



Drought Update

June 15, 2021

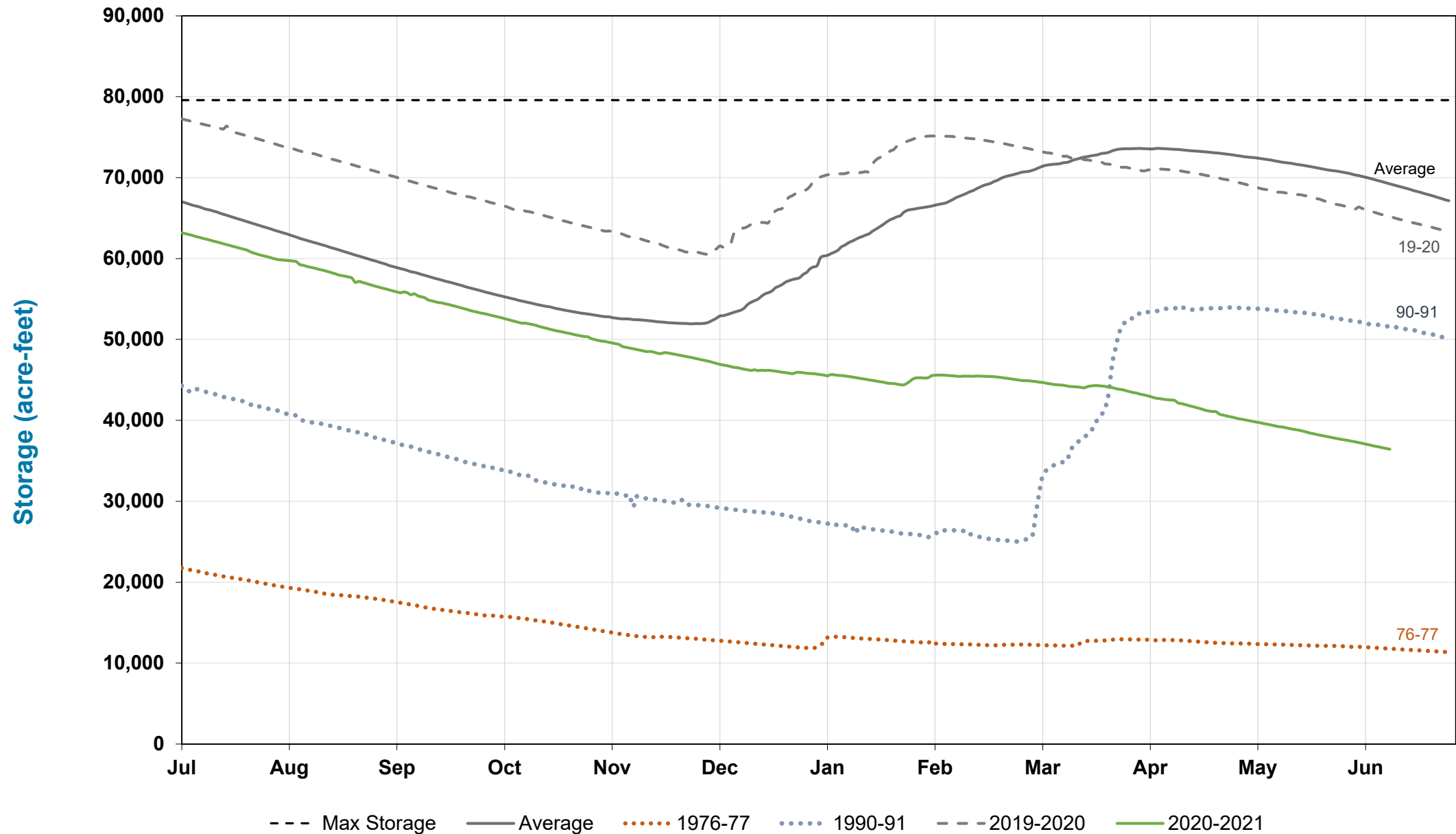


Overview

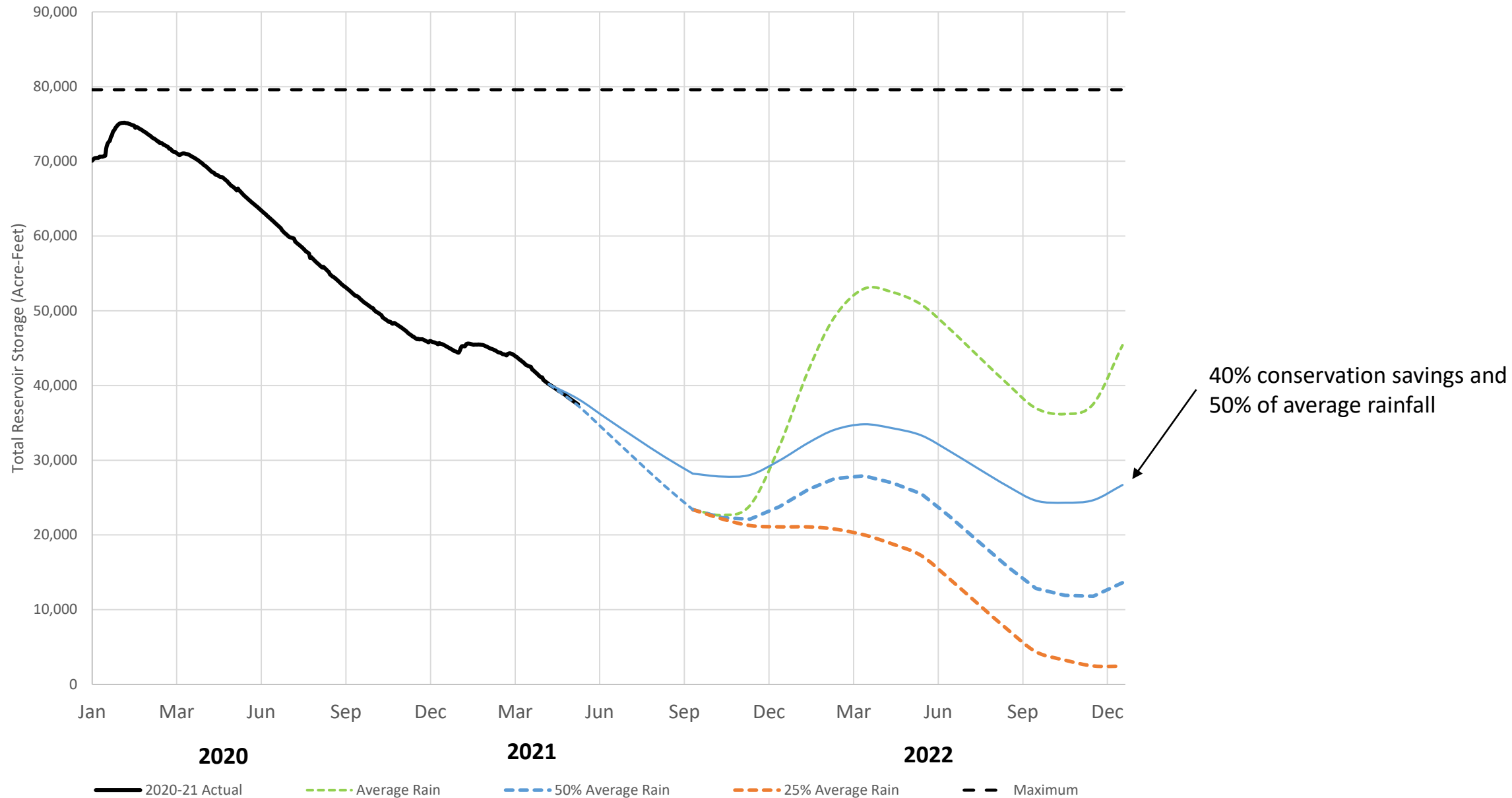
- Update on Water Supply Conditions and Water Use
- Drought Outreach
- Consideration of Additional Conservation Actions
- Next Steps

Review of Drought Conditions

Total Reservoir Storage



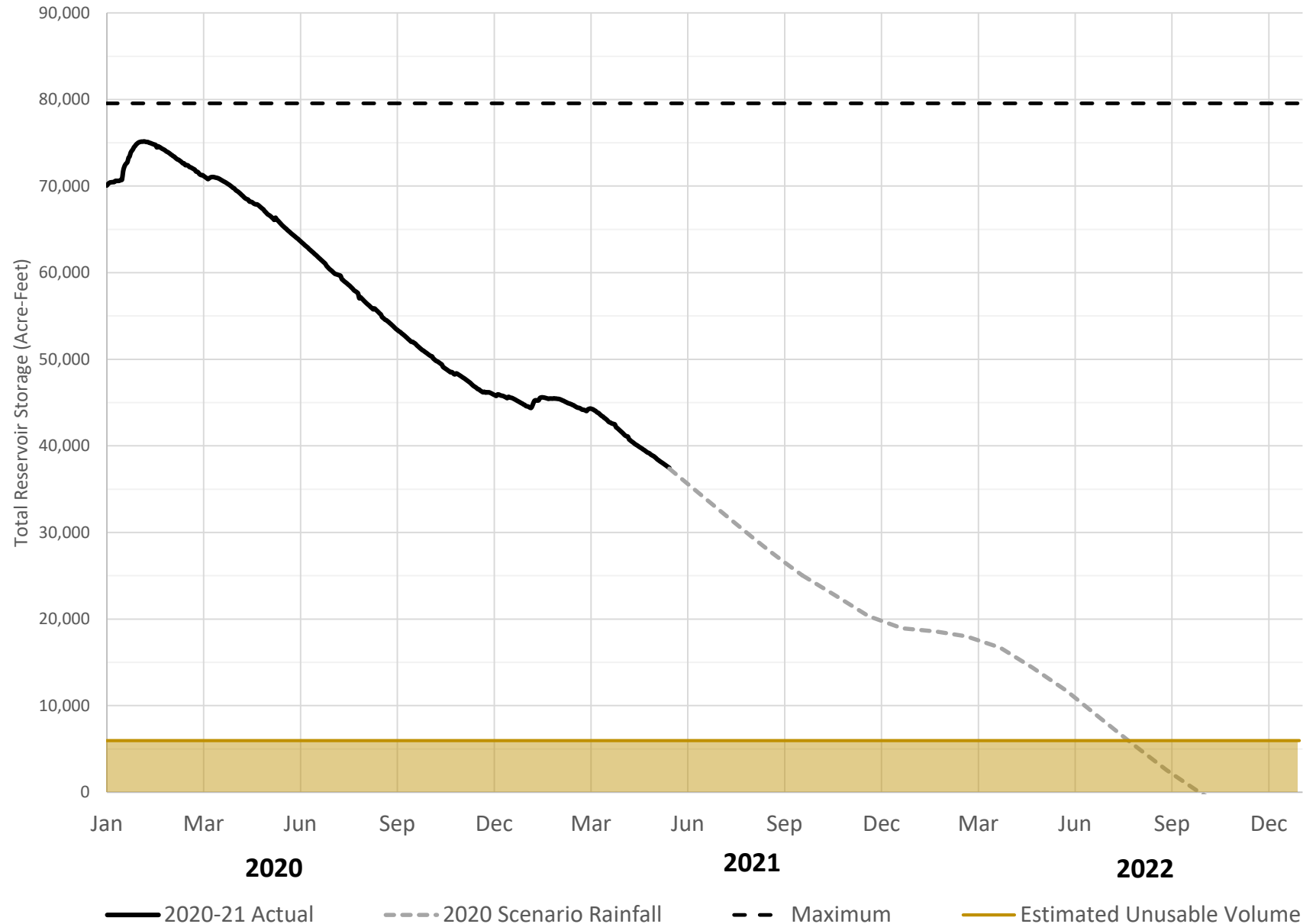
Projected Reservoir Storage



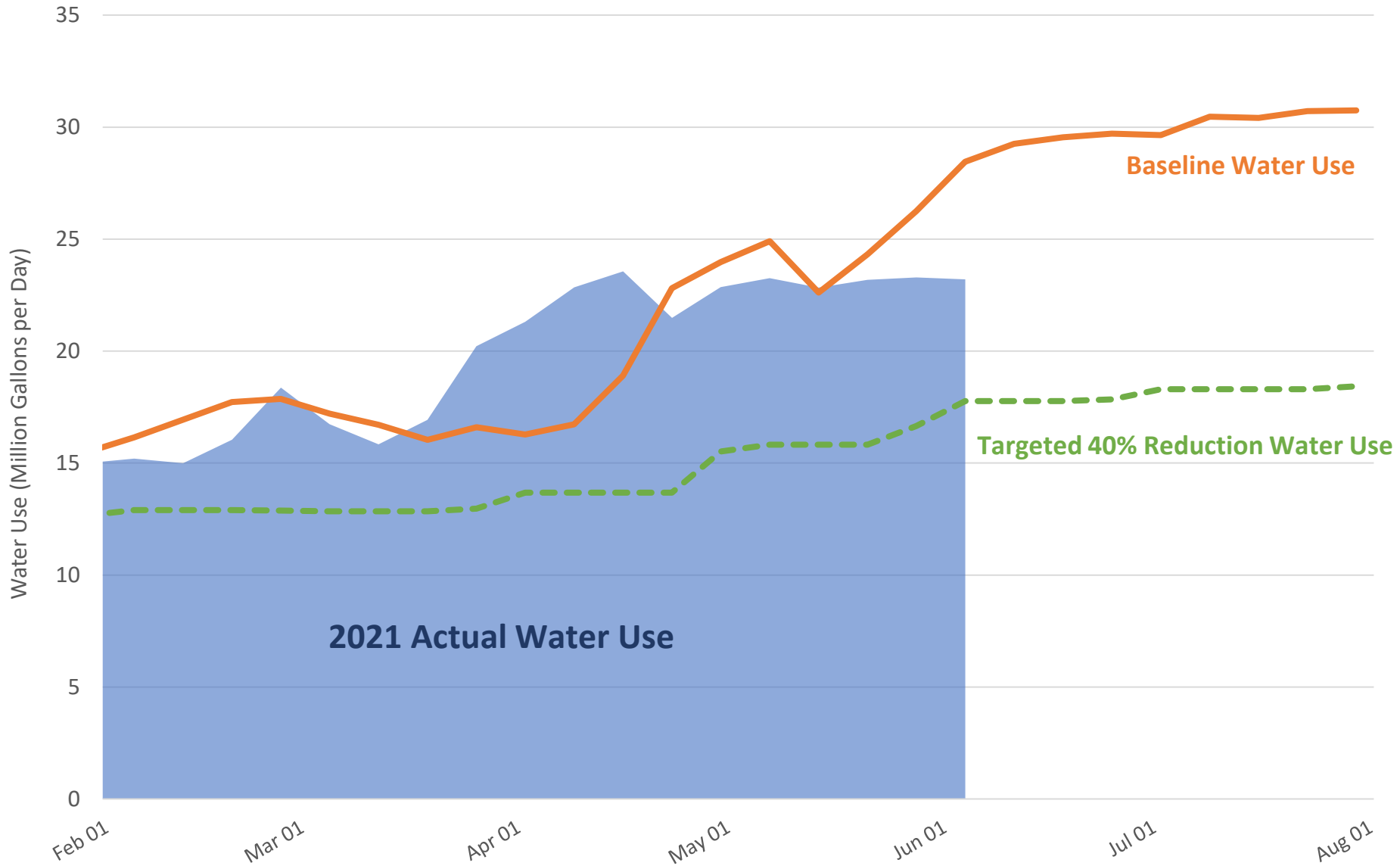
Current Drought Extended Projection

Scenario based on:

- Actual runoff from 2020-2021
- 20% conservation achieved and maintained
- Dry-year stream releases (no TUCP)



Actual vs. Targeted Water Use



*Baseline = 3-year average



Weekly Water Savings Tracker

Percent of water saved compared to average use.



**Average Daily
Water Use**

(in millions of gallons)

Last Week's
Usage

23.2

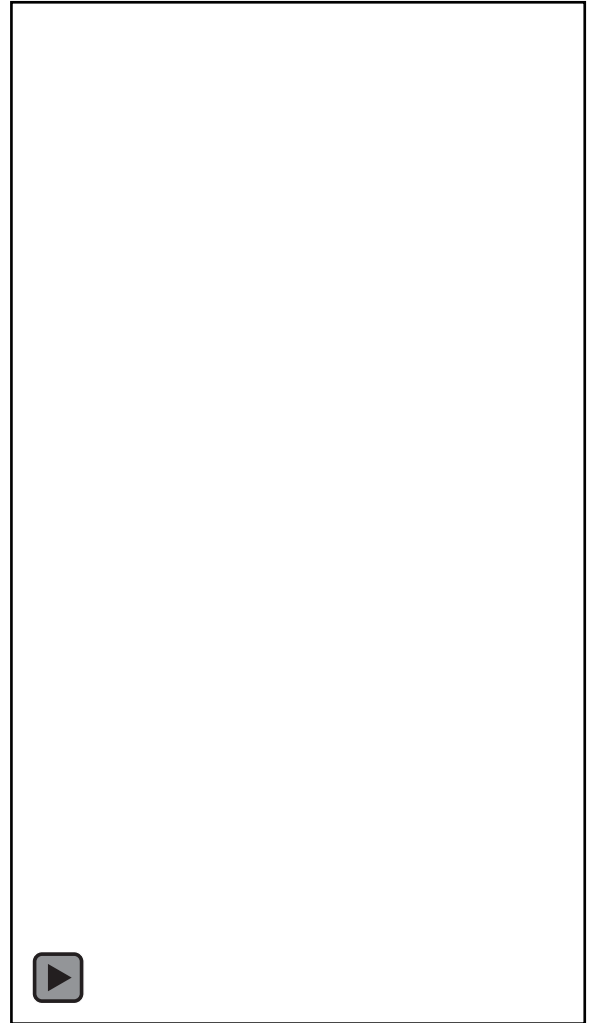
Average Weekly
Use

28.5

Drought Outreach

Community Engagement & Partnerships

- Regional Partnerships
 - Drought Drop By event with water saving kits and conservation information
 - More than 1,000 attended



Community Engagement & Partnerships

- Drive-It-Dirty Campaign
 - Vehicle clings and social media photo campaign for “spotters”
 - Conservation giveaways and incentives
- Super Savers
 - Highlights our customers stories
 - Social media, website, and featured ads
 - Media partnerships
 - Conservation giveaways as incentives
- Up Next:
 - Water Conservation Video PSA
 - Drought and Conservation Podcast
 - Conservation advertising expanded to radio, magazines, cable

It's drive-it-dirty time.

Drought is here. Save water.




We're in a drought, Marin, and you know what that means. It's time for us to cut back on our water usage. So let's fix every leak we find, water landscaping by hand, and drive around town in our beautifully dirty cars.

MarinWater.org/Conserve




Community Engagement & Partnerships

- Targeted Outreach
 - Businesses with high water usage
 - Provide information, guidance and materials to achieve water conservation results
 - Restaurants, hotels, health clubs, carwashes, etc.
 - Up Next:
 - Rental property owners to support tenant conservation
 - Community centers working with diverse communities



Severe Drought Save Water

Conserve water during your visit.



Quick Tips:

- Limit showers to less than 5 minutes.
- Turn off the water while brushing your teeth.
- Reuse your linens.

To reuse towels: Hang them back on the towel rack. If you prefer them to be replaced, place them on the floor or in the bathtub.

To reuse bedsheets: Place this card on your bed. Housekeeping will make your bed and not change the sheets.

Consideration of Additional Conservation Measures

Upcoming Drought Months

JUNE

- Continue to monitor water savings and report to Board

JULY

- Potential adoption of additional water use restrictions

AUG-OCT

- Continued conservation messaging
- Monitoring and reporting of water savings

NOV-DEC

Consider allocation of water:

- Per capita
- Per household

Keeping Plants Alive Under Drought Conditions

- Manage Irrigation
 - Program controller as per Marin Weekly Watering Schedule
 - Use cycle/soak (manual or automatic)
 - Infrequent, deep irrigation (slightly below root zone)
 - Irrigate early in the morning to avoid wind effect (< 5 mph)
- Maintain Irrigation System
 - Inspect and repair leaks
 - Replace mis-matched sprinkler nozzles
 - Replace defective nozzles
- Irrigate Based on Soil Texture (measure/monitor)
 - Use the feel method (see article)
 - Use a screw driver
- Mulch to maintain soil moisture and prevent weeds
- Avoid over fertilization (high in nitrogen)

University of California
Agriculture and Natural Resources

ANR Publication 8553 | October 2015
<http://anrcatalog.ucanr.edu>

UC
PEER
REVIEWED




Figure 1.
Salt damage on avocado can mimic drought damage. Photo: UC ANR.

DROUGHT TIP

Keeping Plants Alive under Drought or Water Restrictions

This publication provides credible information on how to keep outdoor plantings alive during drought and under water restrictions. Topics covered include symptoms of water stress, tips to conserve water in your current landscape, methods to help specific plants survive drought, and considerations and tips regarding planting a drought-resistant landscape.

Plants that do not receive enough water eventually show signs of water stress. During a drought or under water restrictions aimed at water conservation, keeping plants alive can be particularly difficult. Although plants vary in the amount of water they require for optimal growth and development, most exhibit characteristic symptoms when they are in need of water. Because plants need to be watered before irreversible damage occurs, it is crucial to check plants regularly for symptoms of drought. Also ensure that damage identified as drought stress is not due to other conditions that can mimic drought such as salts (fig. 1), disease, insects, and frost.

Symptoms of Water Stress

Common symptoms of water stress include

- wilting or drooping leaves that do not return to normal (without additional water) by morning
- curled or yellow leaves that may fold or drop, along with potential twig drop
- leaves that lose luster and become grayish or bluish (fig. 2)




Figure 2. Drought damage on leaves of a rose plant. Photo: J. K. Clark.

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English Version: <https://anrcatalog.ucanr.edu/pdf/8553.pdf>

Spanish Version: <https://anrcatalog.ucanr.edu/pdf/8628.pdf>

Irrigation of Lawns During a Drought



Cool Season Lawn: may die within a month or two if no irrigation

i.e., bluegrass, ryegrass & fescue

All Lawns

- Survival depends on species, soil, weather and prior irrigation
- Increase mow height
- Reduce fertilizer
- Gradually reduce amount of water applied



Warm Season Lawn: may survive several weeks of dryness even after partial dormancy

i.e., bermudagrass, buffalograss

Lawns Chance of Survival – 1 day of week

- **Best chance:**

Warm Season Lawn:

Bermudagrass,
Buffalograss

- Mature stand – approx. 6 years or more
- Properly watered before restrictions
- Full sun exposure
- Optimal nutrition levels
- 10-12” root depth
- Predictable 30-50% loss in appearance (green growth)

- **Moderate chance:**

Cool Season Lawn:

Fescues

- Mature stand – approx. 6 years or more
- Properly watered before restrictions
- Full sun exposure
- Optimal nutrition levels
- 6-8” root depth
- Predictable 70-90% loss in appearance (green growth), possible mortality

- **Least Chance:**

Cool Season Lawn:

Bluegrass & Ryegrass

- Mature stand – approx. 6 years or more
- Properly watered before restrictions
- Full sun exposure
- Optimal nutrition levels
- 4-6” root depth
- Predictable 90 -100% loss in appearance (green growth), potential mortality

Irrigating During a Drought

- **Shrubs:** Most established shrubs can survive with 1 thorough spring watering and 1-2 thorough summer irrigation
- **Groundcover:** water once every 3-6 weeks, but may experience dieback
- **Trees:** need slow and deep irrigation
 - Most established trees can survive with 1 thorough spring watering and 1-2 thorough summer irrigation
 - Trees in Lawns: Very stressed due to shallow roots dependent on lawn irrigation, install a soaker hose or drip irrigation to maintain tree health
 - Fruit Trees: Fruit production will stop or decrease

Insights From Local Landscape Professionals

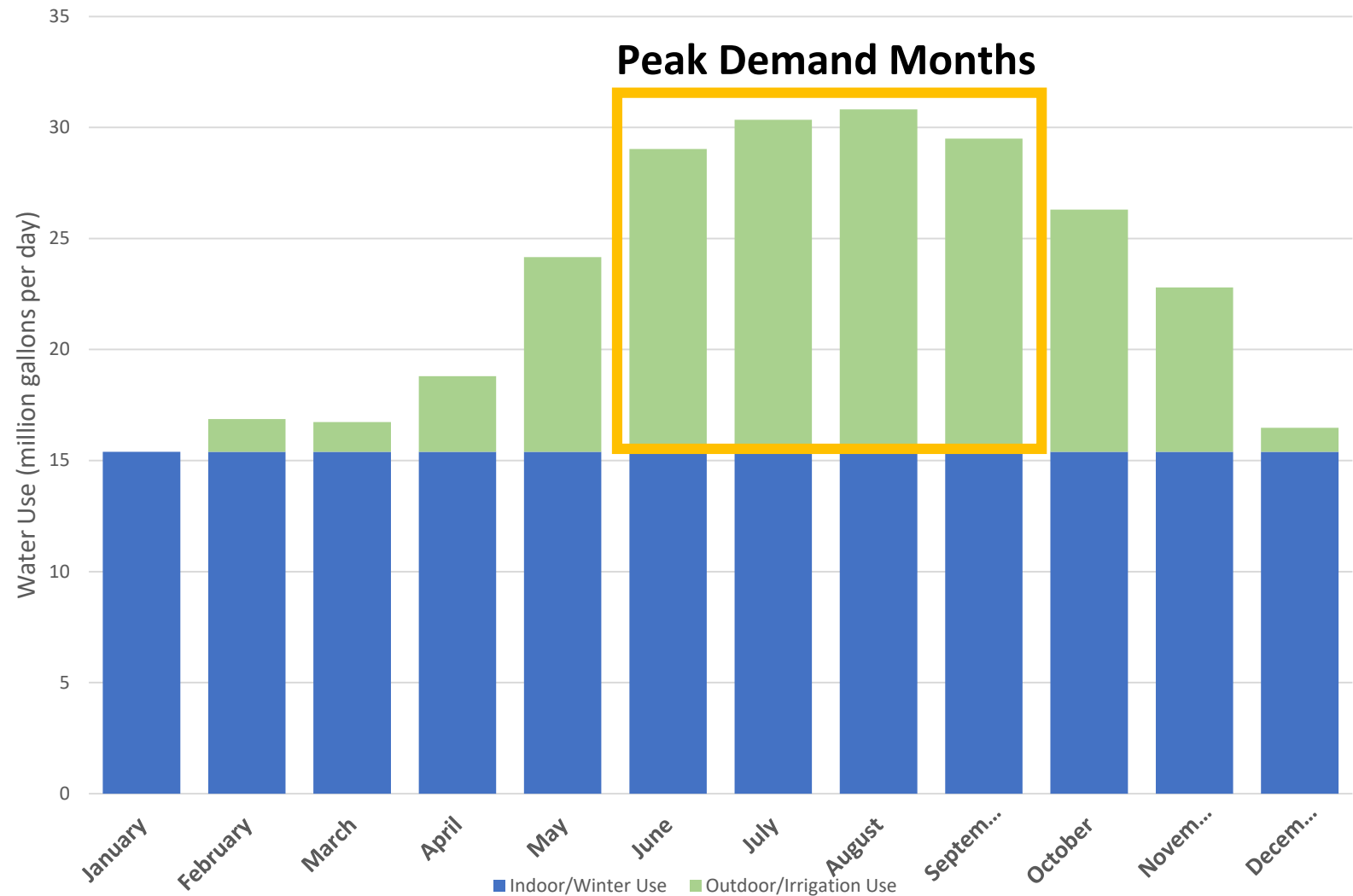
- Save your trees and valuable plants first
 - Trees provide cooling effects and habitat
 - Valuable to community
- No new plantings should be allowed
- Lawns are the cheapest and easiest plant material to replace
- No overhead irrigation of lawn result in least survivability
- One day per week of lawn – up to 50% survivability but very poor appearance, long term recovery with added management
- Outreach and resources on how to protect dormant lawns
- Our limited water supply should not go to lawns

Summary

- Shrubs and trees can survive on 2 days of irrigation or less
- All lawns will be stressed, they won't look good, and some will not survive with either 1 day or no days of irrigation
- New plantings should not be allowed
- Outreach and resources
 - Weekly Watering Schedule
 - Master Gardeners
 - Conservation Staff

Critical Window for Irrigation Water Savings

- One day per week overhead spray
- One day per week overhead spray designated
- No irrigation of lawns



AMI Data

- Roughly 42% of AMI meters appear to be heavily irrigating 3+ days per week
 - 13% irrigating 5+ days

Flume Data

May 2021



June 2021



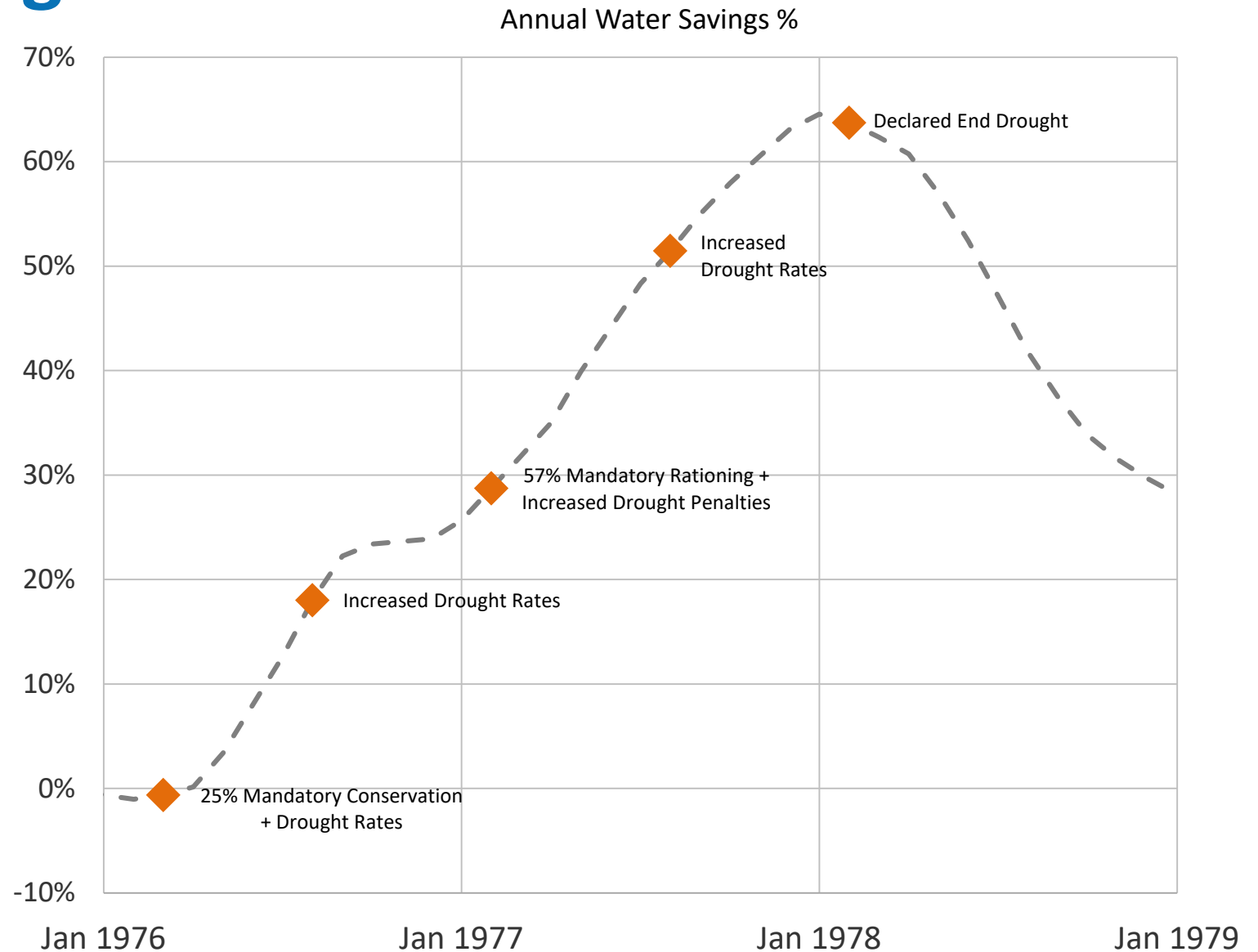
Marin 1976-77 Drought

1976: 25% Mandatory Conservation

- No lawn irrigation
- Drought rates and penalties

1977: 57% Mandatory Rationing

- Allotment per person (~ 49 gallons per person per day)
- Drought rates and penalties, increased as drought persisted



Drought Research

- 11 case study participants from CA and TX
 - Reduced annual demand by 18%-30%
 - Reduced summer demand by 20%-42%
- Key Drought Implementation Strategies
 - ✓ Messaging
 - Enforcement (assigned day irrigation restrictions)
 - ✓ Irrigation day-of-week restrictions
 - ✓ Time-of-day restrictions
 - Drought surcharges
 - ✓ Financial incentives

Use and Effectiveness of Municipal Irrigation Restrictions During Drought Study Report



January 2020

Recommendation

- Next Board Meeting (July 6th) bring an ordinance for adoption:
 - 1 day per week of overhead spray irrigation
 - Day of week is designated by city/location
 - 2 days per week for drip irrigation
 - Spot watering by hand is exempt
 - Discourage new plantings

Additional Conservation Actions for Consideration

In addition to landscape irrigation restrictions future action could include

- Consideration of approach for new connections
- Allocation of water
 - Per capita – gallons per person per day
 - Per connection % reduction from baseline water use
- Drought Rates

Next Steps

- Return next meeting with ordinance for consideration to adopt additional water use restrictions
- Continue discussions on new connections and staff work on allocation development
- Ongoing monitoring and reporting to the Board status as compared to established conservation goals
- Continue drought outreach efforts
- Continue operational and water supply projects

**Drought is Here
Conserve Water**

Learn more at MarinWater.org/Conserve

