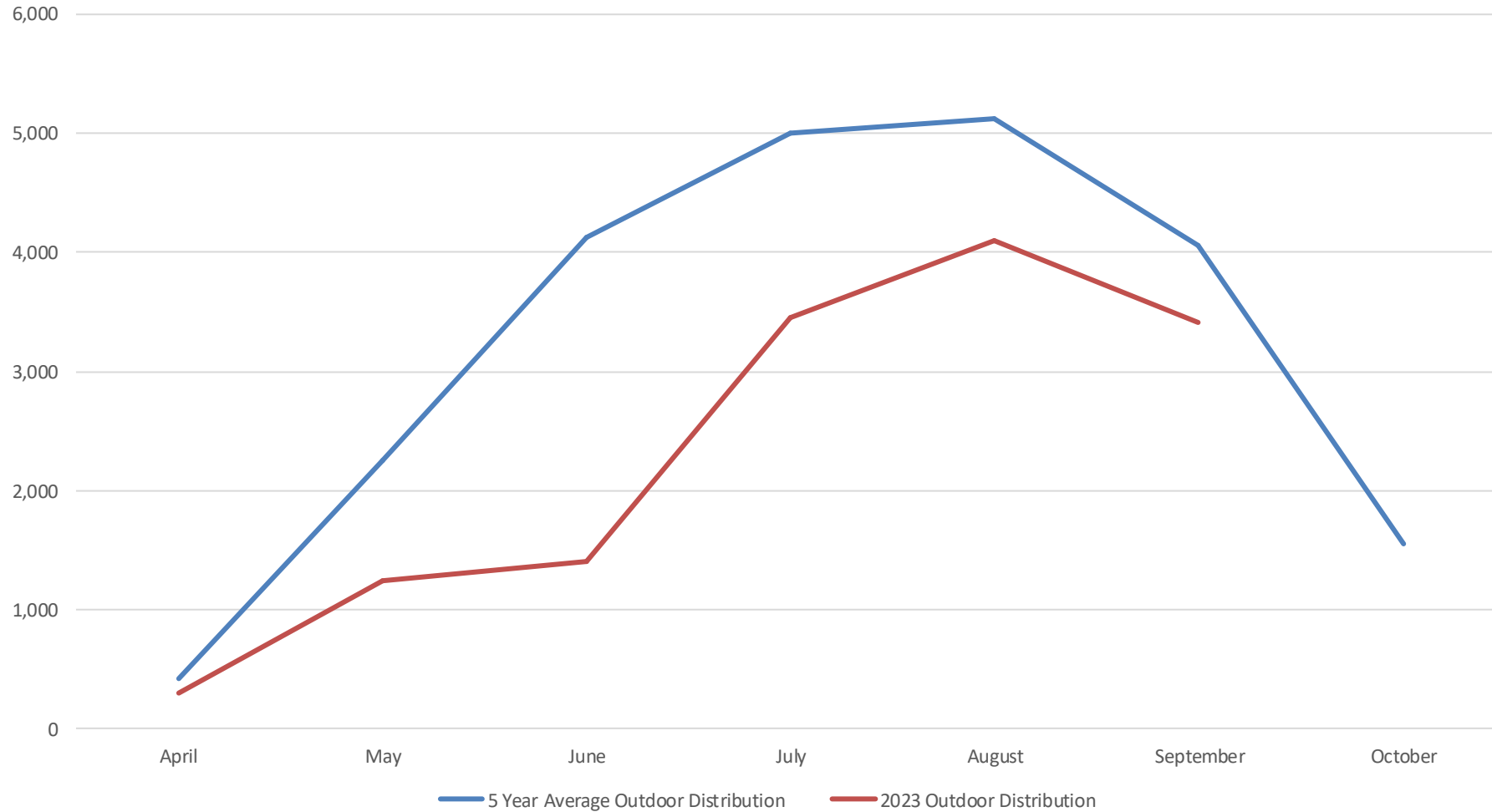
AURORA
WATER



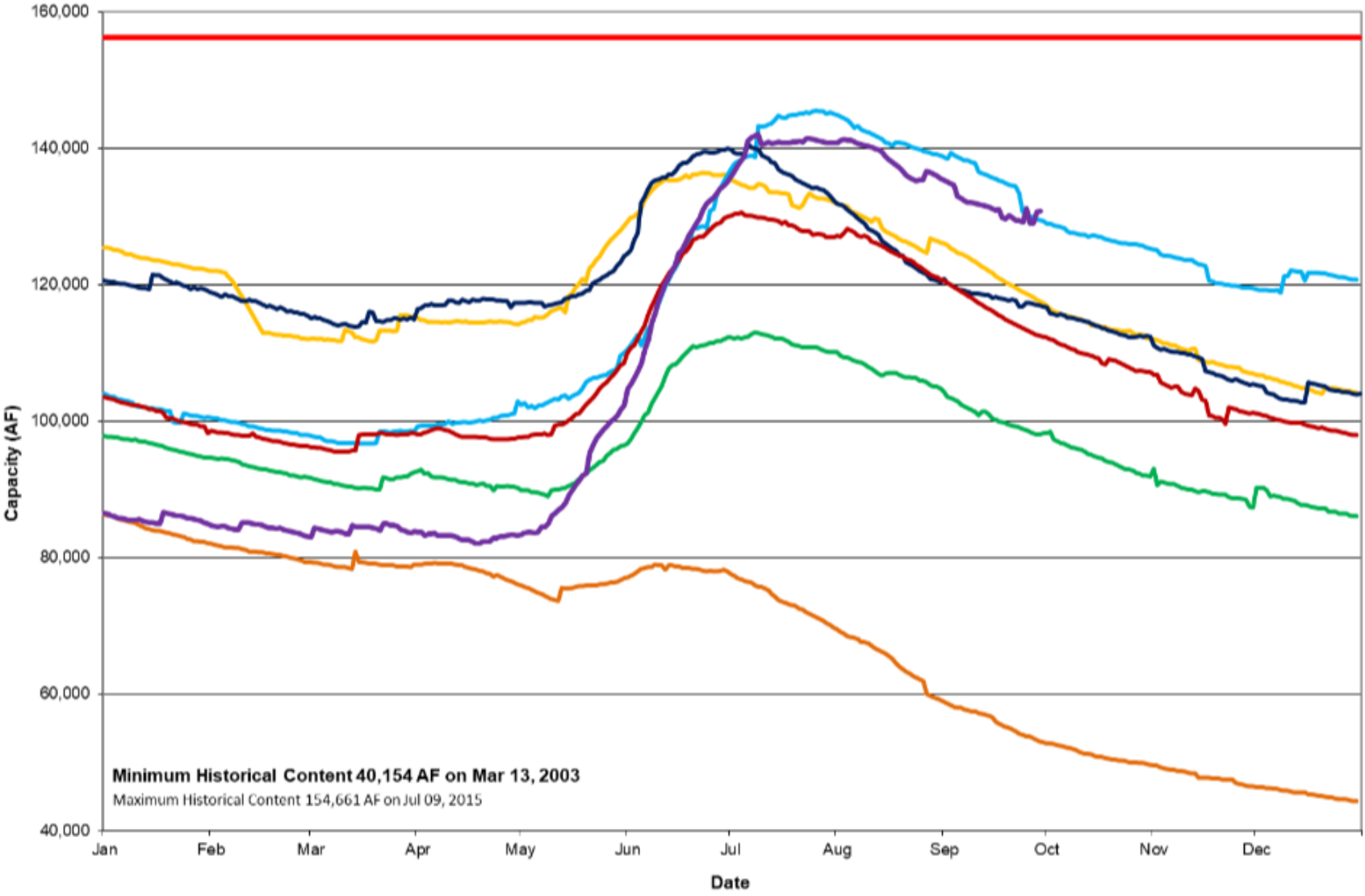
Most customers doing the right thing



Monthly Outdoor Distribution - Acre Feet



Aurora Water - Last 5-Year System Storage



System Capacity 2002 2018 2019 2020 2021 2022 2023



How do we conserve water?



AURORA
WATER

Municipal water, often referred to as M&I water, is used by Coloradans in their homes, yards, businesses, firefighting, and (smaller) industry. Annual M&I deliveries from surface and groundwater sources account for approximately 7% of total statewide deliveries, and **M&I consumes approximately 7% of all the water consumed in the state** (WEco, 2016; CWCB, 2011; State of Colorado, 2015).

<https://waterknowledge.colostate.edu/water-management-administration/conservationpage/#~:text=Municipal%20Water%20Conservation%20and%20Efficiency&text=Annual%20M%26I%20deliveries%20from%20surface,State%20of%20Colorado%2C%202015>



AURORA
WATER



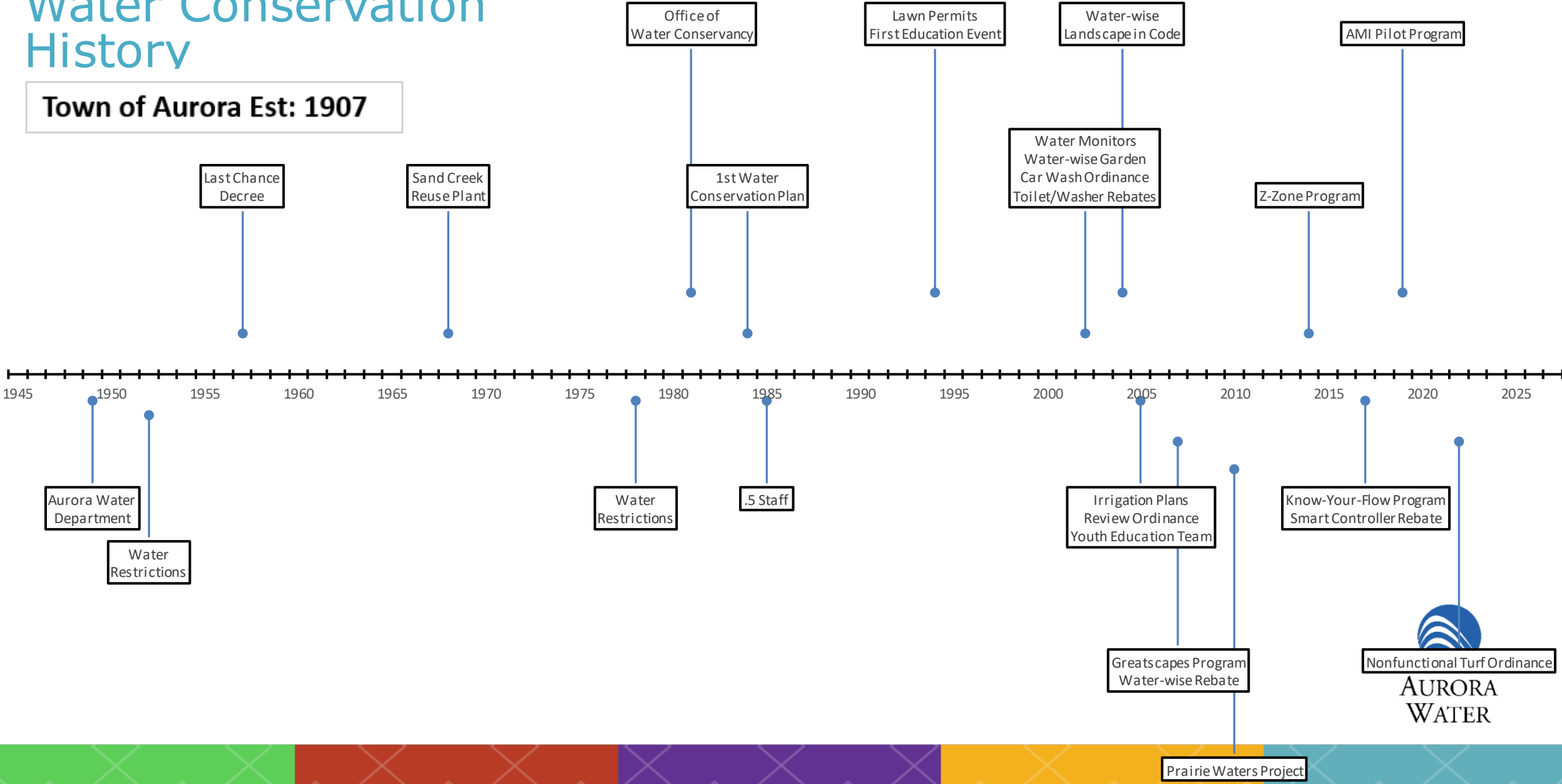
Aurora's Water Conservation team is one of 3 platinum recognized teams in the country.



AURORA
WATER

Water Conservation History

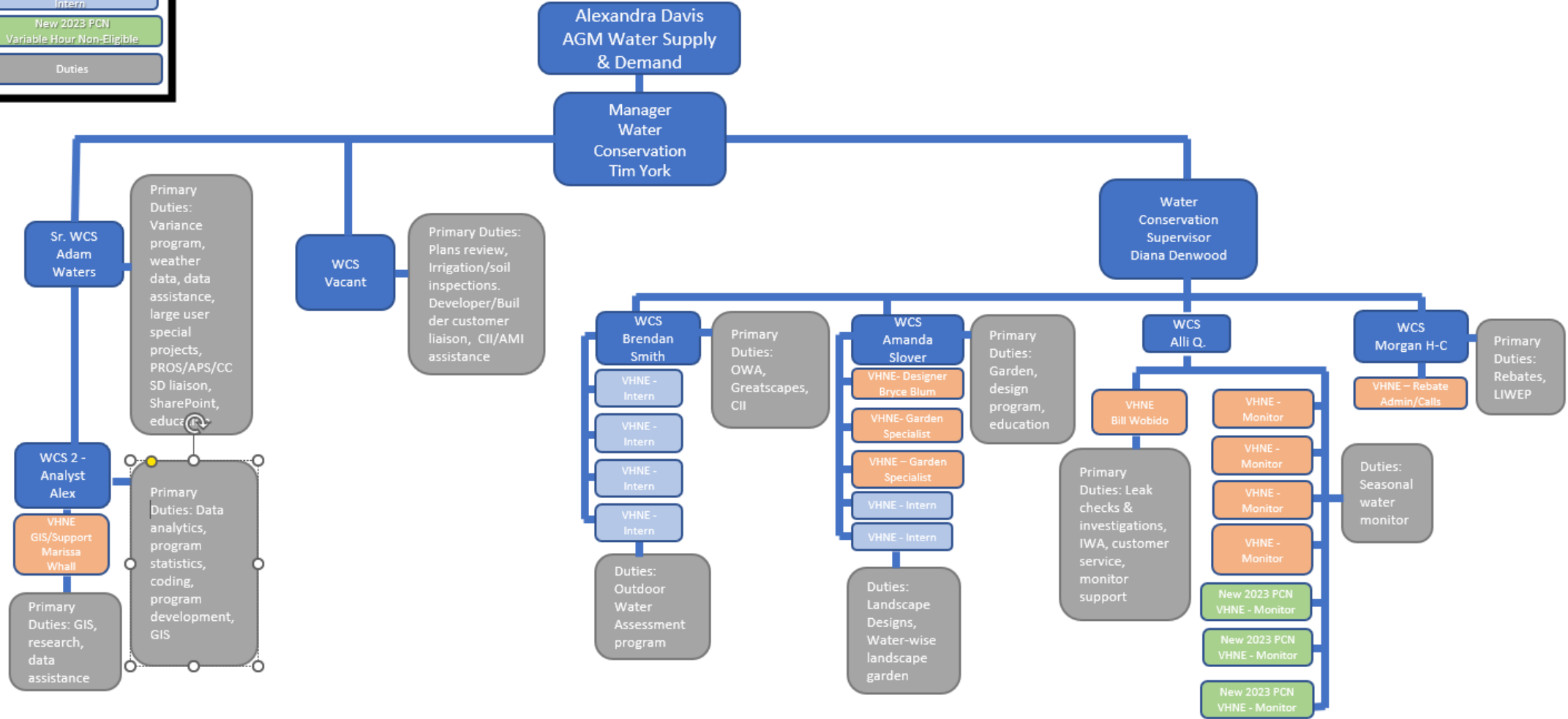
Town of Aurora Est: 1907



AURORA
WATER

Legend

- Full-time Employee
- Variable Hour Non-Eligible Program Specialist
- Variable Hour Non-Eligible Intern
- New 2023 PCN Variable Hour Non-Eligible
- Duties



Conservation Programs

- AMI Leak Notification and Investigations
- Code/Ordinance Development
- Commercial Washer Rebates
- Community Gardens
- Conservation Education
- Dreamscape Giveaway – New 2021
- Greatscapes – Income Qualified Landscape
- High Use Outreach and Investigations
- Indoor Water Assessments
- Irrigation and Soil Inspections
- Irrigation High-Efficiency Component Rebates
- Irrigation Plans Review
- Know Your Flow
- Large Property Watering Variance Program
- Low-income Water Efficiency Program
- Outdoor Water Assessments
- Smart Irrigation Controller Rebates
- Ultra-high Efficiency Toilet Rebates
- Water Management Plan Enforcement
- Water-wise Landscape Designs
- Water-wise Garden
- Water-wise Landscape Rebates
- Water-wise Neighbors – New 2021
- Z-zone Program

** Programs in BLUE are outdoor use focused or inclusive*



AURORA
WATER

Grass Replacement Incentive Program (GRIP)

Residential

- Low Water-use Landscape: \$4,000
 - \$1,000 for labor and/or equipment rental
- Min. 500 square feet
- Backyards are ineligible

Commercial/Multi-Family

- Same options with rebate value dependent on conservation analysis.





Smart Attributes

Zone 1: Zone 1

Zone Smart Watering Details

Soil Type Clay Loam

Plant Type Cool Turf

Sprinkler Type Spray

Sun/Shade Partial Shade

Slope 0-3%

Head Count 7 Spray heads

Catch Cups 0 cups configured

Watering Schedule

"Smart" Technology Rebates

- Rain Sensors
 - Wired/wireless
- Residential
 - Up to \$200 for controllers
 - Single payment
- Commercial/Multi-family
 - Dependent on cost and potential savings
 - Max rebate is agreement dependent
 - Multi-year payback



AURORA
WATER



Water Management Plan

Water monitors look for non-compliance/water waste issues.

Educate customers on best practices.

- No watering more than 3 days/week or between 10am-6pm
- Permit required for sod/seed installation ≥ 250 sq. ft.
- Must repair or discontinue use of broken systems which cause excessive water waste.

KNOW YOUR FLOW

- Educate residents on efficient water use
- 2,356 participants
- Weekly recommended irrigation schedule
- Monthly water use report
 - Recommended water use vs. actual water use

www.aurorgov.org/KnowYourFlow

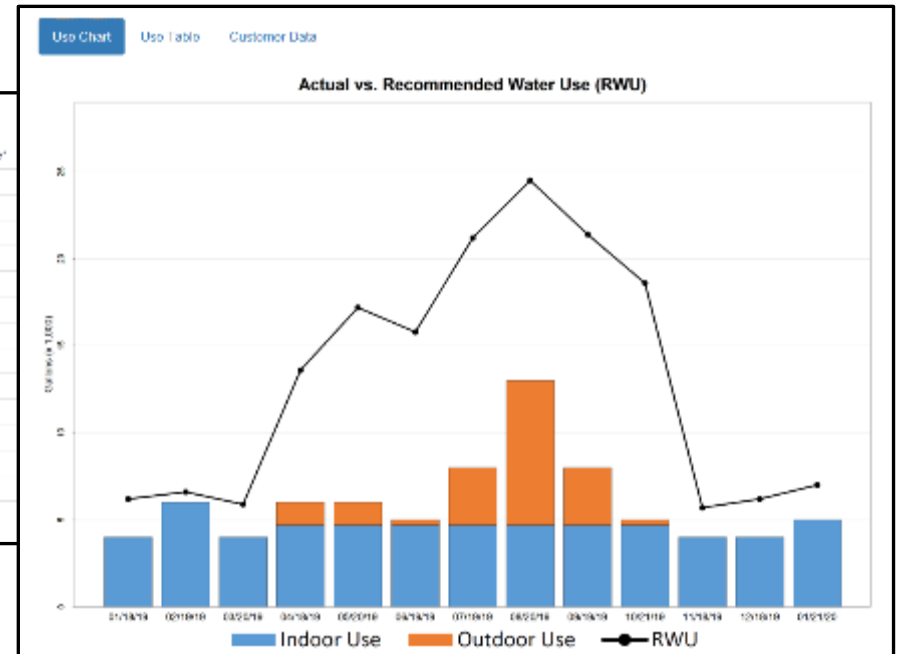
Use Chart Use Table **Customer Data**

The information below is used to calculate your household's recommended water use. Visit [this website](#) for more information on the calculation methods, and please call (720.859.4375) or e-mail us if any information below has changed.

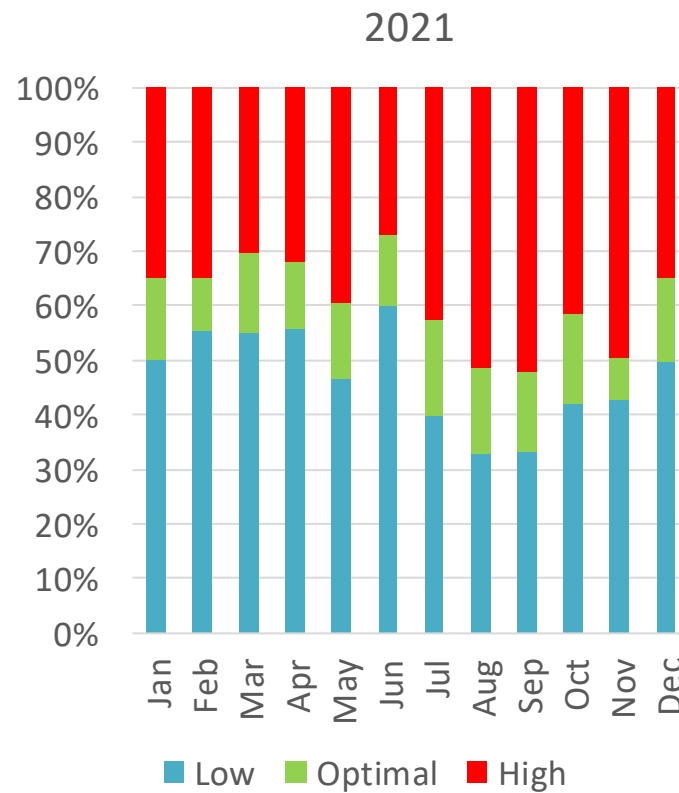
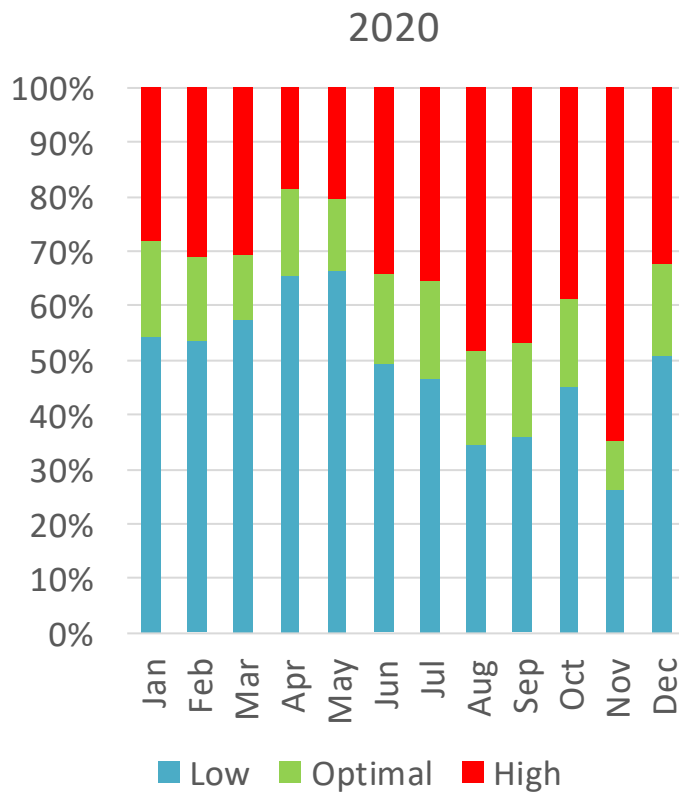
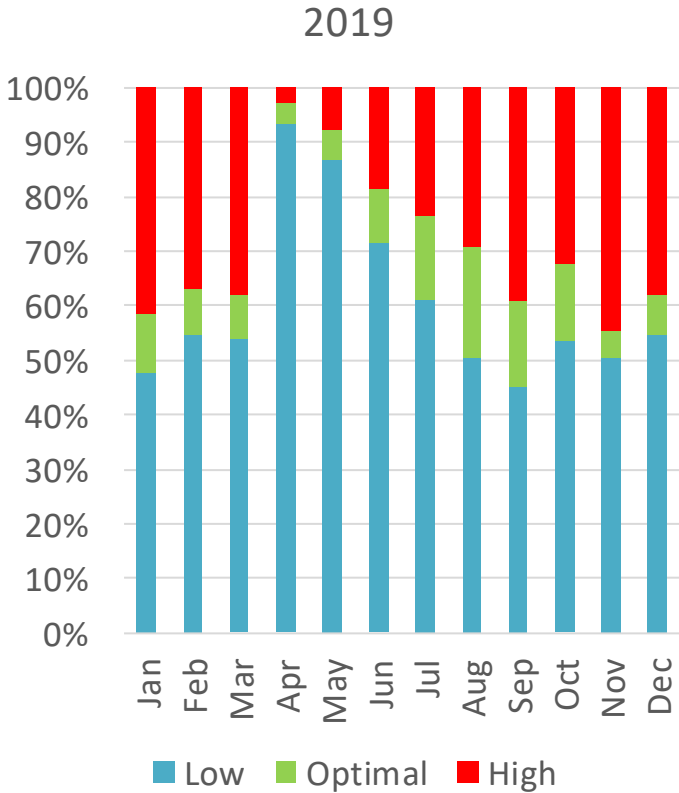
- Billing Period: 12/18/19 to 01/21/20
- Number of Days: 34
- Number of people: 5
- Square feet of turf grass: 4773
- Square feet of water-wise landscape: 201

Use Chart **Use Table** Customer Data

Read Period	Total Use*	Total RWU**	Indoor Use*	Indoor RWU**	Outdoor Use*
12/12/19 - 01/18/20	4	0.2	4	0.2	0
01/19/20 - 02/19/20	6	0.6	6	0.6	0
02/20/20 - 03/20/20	4	5.0	4	5.0	0
03/21/20 - 04/20/20	6	13.6	4.7	5.9	1.5
04/21/20 - 05/20/20	6	17.2	4.7	8.6	1.5
05/21/20 - 06/20/20	5	15.8	4.7	0.2	0.3
06/21/20 - 07/20/20	8	21.2	4.7	0.2	3.3
07/21/20 - 08/20/20	13	34.5	4.7	6.5	6.5
08/21/20 - 09/20/20	8	21.4	4.7	8.7	3.5
09/21/20 - 10/20/20	5	16.6	4.7	8.6	0.5
10/21/20 - 11/20/20	4	5.7	4	5.7	0
11/21/20 - 12/20/20	4	0.2	4	0.2	0
12/18/19 - 01/21/20	5	7	5	7	0
Total (last 12 mos.)	74	181.7	55.9	75.7	18.1



Know Your Flow



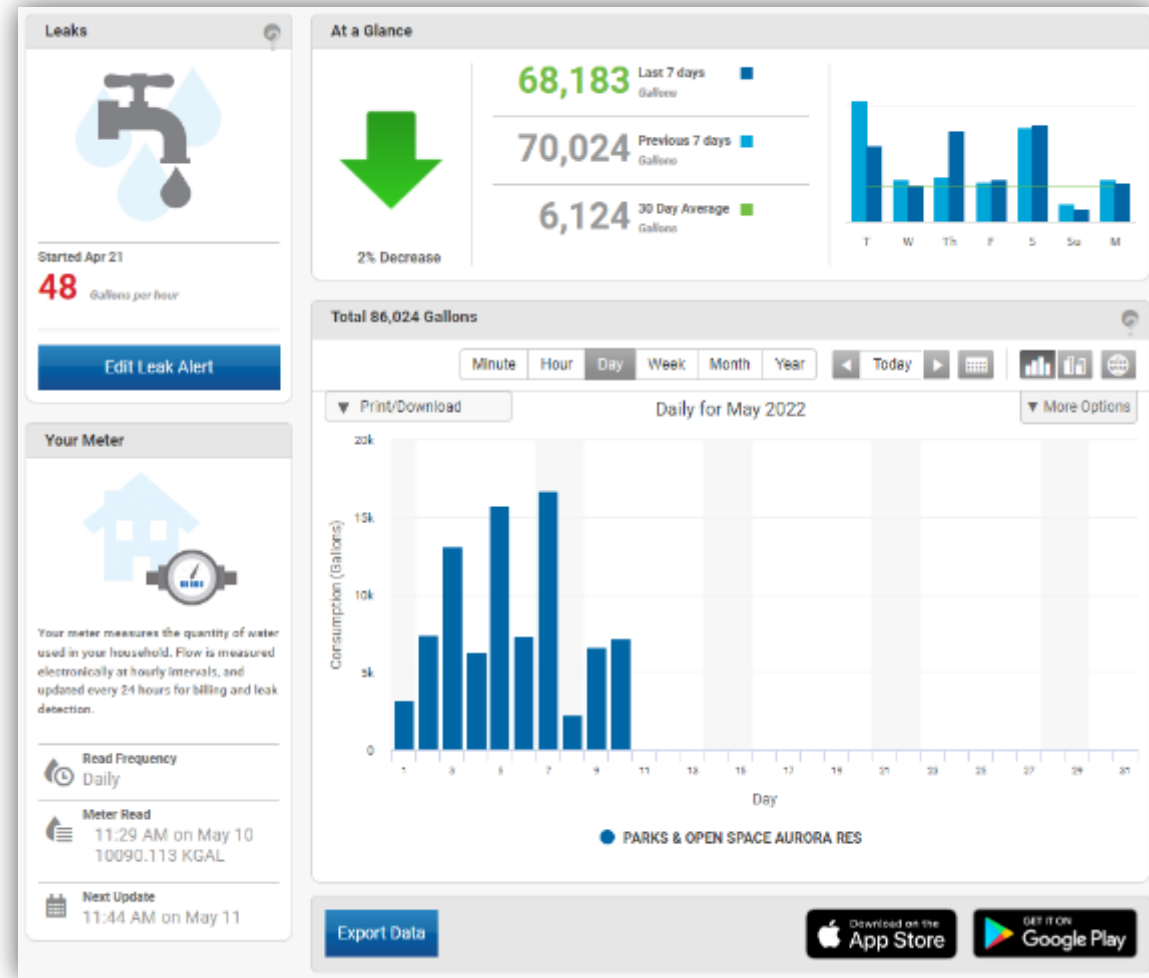
Low – 90% of recommended or lower
 Optimal – 90%-110% of recommended
 High – 110% of recommended or higher



AMI

Advanced Metering Infrastructure

- 51,000 AMI accounts (54% customers)
- EyeOnWater
 - Customer portal
 - Leak alerts
 - Usage spikes
 - 2,569 users
 - 5% of AMI accounts



AuroraGov.org/Meters



AMI Leak Detection Cases

- 500-1000 leak notifications/day
- Cost-Benefit Study (2021)
 - \$50 cost per hour
 - 11,952,000 gals estimated savings per month
 - \$126.09 per acre foot saved

Sample Cases of Leak Alerts			
Customer Class	Leak Detected (gal/hr)	Investigation	Savings (gal/month)*
Residential	342	Stuck toilet flapper in rarely used basement bathroom	246,000
Multi-family	260	Plumbing leak under ground floor apartment	100,000
Commercial	1,288	Improper irrigation schedule, broken irrigation valves, broken toilets	927,000
Irrigation	1,319	Broken irrigation valve, zone running in retention pond area	950,000

*Savings assume issue goes unnoticed





Conservation in New Development

- Z-Zone Tap Fee for Irrigation Meters
 - No Fee for native grass areas
 - 3 year allocation for establishment of plant material
 - Allocation is reduced by volume of water assigned to the Z-Zone areas
 - If exceeded, Capital Recovery fee added

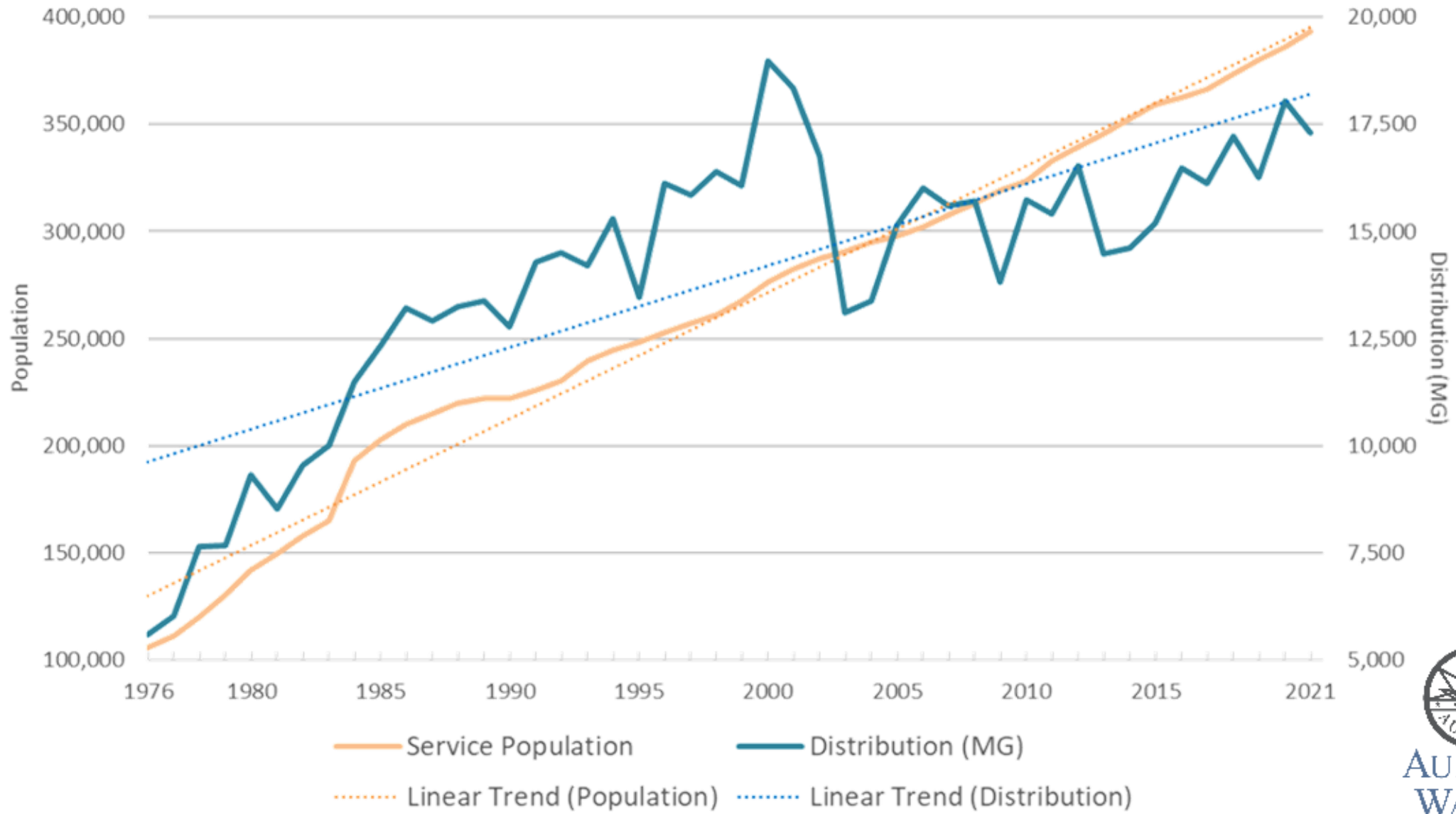
Conservation in New Development

- Ordinance 2022-46
- Used based connection fees
- Inclining block rate tiers



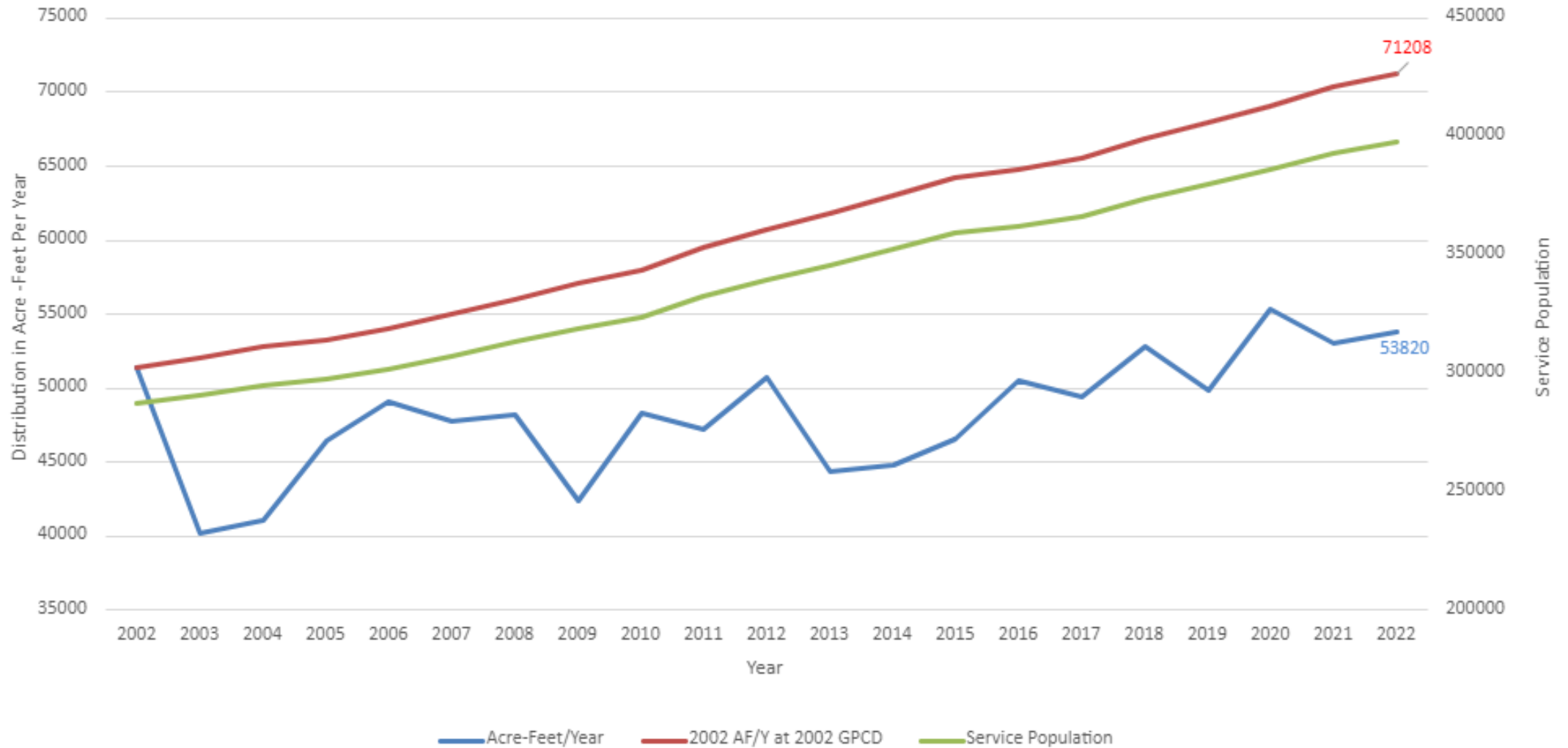
AURORA
WATER

Population and Distribution: 1976-2021



AURORA
WATER

Distribution Scenarios in Acre-Feet Per Year



Questions?

Tim York, PLA, CLIA

Manager of Water Conservation, Aurora Water

tyork@auroragov.org

303.326.8819

www.auroragov.org

