

PUBLIC DRAFT



**NORTH MARIN
WATER DISTRICT**

2025

URBAN WATER MANAGEMENT PLAN

**NORTH MARIN WATER DISTRICT
JUNE 2026**



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PREPARED BY:

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2025 URBAN WATER MANAGEMENT PLAN

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2025 URBAN WATER MANAGEMENT PLAN

NORTH MARIN WATER DISTRICT

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ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AF	Acre-Feet
AFY	Acre-Feet per Year
AMI	Advanced Metering Infrastructure
AWE	Alliance for Water Efficiency
AWWA	American Water Works Association
BMP	Best Management Practice
CalWEP	California Water Efficiency Partnership
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
cfs	Cubic Feet per Second
CGC	California Government Code
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
CMIP5	Coupled Model Intercomparison Project
CWC	California Water Code
DDW	Division of Drinking Water
DIM	Dedicated Irrigation Meter
DMM	Demand Management Measure
DWR	Department of Water Resources
EIR	Environmental Impact Report
EO	Executive Order
ETo	Evapotranspiration
FY	Fiscal Year
GMP	Groundwater Management Plan
GPCD	Gallons per capita per day
GPD	Gallons per day
gpm	Gallons per Minute
GPSCD	Gallons per Service Connection per Day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
HOA	Homeowner Association
kWh	Kilowatt-hour
LEF	Landscape Efficiency Factor

LGVSD	Las Gallinas Valley Sanitary District
LHMP	Local Hazard Mitigation Plan
LOCA	Localized Constructed Analog
MCCWL	Making Conservation a California Way of Life
MCLs	Maximum Contaminant Levels
MFR	Multi-Family Residential
MG	Million Gallons
MGD	Million gallons per day
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MMWD	Marin Municipal Water District
NBWRA	North Bay Water Reuse Authority
NMFS	National Marine Fisheries Service
NMWD	North Marin Water District
NOAA	National Oceanic and Atmospheric Administration
NSD	Novato Sanitary District
PG&E	Pacific Gas and Electric
PVID	Potter Valley Irrigation District
PVP	Potter Valley Project
PWS	Public Water System
RCP	Representative Concentration Pathway
RHNA	Regional Housing Needs Allocation
RPM	Reasonable and Prudent Measure
RUWMP	Regional Urban Water Management Plan
RWF	Recycled Water Facility
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SFR	Single Family Residential
SGMA	Sustainable Groundwater Management Act
SMSWP	Sonoma Marin Saving Water Partnership
STP	Stafford Treatment Plant
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TUCP	Temporary Urgency Change Petitions
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
UWUO	Urban Water Use Objective
WAC	Water Advisory Committee
WBIC	Weather-Based Irrigation Controller

WRP	Water Recycling Plant
WSCP	Water Shortage Contingency Plan
WWTP	Wastewater Treatment Plant
WY	Water year

EXECUTIVE SUMMARY

CWC §10630.5

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

This Urban Water Management Plan (UWMP or Plan) is prepared for North Marin Water District (also referred to as NMWD or District), which serves drinking water to an estimated population of 61,691 in and around the City of Novato, California. In addition to the Novato Water System, the District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. Only information regarding the Novato Water System is included herein, and where the terms “District” and “NMWD” are used, they are referring to the Novato Water System portion of the District unless otherwise noted. This UWMP serves as a planning document and includes descriptions of historical and projected water demands and water supplies and reliability over a 25-year planning horizon. This document also describes the actions the District is taking to promote water conservation, both by the District and by its customers (referred to as “demand management measures”) and includes a plan to address potential water supply shortages such as drought or other impacts to supply availability (the “Water Shortage Contingency Plan”). This UWMP is updated every five years in accordance with state requirements under the Urban Water Management Planning Act (UWMP Act) and amendments (Division 6 Part 2.6 of the CWC §10610 – 10656). Past plans developed for the District are available on the California Department of Water Resources (DWR) Water Use Efficiency Data Portal website: <https://wuedata.water.ca.gov/>. This Plan includes 11 chapters, which are summarized below.

Chapter 1 - Introduction

This chapter presents the background and purpose of the UWMP, identifies the Plan organization, and provides this lay description overview of the document.

Chapter 2 - Plan Preparation

This chapter discusses key structural aspects related to the preparation of the UWMP and describes the coordination and outreach conducted as part of the preparation of the Plan, including coordination with local agencies (i.e., members of the Sonoma-Marín Saving Water Partnership [SMSWP], Sonoma and Marin Counties) and the public.

Chapter 3 - Service Area and System Description

This chapter provides a description of the District’s water system and service area, including information related to the climate, population, and demographics. The District serves a population of approximately 61,691 and has a moderate climate characterized by hot dry summers and cool wet winters. The majority of precipitation falls during late autumn, winter, and spring, averaging 26 inches of rainfall annually. Land use within the District is primarily residential, but also includes agricultural, industrial, commercial, and recreational land uses.

Chapter 4 - System Water Demands

This chapter provides a description and quantifies the District’s current and projected demands through the year 2050. The District provides drinking water (also referred to as “potable water”), raw water, and

recycled water to customers. Raw and recycled water are used within the District primarily for irrigation purposes. Water demands refer not only to the water used by customers, but also includes the water used as part of the system maintenance and operation, as well as unavoidable losses inherent in the operation of a water distribution system. Total water demand within the District was 7,925 acre-feet per year (AFY) in 2025. Taking into account historical water use, expected population increase and other growth, climatic variability, and other assumptions, potable and raw water demand within the District is projected to increase to 10,163 AFY by 2050, an increase of 28% from 2025 to 2050.

Chapter 5 - Baseline Water Use and SB X7-7 Water Conservation Targets

In this chapter, the District demonstrates compliance with its per capita water use target for the year 2020. The Water Conservation Act of 2009 (Senate Bill X7-7) was enacted in November 2009 and requires the state of California to achieve a 20 percent reduction in urban per capita water use by 31 December 2020. In order to achieve this, each urban retail water supplier was required to establish water use targets for 2015 and 2020 using methodologies established by DWR. The 2025 UWMPs are required to continue report progress in meeting the 2020 target. The District is a member of a “Regional Alliance” for purposes of SB X7-7 compliance. The Regional Alliance’s 2020 water use is 113 GPCD, and the Regional Alliance remains in compliance with its 2020 target of 129 GPCD.

Chapter 6 - Water Supply Characterization

This chapter presents an analysis of the District’s water supplies, as well as an estimate of water-related energy consumption. The intent of this chapter is to present a comprehensive overview of the District’s water supplies, estimate the volume of available supplies over the UWMP planning horizon, and assess the sufficiency of the District’s supplies to meet projected demands under “normal” hydrologic conditions.

Water supply for the District comes primarily from purchased water from Sonoma County Water Agency (Sonoma Water) Russian River Project. The Russian River, Lake Mendocino, and Lake Sonoma are primary sources for the Russian River Project. The Sonoma Water supply also includes a relatively small amount of groundwater from groundwater supply wells located in the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin [DWR Basin 1-55.01]. This water supply is supplemented by local surface water from Stafford Lake and recycled water from Novato Sanitary District (NSD) and Las Gallinas Valley Sanitary District (LGVSD). Based on comparison of demands and available supplies, the District’s water supply is expected to be sufficient to support the District’s projected water demand through 2050 during normal hydrologic years.

Calculation and reporting of water system energy intensity is also included in this chapter. Energy intensity is defined as the net energy used for water treatment, conveyance, and distribution for all water entering the District’s distribution system and does not include the energy used to convey or treat wastewater. The energy intensity for NMWD is estimated to be 345 kilowatt hours per acre-foot of water (kWh/AF). To reduce the overall net energy consumption by the system, solar energy is also produced at the Stafford Treatment Plant (STP). If the solar energy generated were discounted from total energy consumption, the net energy intensity for NMWD would be 260 kWh/AF.

Chapter 7 - Water Supply Reliability

This chapter assesses the reliability of NMWD’s water supplies, with a specific focus on potential constraints such as water supply availability, water quality, and climate change. The intent of this chapter is to identify any potential constraints that could affect the reliability of the District’s supply (such as drought conditions) to support the District’s planning efforts. Water service reliability is assessed during normal, single dry-year, and multiple dry-year hydrologic conditions. Based on this analysis, the District expects the available supplies to be sufficient to meet projected demands in all hydrologic conditions, including a five-year drought period, and considering the impacts of climate change.

Further, potential water quality issues are not expected to affect the quality of water served to the District’s customers, as water quality is routinely monitored, and the District is able to make all appropriate adjustments to its treatment and distribution system to ensure only high-quality drinking water is served.

Chapter 8 - Water Shortage Contingency Plan

This chapter describes the Water Shortage Contingency Plan (WSCP) for NMWD. The WSCP serves as a standalone document to be engaged in the case of a water shortage event, such as a drought or supply interruption, and defines specific policies and actions that will be implemented at various shortage level scenarios. For example, implementing customer water budgets and surcharges, or restricting landscape irrigation to specific days and/or times. Consistent with DWR requirements, the WSCP includes six levels to address shortage conditions ranging from up to 10% to greater than 50% shortage.

Chapter 9 - Demand Management Measures

This chapter includes descriptions of past and planned conservation programs that NMWD and the Sonoma-Marín Saving Water Partnership (SMSWP) operate within each demand management measure (DMM) category outlined in the UWMP Act, specifically: (1) water waste prevention ordinances, (2) metering, (3) conservation pricing, (4) public education and outreach, (5) distribution system water loss management, (6) water conservation program coordination and staffing support, and (7) “other” DMMs. NMWD has developed a suite of conservation programs and policies which address each DMM category. Through the implementation of DMMs, both independently and through the SMSWP, it is estimated that between the years 2021 and 2024, NMWD saved 646 AF, or 162 AFY on average, through implementation of active conservation programs.

Chapter 10 - Plan Adoption and Submittal

This chapter provides information on a public hearing, the adoption process for the UWMP and WSCP, the adopted UWMP and WSCP submittal process, UWMP and WSCP implementation, and the process for amending the adopted UWMP and WSCP. Prior to adopting the Plan, NMWD held a formal public hearing to present information on its UWMP and WSCP on 16 June 2026 at 4:00 PM. The UWMP and WSCP were submitted to DWR within 30 days of adoption and by the 1 July 2026 deadline.

Chapter 11 - References

This chapter contains key references and sources used throughout the Plan.

1 PLAN INTRODUCTION

This section discusses the importance and uses of this Urban Water Management Plan (UWMP or Plan), the relationship of this Plan to the California Water Code (CWC), the relationship of this Plan to other local and regional planning efforts, and how this Plan is organized and developed in general accordance with the California Department of Water Resources' (DWR) 2025 UWMP Guidebook.

1.1 Background and Purpose

This UWMP addresses the Novato Water System operated by North Marin Water District (NMWD or District). The District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. The West Marin Water System has only 811 connections, serving approximately 2,000 people and approximately 240 acre-feet per year (AFY), and is therefore not subject to the UWMP Act. Thus, this Plan includes information on the Novato Water System only, and where the terms "District" and NMWD are used, they are referring to the Novato Water System portion of the District unless otherwise noted.

The District receives the majority (approximately two-thirds) of its water from Sonoma County Water Agency (Sonoma Water or Sonoma Water), which provides surface water from the Russian River and to a lesser extent groundwater from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin (California Department of Water Resources [DWR] Basin No. 1-55.01). The remainder of the District's water supply is from its local Stafford Lake water supply and recycled water developed in cooperation with Novato and Las Gallinas Valley Sanitary Districts.

This UWMP is a foundational document and source of information about NMWD's historical and projected water demands, water supplies, supply reliability and potential vulnerabilities, water shortage contingency planning, and demand management programs. Among other things, it is used as:

- A long-range planning document for water supply and system planning; and
- A source for data on population, housing, water demands, water supplies, and capital improvement projects used in:
 - Regional water resource management plans prepared by wholesale water suppliers and other regional planning authorities (as applicable),
 - General Plans prepared by cities and counties, and
 - Statewide and broad regional water resource plans prepared by DWR, the State Water Resources Control Board (SWRCB), or other state agencies.

NMWD's last UWMP was adopted in 2021, referred to herein as the "2020 UWMP." This Plan is an update to the 2020 UWMP, carries forward information from that plan that remains current and relevant, and provides additional information as required by subsequent amendments to the UWMP Act (CWC §10610-10657). Although this Plan is an update to the 2020 UWMP, it was developed to be a self-contained, stand-alone document and does not require readers to reference information contained in previous UWMP updates.

1.2 Urban Water Management Planning and CWC

The UWMP Act requires urban water suppliers to prepare a UWMP every five years and to submit this plan to the DWR, the California State Library, and any city or county within which the supplier provides water supplies. All urban water suppliers, either publicly or privately owned, providing water for municipal

purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 AFY are required to prepare a UWMP (CWC §10617).

The UWMP Act was enacted in 1983. Over the years it has been amended in response to water resource challenges and planning imperatives confronting California. A significant amendment was made in 2009 following the Governor’s call for a statewide 20% reduction in urban water use by 2020, referred to as the Water Conservation Act of 2009, or “SB X7-7.” This amendment required urban retail water suppliers to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20% by 2020. Beginning in 2016, urban retail water suppliers were required to comply with the water conservation requirements in SB X7-7 to be eligible for state water grants or loans. **Chapter 5** of this Plan contains the data and calculations used to determine compliance with these requirements.

In 2016, Governor Brown signed Executive Order (EO) B-37-16 Making Conservation a California Way of Life (MCCWL). Subsequently, the Legislature passed Senate Bill (SB) 606 and Assembly Bill (AB) 1668, which added new drought planning requirements, including:

- 1) Additional Water Shortage Contingency Plan (WSCP) requirements (CWC §10640),
- 2) Drought risk assessments to assess water supply reliability in UWMPs for a drought period lasting five consecutive water years (WY) (CWC §10635(b)), and
- 3) Annual water supply and demand assessments to determine water supply reliability for the current year and one subsequent dry year (CWC §10632(a)).

These elements are included in **Chapter 7** and **Chapter 8** of this Plan. Additionally, SB 606/AB 1668 set new requirements for urban water suppliers to further increase water use efficiency beyond SB X7-7. Beginning in 2024, agencies were required to report an annual Urban Water Use Objective (UWUO). Section 4.8 of this Plan documents NMWD’s progress in meeting the UWUOs.

1.3 Plan Organization

The organization of this Plan follows the same sequence as outlined in the 2025 UWMP Guidebook.

- Chapter 1 Plan Introduction
- Chapter 2 Plan Preparation
- Chapter 3 Service Area Description
- Chapter 4 Water Use Characterization
- Chapter 5 SB X7-7 Baseline, 2020 Target, and 2025 Reporting
- Chapter 6 Normal Year Water Supply Characterization
- Chapter 7 Water Supply Reliability Assessment
- Chapter 8 Water Shortage Contingency Planning
- Chapter 9 Demand Management Measures
- Chapter 10 Plan Adoption, Submittal, and Implementation[DU1.1]
- Chapter 11 References

In addition to these sections, this Plan includes appendices providing supporting documentation and supplemental information. Pursuant to CWC §10644(a)(2), this Plan utilizes the standardized forms, tables, and displays developed by DWR for the reporting of water use and supply information required by the UWMP Act. This Plan also includes additional tables, figures, and maps to augment the set developed

by DWR, as appropriate. The table headers indicate if the table is part of DWR’s standardized set of submittal tables. A lay description of the UWMP, including information related to water service reliability, potential issues, and strategies for managing reliability risks, is provided at the beginning of this UWMP.

1.4 UWMP Relationship to Other Efforts

This Plan provides information specific to water management and planning by the District. However, water management does not happen in isolation; there are other planning processes that integrate with the UWMP to accomplish urban planning. Some of these relevant planning documents include relevant city and county General Plans, Water Master Plans, integrated resource plans, and others.

This Plan is informed by and helps to inform these other planning efforts. In particular, this Plan utilizes information contained in local and regional water resource plans to the extent data from these plans are applicable and available.

1.5 Special Considerations

This Plan includes information beyond the requirements of the UWMP Act to support other regulatory processes that rely on UWMP data, including the Delta Plan and permitting for ocean desalination projects.

1.5.1 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions

Although not required by the UWMP Act, in the 2025 UWMP Guidebook, DWR recommends that all suppliers that are participating in, or may participate in, receiving water from a proposed project that is considered a “covered action” under The Delta Plan by the Delta Stewardship Council—such as a (1) multiyear water transfer, (2) conveyance facility, or (3) new diversion that involves transferring water through, exporting water from, or using water in the Delta—provide information in their UWMP to demonstrate consistency with the Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code of Regulations [CCR], Title 23, Section 5003).

The District obtains its water supplies from Sonoma Water’s Russian River Project, local surface water from Stafford Lake, and recycled water, and therefore the District does not receive water or plan to receive water from a “covered action” under the Delta Plan. As such, demonstration of consistency with the Delta Plan is not applicable.

1.5.2 Permitting for Ocean Desalination Projects

California’s *Water Supply Strategy: Adapting to a Hotter, Drier Future* updates state priorities to address water supply shortages due to long-term drought and the accelerating impacts of climate change, including identifying opportunities to access new water sources such as ocean desalination. To streamline permitting for ocean desalination projects, the *Seawater Desalination Siting and Streamlining Report to Expedite Permitting* recommends that UWMPs clearly demonstrate the need for future or proposed ocean desalination projects.

As discussed in **Chapter 6** and **Chapter 7**, NMWD has sufficient water supplies available to meet projected demands through the 2050 planning horizon and does not anticipate the need for an ocean desalination project. Therefore, NMWD will not pursue ocean desalination to augment its supply portfolio.

2 PLAN PREPARATION

This chapter discusses the type of UWMP prepared by NMWD and includes information that applies throughout the Plan. It also summarizes coordination and outreach during Plan development.

Text from the UWMP Act has been included in grey text boxes with italicized font at beginning of relevant sections of this UWMP. The information presented in the respective UWMP sections and the associated text, figures, and tables are collectively intended to fulfill the requirements of that sub-section of the UWMP Act. To the extent practicable, supporting documentation has also been provided in **Appendix A** through **Appendix G**. Other sources for the information contained herein are provided in the references section of this document.

Per CWC §10644(a)(2), selected information for the 2025 UWMP updates must be presented in standardized tables for electronic submittal to DWR. The tables presented in this UWMP have been re-numbered, but the content has been preserved, and the original DWR table numbers are included in parentheses in the table titles.

2.1 Basis for Preparing the UWMP

CWC §10617

“Urban water supplier” means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CWC §10608.12

(t) “Urban retail water supplier” means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(w) “Urban wholesale water supplier” means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

CWC §10620

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

CWC §10621

(a) Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.

California Health and Safety Code §116275

(h) “Public Water System” means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

An urban water supplier is defined in CWC §10617 as a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to 3,000 customers or supplying more than 3,000 AFY.

Table 2-1 provides information on NMWD’s public water system that served 20,438 connections and 7,389 acre-feet in fiscal year 2025 within the Novato service area and is therefore subject to the requirements of the UWMP Act. NMWD also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. The West Marin Water System has only 811 connections, serving approximately 2,000 people and approximately 240 AFY, and is therefore not subject to the UWMP Act. Thus, this Plan includes information on the Novato Water System only.

Table 2-1 Public Water Systems (DWR Table 2-1)

Has there been a change in the number of affiliated PWSs since the 2020 UWMP? (OPTIONAL)			No
PWS Number	PWS Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
CA2110003	North Marin Water District	20,438	7,389
Total		20,438	7,389
NOTES: (a) The District also operates the West Marin Water System, which is a separate public water system with a separate source of supply and no physical interconnection of facilities between the Novato and West Marin Water System. The West Marin Water System has only 811 connections, serving approximately 2,000 people and approximately 240 AFY, and is therefore not subject to the UWMP Act.			

2.2 Individual or Regional Plan

Urban water suppliers may elect to prepare individual or regional UWMPs. NMWD has elected to prepare an individual UWMP (**Table 2-2**). However, the 2025 UWMP was developed in close coordination with its wholesaler, Sonoma County Water Agency (Sonoma Water or Sonoma Water), and other agencies that receive water from Sonoma Water (referred to herein as Water Contractors). Furthermore, a regional Alliance was formed in 2011 among these agencies including the cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor, Marin Municipal Water District, Valley of the Moon Water District, and NMWD to comply with SB X7-7, the Water Conservation Act of 2009. This regional Alliance, referred to in **Table 2-2** as the “North Marin-Sonoma Alliance” but more typically referred to as the Sonoma-Marín Saving Water Partnership (SMSWP), is used within the 2025 UWMP for reporting on regional water use targets (see Chapter 5). All other elements of the CWC requirements are addressed in the District’s Individual Plan.

Table 2-2 Plan Identification (DWR Table 2-2)

Type of Plan		Name of Regional Alliance or RUWMP
<input checked="" type="checkbox"/>	Individual UWMP	
	<input checked="" type="checkbox"/> Water Supplier is also a member of a SB X7-7 Regional Alliance	North Marin-Sonoma Alliance
<input type="checkbox"/>	RUWMP	

2.3 Fiscal or Calendar Year and Units of Measure

☑ CWC §10608.20

(a)(1) Urban retail water suppliers ... may determine the targets on a fiscal year or calendar year basis.

NMWD is an urban retail water supplier, as defined by CWC §10608.12(t) and §10617, and as identified in **Table 2-3**. NMWD is not a wholesale water supplier. Annual volumes of water reported in this UWMP are measured in AF and are reported on a fiscal year basis spanning from 1 July to 30 June of the following year. As such, “2025” represents FY 2024-25, and so forth. Water use and planning data reported in this UWMP for fiscal year 2025 cover the full twelve months of the year, as required by the UWMP Guidelines.

Table 2-3 Supplier Identification (DWR Table 2-3)

Type of Supplier	
<input type="checkbox"/>	Supplier is a wholesale supplier.
<input checked="" type="checkbox"/>	Supplier is a retail supplier.
Fiscal or Calendar Year	
<input type="checkbox"/>	UWMP tables are in calendar years.
<input checked="" type="checkbox"/>	UWMP tables are in fiscal years (fiscal year begins: 07/01).
Units of measure used in UWMP	
Unit	AF

2.4 Standard Submittal Tables and Alignment with UWMP Act Requirements

The Plan has been prepared in general accordance with the format suggested in DWR’s 2025 UWMP Guidebook. Text from the UWMP Act has been included in text boxes at the beginning of relevant sections of this UWMP. The information presented in the respective UWMP sections, and the associated text, and figures are collectively intended to fulfill the requirements of that subsection of the UWMP Act. To the extent practicable, supporting documentation has also been provided in **Appendix A** through **Appendix G**. Other sources for the information contained herein are provided in the references section of the document.

Per CWC §10644(a)(2), selected information for the UWMP updates must be presented in standardized tables for electronic submittal to DWR. Text and tables in the main body of the UWMP document have been cross-referenced to the companion DWR tables. UWMP preparers are also requested to complete a checklist of specific UWMP requirements to assist the DWR review of the submitted UWMP. The completed checklist is included in **Appendix A**.

2.5 Coordination and Outreach

Coordination with other water suppliers, cities, counties, and community organizations in the region is an important part of preparing the updated UWMP and WSCP. This section identifies the agencies and organizations NMWD sought to coordinate during the preparation of this Plan.

2.5.1 Wholesale and Retail Coordination

CWC §10631

(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier’s plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision.

(f) An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

Urban retail water suppliers relying on one or more wholesalers for water supply are required to provide these wholesalers with information regarding projected water supply and demand. NMWD meets regularly with other water purveyors to discuss water supply and demand planning. In particular, NMWD meets at least monthly with its water wholesaler, Sonoma Water, and with other Water Contractors who purchase water from Sonoma Water. These monthly meetings occur through NMWD’s participation in Sonoma Water’s Technical Advisory Committee (TAC). The primary mission of the TAC is to provide input and guidance to Sonoma Water regarding technical issues that may have an impact on the Water Contractors (i.e., UWMP coordination, capital projects, operational changes, etc.). Additionally, NMWD participates in quarterly meetings of the Water Advisory Committee (WAC). The WAC’s objectives are to advise Sonoma Water’s Board of Directors on policy and fiscal matters affecting the Water Contractors. NMWD’s participation in the TAC and WAC has been instrumental in coordinating water supply and demand analyses for the preparation of this Plan. As part of the development of this Plan, the District coordinated closely with the other eight Sonoma Water Contractors and are listed in **Table 2-5**.

NMWD’s water supply primarily comes from water purchased from Sonoma Water. NMWD, along with eight other Water Contractors, has a water supply agreement with Sonoma Water for the purchase of Russian River water commonly referred to as the Restructured Water Supply Agreement. NMWD coordinated the development of its demand projections with members of the SMSWP. Demand projections through 2050 were provided through the Partnership to Sonoma Water, as indicated in **Table 2-4**.

Table 2-4 Water Supplier Information Exchange (DWR Table 2-4)

Wholesale Water Supplier Name
Sonoma County Water Agency

NMWD’s projected water demands were developed as part of a planning effort in 2025 that was implemented through the Sonoma-Marin Saving Water Partnership (i.e., the *2025 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update* included as **Appendix B**). Sonoma Water was provided with NMWD’s water use projections through this process. NMWD will continue to coordinate with Sonoma Water to determine the timing of capital improvement projects that may need to be implemented in order to meet the District’s projected future water demands.

Additionally, as described in more detail in Chapter 7, the District has relied upon the water supply reliability projections provided by Sonoma Water for the purposes of analyzing the reliability of its Russian River water supplies during normal and dry years through 2050.

2.5.2 Agency Coordination

CWC §10620

(d)(3) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

NMWD coordinated with other regional entities during preparation of this UWMP to ensure that data and issues are presented accurately, including: the Novato Sanitary District, the Las Gallinas Valley Sanitary District, the Marin County Local Agency Formation Commission (LAFCo), the County of Marin, and the County of Sonoma. On 2 February 2026, a letter was sent to each of these entities advising that the District was reviewing and updating the UWMP. The agencies, cities, and counties that were notified by the District during the development of this Plan are listed in **Table 2-5**. A sample copy of the notices is provided in **Appendix C**.

Table 2-5 Notification to Cities, Counties, and Other Agencies (DWR Table 10-1)

City Name	60 Day Notice	Notice of Public Hearing
City of Cotati	X	X
City of Novato	X	X
City of Petaluma	X	X
City of Rohnert Park	X	X
City of Santa Rosa	X	X
City of Sonoma	X	X
Town of Windsor	X	X
County Name	60 Day Notice	Notice of Public Hearing
Marin County	X	X
Sonoma County	X	X
Other Agency Name	60 Day Notice	Notice of Public Hearing
Las Gallinas Valley Sanitary District	X	X
Marin County Local Agency Formation Commission	X	X
Marin Municipal Water District	X	X
Novato Sanitary District	X	X
Sonoma County Water Agency	X	X
Valley of the Moon Water District	X	X

2.5.3 Notice to Cities and Counties

CWC §10621

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

CWC § 10642

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan...

NMWD provided a 60 Day Notice to the entities and the communities it serves more than 60 days prior to the public hearing it held on June 16, 2026, informing them that the Plan was going to be reviewed and updated. As a courtesy, NMWD also provided a 60 Day Notice to neighboring agencies and sanitary districts due to geographical proximity and to ensure regional alignment in water management, as shown in **Table 2-5**. The 60 Day Notice recipients are listed in **Table 2-5**, and copies of correspondence with the agencies are provided in **Appendix C**.

NMWD also sought public participation and notified the public of its intent to adopt its UWMP through a public hearing and notices to members of the community. Additional information on public participation, including information on notifications, is provided in **Chapter 10** and in **Appendix D**.

3 SERVICE AREA DESCRIPTION

This chapter describes NMWD’s water system and service area, including climate, population, demographics, and land uses to help in understanding various elements of water supply and demand.

CWC §10631(a) A plan shall be adopted in accordance with this chapter that shall do all of the following:

Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier’s water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier’s water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

3.1 General Description

The NMWD service area is shown in **Figure 3-1**. The majority of the District is located in the Marin County and provides service to customers in the City of Novato and surrounding unincorporated areas (NMWD, 2026).¹

3.2 Service Area Climate

CWC §10631

(a) Describe the service area of the supplier, ... “climate...”

CWC §10635

(b)(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

NMWD’s climate is tempered by its proximity to the Pacific Ocean. Similar to much of the California coastal area, the year is divided into wet and dry seasons. Approximately 93% of the annual precipitation normally falls during the wet season, October to May, with a large percentage of the rainfall typically occurring during three or four major winter storms. Winters are cool, and below-freezing temperatures seldom occur. Summers are warm and the frost-free season is fairly long. Annual precipitation averages 25.6 inches. **Table 3-1** and its associated chart summarizes average monthly evapotranspiration rates (ET_o), rainfall, and temperatures from July 1986 to December 2025.

¹ As noted in Section 2.1, the District also operates a separate public water system (the West Marin Water System), which has a separate supply source, is not interconnected to the Novato System, and is not subject to UWMP Act requirements.

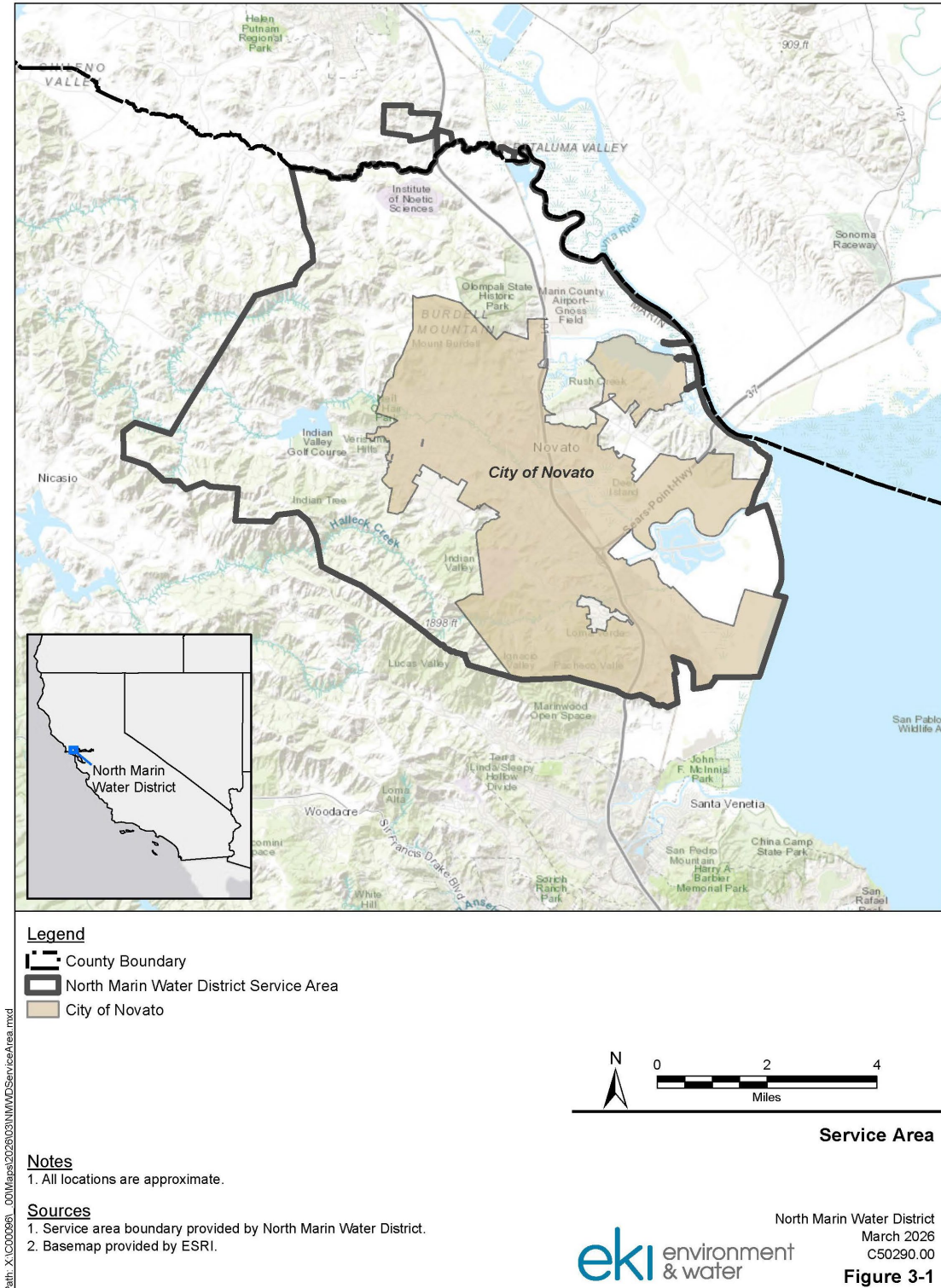


Figure 3-1 NMWD Location and Service Boundaries

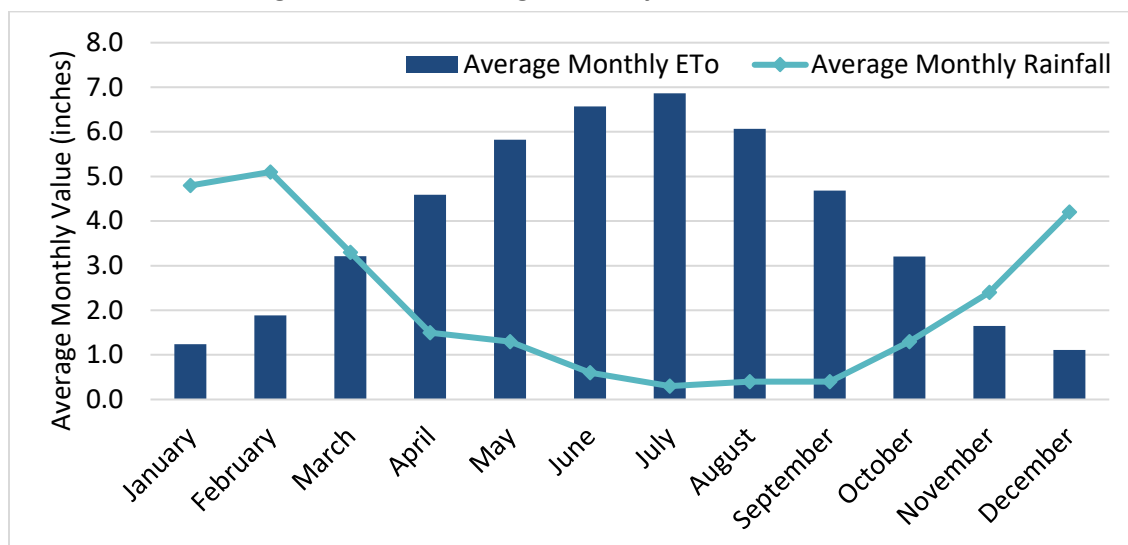
Table 3-1 Climate Characteristics

Month	Average Temperature		Average Rainfall (inches)	ETo (inches)
	Min (°F)	Max (°F)		
January	36.8	56.8	4.8	1.2
February	38.8	60.9	5.1	1.9
March	40.6	64.7	3.3	3.2
April	42.4	69.2	1.5	4.6
May	45.4	73.2	1.3	5.8
June	48.8	78.8	0.6	6.6
July	51.0	81.4	0.3	6.9
August	51.0	81.6	0.4	6.1
September	49.1	81.2	0.4	4.7
October	45.0	75.4	1.3	3.2
November	39.6	64.6	2.4	1.6
December	36.6	56.5	4.2	1.1
Annual	43.8	70.4	25.6	46.9

NOTES:

(a) Data represents the monthly average from July 1986 to January 2002 recorded from Novato California Irrigation Management Information System (CIMIS) station 63 and from June 2003 to December 2025 recorded from Black Point CIMIS station 187.

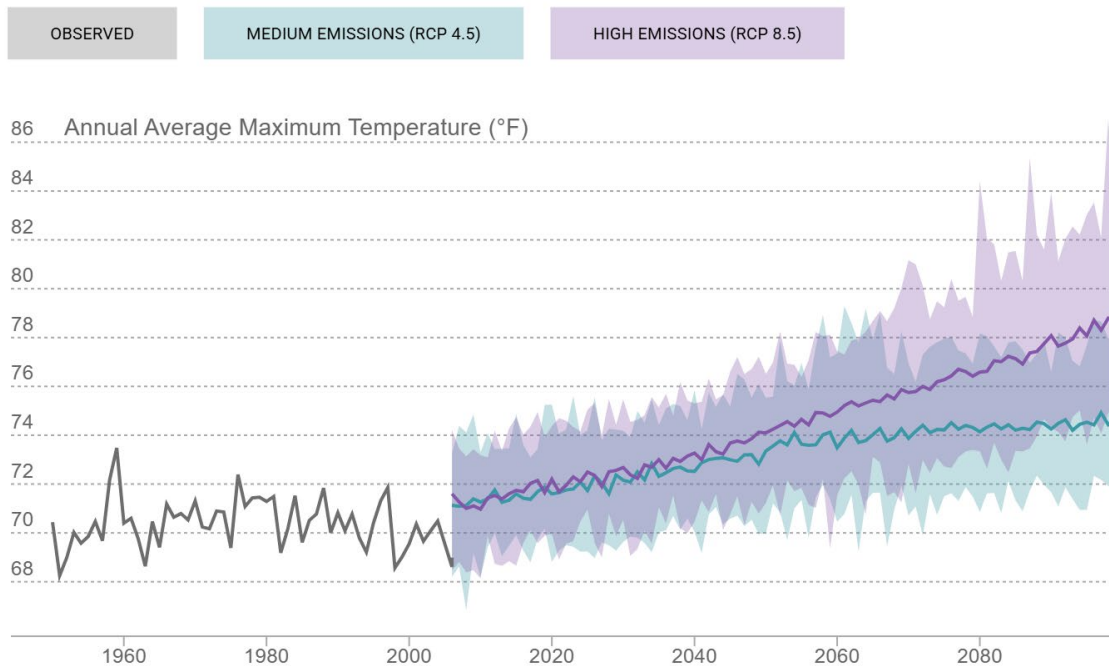
Figure 3-2 Average Monthly Climatic Conditions



Source: Novato CIMIS station 63 and from July 1986 to January 2002 and Black Point CIMIS station 187 from July 2003 to December 2025.

According to the Cal-Adapt Local Climate Change Snapshot tool, future projections for NMWD’s service area using Localized Constructed Analogs (LOCA) downscaled Coupled Model Intercomparison Project (CMIP5) models indicate an average increase in temperature of 3.0°F for medium emissions (RCP 4.5) models and 3.8°F for high emissions (RCP 8.5) models by mid-century (2035-2064) as shown in **Figure 3-3** (Cal-Adapt, 2018).

Figure 3-3 Annual Average Maximum Temperature, Historic and Under Climate Change Conditions for Novato, CA



Source: Cal-Adapt, 2018

Impacts associated with climate change are discussed in the *Marin County Operational Area Multi-Jurisdictional Hazard Mitigation Plan 2023* (County MJHMP), which is incorporated into this UWMP by reference (Marin County, 2023). The County MJHMP assesses Marin County’s vulnerabilities to various hazards and presents mitigation strategies that are planned over the next five years. Risks described in the County MJHMP include flooding, storms, wildfires, and coastal erosion that are anticipated to occur due to climate change.

A further discussion of climate change impacts specific to Sonoma Water’s system is provided in the *Sonoma County Water Agency Local Hazard Mitigation Plan*, dated 19 September 2024, which is also incorporated into this UWMP by reference (Sonoma Water, 2024). The Sonoma Water LHMP specifically assesses Sonoma Water’s natural hazard risks and vulnerabilities facing Sonoma Water infrastructure and provides a plan of action to address these vulnerabilities. As described in the Sonoma Water LHMP, the most significant climate change-related vulnerabilities for Sonoma Water are associated with floods, wildfires, landslides, and drought.

Climate change impacts on the District’s water demands are discussed in **Section 4.5.5**, while climate change impacts on the District’s water supply are discussed in **Section 6.10.1**.

3.3 Service Area Population and Demographics

Employment in the District’s service area includes a variety of industries, with the majority working in health and education services, professional/scientific occupations, management, finance, and retail (City of Novato, 2024). Regionally, employment in the agricultural industry is related to vineyards, livestock, orchards, silage crops, and timber. The primary industrial activities in the region include telecommunications, wine production, recreation, tourism, timber and other agricultural product processing, energy production, and miscellaneous manufacturing (Sonoma Water, 2021).

3.3.1 Future Population Growth

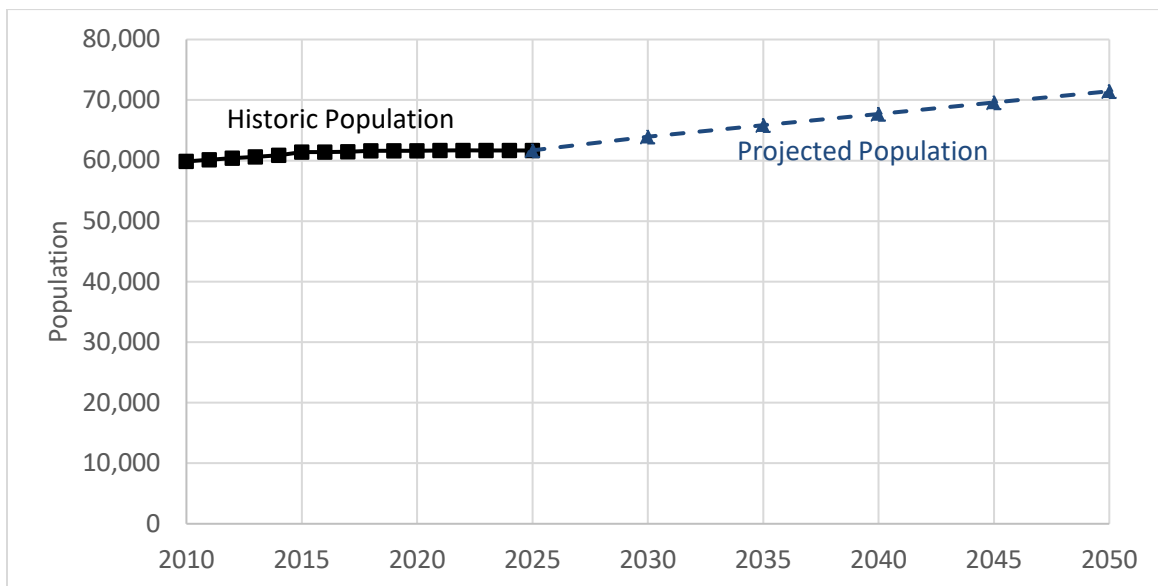
Table 3-2 and **Figure 3-4** show the current and projected population for the District’s service area, including population served outside the City of Novato boundary², through the year 2050. The 2025 population was calculated using a per dwelling unit multiplier method, assuming 2.56 persons per dwelling unit (EKI, 2025). Population projections were developed separately based on population projections by the Association of Bay Area Governments (ABAG) Plan Bay Area Projections 2050 (ABAG, 2021), as described further in the *2025 Water Demand Analysis and Water Conservation Measure Update* (EKI, 2025, Appendix B).

Table 3-2 Population – Current and Projected (DWR Table 3-1)

Population Served	2025	2030	2035	2040	2045	2050
	61,691	63,955	65,846	67,715	69,584	71,452

NOTES: 2025 population calculated by multiplying active dwelling units by 2.56 (EKI, 2025). Projected population is based on ABAG projections (ABAG, 2021), with growth calculation methodology as described in Appendix B.

Figure 3-4 Population – Historic and Projected



² Population estimates do not include estimates for the West Marin Water System.

3.3.2 Other Social, Economic, and Demographic Factors

Demographics for the City of Novato, which accounts for a majority of the service area population, are summarized in **Table 3-3**. The same data are also provided for the state of California as a whole. Data were obtained from the U.S. Census Bureau QuickFacts website (U.S. Census, 2026). Relative to the rest of California, the City of Novato’s population is slightly older and somewhat more racially diverse. Educational attainment and median household income in City of Novato are higher than for the state as a whole, while population below the poverty level is comparatively lower.

Table 3-3 Demographic and Housing Characteristics, 2020-2024

Demographics	Novato	California
Age and Sex		
Persons under 5 years	4.5%	5.3%
Persons under 18 years	20.5%	21.3%
Persons 65 years and older	24.0%	16.5%
Female persons	49.2%	50.1%
Race and Hispanic Origin		
White alone	58.8%	69.8%
Black or African American alone	2.6%	6.4%
American Indian and Alaska Native alone	0.9%	1.8%
Asian alone	7.0%	17.0%
Native Hawaiian and Other Pacific Islander alone	0.0%	0.5%
Two or More Races	15.7%	4.4%
Hispanic or Latino	28.0%	40.8%
White alone, not Hispanic or Latino	54.6%	33.6%
Families & Living Arrangements		
Persons per household	2.58	2.84
Living in same house 1 year ago, percent of persons age 1 year+	91.5%	89.2%
Language other than English spoken at home, age 5 years+	31.5%	44.1%
Education		
High school graduate or higher, persons age 25 years+	89.0%	84.7%
Bachelor’s degree or higher, persons age 25 years+	48.9%	37.1%
Income & Poverty		
Median Household Income (2024 dollars)	\$115,736	\$96,334
Per capita income in past 12 months (2024 dollars)	\$65,423	\$47,977
Persons in poverty	9.6%	11.8%

3.4 Land Uses within Service Area

Land use within NMWD’s service area is primarily residential, but also includes agricultural, industrial, commercial, and recreational land uses. Current land use maps within the District can be found in the Land Use Element of the City of Novato General Plan 2035 (City of Novato, 2020)³ and the Marin Countywide Plan (Marin County, 2023)⁴. Future land uses are expected to remain generally consistent with current land uses. Per the Regional Housing Needs Allocation (ABAG, 2021), substantial new residential units are expected to be constructed within the City of Novato, which has been accounted for in the population projections discussed above.

3.5 Water Distribution System

NMWD receives the majority of its water supply from Sonoma Water’s Russian River Project. The Santa Rosa Aqueduct and the Russian River-Cotati Intertie carry primarily Russian River water from Sonoma Water diversion facilities located in the Wohler and Mirabel areas to NMWD via the Petaluma and North Marin Aqueducts. In addition, Sonoma Water operates three groundwater wells in the Santa Rosa Plain Subbasin (DWR No. DWR Basin 1-55.01) that supplement the water supply from the Russian River. Additional details regarding sources of Sonoma Water supply are included in Chapter 6.

NMWD maintains a local source of supply, Stafford Lake, in addition to the water purchased from Sonoma Water. NMWD operates its Stafford Lake source seasonally to reduce peak demand on Sonoma Water’s Aqueduct system. A map of NMWD’s Novato water system is presented in the 2025 Novato Water System Master Plan Update provided in **Appendix E**. NMWD’s water supply from Stafford Lake is treated at the STP. Water from Stafford Lake is drawn through an intake tower and, depending on the water surface elevation, is either gravity-fed or pumped to the STP. The STP, which was constructed in 1951, was upgraded in 1973 and completely rehabilitated in 2006. The rehabilitated STP has a production capacity of 5.4 million gallons per day (MGD).

NMWD owns and operates the 30, 36, and 42-inch diameter North Marin Aqueduct, which transports water from Sonoma Water’s Petaluma Aqueduct near Kastania Tank in south Petaluma to Novato. NMWD has four separate pressure zones, using 31 storage tanks with a total capacity of approximately 37 million gallons, 26 booster pump stations, and seven hydropneumatic systems that have combined tanks and pump stations. More detailed information regarding NMWD’s water storage and transportation system is available in the NMWD’s 2025 Water Master Plan (NMWD, 2026). NMWD’s four pressure zones each have gravity storage in one or more storage tanks. Approximately 46% of the total system demand is in Zone 1 and 45% in Zone 2. Zone 1, at the lowest elevation, is supplied by water delivered from Sonoma Water via the Petaluma Aqueduct and the North Marin Aqueduct, as well as water pumped from STP. Water to supply the other zones is pumped from Zone 1. Transmission mains vary in size from 16 to 24 inches in diameter. Most of NMWD’s distribution pipelines were constructed in the 1950s and 1960s, and were principally constructed of asbestos cement or polyvinyl chloride.

³ The City of Novato General Plan 2035 is available at the City’s website: <https://www.novato.org/home/showpublisheddocument?id=30461>.

⁴ The Marin Countywide Plan is available at the county’s website: https://assets.marincounty.gov/marincounty-prod/public/2026-02/cwplan_2023_updated_2026.pdf.

4 WATER USE CHARACTERIZATION

CWC §10635

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

CWC §10631

(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following...

(d)(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(d)(4)(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(d)(4)(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections. (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

This chapter describes and quantifies NMWD’s historical, current, and projected water uses through 2050. For the purposes of this UWMP, the terms “water use” and “water demand” are used interchangeably and are defined as the volume of water produced by NMWD to serve the Novato Water System.

4.1 Non-Potable Versus Potable Water Use

Potable and non-potable water uses are accounted for separately herein. Potable uses are served by the District’s potable water delivery system. Potable water deliveries comply with Title 22 Drinking Water Standards. Non-potable water uses include recycled and untreated raw water deliveries, such as tertiary treated recycled water or surface supplies that do not meet potable drinking water standards. Uses of potable versus non-potable water are clearly distinguished in the tables included in this chapter.

4.2 Water Use Sectors

CWC §10631

(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

Demand within NMWD's water service area is measured using water meters installed at each customer account. Records of current and historical water use at each account are maintained by NMWD. Demand within NMWD's service area is tracked and reported for the following sectors:

- **Single Family Residential:** Attached or detached dwelling units that are individually metered.
- **Multi-Family Residential:** Two or more dwelling units served by a common water meter. Water use is predominately for indoor water uses; irrigation water use for multiple family sites is usually separately metered and listed in the irrigation sector.
- **Commercial:** Includes commercial and institutional/governmental customers.
- **Landscape:** Water meters used exclusively for outdoor uses associated with multiple family residential customers (i.e., homeowner associations [HOAs]) and other irrigation sites.
- **Other:** Includes temporary meters and miscellaneous customers not listed elsewhere, including non-revenue potable water, raw water, and potable make-up water to the recycled water system.

NMWD's total water demand is the sum of potable, raw and recycled water demands within its service area. NMWD's total water demand includes water consumed by metered accounts in the service area (metered water use), authorized but unbilled uses, and water losses within the system. The latter accounts for physical losses within the distribution system caused by seepage, leaks, and spills, while the former accounts for accounting losses due to meter inaccuracies, data handling errors, and unauthorized consumption.

4.3 Past and Current Water Demand

CWC §10631

(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use... based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors...

Past and current water demand by water use sector for 2025 are shown in **Table 4-1** while **Figure 4-1** shows demand from 2021 to 2025. Water use within the District’s service area is predominantly associated with residential use, with 57% of water use in 2025 from SFR accounts and 16% from MFR accounts. Commercial and institutional/governmental accounts comprised 13% of total water use, and landscape accounts comprised 6%.

Non-potable water demand within NMWD’s service area is served with recycled water and raw water to meet irrigation demands. Recycled water demand makes up 9% of total demand, while raw water demand makes up 3%. The recycled water system is supplemented with potable water to meet demands, as necessary. This potable make-up represented less than 1% of total potable water demand in 2025. The District receives recycled water from two recycled water systems: the Novato Sanitary District (NSD) and the Las Gallinas Valley Sanitary District (LGVSD). The recycled water system is discussed in further detail in Section 6.5.

As demonstrated in **Figure 4-1**, total water use decreased between 2021 and 2023, reflecting a period of drought, after which demand began increasing though not fully returning to previous levels. These trends were likely influenced by the historic drought conditions, mandatory state-wide restrictions imposed on urban water use by the SWRCB, and local drought response.

Figure 4-1 Total Uses for Potable and Non-Potable Water - 2021 – 2025 Actual

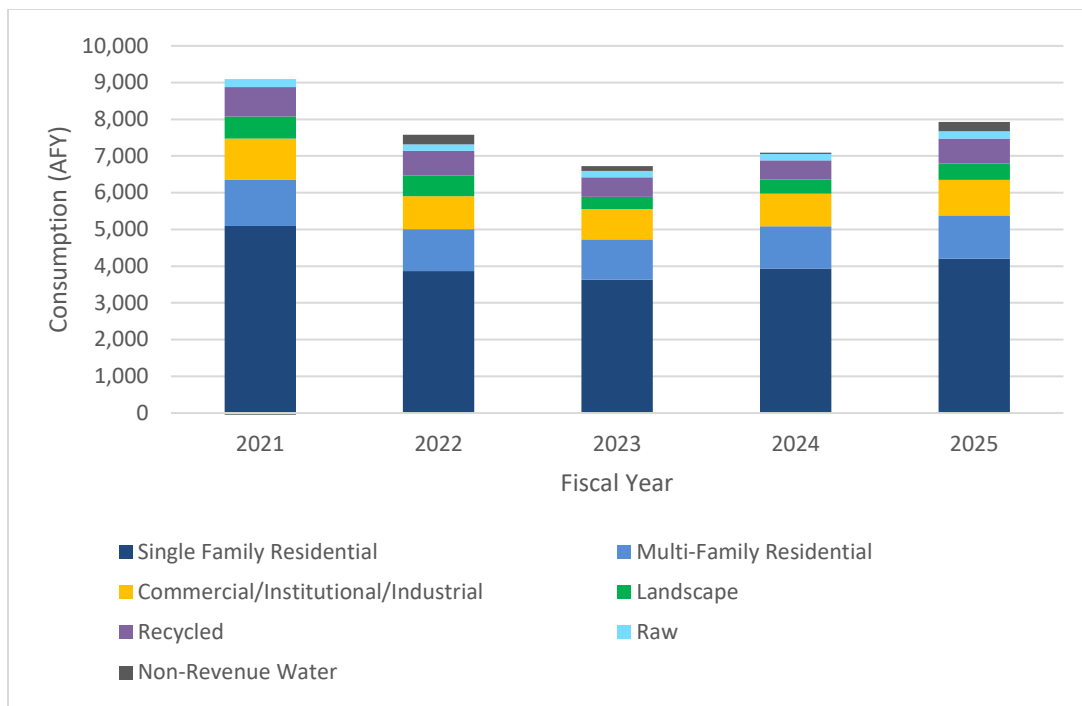


Table 4-1 2025 Actual Total Uses for Potable and Non-Potable Water (DWR Table 4-1)

Use Type	Additional Description	2025 Actual Water Use	
		Level of Treatment When Delivered	Volume (AF)
Single Family		Potable	4,204
Multi-Family	Apartments, condos, and mobile homes	Potable	1,178
Commercial	Includes Commercial, Institutional/Governmental	Potable	972
Landscape	Dedicated Irrigation	Potable	440
Landscape	Recycled water	Non-Potable	627
Landscape	Potable water make-up to recycled water system	Potable	58
Other (optional)	Raw water	Non-Potable	196
Distribution System Water Loss	Non-revenue water (c)	Potable	250
Subtotal Potable			7,102
Subtotal Non-Potable			823
Total			7,925
<p>NOTES:</p> <p>(a) Volumes are in units of AF</p> <p>(b) Water demand is based upon metered water consumption</p> <p>(c) "Distribution System Water Loss" represents all non-revenue water, including real losses, apparent losses, and unbilled authorized consumption.</p>			

4.4 Distribution System Water Loss

CWC §10631(3)

(A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

Water loss is the sum of apparent and real losses. Apparent loss is associated with metering inaccuracies, billing and administrative errors, authorized unmetered uses (e.g., system flushing and firefighting), and unauthorized uses. Real loss is associated with physical loss of water through line breaks, leaks and seeps, and overflows of storage tanks. Since 2016, urban retail water suppliers have been required under CWC §10608.34 and California Code of Regulations (CCR) §638.1 et seq to quantify distribution system water losses using the American Water Works Association (AWWA) Free Water Audit Software (referred to as “water loss audit reports”). **Table 4-2** summarizes the water loss audit reports submitted to DWR for NMWD’s Novato water system since 2021. The water loss audit reports are available through DWR’s

Water Use Efficiency Data.⁵

In 2022, the SWRCB adopted water loss performance standards for urban retail water suppliers, aiming for a significant long-term reduction in real losses. Effective starting in 2023, the SWRCB established individual volumetric standards for each urban retail water supplier, calculated to reflect the life-cycle cost-effective level of water loss based on specific system characteristics. While annual reporting is ongoing, suppliers will be required to start meeting individual volumetric loss standards over a three-year period, with full compliance required by January 1, 2028. These standards constitute the water loss component of the MCCWL regulatory framework (SWRCB, 2022).

CWC §10631 (3)(c) requires that this UWMP demonstrate whether the NMWD has met the distribution loss standards enacted by the SWRCB pursuant to CWC §10608.34. **Table 4-3** demonstrates NMWD’s progress towards meeting the 2028 water loss standard, and is currently on track to meet water loss standards.

Table 4-2 Water Loss Audit Reporting Water Code Section 10631(d)(3)(A) (DWR Table 4-5)

PWS ID # (reported in DWR Table 2-1)	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
CA2110003	2020	Yes
	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
DWR Notes: Suppliers will provide a link to WUEdata submittals of their Water Loss Audit Reports.		
<p>Notes: 2020:https://wuedata.water.ca.gov/public/awwa_uploads/2411573112/North%20Marin%20Water%20District%20%28Novato%29%20%2D%20Validated%20Audit%20CY2020.xlsx 2021:https://wuedata.water.ca.gov/public/awwa_uploads/3997312247/NMWD%2DNovato%20%2DCY2021%20Validated%20Audit.xlsx 2022:https://wuedata.water.ca.gov/public/awwa_uploads/2603421866/NMWD%20CY2022%20%2D%20Novato%20Validated%20Water%20Audit%20%2D%20Revised.xlsx 2023:https://wuedata.water.ca.gov/public/awwa_uploads/7017316520/NMWD%20CY2023%20%2D%202110003%20Novato%20Validated%20Water%20Audit.xlsx 2024:https://wuedata.water.ca.gov/public/awwa_uploads/4803434073/NMWD%20CY2024%20%2D%20Novato%20Validated%20Water%20Audit.xlsx</p>		

⁵ DWR’s Water Use Efficiency Data Portal: https://wuedata.water.ca.gov/awwa_plans

Table 4-3 Progress Towards 2028 Water Loss Standard (DWR Table 4-6)

PWS ID # (reported in DWR Table 2-1)	Did the SWRCB Calculate a Water Loss Standard for this PWS? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit			State Water Board Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard per Unit per Day	Units for Apparent Water Loss	Number of Connections	Volume of Total Apparent Loss (from AWWA Water Loss Audit)	Apparent Water Loss Per Unit per Day
CA2110003	Yes	4.8	Gallons per Service Connection per Day (GPSCD)	21025	293.9 AF	12.5	4.1	GPSCD	21025	100.7 AF	4.3
<p>NOTES: (a) Most recent water loss audit is the 2024 AWWA Water Loss Audit.</p>											

4.5 Projected Water Demand

The District's water demand projections were prepared as part of the *2025 Water Demand Analysis and Water Conservation Measures Update* (Water Demand Report; EKI, 2025), which is provided in **Appendix B** and documents in detail the methods and assumptions used to project future water demand.

Projected total water demand is summarized in the following subsections.

4.5.1 Basis of Demand Projections

As described in more detail below and in the Water Demand Report (**Appendix B**), projected potable water demands for the District were estimated by:

1. Applying an estimated growth rate to accounts within each water use sector based on projected population and employment growth rates,
2. Evaluating and selecting water demand factors for each water use sector based on a review of recent average per-account water use representing three scenarios,
3. Estimating future passive savings using the Alliance for Water Efficiency (AWE) Water Conservation Tracking Tool (AWE model), and
4. Calculating estimated future water demand that incorporates the anticipated account.

This methodology is consistent with CWC §10631(d)(4)(A), which requires that “water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.” The assumptions used as the bases for demand projections were developed in close coordination with the District and reflect a land-use based approach consistent with community planning within the District.

The recycled water system is separate from the potable water system and has a more limited footprint within the District. Expansion of recycled water use is generally dependent on (1) location and proximity to the recycled water distribution system, (2) the presence of substantial enough opportunities for use of non-potable water (i.e., irrigation and some small commercial uses such as automatic, drive through car washes) to warrant connection to the recycled water distribution system, and (3) the capacity of the recycled water treatment facility and distribution system to meet the available demand. Due to these factors, while some recycled water use may be expected to increase relative to population or employment growth within the District, system infrastructure is a more significant driver in projecting future recycled water use.

4.5.2 Water Savings from Codes, Standards, Ordinances, or Transportation and Land Use Plans

CWC §10631(d)(4)

(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

“Passive conservation” refers to water savings resulting from actions and activities that do not depend on direct financial assistance (e.g., rebate) programs from the District. These savings result primarily from (1) the natural replacement of existing plumbing fixtures with water-efficient models required under current plumbing code standards, and (2) the installation of water-efficient fixtures and equipment in new buildings and retrofits as required under CALGreen Building Code Standards and the District’s strict enforcement of new development water use efficiency requirements in District Regulation 15.⁶ The water use projections discussed in **Section 4.5** include water savings associated with these codes and standards. Specifically, as shown in **Table 4-4** and its associated chart, passive water savings for the District were calculated using the Alliance for Water Efficiency (AWE) Water Conservation Tracking Tool (referred to as the AWE model; AWE, 2021). The AWE model is an industry standard tool that incorporates historical population, residential building stock, number of accounts, and projected population and account growth to estimate future passive savings. More information regarding the passive savings estimated using the AWE model can be found in **Appendix B**.

Table 4-4 Projected Total Water Demand and Projected Passive and Active Water Conservation

Water Conservation Type	Projected Total Water Demand				
	2030	2035	2040	2045	2050
Baseline Projected Water Demand	8,752	8,980	9,220	9,460	9,700
Passive Water Conservation	249	396	504	595	676
Total Potable Water Demand	8,503	8,583	8,716	8,865	9,023
NOTES: (a) Volumes are in units of AF. (b) The District also implements a number of active conservation programs, as discussed in Chapter 9 and Appendix B .					

While projections account for passive savings, the District has taken a more conservative approach to demand projections by not accounting for savings associated with future active conservation measures.

⁶ The District Regulation 15 is available at the District’s website: <https://nmwd.com/wp-content/uploads/2023/12/Reg-15.pdf>

However, savings associated with all past active conservation efforts are embedded into the demand projections. This approach is conservative, as it projects the highest level of probable demand. Active conservation thus increases resiliency for District customers by further increasing efficient utilization of available supplies.

4.5.3 Projected Total Water Demand

Projected customer water demands for years 2030 through 2050 are presented in **Table 4-5**. These demands are broken down by sector, including water loss, recycled water, raw water, and potable make-up to the recycled water system. Recycled water demands are further discussed in Section 6.5. As affirmed in **Table 4-6**, both future water savings (**Section 4.5.2**) and lower income residential demands (**Section 4.5.4**) are included in the projections of future water use.

Table 4-5 Total Uses of Potable and Non-Potable Water – Projected (DWR Table 4-2)

Use Type	Additional Description	Projected Water Use					
		Level of Treatment When Delivered	2030	2035	2040	2045	2050
Single Family		Potable	4,630	4,614	4,656	4,710	4,769
Multi-Family	Apartments, condos, and mobile homes	Potable	1,229	1,271	1,305	1,341	1,379
Commercial	Commercial, Institutional/ Governmental	Potable	1,388	1,406	1,427	1,450	1,476
Landscape	Dedicated Irrigation	Potable	890	917	943	969	995
Landscape	Recycled water system	Non-Potable	824	849	873	897	921
Other (optional)	Raw water (b)	Non-Potable	218	218	218	218	218
Distribution System Water Loss	Non-revenue water (c)	Potable	366	375	385	395	405
Subtotal Potable			8,503	8,583	8,716	8,865	9,024
Subtotal Non-Potable			1,042	1,067	1,091	1,115	1,139
Total			9,545	9,650	9,807	9,980	10,163

NOTES:

(a) Volumes are in units of AF

(b) Projected water demands were estimated using methodology described in **Appendix B** and incorporate passive conservation savings, as described in **Section 4.5.2**.

(c) Raw water projections are based on past raw water usage.

(d) "Distribution System Water Loss" represents all non-revenue water, including real losses, apparent losses, and unbilled authorized consumption.

Table 4-6 Inclusion in Water Use Projections (DWR Table 4-3)

Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	Refer to Section 4.5.2 and Table 5-4 of Appendix B .
Are Lower Income Residential Demands Included In Projections?	Yes
OPTIONAL If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found.	Refer to Section 4.5.4

4.5.4 Water Use by Lower Income Households

CWC §10631.1

(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirements under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

California Senate Bill No. 1087 (SB 1087), Chapter 727, was passed in 2005 and amended by Government Code Section 65589.7 and Water Code Section 10631.1. SB 1087 requires local governments to provide a copy of their adopted housing element to water and sewer providers. In addition, it requires water providers to grant priority for service allocations to proposed developments that include housing units for lower income families and workers. Subsequent revisions to the UWMP Act require water providers to develop water demand projections for lower income single and multi-family households.

NMWD does not discriminate in terms of supplying water to any development. NMWD is required to serve any development that occurs within its service area, regardless of the income level of the future residents. It is ultimately the City’s or County’s responsibility to approve or not approve developments within the service area.

As indicated in **Table 4-6**, the water use projections presented in **Section 4.5.1** and **Table 4-5** include projected water use by lower income households. A lower income household is defined under California Health and Safety Code §50079.5(a) to be 80% of income, adjusted for family size. Based on Census data for the Novato service area, the 80% of median household income figure is approximately \$92,600.⁷ Census data also indicates that currently, between 31% and 44% of households in the City of Novato earn less than 80% of the median household income. The Final Regional Housing Needs Allocation (RHNA) for the San Francisco Bay Area (ABAG, 2025) was used to estimate the proportion of new lower income households anticipated within the District. Based on ABAG (2025) data for the City of Novato, new lower income households are estimated to comprise approximately 43% of the total new households. Given that the estimated percent of current and new lower income households are similar, demand for lower income

⁷ US Census Bureau American Fact Finder for City of Novato using 2020-2024 American Community Survey 5-Year Estimates (in 2024 dollars). Median income estimate is \$115,736.

households is based on 43% of the total single-family and multi-family residential projected water uses, as shown in **Table 4-7**.

Table 4-7 Projected Water Use for Lower Income Households

Lower-Income Water Demand Sector	Projected Water Use (AFY)				
	2030	2035	2040	2045	2050
Single Family Residential	1,991	1,984	2,002	2,025	2,051
Multi-Family Residential	528	547	561	577	593
Total	2,519	2,531	2,563	2,602	2,644
NOTES: (a) Volumes are in units of AF					

4.5.5 Characteristic Five-Year Water Use and Climate Change Impacts to Demand

CWC §10635

(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following...

*(3) A comparison of the total water supply sources available to the water supplier with **the total projected water use for the drought period**. (Emphasis added).*

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

In accordance with CWC §10635(b)(3), UWMPs must provide a five-year Drought Risk Assessment (see **Section 7.4**). As a first step, DWR suggests that water suppliers estimate their unconstrained water demand for the next five years (2026-2030). Unconstrained water demand is water use in the absence of drought water use restrictions. These numbers can then be adjusted to estimate the five-years’ cumulative drought effects. The Drought Risk Assessment presented in **Section 7.4** accounts for this increase in unconstrained water demand. **Table 4-8** shows unconstrained demands for 2026-2030, which is assumed to be the same under normal and dry year scenarios.

Table 4-8 Characteristic Five-Year Water Use (AF)

2026	2027	2028	2029	2030
8,525	8,780	9,035	9,290	9,545
<p><u>Notes:</u> (a) Units are in AF (b) The table shows unconstrained demand (i.e., demand in the absence of drought water use restrictions).</p>				

The Drought Risk Assessment must include a consideration of climate change impacts on demand. Hotter and drier weather may lead to an increased demand in landscape irrigation. The methodology used to develop demand projections herein considers the impacts of climate change on projected demands. California experienced a historic drought between 2011-2017. In 2014, Governor Brown issued Executive Order B-26-14 declaring a Drought State of Emergency and requested all Californians to voluntarily reduce water use by 20%. In 2015, the State Water Resources Control Board implemented emergency conservation regulations that, among other things, required water agencies to reduce their water use and prohibited certain types of water uses. As a result, the District experienced an overall decrease in demands during the historic drought, most significantly during 2015. As explained further in **Appendix B**, the demand factors evaluated multiple drought periods, including 2011-2013, 2014-2017, and 2021-2023, as well as rebound period between droughts. Thus, the periods used to develop the demand projections reflect conditions representative of the hotter, drier weather expected as a result of climate change.

4.6 Water Use Sectors Not Included in Demand Projections

Several water use sectors listed in CWC §10631(e)(1) are not included in the water demand projections described in Sections 4.3 because they are not applicable to NMWD. The following sectors were not included in the demand projections in this Plan:

Industrial (CWC §10631(e)(1)(D)) – The District does not currently, nor does it plan to, provide water for industrial uses. The District does provide water for some biopharmaceutical industrial purposes, but this use is included in the commercial sector and not tracked separately.

Sales to Other Agencies (CWC §10631(e)(1)(G)) – The District does not currently, nor does it plan to, sell water to other agencies.

Saline Water Intrusion Barriers, Groundwater Recharge, or Conjunctive Use (CWC §10631(e)(1)(H)) – The District does not currently use, nor does it plan to use, water for saline water intrusion barriers, groundwater recharge, or conjunctive use.

Agricultural (CWC §10631(e)(1)(I)) – The District does not currently, nor does it plan to, provide water for agricultural uses.

4.7 Coordinating Water Use Projections

CWC § 10631(h)

An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available.

NMWD purchases water from Sonoma Water. As part of the coordination effort for the UWMP, and in compliance with CWC §10631(h), NMWD supplied Sonoma Water with its water demand projections through 2050, as described in Section 2.5.1

4.8 Urban Water Use Objective

CWC § 10609.20

(a) Each urban retail water supplier shall calculate its urban water use objective no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use conditions for the previous calendar or fiscal year.

CWC § 10609.22

(a) An urban retail water supplier shall calculate its actual urban water use no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use for the previous calendar or fiscal year.

CWC § 10609.24

(a) An urban retail water supplier shall submit a report to the department no later than January 1, 2024, and by January 1 every year thereafter. The report shall include all of the following:

(1) The urban water use objective calculated pursuant to Section 10609.20 along with relevant supporting data.

(2) The actual urban water use calculated pursuant to Section 10609.22 along with relevant supporting data.

(3) Documentation of the implementation of the performance measures for CII water use.

(4) A description of the progress made towards meeting the urban water use objective.

(5) The validated water loss audit report conducted pursuant to Section 10608.34.

(b) The department shall post the reports and information on its internet website.

(c) The board may issue an information order or conservation order to, or impose civil liability on, an entity or individual for failure to submit a report required by this section.

In July 2024, California enacted the MCCWL regulation (implementing SB 606 and AB 1668) to support long-term water conservation and drought resilience. These regulations establish annual UWUOs for water suppliers and introduce Performance Measures for CII water users.

The UWUO is a water budget-based approach to water use efficiency unique to each urban water supplier and consists of the following components: (1) residential indoor water standard, (2) residential outdoor water budget, (3) CII landscape outdoor water use standard (for landscapes with dedicated irrigation meters, (4) water loss standard, (5) variance, and (6) bonus. Suppliers will need to assess whether they meet their UWUO collectively (i.e., they are not required to comply with the individual standards if they

meet the overall UWUO). Compliance with UWUOs is required beginning January 2027. Per the MCCWL regulation, over the next 25 years, the water efficiency standards for residential indoor and outdoor water use as well as CII outdoor water use will become increasingly stringent.

Beginning in 2024, agencies were required to report an annual UWUO. To forecast the NMWD’s Objective compliance, an analysis was conducted comparing the NMWD’s projected water use to its Objectives for 2030, 2035, and 2040 as part of the 2025 Water Demand Analysis and Water Conservation Measure Update (EKI, 2025). The projected water demands subjective to the Objectives and the corresponding Objectives were calculated using the following data sources and assumptions:

- Projected population, water use components subject to the objectives (e.g., residential water use and dedicated irrigation water use), and real water loss;
- Decreasing Objective water use standards through 2040;
- Residential landscape area based on values reported in NMWD’s FY 2023-24 UWUO Annual Report and increasing proportional to population projections;
- Existing CII landscape area on DIMs irrigated with potable water estimated from FY 2023-24 water use, assuming a LEF of 0.80;
- Existing CII landscape area on DIMs irrigated with recycled water estimated from FY 2023-24 water use, assuming a LEF of 1.0;
- Future CII landscape area on DIMs is increasing proportionally with NMWD’s irrigation and recycled water accounts.

Note that at the time this analysis was prepared, 2025 data was not available so 2024 data was used as the “existing” year. The results of this analysis show that the District is anticipated to comply with its Objectives through 2040, as shown below in **Table 4-9**.

Table 4-9 Actual and Projected Water Use vs. Urban Water Use Objectives

Year	Actual and Projected Water Use Subject to the Objectives (a) (AFY)	UWUO (AFY)
FY 2023-24	6,212	8,422
2030	7,829	9,403
2035	7,913	9,350
2040	8,046	8,886

5 SB X7-7 BASELINE, 2020 TARGET, AND 2025 REPORTING

CWC §10608.24 (b)

Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

CWC §10608.28

(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

The Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7, required that urban retail water suppliers⁸ reduce their baseline per capita water use by 20% by 2020. Instead of, or in addition to, individual water use targets, urban water retail suppliers may plan, comply, and report on SB X7-7 requirements on a regional basis as part of a “Regional Alliance.” As described in Section 2.2, the District is one of eight Water Contractors to the Sonoma County Water Agency (Sonoma Water or Sonoma Water) for purchase of Russian River water supply. As such, the Water Contractors formed a regional alliance 2011 under the provisions of SB X7-7 because they are recipients of water from a common wholesale water supplier.

The membership of the Alliance is consistent with that of a previously established water conservation regional partnership of eight Water Contractors under the SMSWP. This regional group, which collaborates on regional water conservation efforts, formed a Regional Alliance for the purposes of meeting regional water use targets. The members of the North-Marín Sonoma Alliance include: the District, City of Sonoma, City of Santa Rosa, Town of Windsor, City of Rohnert Park, City of Cotati, City of Petaluma, Marin Municipal Water District, and Valley of the Moon Water District⁹.

As shown in **Table 5-1**, the Alliance was in full compliance with the SB X7-7 2020 target.

⁸ CWC §10608.12 defines an urban retail water supplier as “a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.”

⁹ The letter approving the District’s membership in the regional Alliance is available at the following link: <http://www.savingwaterpartnership.org/wp-content/uploads/20x2020-regional-alliance-agreement.doc.pdf>.

Table 5-1 SB X7-7 2020 Target Progress (DWR Table 5-1)

Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target?	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?
No	Regional Alliance Target	129	113	Yes

6 NORMAL YEAR WATER SUPPLY CHARACTERIZATION

- CWC §10631(b)** A plan shall be adopted in accordance with this chapter that shall do all of the following:

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

This chapter describes NMWD’s current and potential water supplies, as well as assessment of the energy intensity used to operate NMWD’s treatment and distribution systems. It includes a description of each water source, source limitations, water quality, and future opportunities for additional supply development. The District’s water supplies presently come from a combination of imported water from Sonoma Water, local surface water supplies, and recycled water. Each water supply is described further in the following sections.

6.1 Purchased Water

- CWC §10631(h)** A plan shall be adopted in accordance with this chapter and shall do all of the following:

An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier’s plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

6.1.1 Sonoma County Water Agency Surface Water Supply

NMWD receives its primary water supply from Sonoma Water’s transmission system, which provides treated water purchased from Sonoma Water’s Russian River Project. The Russian River flows are augmented by Pacific Gas and Electric’s (PG&E’s) Potter Valley Project, which diverts a portion of the Eel River flows to the East Fork of the Russian River. Water is diverted and extracted from the stretch of the Russian River located just upstream of Wohler Bridge via six radial wells known as “Ranney collectors.” The diverted river water percolates through sand and gravel and only needs the addition of chlorine to meet drinking water quality standards. Although the water extracted via Ranney collectors does percolate through the ground, due to the connection to the surface water source, this diversion is considered and is permitted as a surface water supply under existing surface water rights to the Russian River and Dry Creek water, described further in Section 6.1.2. As discussed further under Section 6.2, Sonoma Water supply also includes a relatively small amount of groundwater from groundwater supply wells located in the central Santa Rosa Plain subbasin (Sonoma Water, 2026).

NMWD, along with other Sonoma Water contractors, signed the Restructured Agreement for Water Supply (Agreement) in 2006. The Agreement provides for the financing, construction, and operation of diversion facilities, transmission lines, storage tanks, booster pumps, conventional wells, and appurtenant facilities. As described in Section 3.1 of this Agreement, Sonoma Water:

...shall deliver to each Water Contractor [i.e., each signatory to the Agreement] at the points of delivery hereinafter set forth such quantities of water as the Water Contractor shall from time to time require at such rates of flow as are necessary to meet its peak day’s demand, subject to the following:

(a) Sonoma Water shall not be obligated to deliver water in excess of the following:

<i>Water Contractor/ Aqueduct</i>	<i>Average Daily Rate of Flow During Any Month</i>	<i>Annual Amount During Fiscal Year (Excluding Surplus Water)</i>
<i>North Marin From Petaluma Aqueduct</i>	<i>19.9 million gallons per day</i>	<i>14,100 acre-feet</i>

6.1.2 Sonoma County Water Agency Surface Water Rights

As described in Sonoma Water’s 2025 UWMP, currently, four water rights permits (Permits 12947A, 12949, 12950, and 16596) issued by the SWRCB authorize Sonoma Water to store up to 122,500 AFY of water in Lake Mendocino and up to 245,000 AFY of water in Lake Sonoma, and to divert or redivert up to 180 cubic feet per second (cfs) of water from the Russian River with a limit of 75,000 AFY (Sonoma Water, 2026). The permits also establish minimum instream flow requirements for fish and wildlife protection and recreation. These minimum instream flow requirements vary based on the hydrologic classifications of normal, dry, and critical water supply conditions as defined by Sonoma Water’s water rights permits and SWRCB Decision 1610, adopted in 1986, and as modified by Temporary Urgency Change Petitions (TUCPs) filed by Sonoma Water.

The minimum instream flow requirements over the summer period have been adjusted as needed under the TUCP process since 2010 to comply with the 2008 Russian River Biological Opinion and now its successor, the 2025 Russian River Biological Opinion (described in Chapter 7). While Sonoma Water follows the minimum instream flow schedule outlined in Decision 1610 for the remainder of the year, the hydrologic index of Decision 1610 (calculated based on cumulative flow into Lake Pillsbury in the Eel River watershed) was developed during different operations of the Potter Valley Project (PVP). Therefore, Sonoma Water has been filing TUCPs biannually to request that Lake Mendocino storage thresholds—which are more representative of water supply conditions in the Russian River System— be used as the hydrologic index for determining minimum instream flow requirements. As discussed in its 2025 UWMP, Sonoma Water assumes it will continue to operate under storage thresholds at Lake Mendocino. Minimum instream flow requirements for the Russian River and Dry Creek are met by releases from Coyote Valley Dam and Warm Springs Dam (Sonoma Water, 2026). Potential supply constraints are discussed in more detail in Chapter 7.

6.1.3 Sonoma County Water Agency Groundwater Supply

Sonoma Water pumps a portion of its supply from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin (DWR Basin # 1-55.01). Groundwater is used primarily as a drought period supply, or when Russian River supplies are otherwise constrained (Sonoma Water, 2026). In 2025, no groundwater was used to meet retail demands. In the future, groundwater is planned to continue to be used as a drought supply or when Russian River supplies are otherwise constrained (Sonoma Water, 2026). Sonoma Water’s groundwater supply is discussed further in Section 6.2.

6.2 Groundwater

CWC §10631

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

(A) The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area.

(B) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

(C) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

NMWD does not pump groundwater and does not plan to use groundwater as a supply source in the future (see **Table 6-1**). For background purposes, information regarding the groundwater basin underlying NMWD's service area is provided below.

The groundwater basin underlying NMWD's service area is the Novato Valley Basin (California Department of Water Resources [DWR] Basin No. 2-30), which is categorized by the California Statewide Groundwater Elevation Monitoring (CASGEM) program as a very low priority basin (DWR, 2019). The basin occupies a structural depression in the eastern Coast Range west of San Pablo Bay. The basin drains to San Pablo Bay and the areas close to the bay are tidally influenced. The water-bearing deposits underlying NMWD are primarily the alluvial deposits of Pleistocene and Holocene age. These alluvium deposits overlie the non-water-bearing Franciscan Formation. The alluvium is composed of silt, clay, and sand with some lenses of gravel. Groundwater wells screened in sand and gravels yield approximately 50 gallons per minute (gpm). The groundwater quality within NMWD's service area boundary is considered poor due to high salinity, and potential well yields are low. Therefore, groundwater from the service area is not currently or planned to be used as a water supply source by NMWD.

Table 6-1 Groundwater Volume Pumped (DWR Table 6-1)

X	Supplier does not pump groundwater. The supplier will not complete the table below.					
	All or part of the groundwater described below is desalinated.					
Groundwater Type	Location or Basin Name	2021	2022	2023	2024	2025
TOTAL						

Although NMWD does not pump groundwater directly, as noted in Section 6.1.2, a small portion of the Sonoma Water supply is comprised of groundwater from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin (DWR Basin 1-55.01). Given this, characteristics and groundwater management of the Santa Rosa Plain Subbasin are provided below.

6.2.1 Basin Description and Status

As noted in Section 6.1, Sonoma Water utilizes groundwater from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin during drought periods or when Russian River supplies are constrained. Given this, in accordance with CWC § 10631 (b), characteristics and groundwater management of the Santa Rosa Plain Subbasin are provided below.

The Santa Rosa Subbasin is not adjudicated, and in its recent evaluation of California groundwater basins, DWR determined that the Basin is not in a condition of critical overdraft (DWR, 2019). The Santa Rosa Plain Subbasin is currently categorized by the DWR program as a medium priority basin (DWR, 2019).

Under DWR’s prioritization process, basins are ranked on eight components, and if a basin is assigned more than 14 total points, but less than 21 total points, it is defined as “medium priority.” The main factors driving the Santa Rosa Plain Subbasin’s designation include population density (3 out of 5 possible ranking points), population growth (3 out of 5 possible points), public supply well density (5 out of 5 possible points), total production well density (5 out of 5 possible points), irrigated acres (2 out of 5 possible points), and groundwater reliance (3 out of 5 possible points) (DWR, 2019).

Geologically, the Santa Rosa Plain Subbasin has one main water-bearing unit, the Merced Formation, and several units with lower water-bearing capacities, including the Glen Ellen Formation and the Alluvium. The shallow Alluvium consists of poorly sorted coarse sand and gravel and moderately-sorted fine sand, silt, and clay. The alluvial deposits are not perennially saturated, have low permeability, and are generally unconfined or slightly confined. The Glen Ellen Formation underlies the Alluvium and consists of partially cemented beds of poorly sorted gravel, sand, and silt, and clay that vary widely in thickness and extent, with thicknesses varying from 3,000 feet to less than 1,500 feet on the west side of the valley. Underlying the Glen Ellen Formation is the Merced Formation, which is a marine deposit of fine sand and sandstone with thin interbeds of clay and silty-clay and some lenses of gravel and localized fossils. The Merced Formation is Pliocene in age, and its thickness is estimated to range from 300 feet to greater than 1,500 feet. Aquifer continuity and water quality in the Merced Formation are generally very good, with well yields from 100 to 1,500 gpm (Santa Rosa Plain GSA, 2021).

As a DWR-designated medium priority basin, the Santa Rosa Subbasin is subject to the requirements of the SGMA, including the requirement to be covered by one or more GSAs and to prepare and submit to DWR one or more GSPs by 31 January 2022. The Santa Rosa Plain GSP was submitted to DWR in January 2022 and approved by DWR on January 26, 2023.

The GSP estimates the sustainable yield of the basin to be 5,400 AFY. The GSP includes projects and management actions to ensure future sustainable use of the subbasin.

Further description of the Subbasin is included in the Basin Setting chapter of the GSP for the Subbasin, including the hydrogeologic conceptual model, and current and historical groundwater conditions. GSP chapters are available on the Santa Rosa Plain GSA website¹⁰.

6.2.2 Groundwater Management

Prior to the passage of SGMA, the Santa Rosa Plain Subbasin was managed under the Santa Rosa Plain Watershed Groundwater Management Plan (Santa Rosa Plain GMP), developed by the Santa Rosa Plain Advisory Panel (Santa Rosa Plain Advisory Panel, 2014). The stated goal of the Santa Rosa Plain GMP was “to proactively coordinate public and private groundwater management efforts and leverage funding opportunities to maintain a sustainable, locally-managed, high-quality groundwater resource for current and future users, while sustaining natural groundwater and surface water functions.” The Santa Rosa Plain GMP outlines eighteen Basin Management Objectives and groups these into seven key management components, including: (1) stakeholder involvement and public awareness, (2) monitoring and modeling program, (3) groundwater protection, (4) increasing water conservation and efficiency, (5) increasing groundwater discharge, (6) increasing water reuse, and (7) integrated groundwater management.

The Santa Rosa Plain Subbasin is now managed under the GSP for the Santa Rosa Plain Subbasin. The Santa Rosa Plain GSA was formed in June 2017 through a Joint Powers Agreement entered into by Sonoma Water, City of Cotati, City of Rohnert Park, City of Santa Rosa, City of Sebastopol, Town of Windsor, County of Sonoma, Gold Ridge Resource Conservation District, Sonoma Resource Conservation District, Branger Mutual Water Company, California American Water, Willowside Mutual Water Company, and Penngrove Water Company, and covers the entire subbasin. The Santa Rosa Plain GSA is governed by a nine-member Board of Directors, which includes a position held by Sonoma Water. The Board of Directors is advised by an Advisory Committee that includes eighteen members appointed by the Board of Directors, representing various stakeholders.

6.2.3 Coordination with Groundwater Sustainability Agencies

Because NMWD does not directly pump groundwater, it does not coordinate with any GSAs. However, as noted above, Sonoma Water is a member of Santa Rosa Plain GSA and NMWD has coordinated with Sonoma Water on its demand projections through 2050.

6.2.4 Historical Pumping and Supply Sufficiency

As indicated in **Table 6-1**, NMWD does not pump any groundwater. Sonoma Water’s 2025 UWMP provides historical pumping and supply sufficiency information related to their use of groundwater and has factored this into the supply reliability information provided to NMWD and other Water Contractors.

6.3 Surface Water

NMWD supplements the water supply received from Sonoma Water with a local surface water supply from Stafford Lake. Stafford Lake, which captures runoff from an area of 8.3 square miles, is located four miles west of downtown Novato. Runoff contributing flow to the lake is provided from land near the upper reaches of Novato Creek. The capacity of Lake Stafford is 4,450 acre-feet (AF).

¹⁰ Santa Rosa Plain GSA website: <https://santarosaplaingroundwater.org/gsp/>.

NMWD holds two water rights on Novato Creek with the SWRCB: (1) License 9831 issued in 1970, and (2) Water Right Permit 18800 issued in 1983. License 9831 allows NMWD to directly divert up to 2.9 cfs and to divert 4,000 AF to storage in Stafford Lake between October 1 and April 30. The total amount of direct diversion and diversion to storage authorized during a water year (between October 1 and September 30 of the subsequent year) under License 9831 is 4,490 AF.

Water Right Permit 18800 allows NMWD to directly divert up to 9.75 cfs from Novato Creek between October 1 and April 30 and to divert up to 4,400 AF to storage between November 1 and April 1. Although Water Right Permit 18800 limits the total storage between both Water Right Permit 18800 and License 9831 to 4,400 AF, it allows for a maximum of 8,454 AF to be diverted from the Novato Creek during any water year.

6.4 Stormwater

There are no plans to divert stormwater for beneficial uses in NMWD's service area. Although stormwater detention has been studied by the County Flood Control District for flood reduction purposes, no viable storage locations were identified within the Novato watershed as part of that study.

6.5 Wastewater and Recycled Water

CWC §10633

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

This section provides information on the amount of generated wastewater and existing disposal of wastewater to determine the potential for recycled water use by NMWD. The amount of recycled water currently used, potentially available, and future potential uses for recycled water for NMWD are also described.

6.5.1 Recycled Water Coordination

NMWD worked in coordination with the NSD to update the Recycled Water Master Plan and evaluate the economic feasibility of implementing a recycled water system to serve landscape irrigation users in the Novato area. In 2007, the Deer Island Water Recycling Plant (Deer Island WRP) was completed and delivery of recycled water to Stonetree Golf Course began. In 2009, the recycled water system was extended to Novato Fire Protection District Station 62.

Since 2005, the District has been working as a member of the North Bay Water Reuse Authority (NBWRA) to expand use of recycled water on a regional basis in the North San Pablo Bay region. As a result, the District worked with NSD to expand the treatment and delivery of recycled water from the Davidson Street Recycled Water Facility (also known as the Davidson Street Treatment Plant or Novato Treatment Plant) to the north and central portions of its service area in 2012 and 2018. In 2013 the District coordinated with the LGVSD to expand the treatment and delivery of recycled water in the southern area of Novato, principally the Hamilton Field area.

6.5.2 Wastewater Collection, Treatment, and Disposal

CWC §10633 (a)

A description of the wastewater collection and treatment systems in the supplier’s service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

CWC §10633 (b)

A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Within the District’s service area, wastewater is collected and treated by NSD. A small number of residential dwellings within the District’s service area utilize on-site septic treatment systems and are not connected to NSD’s sewer collection system. **Table 6-2** identifies the volume collected within the District’s service area by NSD. Wastewater is sent for treatment at the Novato and Ignacio Wastewater Treatment Plant (WWTP) located at 500 Davidson Street in Novato, also referred to as the NSD WWTP.

Table 6-2 Wastewater Collected Within Service Area in 2025 (DWR Table 6-2)

<input type="checkbox"/>	Checked box indicates there is no wastewater collection system. Proceed to the next table.			
	Percentage of 2025 service area served by wastewater collection system (OPTIONAL)			
	Percentage of 2025 service area population served by wastewater collection system (OPTIONAL)			
Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? (OPTIONAL)	Volume of Wastewater Collected from UWMP Service Area 2025 (a)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number	Is WWTP Located Within UWMP Area?
Novato Sanitary District	Metered	5,482	Novato and Ignacio WWTP, Place ID 244705	Yes
Total Wastewater Received from UWMP Service Area in 2025:		5,482		
NOTES: (a) Volumes are in units of AF.				

The NSD WWTP treats wastewater to a Secondary, Disinfected – 23 level. The resulting treated water is then either sent to the Davidson Street Recycled Water Facility (RWF) or the Deer Island WRP.

NSD owns the Davidson Street Recycled Water Facility, which serves the City of Novato and provides advanced wastewater treatment. Operation of the facility is contracted to a private third party, Veolia Water. During winter months, secondary treated water flows to San Pablo Bay via an outfall pipe. The San Francisco Bay Regional Water Quality Control Board (RWQCB) regulates discharges to the San Pablo Bay from the Novato Treatment Plant. During the summer months, secondary treated water is recycled and used to irrigate pastures and the Deer Island wildlife pond adjacent to Highway 37. Disinfected tertiary treated water from NSD’s Novato and Ignacio WWTP provides recycled water at standards meeting Title 22 requirements for the District’s North and Central Service Areas.

NMWD also owns the Deer Island WRP, which receives secondary effluent from NSD’s Novato and Ignacio WWTP. NMWD stopped regular operations of the Deer Island WRP in 2023 due to inefficiencies and low production volumes. The Deer Island WRP now serves as standby facility should operational problems develop at the NSD Novato Treatment Plant. The Deer Island WRP has very low production volumes compared to the Davidson Street RWF.

Table 6-3 reflects wastewater treated from the NSD WWTP and identifies the volume of treated wastewater either recycled or disposed of within the District’s service area. Within the table, the volume of water treated at the Davidson Street RWF is reflected in the columns titled “Water Recycled Within UWMP Service Area” and “Water Recycled Outside UWMP Service Area” as this facility is at the same site as the WWTP and is owned by NSD. Water sent to the Deer Island WRP is noted in the last column titled “Delivered to Another Entity for Treatment” as this facility is not owned by NSD.

LGVSD owns and operates the LGVSD Treatment Plant and has a service area just south of the District’s Novato service area. Because LGVSD’s wastewater is generated from outside of the District’s service area, and therefore is not reflected in **Table 6-3**. LGVSD supplies NMWD with disinfected tertiary recycled water in conformance with Title 22 requirements to serve NMWD’s South Service Area.

Table 6-3 Wastewater Treatment and Outcomes Within UWMP Service Area in 2025 (DWR Table 6-3)

<input type="checkbox"/>	Checked box indicates no wastewater is treated or disposed of within the UWMP service area. Proceed to the next table.													
Wastewater Treatment Plant Name and Place ID Number	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area? (OPTIONAL)	2025 Volume of Wastewater Received from UWMP Service Area (as Reported in DWR Table 6-2)	Total 2025 Volume of Water Treated	2025 Outcomes of Treated Wastewater										
				Water Recycled Within UWMP Service Area		Water Recycled Outside of UWMP Service Area		Effluent Discharge that is not a Permitted Recycled Water Use		Required Discharge for Instream Flow		Delivered to Another Entity for Additional Treatment		
				Treatment Level	Volume	Treatment Level	Volume	Treatment Level	Volume	Treatment Level	Volume	Treatment Level	Volume	Name of other entity
Novato and Ignacio WWTP, Place ID 244705	No	5,482	5,482	Advanced	608	Advanced	816	Secondary, Disinfected - 23	4,058	-	-	-	-	-
Total		5,482	5,482		608		816		4,058	-	-	-		-
NOTES: Volumes are in units of AF.														

6.5.3 Recycled Water System and Recycled Water Beneficial Uses

CWC §10633 (c-g)

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

The 2006 *Recycled Water Implementation Plan* (Nute Engineering, 2006) was prepared to provide guidance and phasing for the recycled water system. Based on the 2006 Implementation Plan recommendations, the District entered into agreements with both NSD and LGVSD. Under the terms of both agreements, the NSD and LGVSD are the producers and NMWD is the distributor of recycled water. The Recycled Water Implementation Plan divided the Novato Service Area into North, Central, and South service areas.

In accordance with the recommendations in the Recycled Water Implementation Plan, the following recycled water uses have been developed in the three service areas:

- **North Service Area:** Recycled water is conveyed from the Davidson Street RWF to private and public landscape irrigation customers, including the Stonetree Golf Course, Valley Memorial Park Cemetery, and the Novato Fire Department. In addition, an interconnection between the Deer Island WRP and the Davidson Street Recycled Water Facility was constructed to improve the reliability of recycled water supplies when needed.
- **South Service Area:** Recycled water is conveyed from the LGVSD Recycled Water Facility to landscape irrigation customers located in the South Service Area.
- **Central Service Area:** Recycled water is conveyed from the Davidson Street RWF to private and public landscape irrigation customers, including homeowner associations, Marin Country Club, and Vintage Oaks Shopping Center.

Table 6-4 below provides the existing and anticipated future recycled water uses within the District. All of the currently anticipated recycled water use is for landscape and golf course irrigation. **Table 6-4** also notes the potential recycled water use, which is equal to projected 2050 demands. **Table 6-5** compares the District's 2020 UWMP projection for 2025 recycled water demand to actual 2025 recycled water use, and reflects that actual use exceeded projections.

Table 6-4 Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4)

<input type="checkbox"/>	Checked box indicates recycled water is not used and is not planned for use within the service area of the supplier. The supplier will only complete the column on "Potential Recycled Water Use" and submit an accompanying narrative on the feasibility of that potential recycled water use.									
Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL):					Novato Sanitary District and Las Gallinas Valley Sanitary District					
Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL):					North Marin Water District					
Supplemental Water Added in 2025 (volume). Include units (OPTIONAL):					58 AF					
Source of 2025 Supplemental Water (OPTIONAL):					NMWD Potable Water Supply					
Use Type	Water Type (after treatment if treated) (OPTIONAL)	Additional Information (as needed)	2025	2030	2035	2040	2045	2050	Potential Recycled Water Use	
									Volume	Narrative page number (OPTIONAL)
Landscape Irrigation (excluding golf course)	Non-potable		322	387	399	410	422	433	433	
Golf course irrigation	Non-Potable		363	437	450	463	475	488	488	
Total			685	824	849	873	897	921	921	
NOTES: Volumes are in units of AF.										

Table 6-5 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual (DWR Table 6-5)

<input type="checkbox"/>	Checked box indicates recycled water was not used in 2025 nor previously projected for use in 2020. Proceed to the next table.	
Use Type	2020 Projection for 2025 (a)	2025 Actual Use (a)
Landscape irrigation (excl. golf courses)	332	322
Golf course irrigation	326	363
Total	625	685
NOTES: (a) Volumes are in units of AF.		

6.5.4 Actions to Encourage and Optimize Future Recycled Water Use

NMWD encourages the future expanded use of recycled water through District Regulation No. 18. District Regulation 18 includes a mandatory use requirement for recycled water service when connection to the recycled water system is deemed to be feasible. District Regulation No. 18 applies to both existing customers and new development within the District’s recycled water service areas. Retrofit costs for existing customers are paid by the District to help encourage the development of recycled water users in a fair and equitable manner.

Table 6-6 Methods to Encourage Future Recycled Water Use (DWR Table 6-6)

<input type="checkbox"/>	Checked box indicates that Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
<input type="checkbox"/>	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use (a)
Conditional Service	New and existing customers are required to use recycled water where available.	Ongoing	Unknown
Total			Not available

6.6 Desalinated Water Opportunities

CWC §10631(g) A plan shall be adopted in accordance with this chapter and shall do all of the following:

Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Although the District has not investigated the feasibility of constructing a desalination plant, the neighboring Marin Municipal Water District (MMWD) previously performed a study exploring desalination as a potential supply option. If a full-scale desalination plant were constructed, it is possible that the District could supplement its water supply with desalinated water under a future agreement with MMWD. However, because MMWD currently does not intend to pursue desalination further, it is not included in this Plan as a future water supply source.

6.7 Water Exchanges and Transfers

CWC §10631 (c) A plan shall be adopted in accordance with this chapter and shall do all of the following:
Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Currently, when surplus transmission system capacity is available, MMWD receives Russian River water from Sonoma Water through NMWD’s North Marin Aqueduct under the MMWD Supplemental Water Supply Agreement with Sonoma Water. A provision of the Intertie Agreement between NMWD and MMWD allows for delivery of MMWD’s Russian River water through the District’s aqueduct, referred to as “wheeling”. Because MMWD has a direct agreement with Sonoma Water, Russian River water delivered to MMWD does not affect the District’s allocation.

Although the District does not currently transfer or exchange water with other entities, water transfers between Sonoma Water’s contractors are authorized under the Restructured Agreement. Such transfers and exchanges between Sonoma Water contractors have been necessary in the past and may be necessary in the future to improve water supply reliability.

6.8 Future Water Projects

CWC §10631 A plan shall be adopted in accordance with this chapter and shall do all of the following:
(b) (3) For any planned sources of water supply, a description of the measures that are being undertaken to acquire and develop those water supplies.
(f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

NMWD completed its Water System Master Plan Update (Master Plan) in 2025 and identified several projects to address system deficiencies, asset risk and resiliency, and long-term renewal strategies. Priority projects include pipeline replacement, pump station rehab and replacement, storage tank rehabilitation, and pipeline redundancy. The Master Plan notes that additional study is needed to evaluate the STP, Stafford Reservoir, and Stafford Dam, and therefore projects were not identified that would increase supply available to NMWD (NMWD, 2026).

NMWD also completed a study in 2022 to identify potential local water supply enhancement projects. This study identified the following as feasible alternatives (West Yost, 2022):

- Improve STP Process Water Recapture Efficiency
- Increase Stafford Lake Storage Capacity – Spillway Notch Slide Guide
- Divert Captured Stormwater into Stafford Lake

These projects require additional planning and engineering to move forward, and therefore are not included as future water projects here. As shown in **Table 6-7**, there are no planned future water supply projects or programs that are expected to provide a quantifiable increase to NMWD’s water supply.

Table 6-7 Expected Future Water Supply Projects or Programs (DWR Table 6-7)

<input type="checkbox"/>	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.						
<input checked="" type="checkbox"/>	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.						
Pg. 6-13	Provide page location of narrative in the UWMP.						
Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	Water Type (after treatment if treated) (OPTIONAL)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier (a)
	Yes/no	If Yes, Supplier Name					

6.9 Summary of Existing and Planned Sources of Water

CWC §10631(b)

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

CWC §10631(b)(2)

When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.

CWC §10631(b)(4)(D)

A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

NMWD purchases potable water from Sonoma Water to meet most of the water demands within the District's service area. In 2025, NMWD purchased approximately 6,200 AF of water from Sonoma Water. The remainder of the District's water supply comes from local surface water and recycled water. The District's water supplies in 2025 are summarized in **Table 6-8**.

NMWD plans to continue to purchase wholesale water from Sonoma Water, while monitoring its surface water supplies from Stafford Lake. Water supplies from Sonoma Water through 2050 are projected to be equivalent to the District's annual entitlement of 14,100 AFY, established in the Restructured Agreement and effective through 2037. Surface water projections from Stafford Lake are based on averages of historical flows, which typically range between 0 and 2,000 AFY. Recycled and raw water supplies are assumed to equal the demands shown in **Table 4-5**. The District's total water supply projections are shown in five-year increments through 2050 in **Table 6-9**.

Table 6-8 Water Supplies – 2025 Actual (DWR Table 6-8)

Water Supply	Additional Description (as needed)	2025		
		Water Type (after treatment if treated) (OPTIONAL)	Actual Volume	Total Entitlement (OPTIONAL)
Purchased or Imported Water	Sonoma Water	Potable	6,154	-
Surface water (not desalinated)	Stafford Lake, STP	Potable	948	-
Surface water (not desalinated)	Stafford Lake, Raw	Non-Potable	196	
Recycled Water		Non-Potable	627	-
Subtotal Potable			7,102	-
Subtotal Non-Potable			823	-
Total			7,925	-
NOTES: (a) Volumes are in units of AF.				

Table 6-9 Water Supplies – Projected (DWR Table 6-9)

Water Supply			Projected Water Supply									
Water Supply	Additional Detail on Water Supply	Water Type (after treatment if treated)	2030		2035		2040		2045		2050	
			Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)
Purchased or Imported Water	Sonoma Water (b)	Potable	14,100	-	14,100	-	14,100	-	14,100	-	14,100	-
Surface water (not desalinated)	Stafford Lake (c)	Potable	1,000	-	1,000	-	1,000	-	1,000	-	1,000	-
Recycled Water	(d)	Non-Potable	824	-	849	-	873	-	897	-	921	-
Surface water (not desalinated)	Raw water (d)	Non-Potable	218	-	218	-	218	-	218	-	218	-
Subtotal Potable			15,100	-	15,100	-	15,100	-	15,100	-	15,100	-
Subtotal Non-Potable			1,042	-	1,067	-	1,091	-	1,115	-	1,139	-
Total			16,142	-	16,167	-	16,191	-	16,215	-	16,239	-

NOTES:

- (a) Volumes are in units of AF.
- (b) Sonoma Water supplies are equivalent to the District’s annual entitlement as established in the Restructured Agreement.
- (c) Surface supplies are based on an average of historical flows, which typically range from 0 to 2,000 AFY.
- (d) Recycled and raw water supplies are based on projected demands.

6.10 Special Conditions

Special conditions including climate change effects, regulatory conditions and project development, and other locally applicable criteria may affect supply availability, as described in the following subsections.

6.10.1 Climate Change Effects

Purchased Water

Sonoma Water completed its Climate Adaptation Plan in October 2021. This Climate Adaptation Plan includes a vulnerability assessment, risk assessment, and potential adaptation concepts. The following summary of the risk assessment results for Sonoma Water supply system is provided in the Climate Adaptation Plan's Table 15:

- *Potter Valley Project¹¹ and Lake Mendocino was considered moderate risk due to its sensitivity to modest changes in hydrology and importance in providing flows for the upper Russian River for instream flows, flood control, and buffering impacts to Lake Sonoma.*
- *Lake Sonoma was assessed to have moderate/high risk primarily due to the drought and wildfire risks. The importance of the facility for providing water supply, hydropower, and ecosystem benefits led to high consequences should the operation be restricted.*
- *Wohler and Mirabel diversion facilities have high risk across all categories. These facilities and operations are susceptible to flooding, and wildfire/post-fire threats. The dependence on natural watershed processes (regulated flow, natural filtration, etc.) is a strength of the water supply system, but any failure of these systems or risk to the facilities themselves pose high risks. Financial, social, and governance risks would be considered high if these facilities were to be operated at limited capacity.*
- *River Road Chlorination Facility, Wohler Chlorination and Corrosion Control Facility, and Mirabel Chlorination Facility are assessed with moderate risk. While they may suffer temporary impacts due to climate change, redundancy of operations between facilities may reduce overall risk.*
- *Ely Booster Pump Station is considered high risk with respect to system function.*

The Climate Action Plan includes a recommended water supply adaptation strategy that consists of five major actions that include specific projects to address these risks, such as development of a water diversion facilities protection program to protect Wohler and Mirabel diversion infrastructure, an expanded Forecast-Informed Reservoir Operations program to increase operational flexibility at Lake Mendocino, and development of regional water supply strategies to improve system integration and regional resilience.

Local Surface Water

The local watershed that provides water to Stafford Lake could be impacted by climate change due to increased drought risk, which would reduce supply availability (NMWD, 2026). In addition, more extreme storm events, such as atmospheric rivers, could result in more of the rainfall spilling over the Stafford Lake spillway and not being available as annual water supply yield. Even with climate change, this increase in water supply is expected to be relatively reliable (West Yost, 2022). Given that local surface water supply serves as a small portion of NMWD's potable water sources, this UWMP assumes that climate change will

¹¹ Since the time the Climate Adaptation Plan was prepared, it was determined that the Potter Valley Project would be decommissioned. See Section 7.1.1 for more information.

not significantly impact local surface water supply availability during the period covered by the plan (i.e., through 2050).

Recycled Water

Recycled water supply is dependent on wastewater flows, which in turn are dependent on indoor water demand. During periods of drought, which may become more common due to climate change, conservation measures may reduce wastewater flows available and thus decrease recycled water supply. Because recycled water demands within NMWD's service area are approximately 10 percent of the total wastewater volume treated at NSD, climate change is not anticipated to impact recycled water supply (West Yost, 2022).

6.10.2 Regulatory Conditions and Project Development

Emerging regulatory conditions may affect planned future projects and the characterization of future water supply availability and analysis. NMWD does not have any current plans to develop additional supply sources. If the District does move forward with any plans to develop supply projects, emerging regulatory conditions will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

6.10.3 Other Locally Applicable Criteria

Other locally applicable criteria may affect characterization and availability of an identified water supply (e.g., changes in regional water transfer rules may alter the availability of a water supply that had historically been readily available). The District does not have any current plans to develop additional supply sources. If the District does move forward with any plans to develop supply projects, locally applicable criteria will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

6.11 Energy Intensity

CWC §10631.2

- (a) *In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:*
- (1) *An estimate of the amount of energy used to extract or divert water supplies.*
 - (2) *An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.*
 - (3) *An estimate of the amount of energy used to treat water supplies.*
 - (4) *An estimate of the amount of energy used to distribute water supplies through its distribution systems.*
 - (5) *An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.*
 - (6) *An estimate of the amount of energy used to place water into or withdraw from storage.*
 - (7) *Any other energy-related information the urban water supplier deems appropriate.*
- (b) *The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.*
- (c) *The Legislature finds and declares that energy use is only one factor in water supply planning and shall not be considered independently of other factors.*

Within the service area, NMWD uses energy to treat and distribute water supplies through its distribution systems, including at the Stafford Treatment Plant and the distribution system pump stations, and other

facilities.¹² The energy used by the distribution systems is metered and documented in monthly PG&E bills. During Fiscal Year (FY) 2025, the District used 2,529,714 kilowatt hours (kWh) of energy to operate the water supply system and deliver 7,338 AFY of potable and non-potable water to customers in the service area, including both the Novato and West Marin systems, for a total energy intensity of 1,058 kWh/MG, equivalent to 345 kWh/AF (**Table 6-10**). Sonoma Water also uses energy to treat and distribute water before delivery to NMWD. However, the energy is used outside of NMWD’s service area, and the energy consumption information is not typically shared with NMWD. NMWD also generates renewable energy through the Stafford Treatment Plant, which has solar energy cells that produce energy for the District. In FY 2025, the total energy produced was 620,095 kWh. If the solar energy generated were discounted from total energy consumption, the net energy intensity for NMWD would be 260 kWh/AF.

Table 6-10 Recommended Energy Reporting: Single Delivery Product, Total Utility Approach (DWR Table O-1B)

Water Delivery Product	Retail Potable Deliveries	Only for Water Delivery Products Under the Urban Water Supplier’s Operational Control		
Start Date of Reporting Period	7/1/2024	Sum of All Water Management Processes	Non-Consequential Hydropower	
End Date of Reporting Period	6/30/2025			
Is upstream embedded energy in the values reported?	No			
Units of Measure for Water	AF	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process		7,338	-	7,338
Energy Consumed (kWh)		2,529,714	-	2,529,714
Energy Intensity (kWh/vol. converted to MG)		1,058	-	1,058
Quantity of Self-Generated Renewable Energy				
620,095	kWh			
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)				
Metered Data				
Data Quality Narrative:				
Utility bills for the associated time period are used as the source for energy consumption data.				
Narrative:				
The energy consumed includes the energy needs for both the Novato and West Marin System, therefore the volume of water entering process includes both the Novato System and West Marin System and may be higher than that shown in supply tables in other parts of this UWMP.				

¹² Other facilities include West Marin Facilities.

7 WATER SUPPLY RELIABILITY ASSESSMENT

☑ CWC §10620 (f)

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

☑ CWC §10630.5

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

This chapter describes the reliability of NMWD's water supplies. Assessment of water supply reliability is complex and depends on various factors, such as the water supply portfolio, regulatory and legal constraints, hydrological and environmental conditions, climate change, and expected growth, among others. Based on available historical information and projections of future water uses, regulatory and legal constraints, and hydrological and environmental conditions, including climate change, NMWD has made its best determination of future water supply reliability for its service area.

7.1 Constraints on Water Sources

Purchased water from Sonoma Water and local surface water are the primary supply sources for the District. Potential constraints on future purchased water availability have been identified, including water quality and climate change. These constraints, along with associated management strategies, are summarized in the following sections.

7.1.1 Supply Availability

Purchased Water

The water available to Sonoma Water's customers is constrained by both physical and legal constraints. The capacity of Sonoma Water's transmission system is a physical constraint that can limit NMWD's water supply from Sonoma Water. NMWD receives Sonoma Water supply through NMWD's North Marin Aqueduct, which is a 30, 36, and 42-inch diameter steel transmission main that runs from Sonoma Water's Petaluma Aqueduct near Kastania Tank in south Petaluma to a connection located at the northern end of NMWD's pipeline facilities in Novato.

Legal constraints include the Restructured Agreement for Water Supply (Agreement), Sonoma Water Rights, and the Russian River Biological Opinion. These legal constraints are described below.

Restructured Agreement

The Agreement includes specific maximum amounts of water that Sonoma Water is obligated to supply to its Water Contractors, including NMWD. The Agreement states that Sonoma Water is not obligated to provide the District with more than 14,100 AFY or more than 19.9 mgd as an average flow during any single month.

Sonoma Water Rights

Four SWRCB permits (SWRCB Permit Numbers 12947A, 12949, 12950, and 16596) currently authorize Sonoma Water to store water in Lake Mendocino (122,500 AFY) on the East Fork Russian River and Lake Sonoma (245,000 AFY) on Dry Creek, and to divert and redivert 180 cubic feet per second (cfs) of water from the Russian River, up to 75,000 AFY. Sonoma Water estimates the existing annual diversion and

rediversion limit of 75,000 AFY will be exceeded by 2035. Consequently, Sonoma Water will need to file an application to SWRCB by around 2030 to increase its annual diversion and rediversion limit. The permits also establish minimum instream flow requirements for fish and wildlife protection as well as for recreational considerations. These minimum instream flow requirements vary according to the hydrologic cycle as defined by SWRCB Decision 1610. Sonoma Water meets the Decision 1610 flow requirements by making releases from Coyote Valley Dam at Lake Mendocino and Warm Springs Dam at Lake Sonoma.

Biological Opinion

On September 24, 2008, the National Marine Fisheries Service (NMFS) issued a 15-year Biological Opinion for water supply operations, flood control activities, and channel maintenance conducted by the U.S. Army Corps of Engineers (USACE), the Sonoma County Water Agency (Sonoma Water), and the Mendocino County Russian River Flood Control and Water Conservation Improvement District within the Russian River watershed. The 2008 Russian River Biological Opinion concluded that the elevated river flows required by SWRCB Decision 1610 were adversely affecting fish habitat and contributing to adverse effects on listed salmonid species.

To address these effects, the 2008 Biological Opinion identified a suite of alternatives intended to reduce impacts to listed species while maintaining water supply reliability, including:

- Reducing summertime flows in the Russian River and Dry Creek
- Enhancing approximately six miles of habitat in Dry Creek
- Creating and maintaining a freshwater lagoon in the Russian River estuary during summer months
- Conducting long-term habitat and fish monitoring in Dry Creek, the Russian River, and the estuary
- Eliminating barriers to fish passage and improving habitat conditions in several tributary streams

The 2008 Biological Opinion required that summertime flows be permanently reduced to better replicate natural dry-year river conditions. Following issuance of the Biological Opinion, Sonoma Water submitted a petition to the SWRCB requesting permanent changes to the Decision 1610 minimum instream flow requirements consistent with NMFS's recommendations and initiated preparation of an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA). While the permanent change process was underway, Sonoma Water requested and obtained temporary changes to the Decision 1610 minimum instream flows on an annual basis beginning in 2010, consistent with the 2008 Biological Opinion.

On April 29, 2025, NMFS issued a new 10-year Biological Opinion addressing substantially similar water supply operations, flood control activities, and channel maintenance actions in the Russian River watershed. In contrast to the 2008 Biological Opinion, the 2025 Russian River Biological Opinion concluded that the proposed action is not likely to jeopardize the continued existence of Central California Coast coho salmon, California Coastal Chinook salmon, Central California Coast steelhead, or Southern Resident Killer Whale, and is not likely to destroy or adversely modify designated critical habitat for these species.

The 2025 Biological Opinion reflects over a decade of interim operational experience, habitat improvements, monitoring data, and incorporation of updated operational approaches. Although the jeopardy determination was removed, NMFS included Reasonable and Prudent Measures (RPMs) and associated terms and conditions to address remaining potential adverse effects to listed species. Key elements of the proposed action evaluated in the 2025 Biological Opinion include:

- Continued reservoir flood control and water supply operations at Coyote Valley Dam (Lake Mendocino) and Warm Springs Dam (Lake Sonoma), including approved deviations from Water Control Manuals

- Implementation of Forecast-Informed Reservoir Operations to improve water supply reliability and flood management while enhancing downstream ecological conditions
- Modification of the Russian River Hydrologic Index (Water Year Classification methodology) to shift from reliance on Eel River hydrology at Lake Pillsbury to Russian River hydrology based on conditions at Lake Mendocino, improving alignment between hydrologic classifications and actual watershed conditions

The 2025 Biological Opinion represents a substantial evolution from the 2008 framework, transitioning from emergency, annually-renewed flow modifications to a longer-term, integrated operational and regulatory approach that balances water supply, flood management, and species protection objectives in the Russian River watershed. (NOAA, 2025; Sonoma Water, 2025)

Potter Valley Project Decommissioning

PG&E is decommissioning its Potter Valley Project hydropower facilities¹³ primarily due to economic considerations (PG&E, n.d.). Historically, the PVP has diverted water from the Eel River through a trans-basin tunnel into the East Fork Russian River, where a portion of the diverted flow is used by the Potter Valley Irrigation District (PVID), and the remainder continues to Lake Mendocino. These imported flows have played a critical role in supplementing the highly variable, rainfall-driven hydrology of the Watershed. Stored water in Lake Mendocino has been managed and released to support downstream diversions, municipal and agricultural demands, and instream flow requirements.

This decommissioning effort carries significant implications for regional water reliability across the Upper Russian River Watershed. Historically, imported Eel River flows have supplemented the Russian River system during extended dry periods, providing an important hydrologic buffer that sustained baseflows, reservoir storage and instream habitat conditions. These imports have helped stabilize municipal, agricultural, and environmental water supplies, particularly during late summer and early fall when natural runoff is minimal.

Sonoma Water and regional partners have proposed a successor diversion and pumping facility (the “New Eel-Russian Facility”) and potential expanded storage at Lake Mendocino to preserve at least seasonal transfers, but future imports would likely be smaller, occur only in wetter periods, and cost more to operate. For NMWD, this means that Russian River supply reliability is no longer assumed to be supported indefinitely by year-round Eel River imports.

Surface Water

The surface water available from Stafford Lake is constrained by the legal constraints of its two water rights with the SWRCB, which include License 9831 and Water Right Permit 18800, which allow for a maximum of 8,454 AF to be diverted from Novato Creek during any water year. Constraints of the water rights include:

- License 9831 allows the District to directly divert up to 2.9 cfs and to divert 4,000 AF to storage in Stafford Lake between October 1 and April 30. The total amount of direct diversion and diversion to storage authorized during a water year (between October 1 and September 30 of the subsequent year) under License 9831 is 4,490 AF.

¹³ PVP, initiated in 1908, captures water at Cape Horn Dam (Van Arsdale Reservoir) and Scott Dam (Lake Pillsbury) on the Eel River. It diverts water through a tunnel to a powerhouse on the Russian River principally for hydropower generation. In addition to power production, Potter Valley provides water supplies for agricultural irrigation and municipal uses across the Watershed.

- Water Right Permit 18800 allows the District to directly divert up to 9.75 cfs from Novato Creek between October 1 and April 30 and to divert up to 4,400 AF to storage between November 1 and April 1. Although Water Right Permit 18800 limits the total storage between both Water Right Permit 18800 and License 9831 to 4,400 AF, it allows for a maximum of 8,454 AF to be diverted from the Novato Creek during any water year.

The primary physical constraint to the local surface water supply is the 6.0 million gallon per day (MGD) capacity of the STP. Stafford Lake can be fed in dry year periods by pumping the Sonoma Water supply through the San Marin Pump Station.

7.1.2 Water Quality

CWC §10634

The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Impaired water quality has the potential to affect water supply reliability. The District has and will continue to meet all state and federal water quality regulations. All drinking water standards are set by the U.S. Environmental Protection Agency (USEPA) under the authorization of the Federal Safe Drinking Water Act of 1974. In California, the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) can either adopt the USEPA standards or set more stringent standards, which are then codified in Title 22 of the California Code of Regulations. There are two general types of drinking water standards:

- **Primary Maximum Contaminant Levels (MCLs)** are health protective standards and are established using a very conservative risk-based approach for each constituent that takes into potential health effects, detectability and treatability, and costs of treatment. Public water systems may not serve water that exceeds Primary MCLs for any constituent.
- **Secondary MCLs** are based on the aesthetic qualities of the water such as taste, odor, color, and certain mineral content, and are considered limits for constituents that may affect consumer acceptance of the water.

NMWD routinely monitors the water that is treated and served to customers to ensure that water delivered to customers meets these drinking water standards. The results of this testing are reported to the SWRCB DDW following each test and are summarized annually in Water Quality Reports (also known as “Consumer Confidence Reports”), which are provided to customers by mail and made available on the District’s website at <https://nmwd.com/your-water/water-quality/>.

Given NMWD’s proactive monitoring and management of water quality in its source water supplies, water quality is not expected to impact the reliability of its available supplies within the planning horizon (i.e., through 2050).

7.1.3 Climate Change

CWC §10631 (b) (1)

...For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

Section 6.10.1 provides a summary of potential climate change impacts on supplies. As discussed in Section 6.10.1, Sonoma Water’s Climate Adaptation Plan, completed in 2021, identifies vulnerability and risk to water supply system components, and identifies projects that can be implemented to address the risks. The Sonoma Valley Subbasin GSP incorporated climate change into the basin water budget and identified projects and actions to sustainably manage the basin under these conditions. Based on the analyses described in these plans, climate change may be expected reduce supplies available and potentially impact water system facilities, but the projects and actions identified in the plans incorporate these considerations to ensure that supplies are reliable into the future.

7.2 Reliability by Type of Year

CWC §10631 (b)

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

CWC §10631 (b)(1)

A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

CWC §10635 (a)

Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Consistent with the 2025 UWMP Guidebook, the water service reliability assessment includes three unique types of years based on hydrologic conditions:

- A normal hydrologic year represents the water supplies available under normal conditions; this could be an average over a range of years or a single representative year,
- A single dry year represents the lowest available water supply, and
- A five-consecutive year drought represents the driest five-year period in the historical record.

Identification of these dry year periods consistent with the 2025 UWMP Guidebook methodology is provided below.

As shown in **Table 7-1**, quantification of the available supplies is not compatible with the standard DWR Table 7-1, and therefore the available supplies are summarized in **Table 7-2** through **Table 7-5** in Sections 7.2.1 through 7.2.4.

Table 7-1 Basis of Water Year Data (Reliability Assessment) (DWR Table 7-1)

		Available Supplies if Year Type Repeats	
		<input checked="" type="checkbox"/>	Checked box indicates quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: Sections 7.2.1 - 7.2.4
Year Type	Base Year	Volume Available	% of Average Supply
Average Year	1999		100%
Single-Dry Year	1977		
Consecutive Dry Years 1st Year	1987		
Consecutive Dry Years 2nd Year	1988		
Consecutive Dry Years 3rd Year	1989		
Consecutive Dry Years 4th Year	1990		
Consecutive Dry Years 5th Year	1991		

7.2.1 Purchased Water

The projected availability of purchased water supplies by year type are provided in **Table 7-2** below. It is assumed that NMWD will purchase its full available contract amount in normal years. Sonoma Water’s 2025 UWMP concludes that sufficient water supplies are available to meet projected demands under all hydrologic conditions through 2050. However, NMWD’s projected demand for purchased water was used in Sonoma Water’s modeling, and is less than the full contracted entitlement. Accordingly, the purchased water reliability assessment assumes that NMWD’s full contracted amount would be available during normal hydrologic years. In single dry years and extended drought conditions, the volume of purchased water available is assumed to be the remaining potable demand after local supplies have been utilized.

Table 7-2 Projected Availability of Sonoma Water Supply (Responds to DWR Table 7-1)

Year Type		2030	2035	2040	2045	2050
Normal Year		14,100	14,100	14,100	14,100	14,100
Single-Dry Year		7,503	7,583	7,716	7,865	8,024
Extended Drought	First year	7,503	7,583	7,716	7,865	8,024
	Second year	7,503	7,583	7,716	7,865	8,024
	Third year	7,503	7,583	7,716	7,865	8,024
	Fourth year	7,503	7,583	7,716	7,865	8,024
	Fifth year	7,503	7,583	7,716	7,865	8,024
NOTES: (a) Volumes are in units of AF. (b) Dry year supplies from Sonoma Water were estimated based on the total supply shortfall in dry years.						

7.2.2 Surface Water

The water supply from Stafford Lake is unaffected by dry conditions and is projected to be the same during single and multiple dry years as during normal years. Stafford Lake can be operated to avoid drought conditions in dry year periods by “backfeeding” the lake during winter months with Sonoma Water supply. The backfeeding is accomplished by pumping the Sonoma Water supply through the San Marin Pump Station via the transmission main from the STP, bypassing the treatment plant and discharging into Stafford Lake. This backfeeding is enabled by the Interconnection Agreement and is performed periodically, most recently in 2018. The projected availability of local surface water supplies by type are provided in **Table 7-3** below.

Table 7-3 Projected Availability of Local Surface Water Supply (Responds to DWR Table 7-1)

Year Type		2030	2035	2040	2045	2050
Normal Year		1,000	1,000	1,000	1,000	1,000
Single-Dry Year		1,000	1,000	1,000	1,000	1,000
Extended Drought	First year	1,000	1,000	1,000	1,000	1,000
	Second year	1,000	1,000	1,000	1,000	1,000
	Third year	1,000	1,000	1,000	1,000	1,000
	Fourth year	1,000	1,000	1,000	1,000	1,000
	Fifth year	1,000	1,000	1,000	1,000	1,000
NOTES: (a) Volumes are in units of AF.						

7.2.3 Raw Water

Supply availability for raw water is not expected to be impacted in dry years, as reflected in **Table 7-4** below, and is consistent with the demand projections identified in **Table 4-5**.

Table 7-4 Projected Availability of Raw Water Supply (Responds to DWR Table 7-1)

Year Type		2030	2035	2040	2045	2050
Normal Year		218	218	218	218	218
Single-Dry Year		218	218	218	218	218
Extended Drought	First year	218	218	218	218	218
	Second year	218	218	218	218	218
	Third year	218	218	218	218	218
	Fourth year	218	218	218	218	218
	Fifth year	218	218	218	218	218
NOTES: (a) Volumes are in units of AF.						

7.2.4 Recycled Water

Supply availability for recycled water is not expected to be impacted in dry years, as reflected in **Table 7-5** below, and is consistent with the demand projections identified in **Table 4-5**.

Table 7-5 Projected Availability of Recycled Water Supply (Responds to DWR Table 7-1)

Year Type		2030	2035	2040	2045	2050
Normal Year		824	849	873	897	921
Single-Dry Year		824	849	873	897	921
Extended Drought	First year	824	849	873	897	921
	Second year	824	849	873	897	921
	Third year	824	849	873	897	921
	Fourth year	824	849	873	897	921
	Fifth year	824	849	873	897	921
NOTES: (a) Volumes are in units of AF.						

7.3 Supply and Demand Assessment

CWC §10635(a)

Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Water supply and demand patterns change during normal, single dry, and multiple dry years. **Table 7-6** shows the projected supply and demand totals for a normal year. The supply and demand totals are consistent with those in **Table 6-9** and **Table 4-5**, respectively. **Table 7-7** shows the projected supply and demand totals for the single dry year, and **Table 7-8** shows the projected supply and demand totals for multiple dry year periods extending five years.

Table 7-6 Normal Year Supply and Demand Comparison (DWR Table 7-2)

	2030	2035	2040	2045	2050
Supply totals (from Table 6-9 [DWR Table 6-9])	16,142	16,167	16,191	16,215	16,239
Use totals (from Table 4-5 [DWR Table 4-2])	9,545	9,650	9,807	9,980	10,163
Surplus/(shortfall)	6,597	6,517	6,384	6,235	6,076
NOTES: Volumes are in units of AF.					

Table 7-7 Single Dry Year Supply and Demand Comparison – District Total (DWR Table 7-3)

	2030	2035	2040	2045	2050
Supply totals	9,545	9,650	9,807	9,980	10,163
Use totals	9,545	9,650	9,807	9,980	10,163
Surplus/(shortfall)	0	0	0	0	0
NOTES: (a) Volumes are in units of AF. (b) Supply volumes in single dry years shown in this table are based on assumed local production and Sonoma Water purchases only. Actual supply volume available may exceed demand.					

Table 7-8 Five Consecutive Dry Years Supply and Demand Comparison (DWR Table 7-4)

		2030	2035	2040	2045	2050
First year	Supply totals	9,545	9,650	9,807	9,980	10,163
	Use totals	9,545	9,650	9,807	9,980	10,163
	Surplus/(shortfall)	0	0	0	0	0
Second year	Supply totals	9,545	9,650	9,807	9,980	10,163
	Use totals	9,545	9,650	9,807	9,980	10,163
	Surplus/(shortfall)	0	0	0	0	0
Third year	Supply totals	9,545	9,650	9,807	9,980	10,163
	Use totals	9,545	9,650	9,807	9,980	10,163
	Surplus/(shortfall)	0	0	0	0	0
Fourth year	Supply totals	9,545	9,650	9,807	9,980	10,163
	Use totals	9,545	9,650	9,807	9,980	10,163
	Surplus/(shortfall)	0	0	0	0	0
Fifth year	Supply totals	9,545	9,650	9,807	9,980	10,163
	Use totals	9,545	9,650	9,807	9,980	10,163
	Surplus/(shortfall)	0	0	0	0	0
NOTES: (a) Volumes are in units of AF. (b) Supply volumes in multiple dry years shown in this table are based on assumed local production and Sonoma Water purchases only. Actual supply volume available may exceed demand.						

7.4 Water Supply Management Tools and Options

CWC §10620 (f)

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

NMWD is a member of the North Bay Water Reuse Authority (NBWRA), which is a regional water recycling organization formed to put recycled water to its broadest and most beneficial use. NBWRA consists of ten local agencies covering 315 square miles in the portions of Marin, Sonoma and Napa counties that surround the northern rim of the San Francisco Bay. As part of NBWRA, NMWD has made great strides to expand recycled water use.

NMWD is also a member of the SMSWP, which, as described in Chapter 2, is a regional partnership program that represents thirteen utilities in Sonoma and Marin counties that have joined together to provide a regional approach to water use efficiency. Participating in the partnership, NMWD has continued to implement an extensive water conservation program which reduces the demand on imported supplies. As described in Chapter 9, NMWD manages per capita water use through the implementation of a series of DMMs.

7.5 Drought Risk Assessment

CWC §10635(b)

Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

In addition to the long-term water service reliability assessment presented above, the Drought Risk Assessment evaluates NMWD's supply risks under a severe drought period lasting for the next five consecutive years after the assessment is completed, i.e., from 2026 through 2030. This evaluation considers historical drought hydrology and plausible changes to projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria. As a first step to the Drought Risk Assessment, NMWD estimated unconstrained water demand for the next five years (i.e., 2026-2030). Unconstrained water demand is the expected water use in the absence of drought water use restrictions. The characteristic five-year water demand is described in Section 4.5.5.

The available potable water supplies assumed in the Drought Risk Assessment are based upon the same methodology and assumptions used for the long-term water service reliability assessment (**Section 7.2.1**). Sonoma Water states in its 2025 UWMP that it is expecting to be able to provide sufficient water supply from 2026 to 2030 to its water service contractors, including NMWD. All other supply sources are assumed to be unchanged during drought periods, including a drought period from 2026 to 2030.

Table 7-9 provides a comparison of the water supply sources available to NMWD with the total projected water use for an assumed drought period of 2026 through 2030. Sonoma Water is expecting to be able to provide sufficient water supply from 2026 to 2030 to its water service contractor, including NMWD. Thus, as shown in **Table 7-9**, NMWD’s supply is expected to be sufficient to meet demands in all hydrologic conditions, including an extended five-year drought period.

Table 7-9 Five-Year Drought Risk Assessment Tables (DWR Table 7-5)

2026	Total
Total Water Use	8,525
Total Supplies	8,525
Surplus/Shortfall without WSCP Action	0
2027	Total
Total Water Use	8,780
Total Supplies	8,780
Surplus/Shortfall without WSCP Action	0
2028	Total
Total Water Use	9,035
Total Supplies	9,035
Surplus/Shortfall without WSCP Action	0
2029	Total
Total Water Use	9,290
Total Supplies	9,290
Surplus/Shortfall without WSCP Action	0
2030	Total
Total Water Use	9,545
Total Supplies	9,545
Surplus/Shortfall without WSCP Action	0
NOTES: Volumes are in units of AF.	

8 WATER SHORTAGE CONTINGENCY PLANNING

CWC §10640

(a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

The WSCP for NMWD is included in this UWMP as **Appendix F**. The WSCP serves as a standalone document to be engaged in the case of a water shortage event, such as a drought or supply interruption, and defines specific policies and actions that will be implemented at various shortage level scenarios. The primary objective of the WSCP is to ensure that NMWD has in place the necessary resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during water supply shortages and interruptions. Consistent with CWC §10632, the WSCP includes six levels to address shortage conditions ranging from up to 10% to greater than 50% shortage, identifies a suite of demand mitigation measures for NMWD to implement at each level, and identifies procedures for the District to annually assess whether or not a water shortage is likely to occur in the coming year, among other things.

A summary of the key elements of the WSCP including water shortage levels and demand-reduction actions is shown in **Table 8-1**, **Table 8-2**, and **Table 8-3**. Additional details are provided in **Appendix F**.

Table 8-1 Cross-reference for Standard vs Supplier Shortage Levels (DWR Table 8-1)

<input checked="" type="checkbox"/>	Checked box indicates the supplier uses the standard six levels of water shortage (and supplier will not complete this table).		
Standard Shortage Levels	Percent Shortage Range	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		

Table 8-2 Supply Augmentation and Other Actions (DWR Table 8-2)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage	Shortage Gap Reduction Value	
1	Expand Public Information Campaign	Percentage	0.5%	Distribute water bill inserts with information about water shortage and conservation.
1	Expand Public Information Campaign	Percentage	0.2%	Distribute special issue of WaterLine newsletter.
1	Other Actions	Percentage	0.5%	Encourage voluntary rationing.
1	Other Actions	Percentage	0.5%	Pursue vigorous enforcement of water wasting regulations and provisions of the District’s Water Conservation Regulation 15.
1	Other Actions	Percentage	0.5%	Request customers to make conscious efforts to conserve water.
1	Other Actions	Percentage	Not available	Request other governmental agencies to demonstrate leadership and implement restrictive water use programs.
1	Other Actions	Percentage	0.5%	Distribute water saving kits upon customer request, to assure availability to existing and new customers.
1	Other Actions	Percentage	Not available	Encourage private sector use of alternate sources of water such as recycled water or private wells.
1	Other Actions	Percentage	0.5%	Encourage nighttime irrigation
1	Other Actions	Percentage	0.5%	Customers will be encouraged not to regularly flush their toilets for disposal of urine only.
2	Other Actions	Percentage	4%	Continue with actions and measures from Stage 1 except where superseded by more stringent requirements.
2	Expand Public Information Campaign	Percentage	1%	Promote District water conservation and rebate programs.
2	Other Actions	Percentage	Not available	The District can back-feed Stafford Lake using Sonoma Water supply to offset local supply shortage in the lake.
3	Other Actions	Percentage	1%	Increase enforcement and water waste patrols.
3	Other Actions	Percentage	5%	Continue with action and measures from Stage 2 except where superseded by more stringent requirements.
4	Other Actions	Percentage	5%	Continue with action and measures from Stage 3 except where superseded by more stringent requirements.
5	Other Actions	Percentage	5%	Continue with action and measures from Stage 4 except where superseded by more stringent requirements.
6	Other Actions	Percentage	6%	Continue with action and measures from Stage 5 except where superseded by more stringent requirements.

Table 8-3 Demand Reduction Actions (DWR Table 8-3)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
1	Other	Percentage	0.5%	Encourage the non-commercial washing of privately owned vehicles, trailers and boats only from a bucket and except that a hose equipped with a shut-off nozzle may be used for a quick rinse.	No
1	CII - Restaurants may only serve water upon request	Percentage	0.1%	Request restaurants, hotels, cafes, cafeterias, bars or other public places where food or drink are served/purchased to serve water only upon request.	No
1	Other	Percentage	0.5%	Navy style showering will be promoted (e.g., turn on water to wet person or persons, turn off water, lather up, scrub, then turn on water for a quick rinse, then turn off shower with free push button showerhead control valves available to customers upon request).	No
1	CII - Lodging establishment must offer opt out of linen service	Percentage	0.5%	Request hotel and motel operators to provide guests with the option of choosing not to have towels and linens laundered daily.	No
1	Other	Percentage	1%	Enforce water-waste prohibitions as defined in District Regulation 15, Section B.	No
1	Other - Prohibit use of potable water for washing hard surfaces	Percentage	1%	Prohibit washing of sidewalks, driveways, parking areas, tennis courts, patios or other exterior paved areas except by the Novato Fire Protection District or other public agency for the purpose of public safety.	No
2	Other	Percentage	Up to 10%	Continue with actions and measures from Stage 1 except where superseded by more stringent requirements.	Yes
2	Other - Prohibit use of potable water for construction and dust control	Percentage	0.1%	Prohibit use of potable water for dust control at construction sites or other locations.	Yes
2	Other	Percentage	1%	Prohibit any use of potable water from a fire hydrant except for fighting fire, human consumption, essential construction needs or use in connection with animals.	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	3%	Require repair of all leaks within 48 hours	Yes
2	Landscape - Limit landscape irrigation to specific days	Percentage	5%	Restrict irrigation to three days per week, between the hours of 7pm and 9am.	Yes
2	Other water feature or swimming pool restriction	Percentage	1%	Prohibit refilling completely drained swimming pools and/or initial filling of any swimming pools.	Yes
3	Other	Percentage	Up to 20%	Continue with action and measures from Stage 2 except where superseded by more stringent requirements.	Yes
3	Moratorium or Net Zero Demand Increase on New Connections	Percentage	Not available	Restrict new potable service connections to the District unless customer can comply with demand reduction measures and/or other criteria identified and defined at the time this stage is enacted.	Yes
3	Other	Percentage	0.5%	Prohibit non-commercial washing of privately-owned motor vehicles, trailers and boats except from a bucket and except that a hose equipped with a shutoff nozzle may be used for a quick rinse.	Yes
3	Landscape - Other landscape restriction or prohibition	Percentage	5%	Prohibit watering of any lawn, garden, landscaped area, tree, shrub or other plant except from a hand-held hose or container or drip irrigation system. Sprinklers can be used if customer maintains a volume or percent reduction pursuant to the NMWD Board of Directors determination compared to a District calculated or average prior year's use in a similar billing period.	Yes
3	Landscape - Other landscape restriction or prohibition	Percentage	Not available	Prohibit watering any portion of a golf course with potable or raw water except the tees and greens, unless the customer maintains the specified water use reduction and mandated by the District.	Yes
3	Other	Percentage	1%	Prohibit any non-residential use by a vehicle washing facility in excess of the volume percent or reduction pursuant to the NMWD Board of Directors determination.	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
3	Landscape - Limit landscape irrigation to specific days	Percentage	10%	Restrict landscape irrigation to two days per week between the hours of 7pm and 9am the following day.	Yes
3	Landscape - Other landscape restriction or prohibition	Percentage	10%	Prohibit landscape irrigation during or within 48 hours of measurable precipitation.	Yes
3	Landscape - Other landscape restriction or prohibition	Percentage	2%	Prohibit irrigating with potable water of lawn area on public street medians.	Yes
4	Other	Percentage	Up to 30%	Continue with action and measures from Stage 3 except where superseded by more stringent requirements.	Yes
4	Landscape - Limit landscape irrigation to specific days	Percentage	14%	Limit irrigation to one day per week between the hours of 7pm and 9am the following day.	Yes
4	Landscape - Other landscape restriction or prohibition	Percentage	0.5%	Planting any new landscaping, except for designated drought resistant landscaping authorized by NMWD.	Yes
4	Landscape - Prohibit certain types of landscape irrigation	Percentage	1%	Golf courses may only use private well or recycled water for general irrigation.	Yes
4	Landscape - Other landscape restriction or prohibition	Percentage	0.5%	No new annual plants, vegetables, flowers or vines may be planted until the Stage 4 mandatory period is over. An exception will be considered on a case by case basis for customers who are eliminating existing thirsty landscaping and replacing same with drought resisting landscaping prescribed by NMWD.	Yes
4	Other	Percentage	0.1%	Prohibit use of single-pass cooling systems.	Yes
5	Other	Percentage	Up to 40%	Continue with action and measures from Stage 4 except where superseded by more stringent requirements.	Yes

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
5	Landscape - Other landscape restriction or prohibition	Percentage	20%	Watering any residential lawn, or any commercial or industrial area lawn maintained for aesthetic purposes, at any time day or night during the period of March 1, through September 30. (These designated lawns will be allowed to dry up for the summer). Affected customers will be advised on tested methods for re-greening the lawns at minimum expense beginning on October 1, during a Stage 4 mandatory period if operating conditions permit. By following the prescribed instructions, the affected customers will likely avoid the cost of replacing lawns.)	Yes
5	Landscape - Other landscape restriction or prohibition	Percentage	5%	All day and nighttime sprinkling will be discontinued. Any and all outside watering will be done only with a hand-held nozzle. An exception will be made to permit drip irrigation for established perennial plants and trees using manual or automatic time-controlled water application sufficient only for assured plant survival.	Yes
5	Other	Percentage	Not available	Limit deliveries of water to outside service area customers to that needed for human consumption, sanitation and public safety only or as stipulated in outside service agreements.	Yes
6	Other	Percentage	Up to 50%	Continue with action and measures from Stage 5 except where superseded by more stringent requirements.	Yes
6	Other	Percentage	Up to 55%	All residential and CII customers shall reach a water reduction of fifty five percent (55 percent) from previous use.	Yes

9 DEMAND MANAGEMENT MEASURES

CWC §10631 (e)

Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

This chapter provides an overview of NMWD's current and planned Demand Management Measures (DMMs), which include specific types and groupings of water conservation measures typically implemented by water suppliers. The District utilizes water conservation Best Management Practices (BMPs) as a method to reduce water demands, thereby reducing water supply needed. Implementation of DMMs over the past several years has helped the District achieve its 2015 Interim and 2020 Water Use Targets under SB X7-7 (Chapter 5).

9.1 Regional Water Conservation

As described in Chapter 2, the SMSWP water suppliers in Sonoma and Marin Counties include the Cities of Santa Rosa, Rohnert Park, Petaluma, Cotati, Cloverdale, Sonoma and Healdsburg, NMWD, Marin Municipal Water District, Town of Windsor, California American Water – Larkfield District, Sonoma Water, and Valley of the Moon Water District (Partners). The SMSWP was formed in 2010 and its Memorandum of Understanding was amended in May 2018, extending the term by another ten years and adding language to streamline the addition of members to the SMSWP.

Sonoma Water coordinates the work of the SMSWP in conjunction with the WAC, which provides input to Sonoma Water and holds certain powers and responsibilities enumerated in the Restructured Agreement for Water Supply between Sonoma Water and SMSWP.

Funding

Sonoma Water's wholesaler water conservation programs are funded by the Partners annually through a WAC recommended budget that allocates a Water Conservation sub-charge for each acre-foot of water sold. The Partners agreed to expend \$15 million dollars on water conservation implementation from July 2018 through June 2028. They have also agreed to maintain membership in good standing with the California Water Efficiency Partnership (CalWEP) and implement or use best efforts to secure the

implementation of any water conservation requirements added as terms or conditions of Sonoma Water’s appropriative water rights or other regulation or law. Sonoma Water pursues grant funding on behalf of the SMSWP to offset some of the programmatic costs associated with water use efficiency programs and to test new technology.

Annual Report

The Partners are committed to remain as members in good standing of CalWEP and to implement water conservation measures that provide regional benefits and/or that may exceed the targets established from time to time by the Partners or the State. The Partners will implement or use best efforts to secure the implementation of any water conservation requirements and will publish an Annual Report to track progress. The Annual Report will track program implementation, highlight program milestones, and reinforce the importance of protecting and preserving water resources for future generations. The 2024/2025 Annual Report for the SMSWP can be found on the SMSWP’s website.¹⁴

Water and Energy Education Program

The Water and Energy Education Program is a comprehensive approach to helping educators teach students the “value” of water as an important natural resource. Water and energy conservation and stewardship of our local watersheds are promoted throughout the program. Students are encouraged to use water wisely and make environmentally sustainable choices to help secure a reliable source of freshwater now and in the future. The program includes classroom instructional presentations, field study opportunities at Sonoma Water’s Westside Education Facility, free curriculum materials aligned with the existing California State Frameworks and the California Science Standards, a lending library of videos, interactive models and printed materials, production of a newsletter for teachers and endorsement, participation and financial sponsorship of events, assemblies, and workshops. All the education programs and materials are free to teachers in the service area, which covers over 200 schools throughout Sonoma and northern Marin counties.

The total number of students receiving direct instruction in 2024/2025 was 17,392. Students in 2,129 classrooms received school supplies from the program, 21 students participated in the water awareness video contest, 78 classrooms participated in the Steelhead in the Classroom program, and 9,148 students participated in ZunZun Musical Watershed Assemblies.

Public Outreach Program

The SMSWP develops an annual regional outreach campaign that aligns with the region’s current water supply conditions and promotes water use efficiency programs. Sonoma Water, in collaboration with the members of the SMSWP, produces collateral material that aligns with the specific campaign. Sonoma Water coordinates an annual media buy that includes outreach in English and Spanish. Each member of the SMSWP can choose to supplement the campaign with their own media buys. The buys generally include the following:

- Radio (streaming and broadcast),
- Newsprint and online digital media placements in 14 various local publications,
- Sonoma County Fair presence,
- Social Media (Facebook, Twitter, Instagram, YouTube, NextDoor),
- Mall banners, and
- Movie theater trailers.

¹⁴ The 2024-2025 Annual Report for the SMSWP: <https://www.savingwaterpartnership.org/wp-content/uploads/2026/01/SMSWP-Annual-Report-2025-web.pdf>.

Regional Program

Sonoma Water on behalf of the SMSWP implements numerous regional programs. This includes offering staff support for interested Partners as a cost-effective way to offer local programs to customers of smaller agencies. Some of these programs are:

- High Efficiency Clothes Washer Water Rebate – a rebate for replacing a top-loading clothes washer with a qualifying front-loading clothes washer.
- Green Business Program – Certification for local businesses that are going green.
- Qualified Water Efficient Landscaper Training Program – A low-cost professional certification program that educates landscapers about irrigation system auditing, while providing customers with a trusted source for knowledgeable hired help that can save them water.
- Eco-Friendly Garden Tour – An annual self-guided garden tour in Sonoma County and North Marin that promotes sustainable landscaping practices.
- Garden Sense – A free garden consultation program open to all Sonoma County residents. Consultants provide site-specific advice on lawn removal, sprinkler conversion to drip irrigation, and low water use plant selection.
- DIY Energy and Water Savings Toolkit – The Do-It-Yourself (DIY) Home Energy and Water Saving Toolkits are stocked with energy and water saving supplies that can help measure how much energy or water is being consumed in the home and make easy upgrades to your home to help save money on the utility bills.
- Landscape Design Templates – These free, front yard designs are scalable to fit landscaped areas up to 2,500 square feet, ready-to-permit, and in compliance with local Water Efficient Landscape Ordinances.
- Water Smart Plant Label – A free water smart plant labeling program to local nurseries. The water smart plant label highlights low water use plants to nursery customers and promotes sustainable landscaping practices in Sonoma and Marin counties.
- Water-Energy Rebates for Restaurants and Food Service Facilities – a rebate program for replacing inefficient commercial kitchen equipment with new water and energy efficient models.

Sonoma Water participates in numerous regional and statewide initiatives to ensure the SMSWP is on the forefront of water use efficiency, legislation, and conservation planning, such as:

- CalWEP (including presence in the Programs Subcommittee, Research Subcommittee),
- California Irrigation Institute,
- Association of California Water Agencies (Water Management and Water Use Efficiency Subcommittees),
- Russian River Watershed Association, and
- California Landscape Contractors Association.

9.2 Agency Water Conservation

In addition to the regional conservation effort through the SMSWP, NMWD implements DMMs at a local scale. A description of the nature and extent of each DMM implemented over the last five years is provided below.

9.2.1 DMM 1 – Water Waste Prevention Ordinances

The District enforces a strict water waste prevention/ prohibition regulation as required in the District’s Regulation 15 – Water Conservation – Novato Service Area dated December 2023. This regulation

explicitly states that the waste of water is to be prohibited, and it also lists all the prohibited water uses and exempt water uses. The excerpts are provided below:

Customers shall not permit any water furnished by the District for the following nonessential uses:

- a) The washing of sidewalks, walkways, driveways, parking lots and other hard surfaced areas by direct hosing when runoff water directly flows to a gutter or storm drain, except as may be necessary to properly dispose of flammable or other dangerous liquids or substances, wash away spills that present a trip and fall hazard, or to prevent or eliminate materials dangerous to the public health and safety;*
- b) The escape of water through breaks or leaks within the customers' plumbing or private distribution system for any substantial period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of seventy-two (72) hours after the customer discovers such a break or leak or receives notice from the District, is a reasonable time within which to correct such break or leak, or, as a minimum, to stop the flow of water from such break or leak;*
- c) Irrigation in a manner or to an extent which allows excessive run-off of water or unreasonable over-spray of the areas being watered. Every customer is deemed to have his/her water system under control at all times, to know the manner and extent of his/her water use and any run-off, and to employ available alternatives to apply irrigation water in a reasonably efficient manner;*
- d) Washing cars, boats, trailers or other vehicles and machinery directly with a hose not equipped with a shutoff nozzle; Water for non-recycling decorative water fountains;*
- e) Water for new non-recirculating conveyor car wash systems;*
- f) Water for new non-recirculating industrial clothes wash systems;*
- g) Water for single pass coolant systems;*
- h) Potable water for outdoor landscaping during or within 48 hours of measurable rainfall;*
- i) Potable water on ornamental turf in public street medians;*
- j) Drinking water other than on request in eating or dining establishments;*
- k) Water for the daily laundering of towels and linens in hotels and motels without offering guests the option of choosing not to have daily laundering;*
- l) Water for non-functional turf as defined and determined by rulemaking of the State Water Resources Control Board of the State of California.*

9.2.2 DMM 2 – Metering

CWC §526 (a)

Notwithstanding any other provision of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract ... shall do both of the following:

(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings constructed prior to January 1, 1992, located within its service area.

(2) On and after March 1, 2013, or according to the terms of the Central Valley Project water contract in operation, charge customers for water based on the actual volume of deliveries, as measured by a water meter.

CWC §527 (a)

(a) An urban water supplier that is not subject to Section 526 shall do both of the following:

(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

All customer connections within the District are metered.

9.2.3 DMM 3 – Conservation Pricing

The District bills customers using a three-tier rate system for residential customers and a flat rate for non-residential customers. The volumetric tiers for residential customers are as follows:

- Tier 1 – up to 262 gallons per day (GPD);
- Tier 2 – 262 – 720 GPD; and
- Tier 3 – Greater than 720 GPD.

Non-residential customer rates are not tiered, and are charged one volumetric rate per 1,000 gallons.

The current water rates can be found on the District’s website at: <https://nmwd.com/account/rates/>

9.2.4 DMM 4 – Public Education and Outreach

NMWD implements a full-scale public information program including newsletters, regular social media posts, newspaper advertisements, public outreach events, and other programs. As discussed in Section 9.1, the District is a member of a regional water conservation partnership, the SMSWP, which conducts the bulk of public education efforts in the region. Information provided ranges from promotion of conservation programs to water supply/quality, and hardware distribution.

Through the regional SMSWP water conservation school education and outreach programs from the 2020-2021 to 2024-2025 school years, 2,656 students were reached by direct instruction. Additional students were reached through indirect instruction such as assemblies, video and poster contests, and other education materials (EKI, 2025).

9.2.5 DMM 5 – Programs to Assess and Manage Distribution System Real Loss

The District has a proactive program to address and minimize distribution system water loss. As noted in Section 4.4, the District performs annual water loss audits consistent with CWC §10608.34 using the American Water Works Association (AWWA) Free Water Audit Software version 5.0, which is then validated by an AWWA California-Nevada Section-Certified California Water Audit validator prior to

submission to DWR. The District has been performing these audits periodically for years prior to the Senate Bill (SB) 555 State-mandate. Copies of the audit reports are available through DWR's Water Use Efficiency Data Portal¹⁵.

9.2.6 DMM 6 – Water Conservation Program Coordination and Staffing Support

The District employs a full-time Water Conservation and Communications Manager to implement the Water Conservation and Public Outreach Programs. Contact information for the District's Water Conservation Coordinator is listed below:

Name: Ryan Grisso

Phone: (415) 761-8987

Email: rgrisso@nmwd.com

9.2.7 DMM 7 – Other Demand Management Measures

The District's *2025 Urban Water Management Plan Water Demand Analysis and Water Conservation Measures Update (Appendix B)* provided descriptions of conservation program implementation efforts by the District, and detailed analysis of program participation trends for five representative programs. Conservation programs implemented by the District include high-efficiency washer rebates, turf replacement rebates, Water Smart survey programs, toilet and clothes washer rebates for residential and commercial customers, weather-based irrigation controller rebates for residential and commercial customers, pool cover and hot water recirculation rebates, and many more to offer customers every opportunity to conserve and use water more efficiently. For additional information related to these DMMs, refer to **Table 9-1**.

9.3 Past Program Implementation

Table 9-1 summarizes program implementation for the previous four years. Estimated water savings do not include savings from water waste prevention ordinances, conservation pricing, public information, or distribution system water loss management.

¹⁵ DWR's Water Use Efficiency Data Portal: https://wuedata.water.ca.gov/awwa_plans_

Table 9-1 Implementation of Customer DMMs: 2021-2024

DMM Measures (Rebate, Direct Install, and Free Distribution Programs)	2021 – 2024 Total	Average Annual Implementation
Water Smart Home and Commercial Surveys Program	49 rebates	12.3 rebates/year
HET Rebates Program	382 rebates	95.5 rebates/year
Retrofit on Resale (Dwellings Certified) Program	583 dwelling certified	146 dwellings certified/year
HECW Rebates Program	140 rebates	35 rebates/year
Water Smart Landscape Rebates Program	77 rebates	19.3 rebates/year
Residential and Commercial WBIC Rebates Program	67 rebates	16.8 rebates/year
Swimming Pool Cover Rebates Program	132 rebates	33 rebates/year
Large Landscape Audits Program	10 audits	2.5 audits/year
Large Landscape Budgets Program	1,752 participants	438 participants/year
Lawn Be Gone (Sheet Mulching) Program	11 participants	2.8 participants/year
Hot Water Recirculation Rebate Program	21 participants	5.3 participants/year
Cash for Grass Rebates Program	103,509 sq ft	25,880 sq ft/year
Lawn Be Gone (Sheet Mulching) Program	8,800 sq ft	2,200 sq ft/year
AMI Leak Notifications Program	79,839 meters	19,960 meters/year
Estimated Water Savings	646 AF	162 AFY

NOTES:

Data is from the 2025 Water Demand Analysis and Water Conservation Measure Update, Tables 4-3, 4-4, and 6-2 (included as Appendix B)

9.4 Implementation to Achieve Water Use Targets

All the DMMs described above contributed to NMWD’s compliance with the Water Conservation Act of 2009 (SB X7-7) 2020 target gallons per capita per day (GPCD).

In July 2024, California enacted the MCCWL regulation implementing SB 606 and AB 1668 to support long-term water conservation and drought resilience. CWC §10609 requires that urban retail water suppliers report on Urban Water Use Objectives (UWUOs) that are based on specific standards for certain water use sectors. Annual reporting compliance began in January 2025, with UWUO compliance starting in January 2027. As discussed in Section 4.8, NMWD is anticipated to comply with its Objectives through 2040. The District’s 2025 Urban Water Management Plan Water Demand Analysis and Water

Conservation Measures Update, provided in **Appendix B**, evaluates several options for future conservation program implementation.

10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

CWC §10621 (b)

Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

This section provides information on a public hearing, the adoption process for the UWMP and WSCP, the adopted UWMP and WSCP submittal process, plan implementation, and the process for amending the adopted UWMP or WSCP for NMWD.

10.1 Inclusion of All 2025 Data

This UWMP includes water use and planning data for the entire fiscal year of 2025, per the 2025 UWMP Guidebook.

10.2 Notice of Public Hearing

CWC §10642

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

Prior to adopting the Plan, NMWD held a public hearing to present information on its UWMP and WSCP on 16 June 2026 at 4:00 PM.

Relevant entities were notified of the UWMP and WSCP review at least 60 days prior to the public hearing. These same entities were noticed again with the specific date, time and location of the hearing at least two weeks prior to the public hearing. The notice to the public, as specified in California Government Code (CGC) §6066, and letters to relevant agencies can be found in **Appendix C**.

10.2.1 Notice to Cities and Counties

☑ **CWC §10631 (a)** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

Table 2-5 provided in Chapter 2 lists the cities and counties that were notified. Copies of these letters are provided in **Appendix C**.

10.2.2 Notice to the Public

Notification to the public and to cities and counties also provided instructions on how to view the UWMP and WSCP prior to the hearing, the revision schedule, and contact information of the UWMP and WSCP preparer. A copy of this notice is included in **Appendix D**.

10.3 Public Hearing and Adoption

☑ **CWC §10608.26**

(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

☑ **CWC §10621 (b)**

Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

The deadline for public comments on the UWMP and WSCP was 16 June 2026, the date of the public hearing. The final Plan was formally adopted by NMWD's Board of Directors on 16 June 2026, and was submitted to DWR within 30 days of adoption. **Appendix G** presents a copy of the signed Resolution of Plan Adoption. **Appendix D** contains letters sent to agencies regarding this Plan.

10.4 Plan Submittal

CWC §10621 (f)

(1) Each urban water supplier shall update and submit its 2025 plan to the department by July 1, 2026.

CWC §10635 (c)

The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

CWC §10644 (a)

(1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

This UWMP and WSCP were submitted to DWR within 30 days of adoption and by the 1 July 2026, deadline. The submittal was done electronically through Water Use Efficiency Data Portal, an online submittal tool. The adopted UWMP and WSCP were also sent to the California State Library and to the cities and counties to which NMWD supplies water no later than 30 days after adoption.

10.5 Public Availability

CWC §10645

(a) Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

(b) Not later than 30 days after filing a copy of its water shortage contingency plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

On or about 2 June 2026, an electronic version of the Public Review Draft 2025 UWMP and WSCP were made available for public review at the District's office and on the District's website (<https://www.nmwd.com>).

10.6 Amending an Adopted UWMP or Water Shortage Contingency Plan.

CWC §10644 (b)

If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

If the UWMP or WSCP are amended, each of the steps for notification, public hearing, adoption and submittal will also be followed for the amended document.

11 REFERENCES

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Appendix A: Completed UWMP Checklist

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	n/a	Introduction and Overview	Page 4-1, Page 6-1, Page 9-1
x	x	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	n/a	Summary	ES-1
x	x	Section 2.1	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	n/a	Plan Preparation	Page 2-1
x	n/a	Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP	2-1	Plan Preparation	Page 2-1
x	x	Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	2-2	Plan Preparation	Page 2-2

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes	2-3	Plan Preparation	Page 2-2
x	x	Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan	n/a	Plan Preparation	Page 2-5, Page 2-6, Page 10-1
x	x	Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	n/a	Plan Preparation	Page 2-5, Page 10-1
x	n/a	Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	2-4 R	System Supplies	Page 2-4

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
n/a	x	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	2-4 W	System Supplies	n/a
x	x	Chapter 3.0	10631(a)	Describe the Supplier service area.	n/a	System Description	Page 3-1
x	x	Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	n/a	System Description	Page 3-1
x	x	Section 3.4.1	10631(a)	Provide population projections for 2030, 2035, 2040, 2045, and optionally 2050.	3-2 R	System Description	Page 3-5
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	n/a	System Description	Page 3-5
x	x	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.		System Description and Baselines and Targets	Page 3-1 and Table 3-1
x	x	Section 3.5	10631(a)	Describe the land uses within the service area... include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	n/a	System Description	Page 3-7 and Figure 3-5

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	Optional	Section 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	4-1 and 4-2	System Water Use	Page 4-3, Page 4-9
x	n/a	Section 4.3.2	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	4-6	System Water Use	Page 4-5
x	x	Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	4-3	System Water Use	Page 4-9
x	x	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	4-3	System Water Use	Page 4-9
x	Optional	Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	4-5	System Water Use	Page 4-5
x	n/a	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	4-3	System Water Use	Page 4-9
x	n/a	Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall... Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	4-3	System Water Use	Page 4-9

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	n/a	System Water Use	Page 4-8, Page 7-13
x		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.		Baselines and Targets	Page 5-1
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.		Baselines and Targets	Page 5-1
n/a	x	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	n/a	Baselines and Targets	n/a
x		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.		Baselines and Targets	N/A

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100.		Baselines and Targets	Page 5-1 (2020 UWMP by reference)
x	n/a	Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: <ul style="list-style-type: none"> - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	5-1	Baselines and Targets	Page 5-1
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	n/a	System Supplies	Page 7-5

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, <i>including changes in supply due to climate change.</i>	n/a	System Supplies	Page 6-18
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	n/a	System Supplies	Page 6-1
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.		System Supplies	Page 6-1
x	x	Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045, and optionally 2050.	6-8 and 6-9	System Supplies	Page 6-15
x	x	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.		System Supplies	Page 6-3
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	n/a	System Supplies	Page 6-5
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	n/a	System Supplies	Page 6-3

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	n/a	System Supplies	n/a
x	x	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	n/a	System Supplies	Page 6-4
x	x	Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water... (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	6-1	Water Supplies and Recycled Water	Page 6-5
x	x	Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water... (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	n/a	System Supplies	Page 6-5

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	6-9	System Supplies	Page 6-15
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	n/a	System Supplies	Page 6-13
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	6-3	System Supplies (Recycled Water)	Page 6-7
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	6-4	System Supplies (Recycled Water)	Page 6-10
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	6-4	System Supplies (Recycled Water)	Page 6-10
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	6-4 and 6-5	System Supplies (Recycled Water)	Page 6-10

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	6-6	System Supplies (Recycled Water)	Page 6-12
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	n/a	System Supplies (Recycled Water)	Page 6-12
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	6-7	System Supplies	Page 6-12 Page 6-13
n/a	x	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	6-2	System Supplies (Recycled Water)	Page 6-7
x	x	Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	6-7	System Supplies	Page 6-13
x	x	Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	O-1A, O-1B, O-1C, and O-2	System Suppliers, Energy Intensity	Page 6-19

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x		Section 7.1	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	n/a	Water Supply Reliability Assessment	Page 7-1, Page 7-4
x	x	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	n/a	Water Supply Reliability Assessment	Page 7-10
x	x	Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	7-2, 7-3, and 7-4	Water Supply Reliability Assessment	Page 7-8
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	n/a	Water Supply Reliability Assessment	Page 7-10
x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	n/a	Water Supply Reliability Assessment	Page 7-8, Page 7-10

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	n/a	Water Supply Reliability Assessment	Page 7-15
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	7-5	Water Supply Reliability Assessment	Page 7-10
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	n/a	Water Supply Reliability Assessment	Page 7-10
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	n/a	Water Shortage Contingency Planning	Page 8-1, Appendix H
x	x	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 2
x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	n/a	Water Shortage Contingency Planning	Appendix H – Chapters 12 and 13

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 4
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier’s water reliability for the current year and one dry year pursuant to factors in the code.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 4
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	n/a	Water Shortage Contingency Planning	Appendix H– Chapter 5
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	8-1	Water Shortage Contingency Planning	Appendix H – Chapter 5
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	8-2	Water Shortage Contingency Planning	Appendix H – Section 6.1

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	8-3	Water Shortage Contingency Planning	Appendix H – Section 6.2 and Table 6-1
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	8-2	Water Shortage Contingency Planning	Appendix H – C Section 6.3 and Table 6-2
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	8-3	Water Shortage Contingency Planning	Appendix H – Section 6.5 and Table 6-1
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	8-2 and 8-3	Water Shortage Contingency Planning	Appendix H – Section 6.6
x	x	Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	n/a	Water Shortage Contingency Plan	Appendix H – Section 6.6
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 7
x	x	Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 8

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	n/a	Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 9
x	x	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 10
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3. Water Shortage Emergencies.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 10
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 10
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 11
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 11
x	n/a	Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3, Excessive Residential Water Use During Drought	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 11

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	n/a	Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 12
x	n/a	Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	n/a	Water Shortage Contingency Planning	Appendix H – Section 6.4
x	x	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.		Plan Adoption, Submittal, and Implementation	Appendix H – Chapter 14
x	x	Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	n/a	Water Shortage Contingency Planning	Appendix H – Chapter 14
n/a	x	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	n/a	Demand Management Measures	n/a

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	n/a	Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	n/a	Demand Management Measures	Page 9-1, Page 9-3
x	n/a	Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	n/a	Plan Adoption, Submittal, and Implementation	Page 10-1
x	x	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	10-1	Plan Adoption, Submittal, and Implementation	Page 10-2
x	x	Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 2026.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-3
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-1

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	10-1	Plan Adoption, Submittal, and Implementation	Page 10-2
x	x	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-1
x	x	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-3
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-3
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the plan, submitted to the department shall be submitted electronically.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-3
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with the department, the supplier has or will make the plan available for public review during normal business hours.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-3

Completed UWMP Checklist
2025 Urban Water Management Plan



Retail	Wholesale	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Relevant Submittal Table	Subject	2025 UWMP Location
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with the department, the supplier has or will make the plan available for public review during normal business hours.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-3
x	x	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	n/a	Plan Adoption, Submittal, and Implementation	n/a
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	n/a	Plan Adoption, Submittal, and Implementation	Page 10-4

Appendix B: 2025 Urban Water Management Plan
Water Demand Analysis and Water Conservation
Measures Update

2025 WATER DEMAND ANALYSIS AND WATER CONSERVATION MEASURE UPDATE

North Marin Water District

22 December 2025

EKI C40180.00

2025 WATER DEMAND ANALYSIS AND WATER CONSERVATION MEASURE UPDATE

22 December 2025

Prepared for:

North Marin Water District

Prepared by:

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EKI C40180.00

2025 Water Demand Analysis and Water Conservation Measure Update

North Marin Water District

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APPENDICES

- Appendix A Methodology for Estimating Indoor and Outdoor Water Use
- Appendix B Conservation Program Assumptions
- Appendix C Prioritization and Screening of Future Water Conservation Measures

ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
AFY	acre-feet per year
AMI	advanced metering infrastructure
AWE	Alliance for Water Efficiency
BMPs	Best Management Practices
CII	Commercial, Industrial, and Institutional
CWC	California Water Code
DIM	dedicated irrigation meter
District	North Marin Water District
DMM	demand management measure
DWR	Department of Water Resources
GPCD	gallons per capita per day
gpf	gallons per flush
HECW	high-efficiency clothes washer
HET	high-efficiency toilet
HEU	high-efficiency urinal
LEF	landscape efficiency factors
MCCWL	Making Conservation a California Way of Life
MFR	multi-family residential
MUMs	mixed-use meters
Objective	Urban Water Use Objective
QWEL	Qualified Water Efficient Landscaper
Report	Water Demand and Conservation Report
SB	Senate Bill
SFR	single-family residential
SMSWP	Sonoma-Marín Saving Water Partnership
State Water Board	State Water Resources Control Board
TM	technical memorandum
UWMP	Urban Water Management Plan
Water Contractors	The nine members of the SMWSP participating in this project.

1 INTRODUCTION

To support the development of the 2025 Urban Water Management Plan (UWMP) updates, nine members of the Sonoma-Marín Saving Water Partnership (SMSWP) coordinated to conduct a joint update of their water demand projections and water conservation planning efforts (i.e., the *2025 Water Demand and Conservation Project*). The participating SMSWP members include the City of Cotati, City of Petaluma, City of Rohnert Park, City of Santa Rosa, City of Sonoma, Marin Municipal Water District, North Marin Water District, Town of Windsor, and Valley of the Moon Water District. These nine participating SMSWP members (referred to as Water Contractors herein) are shown on **Figure 1-1**.

The goals of the *2025 Water Demand and Conservation Project* are to apply a common methodology to conduct the following analysis for each Water Contractor:

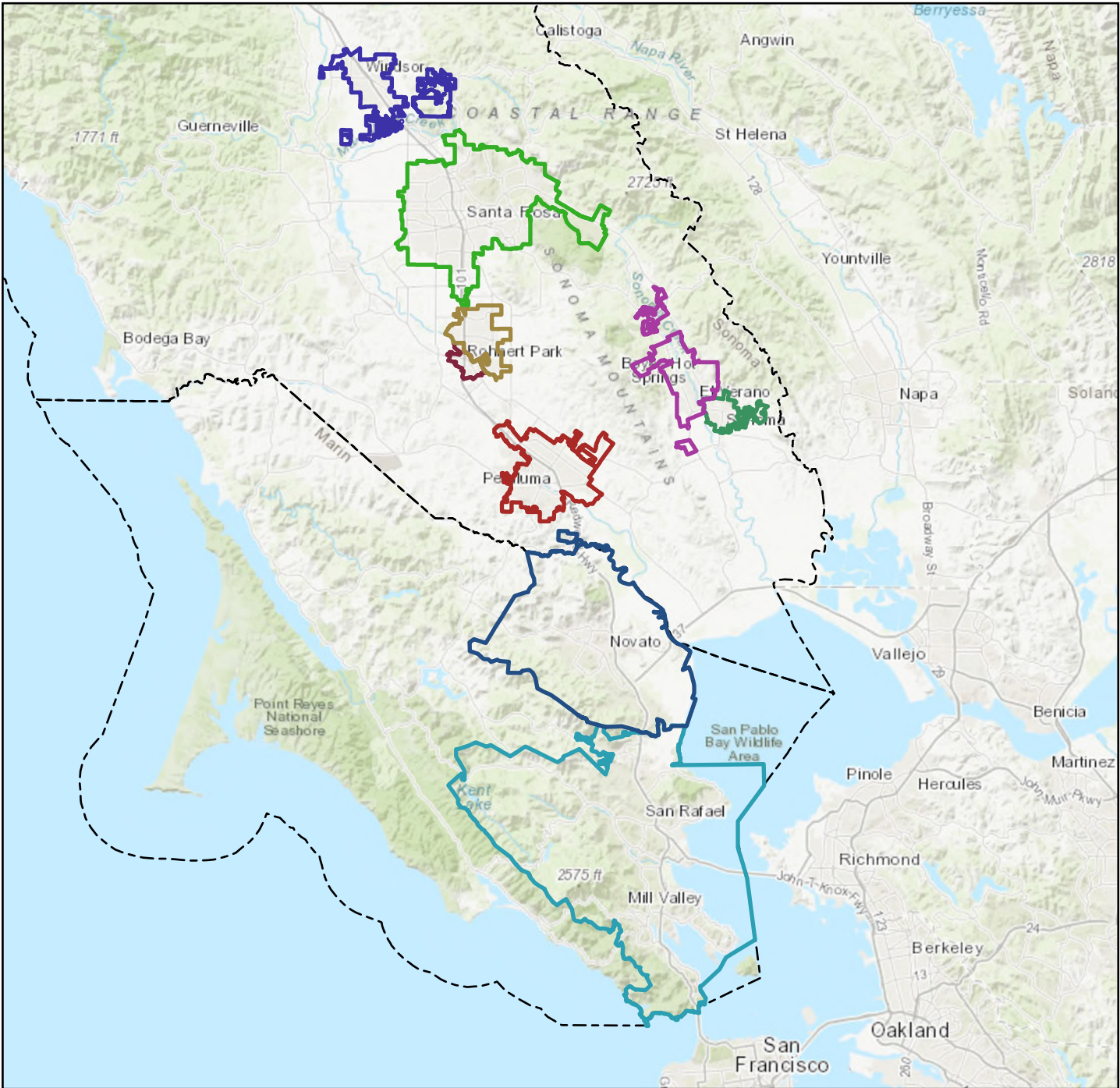
- Evaluate and document recent historical water use characteristics and trends, including population and account growth (in this report, the term “account” indicates “water connection”);
- Estimate projected water demands for the years 2030 through 2050 to support both the 2025 UWMP update and coordination and planning efforts with Sonoma Water;
- Update the suite of common regional conservation measures that are being considered for implementation in the future;
- Review and document past participation in water conservation programs; and
- Estimate the potential water savings associated with future water conservation program implementation.

This 2025 Water Demand and Conservation Measure Update presents the results for the North Marin Water District (District), located in Sonoma County, and serving a population of approximately 61,686 people in 2024 (**Figure 1-2**). The District’s water supplies include surface water purchased from Sonoma County Water Agency (Sonoma Water), local surface water from Safford Lake, and recycled water produced inside and outside of the District (EKI, 2021). Potable water is supplied to urban customers, and recycled water is served primarily for golf course and urban landscape irrigation customers. Conservation has been achieved through the implementation of water conservation programs, including most administered by the District and some administered through the regional SMSWP.

This 2025 Water Demand and Conservation report is organized as follows:

- **Section 1** identifies the goals and objectives of the Report;
- **Section 2** provides the regulatory context for the demand projections as described in the Report, as well as new requirements related to *Making Conservation a California Way of Life* (MCCWL; Assembly Bill [AB]-1668/ Senate Bill [SB]-606) that impact the water demand and conservation planning components of the 2025 UWMPs;
- **Section 3** describes historical water use patterns and characteristics within the District;

- **Section 4** documents past participation in conservation programs and estimated savings associated with program implementation, and presents the results of a detailed analysis of program participation trends for select conservation programs;
- **Section 5** describes the projected water demands through 2050, including the assumptions and methodology used;
- **Section 6** documents the water conservation measure screening process, identifies individual programs and program scenarios for potential future implementation by the District;
- **Section 7** documents the key findings and conclusions from the analyses presented throughout this report; and
- **Section 8** provides key references and sources.



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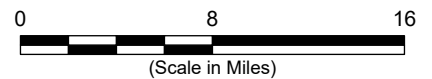
- City of Cotati Service Area
- City of Petaluma Service Area
- City of Rohnert Park Service Area
- City of Santa Rosa Service Area
- Marin Municipal Water District Service Area
- North Marin Water District Service Area
- Town of Windsor Service Area
- Valley of the Moon Water District Service Area
- County Boundaries

Notes

- 1. All locations are approximate.

Sources

- 1. Service area boundaries provided by respective agencies.
- 2. Basemap provided by ESRI.



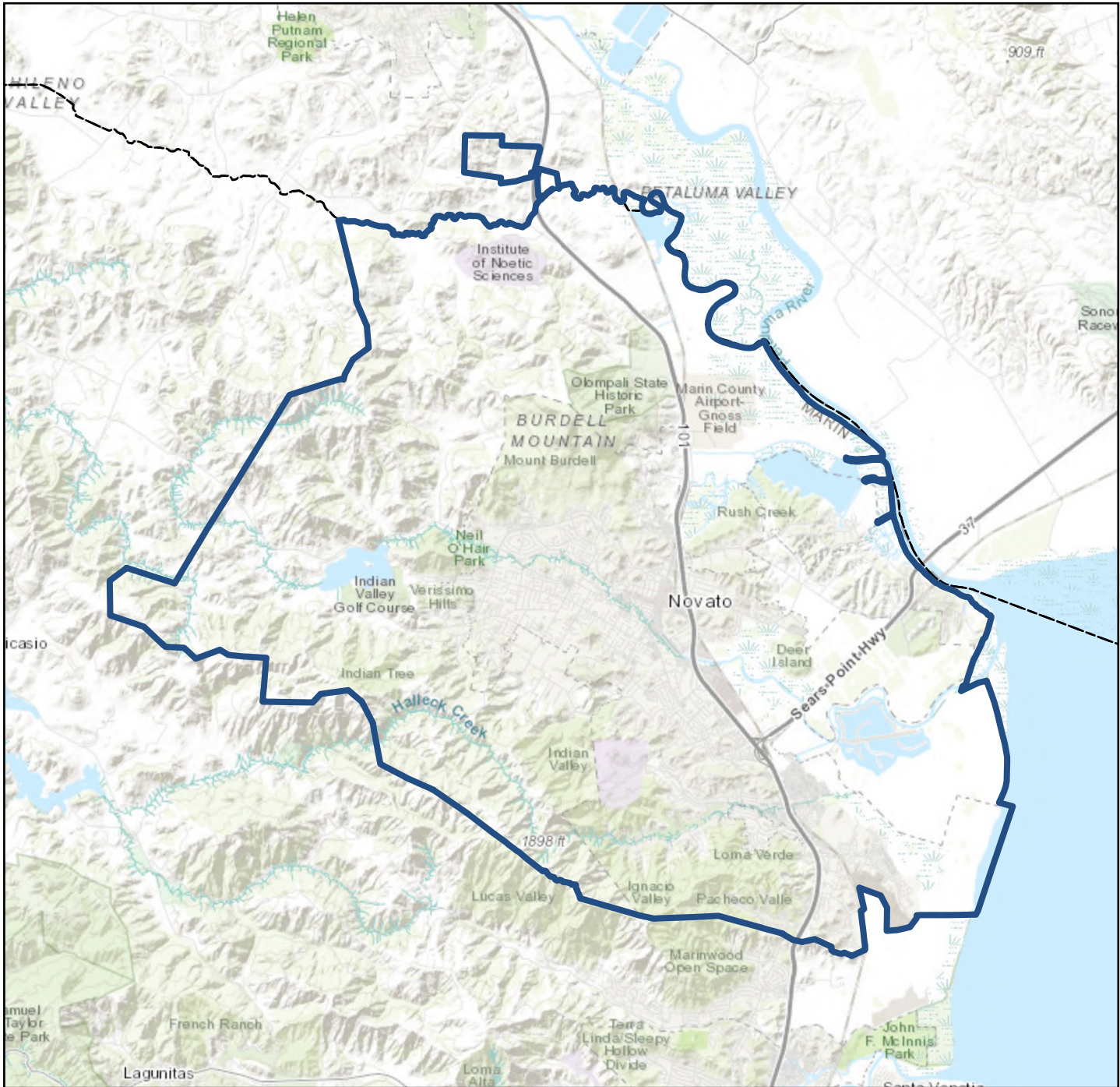
Participating Sonoma-Marin Saving Water Partnership Members

Sonoma Marin Saving Water Partnership
 December 2025
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Figure 1-1

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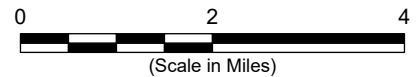
-  North Marin Water District Service Area
-  County Boundaries

Sources

1. Service area boundary provided by North Marin Water District.
2. Basemap provided by ESRI.

Notes

1. All locations are approximate.



Service Area Boundary – North Marin Water District

Sonoma Marin Saving Water Partnership
 December 2025
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Figure 1-2

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2 REGULATORY CONTEXT

This section provides the regulatory background for the requirements to project future demand in the 2025 UWMP. Although there are no updates to the UWMP regulations since 2020, the MCCWL and other state regulations will impact the 2025 UWMPs, as they will inform the water demand projections and conservation planning components.

2.1 UWMP Demand Projections Requirements

California Water Code (CWC) § 10631, excerpted below, describes the requirements to develop water demand projections that consider water use by customer sector, incorporate distribution system water loss, and account for anticipated water savings. Water demand projections herein were developed for the District using a land-use-based approach that is consistent with these requirements, and can be incorporated into the District's 2025 UWMP.

CWC § 10631

A plan shall be adopted in accordance with this chapter that shall do all of the following:

...

(d) (1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

...

(d)(4) (A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall note that fact.

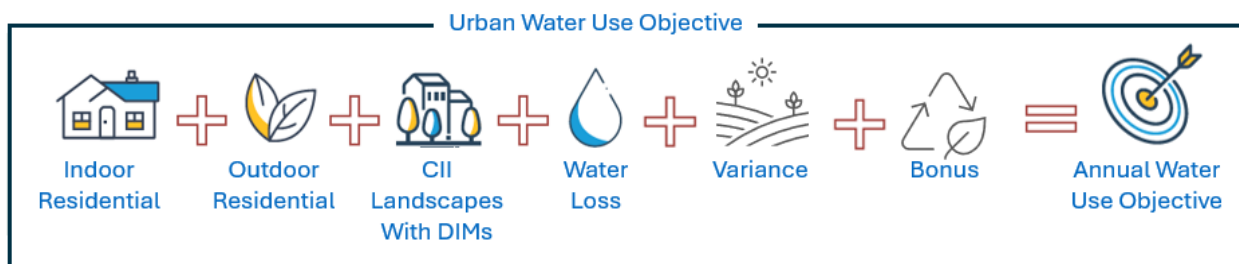
2.2 New Requirements for Water Use Efficiency

2.2.1 Making Conservation a California Way of Life

The State Water Resources Control Board (State Water Board) adopted a new Conservation Framework to implement Senate Bill 606 and Assembly Bill 1668 through the enactment of the MCCWL regulation in July 2024. The Conservation Framework requires each urban water supplier to calculate and comply with an annual Urban Water Use Objective (Objective) and to implement Commercial, Industrial, and Institutional (CII) Performance Measures, both of which must be reported on annually starting January 1, 2024 (although compliance with the Objective is not required until January 1, 2027).

As illustrated on **Figure 2-1** below, the Objective is calculated as the sum of the following components: (1) residential indoor water use standard, (2) residential outdoor water use standard, (3) CII landscape outdoor water use standard (for landscapes with dedicated irrigation meters [DIMs]), (4) water loss standard, (5) allowable variances, and (6) bonus provisions. Per the latest guidelines released by the Department of Water Resources (DWR) and the State Water Board, agencies will need to assess whether they meet their overall Objective (i.e., they are not required to comply with the individual water use standards as long as they meet the overall Objective).

Figure 2-1 Components of Urban Water Use Objective



The components of the Objective Water use include the following:

- Indoor and Outdoor Residential.** Indoor and outdoor residential includes supplier-specific water-use standards for indoor and outdoor single-family and multi-family residential use. The standard for efficient residential indoor water use is expressed in gallons per capita per day (GPCD) and is currently set at 47 GPCD, which took effect January 1, 2025. This standard will be lowered to 42 GPCD beginning January 1, 2030 (**Figure 2-2**). The residential indoor water use budget is calculated by multiplying a supplier’s residential service area population by the residential indoor standard and by the number of days in the year. The standard for efficient residential outdoor water use is expressed as the landscape efficiency factor (LEF), a unitless number used to indicate the amount of water a supplier may need to deliver a healthy and efficient landscape in the service area, and represents plant factors and irrigation efficiency (**Figure 2-2**).

The outdoor budget is then calculated by multiplying the relevant outdoor LEF by landscape area, net evapotranspiration, and a unit conversion factor of 0.62;

- **CII Landscapes with Dedicated Irrigation Meters.** The budget for CII water use associated with dedicated irrigation meters (DIMs) is calculated by multiplying the outdoor LEF (**Figure 2-2**) for the CII special landscape area, by area of the large landscape, net evapotranspiration, and a unit conversion of 0.62. However, the CII landscapes with DIMs budgets will not become effective until June 30, 2028; until then, the budget is equal to actual water deliveries to CII DIMs. In the future, urban retail suppliers will have the option of installing DIMs at “large landscapes” that are over 0.5 acres and currently served by mixed-use meters (MUMs) (see discussion of CII Performance Measures below);
- **Water Loss.** Water loss represents “real water losses” or physical water losses from the pressurized potable water system (water mains and customer service connections) and the utility’s storage tanks, up to the point of customer consumption. These losses do not include apparent losses such as meter inaccuracies or theft. The water loss component is calculated based on the volumetric standards discussed in Section 2.2.2;
- **Variances.** Variances are an additional volume of water that an urban retail water supplier may request to add to its Objective for a unique use that has a substantial impact on a supplier’s Objective. Types of variances include the following: (1) emergency response; (2) recycled water with high levels of total dissolved solids; and (3) other variances, which encompasses water use related to seasonal populations, dust control for horse corrals and animal exercise areas, irrigation of residential agricultural landscapes, water use for sustaining wildlife in ponds and lakes when required by regulation, and irrigation of existing trees. Approved variances can be included in a supplier’s budget for up to five years and have documentation demonstrating that the variance does not conflict with permit requirements; and
- **Bonus Incentives.** Bonus incentives apply to potable reuse projects to help suppliers meet the Objective through alternative water sources. The bonus incentive is calculated by multiplying the urban retail water supplier’s potable reuse volume, in gallons, depending on where the potable reuse water is obtained (i.e., groundwater basin, reservoir, direct potable reuse project) by the portion of total potable water production delivered to residential and landscape irrigation connections for the reporting year. Suppliers must report and update the bonus incentive calculation annually. Required documentation includes data on potable reuse volumes, loss factors for groundwater recharge and recovery, and verification from relevant regulatory authorities.

The progression of the residential indoor water use standard, residential outdoor LEF, and CII landscape with DIMs outdoor LEF is summarized on **Figure 2-2** below.

In addition, the Conservation Framework includes a number of requirements for CII Performance Measures, which include the following:

- **Implementing a classification system for CII water users.** Requires classification of CII accounts based on customer end use, and suppliers shall annually maintain at least a 95% classification rate of CII end users. CII accounts are to be classified based on customer end use, in accordance with the 18 Energy Star Portfolio Manager’s broad categories (e.g.,

banking services, education, office, retail, utility, etc.), including four additional CII categories of laundries, landscapes with DIMs, water recreation, and car washes.

- **Converting MUMs to DIMs for CII customers with large landscapes, or employing in-lieu technologies combined with rolling out Best Management Practices (BMPs).** Suppliers must install DIMs for CII customers with large landscapes (which include those over half an acre) or employ in-lieu technology (e.g., area median income [AMI]) and offer BMPs to CII customers.
- **Providing BMP programs for CII customers.** Suppliers must identify CII water users that exceed a recommended size, volume of water use, or another threshold. Options include identifying the top water users, identifying the top water users within CII classification categories, or identifying inefficient CII water users with the use of key business activity indicators. For CII customers identified, suppliers must design and implement conservation plans from a list of approved BMP themes.

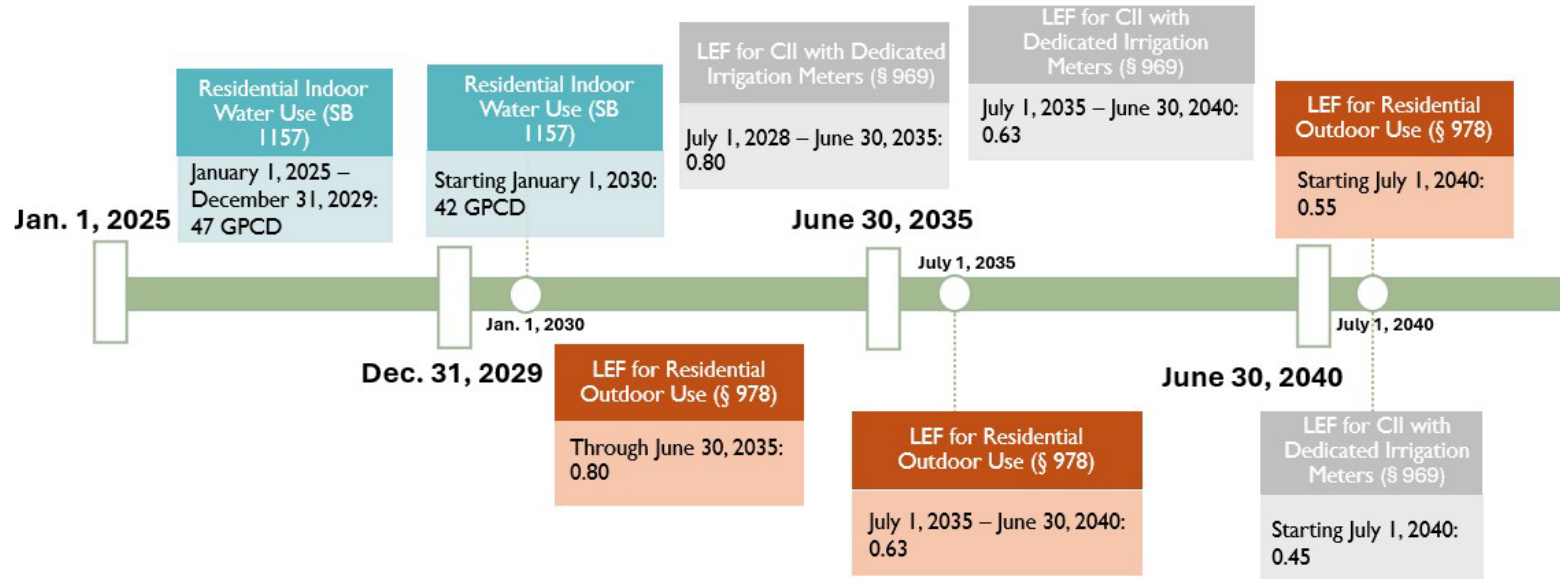
The implementation timeline of the MCCWL regulatory requirements is illustrated on **Figure 2-3**.

2.2.2 Related Regulations with MCCWL Compliance Implications

The following two regulations are separate from those embedded in the compliance requirements of MCCWL and are required to be reported on within annual Objective reporting:

- **Water Loss Control.** Urban water retailers are required to comply with State-assigned volumetric standards for real water loss. Suppliers must calculate system-specific water loss budgets by multiplying their State Board-assigned water loss standard by the number of days in the year and, depending on the units associated with the standard, by either the number of total service connections or the length of the distribution system. Suppliers with multiple systems must calculate an aggregate water loss budget by summing the estimated losses for each system.
- **Nonfunctional Turf Irrigation Ban (AB 1572).** The nonfunctional turf irrigation ban applies to turf (mowed grass maintained for aesthetic purposes) that does not provide recreational or community benefits, including CII properties, and common areas of homeowner associations. Water suppliers need to identify which landscapes are subject to the ban and implement a plan to comply with the required schedule between 2027 and 2031, depending on the property type.

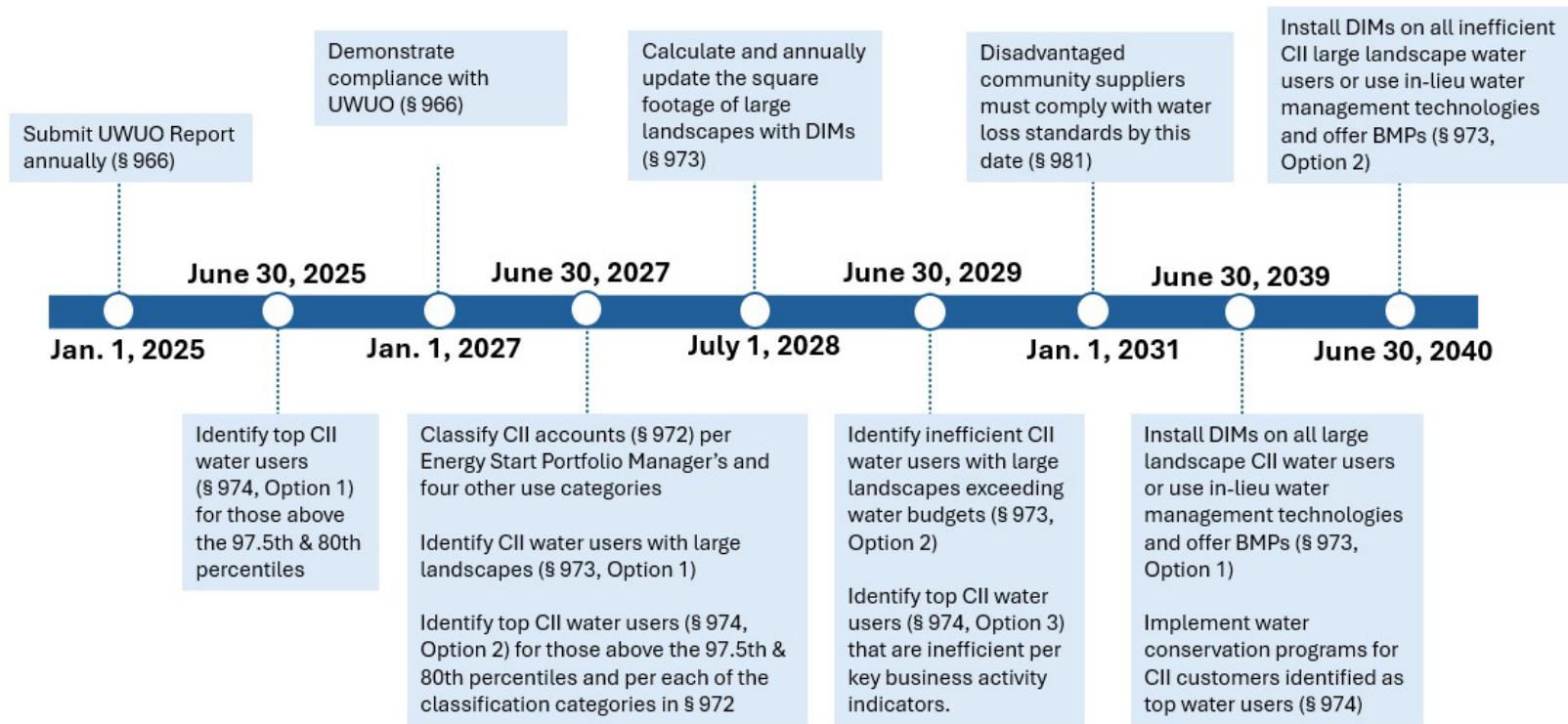
Figure 2-2 Progression of Objectives Indoor and Outdoor Efficiency Standards Through 2040



Abbreviations:

- CII = commercial, industrial, and institutional
- LEF = landscape efficiency factors
- SB = Senate Bill

Figure 2-3 General Timeline of MCCWL Regulatory Requirements



Abbreviations:

- BMPs = best management practices
- CII = commercial, industrial, and institutional
- DIMs = dedicated irrigation meters
- UWUO = Urban Water Use Objective

3 WATER USE CHARACTERISTICS

This section describes historical water use by customers within the District including changes in observed water use, changes in average water use per account over time, and estimates of indoor and outdoor water use. This information is used to provide context and background to support the projection of future water demand and estimates of potential conservation program benefits. The terms “water use,” “water consumption,” and “water demand” are used interchangeably in this document.

3.1 Historical Total and Per Capita Water Use

Table 3-1 and **Figure 3-1** show the potable and recycled water use, total water use, total per capita water use, inclusive of both potable and recycled water¹, and residential per capita water use for the past 15 years, 2010 through 2024.

As shown in **Table 3-1** and on **Figure 3-1**, total water use (including potable and recycled water) peaked in 2013 at 10,489 acre-feet per year (AFY) before declining significantly in response to the historic 2014-2017 drought and the State’s water-use reduction mandates. From 2015 to 2020, water use rebounded from 7,429 to 8,765 AFY before declining again due to the 2021-2023 drought. While there was a modest increase following the drought to 7,703 AFY in 2024, total water use remains below historical levels observed in the 2010s.

Total per capita water use (including both potable and recycled water use) has declined over the period, from a high of 154 gallons per capita per day (GPCD) in 2013 to lows of 100 and 96 GPCD in 2022 and 2023, respectively. A similar trend was observed in residential per capita water use. These trends reflect the impact of water efficiency improvements, as well as demand hardening as structural and behavioral changes during droughts result in lasting water use reductions.

Historical water consumption per customer sector is provided in **Table 3-2** and shown by sector groups on **Figure 3-2**². **Figure 3-3** shows the proportional water use by sector group. The single-family residential (SFR) sector comprises the largest proportion of the District’s total water consumption (56.7%). By comparison, the proportional water use consumption for the other sectors includes the multi-family residential (MFR) sector at 16.2%; the combined commercial, industrial, and institutional (CII) sector at 12.4%; dedicated irrigation accounts at 5.8%; and recycled water comprises 8.9% of total water consumption. Separately, non-revenue water was estimated to be 6.6% of the District’s total water demand (**Table 3-2**).

¹ Per capita water use for purposes of comparing water use to SB X7-7 water conservation targets may be different, due to the prescriptive method by DWR for determining an agencies compliance population and total water use. SB X7-7 compliance will need to be separately addressed by the District’s UWMP.

² Customer sectors are grouped into categories of SFR, MFR, CII total (mixed-use meters), irrigation (dedicated irrigation meters), and recycled water.

Table 3-1 Total and Per Capita Water Use

Year	Potable Water Use (AFY) (a)	Recycled Water Use (AFY) (a)	Total Water Use (AFY) (b)	Total Per Capita Water Use (GPCD) (c)	Residential Per Capita Water Use (R-GPCD) (d)
2010	8,248	159	8,407	125	95
2011	8,793	159	8,952	133	93
2012	9,879	184	10,063	149	101
2013	10,069	420	10,489	154	105
2014	8,343	453	8,796	129	89
2015	6,977	452	7,429	108	76
2016	7,328	415	7,743	113	77
2017	7,859	458	8,317	121	83
2018	7,898	592	8,491	123	84
2019	8,271	578	8,849	128	82
2020	8,031	733	8,765	127	93
2021	6,696	779	7,476	108	78
2022	6,196	684	6,880	100	73
2023	6,104	531	6,635	96	72
2024	6,923	779	7,703	111	76

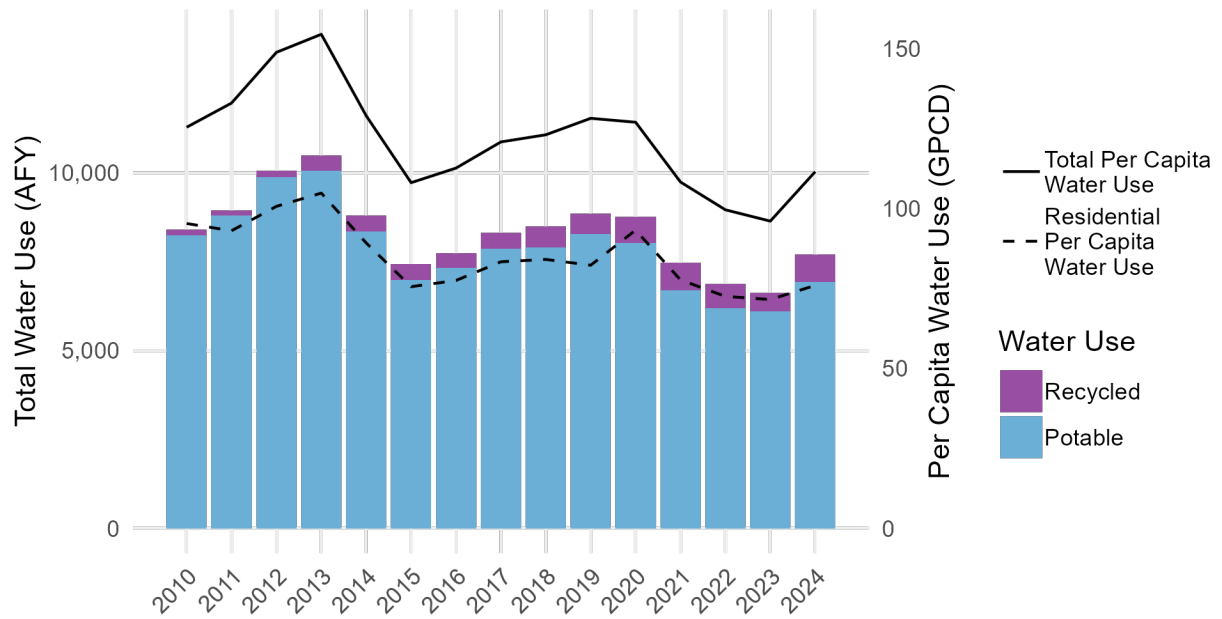
Abbreviations:

AFY = acre-feet per year
GPCD = gallons per capita per day
R-GPCD = residential gallons per capita per day

Notes:

- (a) Water use data are based on water production data provided by District staff.
- (b) Totals may not sum due to rounding.
- (c) Total per capita water use is calculated by dividing the annual water use by service area population (see Section 4) and the number of days in a year.
- (d) Residential per capita water use is calculated by dividing the annual residential water use by the service area population and the number of days in a year.

Figure 3-1 Total Water Production and Per Capita Water Use



Abbreviations:

AFY = acre-feet per year

GPCD = gallons per capita per day

Table 3-2 Annual Water Use by Customer Sector

Water Use Sector	Water Use (AFY) (a)														
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Single Family	5,126	4,995	5,528	5,810	4,883	4,090	4,232	4,631	4,677	4,553	5,119	4,209	3,865	3,814	4,081
Multi-family	1,263	1,269	1,278	1,307	1,201	1,104	1,095	1,106	1,124	1,124	1,317	1,154	1,145	1,128	1,165
Commercial	1,240	1,200	1,295	1,316	1,198	1,051	1,046	1,133	1,256	1,199	1,377	937	867	905	890
Irrigation	850	811	981	965	782	678	712	796	716	749	543	620	414	353	416
Recycled	159	159	184	420	453	452	415	458	592	578	772	729	566	521	639
Total Water Consumption (c)	8,638	8,433	9,267	9,819	8,517	7,375	7,501	8,124	8,366	8,204	9,128	7,648	6,857	6,721	7,193
Non-Revenue Water (b)	-231	519	796	670	279	54	242	193	124	645	-363	-173	23	-86	510
	-2.7%	5.8%	7.9%	6.4%	3.2%	0.7%	3.1%	2.3%	1.5%	7.3%	-4.1%	-2.3%	0.3%	-1.3%	6.6%
Total Water Demand (c)	8,407	8,952	10,063	10,489	8,796	7,429	7,743	8,317	8,491	8,849	8,765	7,476	6,880	6,635	7,703

Abbreviations:

AFY = acre-feet per year

Notes:

- (a) Water use data are provided by District staff.
- (b) Non-revenue water is calculated as the difference between total production and total consumption.
- (c) Totals may not sum due to rounding.

Figure 3-2 Annual Water Use by Sector Group

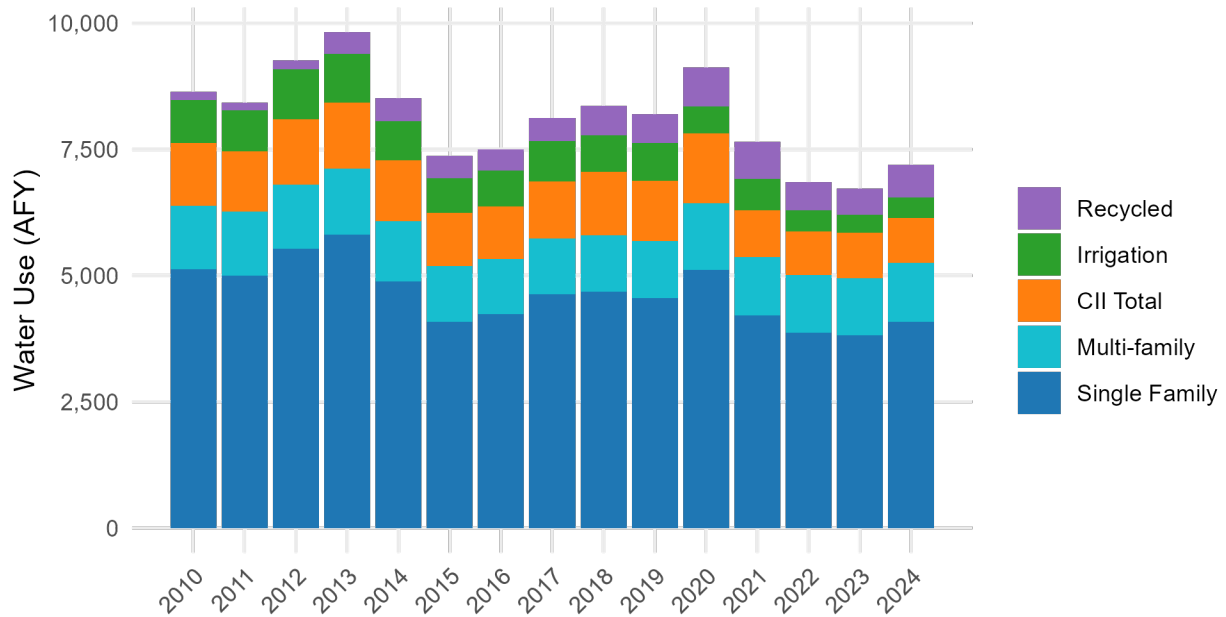
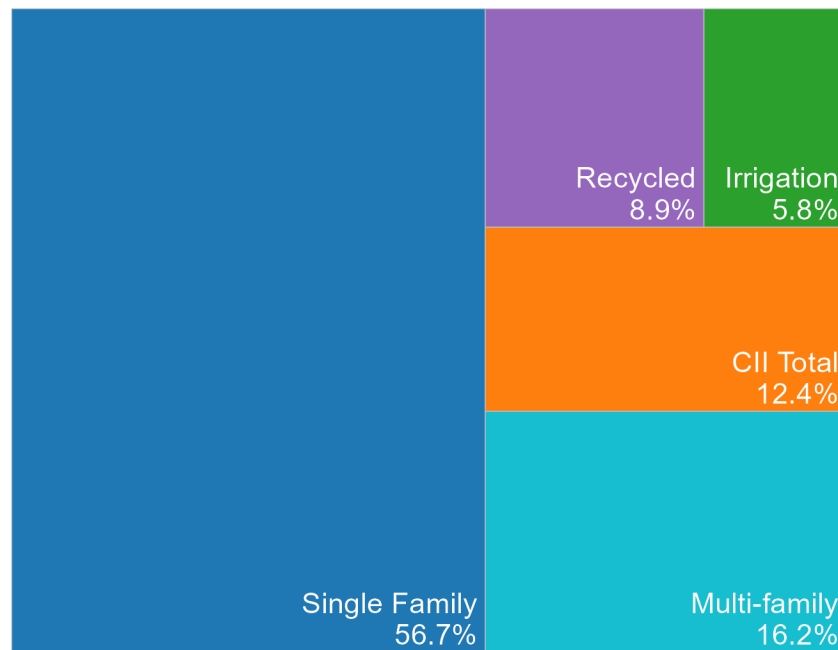


Figure 3-3 Proportional Water Use by Sector Group in 2024



Abbreviations:

AFY = acre-feet per year
CII = commercial, industrial, and institutional

Notes:

The CII Total sector group represents water use across all CII sectors with mixed-use meters.
The irrigation sector group represents water use across all CII dedicated irrigation meters.

3.2 Water Use Trends by Customer Sector

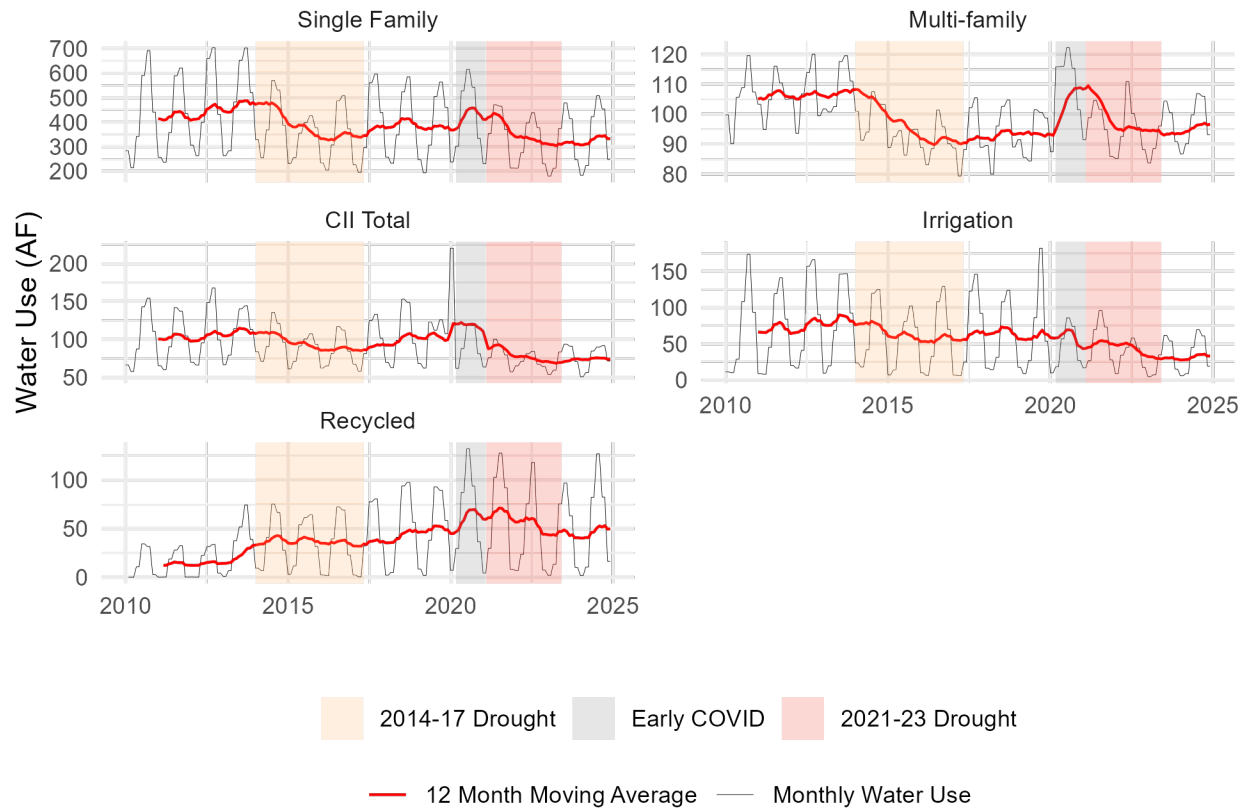
This section discusses long-term trends in both total water use and per-account water use across the SFR, MFR, CII, irrigation, and recycled water sector groups between 2010 and 2024. **Figure 3-4** shows monthly water use with 12-month moving averages. **Figure 3-5** summarizes the average annual water use per account. **Table 3-3** provides water use per customer sector. In total, these results provide insight into how each sector has responded to drought conditions, economic changes, and shifts in demographics.

- **SFR and MFR:** In both sectors, total water use has declined slightly between 2010 and 2024, with notable reductions during drought periods and partial rebounds after the droughts. Water use reductions during the drought periods are accompanied by diminished seasonality (**Figure 3-4**) that reflects likely reductions in outdoor irrigation in response to water use restrictions.

Average per-account water use was highest in 2013 in both sectors and rose again in 2020; likely due to stay-at-home measures during the beginning of the pandemic (**Figure 3-5**). Per-account use began to rebound in 2023-2024, and current levels are below historical in the SFR sector and comparable to 2017-2019 levels in the MFR sector.

- **CII Total:** The CII sectors exhibited a stronger rebound post-2014-2017 drought but showed declines in both total and per account use following the pandemic in 2020. These shifts may be tied to long-term changes in business activity and employment in the District, with reduced water demand persisting through 2024. Per account use has not begun to rebound and stays stable in 2023-2024 with current levels below historical.
- **Irrigation:** The irrigation sectors showed reductions during drought years and an overall water use decline between 2010 and 2024. Per account water use shows signs of a slight rebound in 2023-2024 but remains lower than historical levels.
- **Recycled water:** Recycled water use has increased in total volume over time, with a peak in 2021 followed by slight declines in response to the 2021-2023 drought. Per-account water use ranged between 5,060 gpd/account and 9,189 gpd/account between 2013 and 2024.

Figure 3-4 Monthly Water Use and 12-Month Moving Average



Abbreviations:

AF = acre-feet
CII = commercial, industrial, institutional

Notes:

The CII Total sector group represents water use across all CII sectors with mixed-use meters.
The irrigation sector group represents water use across all CII dedicated irrigation meters.

Table 3-3 Average Per Account Water Use by Sector Group

Water Use Sector	Water Use per Account (GPD/Account)														
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Single-Family Residential	310	302	334	351	294	246	255	278	281	273	307	252	230	227	243
Multi-Family Residential (a)	290	291	293	300	275	253	251	253	257	258	303	262	243	245	253
CII Total (b)	1,196	1,161	1,256	1,272	1,164	1,028	1,015	1,107	1,230	1,175	1,330	909	809	813	799
Irrigation (c)	1,761	1,631	2,047	2,047	1,715	1,491	1,542	1,790	1,599	1,879	1,269	1,495	903	771	911
Recycled Water	(d)	(d)	(d)	8,531	9,189	9,171	8,063	7,714	5,747	5,604	7,492	7,073	5,491	5,060	6,204

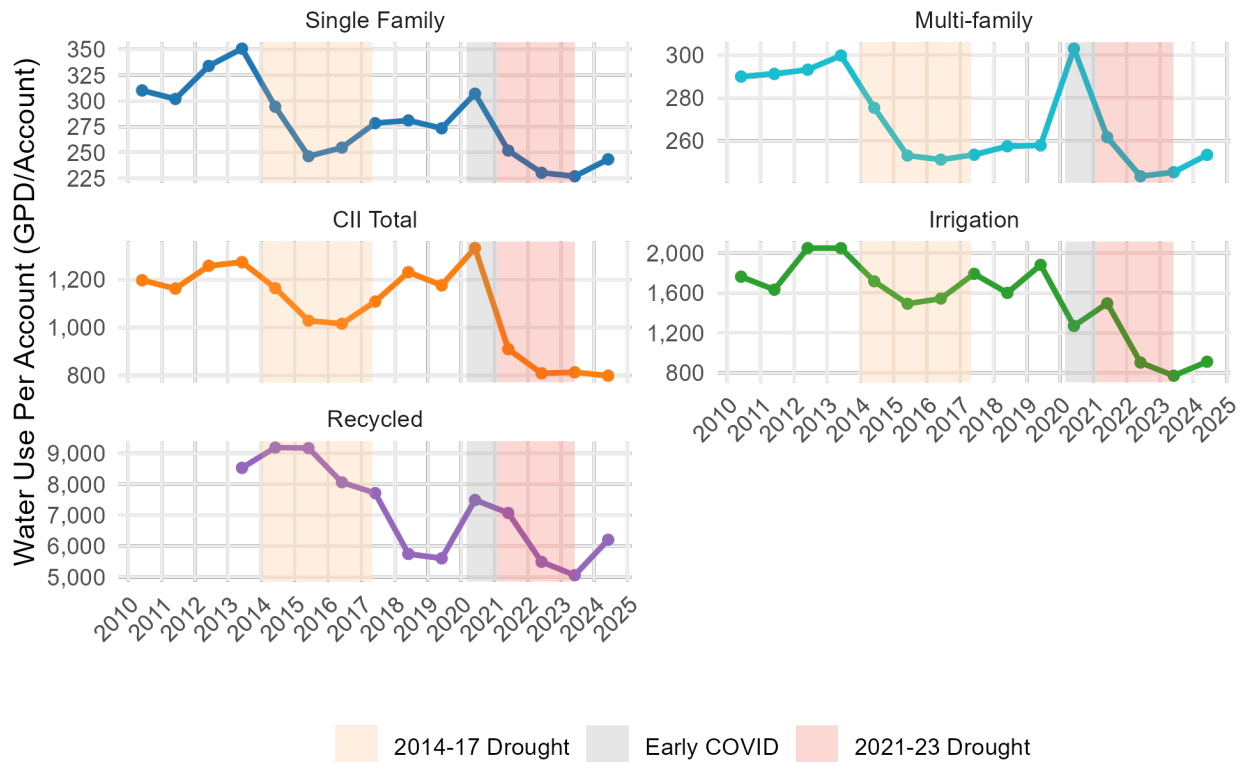
Abbreviations:

CII = commercial, industrial, and institutional
GPD = gallons per day

Notes:

- (a) The water use per account for multi-family residential customers measures water use at the master meter level, which can serve multiple units or the entire complex. This does not reflect water use per dwelling unit, as many properties are not individually submetered.
- (b) Based on the total water use and number of accounts across all CII sectors with mixed-use meters.
- (c) Based on the total water use and number of accounts across all sectors with dedicated irrigation meters.
- (d) Per account recycled water use during 2010-2012 was significantly higher than in other years and has been excluded from the analysis presented herein due to its anomalous nature.

Figure 3-5 Average Per Account Water Use by Sector Group



Abbreviations:

CII = commercial, industrial, and institutional
GPD = gallons per day

Notes:

(a) The CII Total sector group represents water use across all CII sectors with mixed-use meters. The irrigation sector group represents water use across all CII dedicated irrigation meters.

3.3 Estimated Indoor and Outdoor Water Use

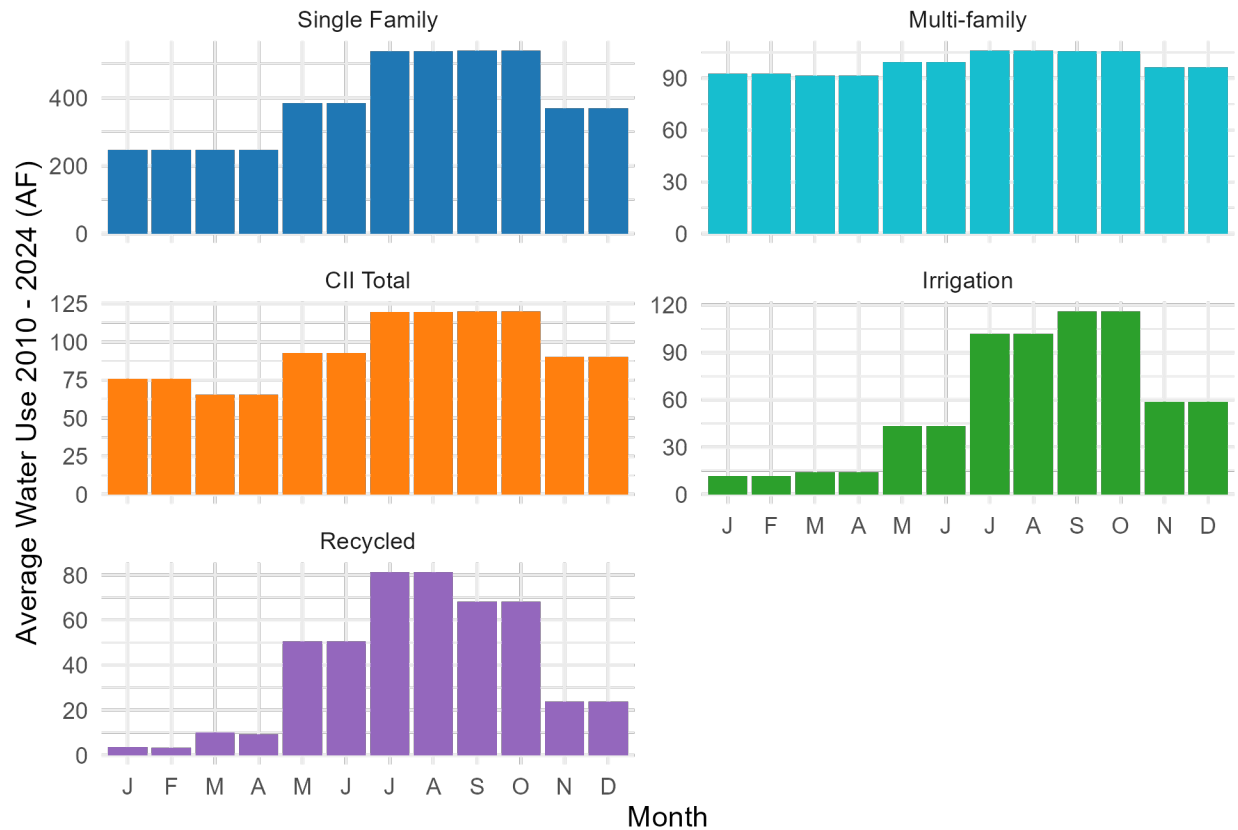
Water use within the District varies seasonally (**Figure 3-6**), primarily driven by increased irrigation needs in the summer compared to the more limited irrigation water use during the wetter and cooler winter months. The most pronounced seasonal fluctuations occur in the irrigation and recycled water sectors, where water use is limited to outdoor irrigation and water use is minimal during the winter.

In contrast, SFR, MFR, and the CII sector include water use from mixed-use meters and record both indoor and outdoor water use. In the SFR and CII sectors, summer water use is approximately double that of winter water use. The MFR sector shows less seasonality, with summer water use about 16% higher than winter water use.

It is important to note that many MFR and CII customers have dedicated irrigation meters that are included in the irrigation sector, not within the MFR and CII mixed-use sectors. As a result, the outdoor water use estimated for MFR and CII sectors herein reflects only the portion of

irrigation that remains on the domestic or mixed-use accounts. Some CII industries, such as restaurants, manufacturing, or facilities with cooling needs, may also experience seasonal variation in indoor water use, contributing to the modest increase in CII summer demands.

Figure 3-6 Average Monthly Water Use, 2010-2024



Abbreviations:

- AF = acre-feet
- CII = commercial, industrial, and institutional

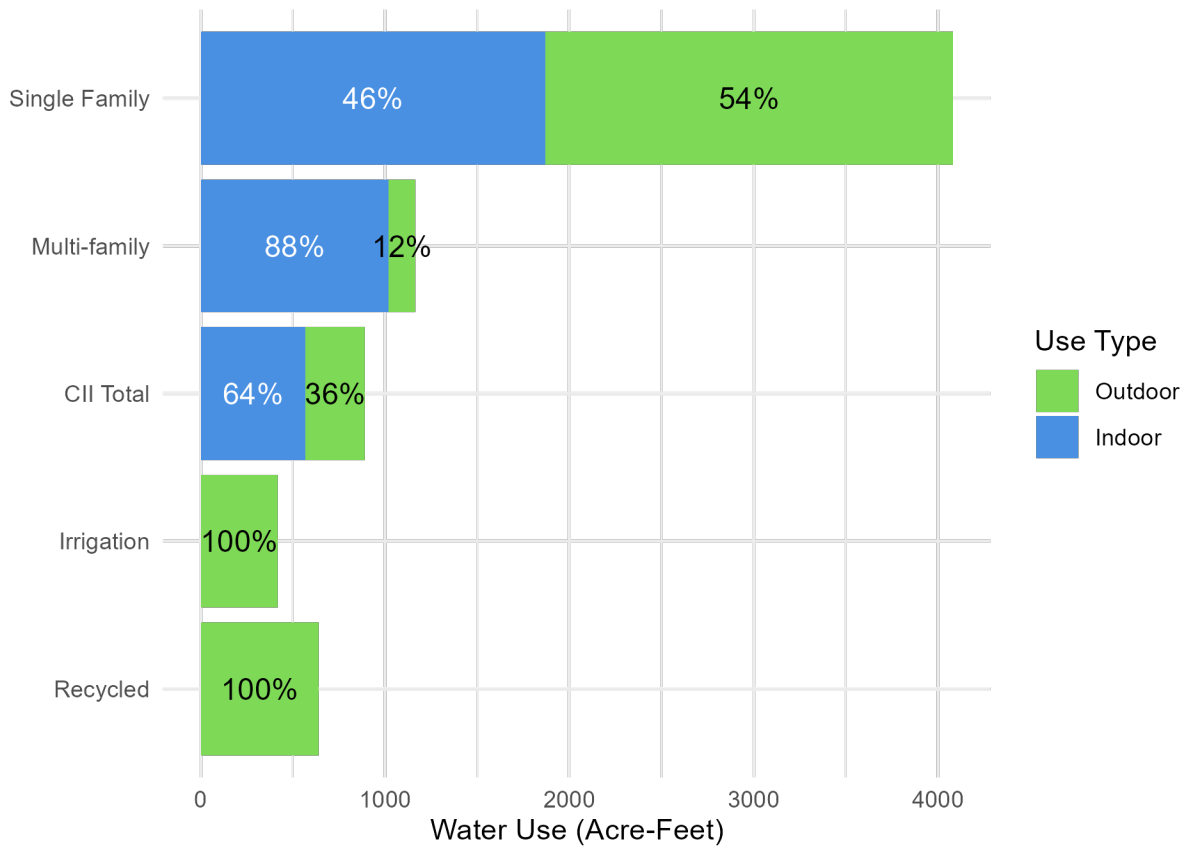
Notes:

- (a). The CII Total sector group represents water use across all CII sectors with mixed-use meters. The irrigation sector group represents water use across all CII dedicated irrigation meters.

A Seasonal Adjustment Method was used to estimate the relative proportions of water use that are used indoors versus outdoors in non-irrigation sectors. The methodology is further described in Appendix A. The results of this estimate are shown on **Figure 3-7**.

Aside from the dedicated irrigation and recycled sectors (100% outdoor water use), SFR water use is estimated to have the highest proportion of outdoor water use at 54%, followed by the CII sector of mixed-use accounts at 36%. The MFR sector of mixed-use accounts has an estimated 12% outdoor water use, corresponding to the lesser seasonality observed in this sector. These values should be interpreted with the understanding that a substantial portion of MFR and CII landscape irrigation is already captured in the irrigation sector through dedicated irrigation meters. Given their landscape-only demands, MFR and CII dedicated irrigation accounts represent meaningful opportunities for outdoor conservation programs.

Figure 3-7 Estimated Indoor and Outdoor Water Use, 2024



Abbreviations:

CII = commercial, industrial, and institutional

Notes:

The CII Total sector group represents water use across all CII sectors with mixed-use meters.
The irrigation sector group represents water use across all CII dedicated irrigation meters.

4 CONSERVATION PROGRAM PARTICIPATION

This section evaluates past participation in water conservation programs by District customers, including presenting historic program participation and estimated water savings associated with program participation. The purpose of this section is to document program participation and savings in order to inform future program selection and implementation, and to support the demand management measure (DMM) reporting required in the UWMP under CWC § 10631(e).³

4.1 Conservation Programs

The description of water conservation programs, eligible customer classes, and program run dates provided by the District to their customers is summarized in **Table 4-1** below. The District currently implements 16 conservation programs offered directly to customers. While many of these programs have been in operation since 1999, for the purposes of this analysis and report, only participation from 2008 to present was documented.

Table 4-1 Description of Conservation Programs

Program	Description	Eligible Customer Class(es)	Program Run Dates
Water Smart Home Surveys Program	In-depth analysis of the residential customer's indoor and outdoor water use with water-efficient recommendations to implement.	SFR (Both)	2008 – Current
Water Smart Commercial Surveys Program		CII (Both)	2008 – Current
Residential HET Rebates Program	Incentive available for qualifying customers who replace toilet(s) that use more than 1.6 gpf and replace them with a District-approved HET or UHET.	SFR (Indoor)	2008 – Current
Commercial HET Rebates Program		CII (Indoor)	2008 – Current
UHET Distribution Program		SFR (Indoor)	2008 – Current
Retrofit on Resale (Dwellings Certified) Program	All existing plumbing fixtures in existing structures receiving water from the District's water system shall, at the time of change of ownership, be retrofitted, if not already done, exclusively with water-conserving plumbing fixtures per Regulation 15 Section M.	SFR (Indoor)	2008 – Current

³ The information presented herein supports a portion of the required DMM analysis, focusing on device and education-focused programs. Additional details regarding customer billing rates and structure, conservation staffing levels, customer metering, etc. are required under CWC § 10631(e) but not addressed herein.

Table 4-1 Description of Conservation Programs (Continued)

Program	Description	Eligible Customer Class(es)	Program Run Dates
HECW Rebates Program	District customers are eligible for a rebate, as available from time to time, for approved high-efficiency washing machines in existing residences.	SFR (Indoor)	2008 – Current
Water Smart Landscape Rebates Program	Landscape water-efficient rebates are available to customers who install qualified water-efficient landscape equipment.	SFR (Outdoor)	2009 – Current
Residential WBIC Rebates Program	Incentive available, on a per irrigation valve basis, for the installation of District-approved weather-based irrigation controllers.	SFR (Outdoor)	2008 – Current
Commercial WBIC Rebates Program		CII (Outdoor)	2008 – Current
Swimming Pool Cover Rebates Program	District customers are eligible for rebates for purchasing District-approved swimming pool covers.	SFR (Outdoor)	2008 – Current
Large Landscape Audits Program	Detailed irrigation audits are available to all large landscape dedicated irrigation and mixed-use metered customers. Audit includes (but is not limited to) review of existing practices and provides recommendations for improved water use efficiency.	IRR (Outdoor)	2008 – Current
Lawn Be Gone (Sheet Mulching) Program	Sheet mulching materials (Cardboard, Compost, and Mulch) are available to customers who wish to cover their regularly maintained and irrigated lawn areas.	SFR (Outdoor)	2015 – Current
Hot Water Recirculation Program	An incentive is available to customers who install District-qualified hot water recirculation systems.	SFR (Indoor)	2015 – Current
Cash for Grass Rebates Program for Single-Family Accounts	An incentive is available for customers who remove regularly maintained and irrigated lawn areas and replace them with approved low-water-use plantings on drip irrigation.	SFR (Outdoor)	2008 – Current

Table 4-1 Description of Conservation Programs (Continued)

Abbreviations:

CII = commercial, industrial, institutional	gpf = gallons per flush
HECW = High Efficiency Clothes Washer	SFR = Single Family Residential
HET = High-Efficiency Toilet	UHET = Ultra High Efficiency Toilet
IRR = Irrigation	WBIC = Weather-Based Irrigation Controller

In addition to programs offered by the District, several regional programs are offered through the SMSWP, including: (1) education and outreach to schools, (2) public outreach and educational workshops, (3) Qualified Water Efficient Landscaper (QWEL) Training, and (4) garden tours.

4.2 Historical Conservation Program Participation

Table 4-3 summarizes participation in the District’s conservation programs from 2008 through 2024. Darker shading indicates higher participation values. The table shows the total number of participants in each program as a percentage of the total number of accounts in the predominant sector. This percentage serves as a measurement of program saturation (i.e., how extensively the program has been adopted within the target customer base) and whether there remains future potential from the program. **Figure 4-1** further illustrates the data included in **Table 4-3**, showing the participation by end use, sector group, or program categories, and turf replacement square footage over time.

Among the programs offered by the District, the programs that reached the largest number of customers and their respective sector participation rates included:

- Residential HET Rebates Program, 30% in the SFR sector;
- Retrofit on Resale (Dwellings Certified) Program, 27% in the SFR sector; and
- Water Smart Home Surveys Program, 25% in the SFR sector.

In addition, the District installed AMI meters on 100% of its services and provides leak notification to all of its customers.

As shown on **Figure 4-1**, graph A, participation in outdoor programs has remained stable over time, whereas participation in indoor programs and programs that target both end uses has decreased over time. Participation from the residential sector (graph B) has declined over time, while participation from the CII and irrigation sectors remained stable. Through the turf removal programs, over 800,000 square feet of turf have been removed. Per graph C, participation in these programs has fluctuated with peak activity during early implementation and drought years.

Looking at all programs per program category (graph D), most programs have a declining adoption rate over recent years, except participation in Audits and Reports remained relatively steady due to the consistent offering of the Large Landscape Budgets Program.

Table 4-2 summarizes participation in the regional SMWSP water conservation direct instruction school education and outreach programs from the 2020-2021 through 2024-2025 school years. Over this period, 2,656 students were reached by direct instruction. Additional students were

reached through indirect instruction such as assemblies, video and poster contests, and other educational materials.

Table 4-2 Participation in SMSWP School Education Programs, Direct Instruction

Grade Level	Number of Students Reached by School Year				
	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
Kindergarten	-	-	-	24	68
1 st – 3 rd Grade	74	74	142	288	422
4 th – 5 th Grade	273	52	262	257	357
Middle/High School	-	208	155	-	-
Total	347	334	559	569	847

4.3 Estimated Savings from Past Conservation Programs

The Alliance for Water Efficiency (AWE) model⁴ was used to estimate water savings associated with the implementation of all devices or turf replacement and audit programs identified in **Table 4-3** for the period of 2010 to 2024. Water savings estimates were based on AWE model default values and other literature values as needed. The specific assumptions used in this assessment are presented in Appendix B. The results of this analysis are presented in **Table 4-4** and illustrated on **Figure 4-2**. It is estimated that conservation programs included in this assessment resulted in active savings of 2,452 AF between 2010 and 2024.

As shown on **Figure 4-2**, the most successful program types in terms of estimated savings include the following, listed in order of savings:

- Audits & Reports (Water Smart Surveys Programs, Large Landscape Audits Program, and Large Landscape Budgets Program);
- HET and UHET Programs;
- Clothes Washes (HECW Rebate Program);
- Turf Replacement (Cash for Grass and Lawn Be Gone Rebate Programs); and
- Irrigation System and Devices (Water Smart Landscape Rebates Program and WBIC Rebates Program).

In addition, over this period, it is estimated that 747 AF was saved through passive savings.⁵ Thus, total active and passive savings are estimated to be 3,199 AF.

⁴ Alliance for Water Efficiency, Water Conservation Tracking Tool Version 4.3.

⁵ Passive water savings are water savings associated with the natural replacement of water using fixtures and devices with higher efficiency ones, due to plumbing code and market changes. Passive savings are estimated for the whole service area.

Table 4-3 Summary of Conservation Program Participation
North Marin Water District, Sonoma-Marín Saving Water Partnership

Program Name	End Use		Program Category	Number of Program Participants																	Pct. of Accounts (b)	
	Sector (a)	Indoor/Outdoor		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		Total
Water Smart Home Surveys Program	SFR	Both	Audits & Reports	213	305	330	345	283	177	366	364	224	385	301	245	152	0	9	13	17	3,729	24.9%
Water Smart Commercial Surveys Program	CII	Both	Audits & Reports	28	22	39	20	5	4	5	7	5	10	4	2	3	0	4	4	2	164	11.7%
Residential HET Rebates Program	SFR	Indoor	HET	368	511	541	568	230	238	348	352	354	211	147	172	125	109	133	71	62	4,540	30.3%
Commercial HET Rebates Program	CII	Indoor	HET	32	137	13	64	5	9	1	17	4	3	3	3	0	2	2	1	2	298	21.2%
UHET Distribution Program	SFR	Indoor	ULFT	502	764	0	0	0	0	497	85	10	0	0	0	0	0	0	0	0	1,858	12.4%
Retrofit on Resale (Dwellings Certified) Program	SFR	Indoor	Policies & Regulations	248	303	322	280	274	315	293	288	236	278	249	174	170	225	169	97	92	4,013	26.8%
HECW Rebates Program	SFR	Indoor	Clothes Washers	415	543	476	468	312	252	308	155	103	55	24	16	7	26	37	33	44	3,274	21.9%
Water Smart Landscape Rebates Program	SFR	Outdoor	Irrigation Systems & Devices	-	21	23	15	8	3	9	8	7	8	4	8	10	16	31	20	10	201	1.3%
Residential WBIC Rebates Program	SFR	Outdoor	Irrigation Systems & Devices	10	10	5	0	2	22	18	8	7	11	15	19	17	28	16	14	6	208	1.4%
Commercial WBIC Rebates Program	CII	Outdoor	Irrigation Systems & Devices	4	4	20	1	1	0	0	0	0	0	0	0	0	0	3	0	0	33	2.4%
Swimming Pool Cover Rebates Program	SFR	Outdoor	Pools & Fountains	69	20	2	2	0	0	0	25	27	3	5	5	2	31	50	28	23	292	2.0%
Large Landscape Audits Program	IRR	Outdoor	Audits & Reports	20	12	19	6	0	16	5	0	8	0	9	10	4	3	2	2	3	119	29.2%
Lawn Be Gone (Sheet Mulching) Program	SFR	Outdoor	Turf Replacement	-	-	-	-	-	-	-	15	5	2	3	3	0	9	0	2	0	39	0.3%
Hot Water Recirculation Rebate Program	SFR	Indoor	Cooling & Heating Systems	-	-	-	-	-	-	-	15	5	1	4	2	2	14	4	4	4	50	0.3%
Total Turf Removed (square feet)																						
Cash for Grass Rebates Program	SFR	Outdoor	Turf Replacement	17,525	49,028	86,129	37,954	28,540	27,207	46,485	114,341	132,226	41,760	17,581	33,392	20,212	11,596	42,601	32,004	17,308	755,889	-
Cash for Grass Rebates Program for Irrigation Accounts	IRR	Outdoor	Turf Replacement	53,553												-	-	-	-	-	53,553	-
Lawn Be Gone (Sheet Mulching) Program	SFR	Outdoor	Turf Replacement	-	-	-	-	-	-	-	10,000	3,500	1,600	2,400	2,400	0	7,200	0	1,600	0	28,700	-
Active AMI Meters																						
AMI Leak Notifications Program	All	Both	Leaks and Water Losses	-	-	-	-	-	-	-	-	-	294	16,812	19,216	19,377	19,532	19,806	19,954	20,547	20,547	(d)

Abbreviations

AMI = advanced meter infrastructure
HECW = High Efficiency Clothes Washer
IRR = Irrigation
WBIC = Weather Based Irrigation Controller

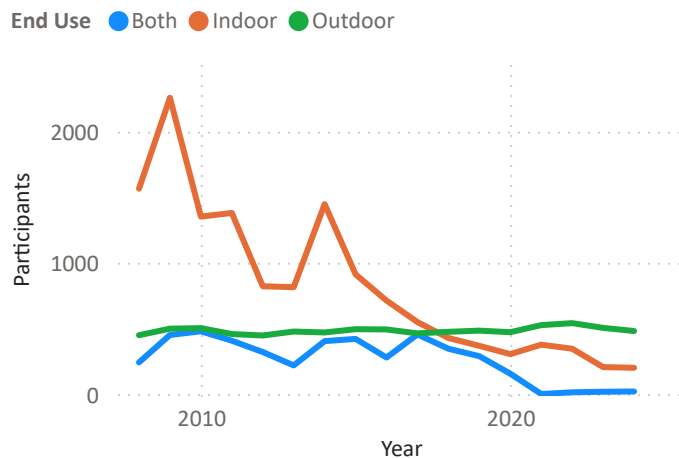
CII = Commercial, Industrial, Institutional
HET = High Efficiency Toilet
SFR = Single-family residential

Notes

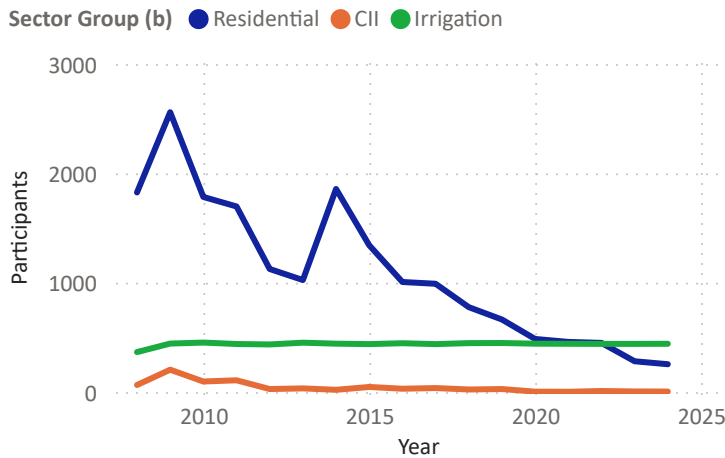
- (a) Predominant sector for program participants.
- (b) Participation is calculated as a percentage of total accounts of the predominant sector indicated.
- (c) Colored shading is added for visualization purposes. Green shading represents higher participation values.
- (d) The District offers leak detection and notification to its customers on AMI meters. As such, the data reflects the number of AMI meters installed. The District is fully installed with AMI meters since 2019.

Figure 4-1
Conservation Program Participation
 North Marin Water District, Sonoma-Marin Saving Water Partnership

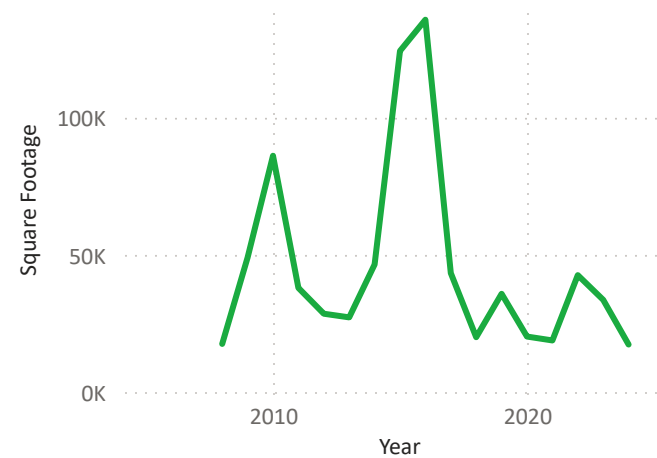
A. Participants by Year and End Use



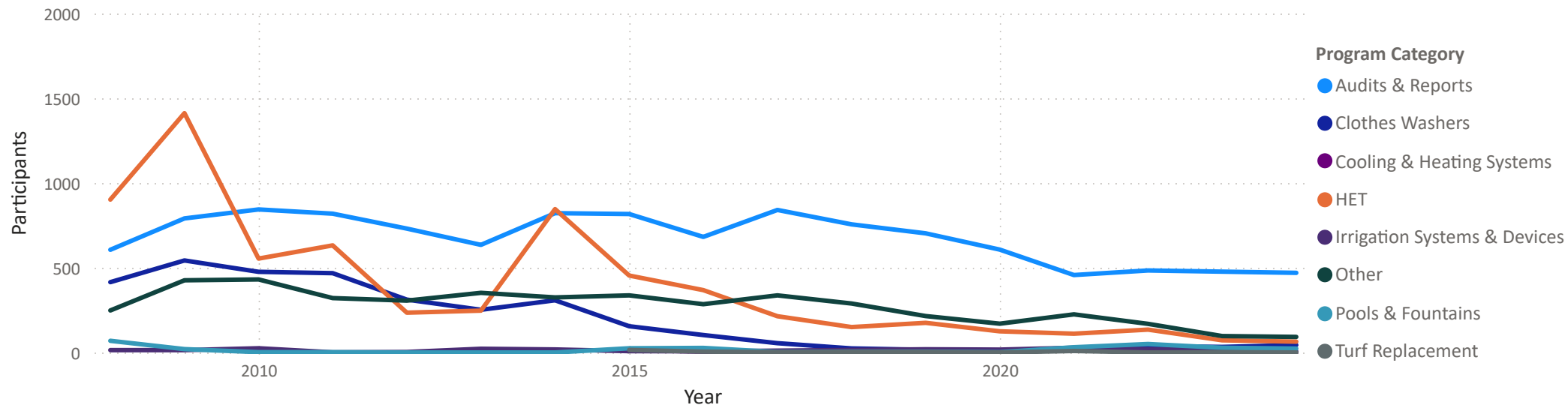
B. Participants by Year and Sector Group



C. Turf Replacement Square Footage



D. Participants by Year and Program Category



Abbreviations:

CII = commercial, industrial, institutional
 HET = high efficiency toilet

Notes:

- (a) See Table 4-3 for program end use, sector, category information and detailed program participation data.
- (b) Programs are summarized by Residential, CII, Irrigation, or Multiple sector groups based on their targeted sectors. Programs that cannot be exclusively assigned to the Residential, CII, Irrigation sector groups are assigned to the Multiple sector group.
- (c) Turf replacement includes both turf replacement and mulch rebate programs.
- (d) Participation in the AMI Leak Notifications Program (i.e., AMI meters installed) are excluded.

Table 4-4 Estimated Water Savings Achieved by Conservation Programs and Passive Savings
 North Marin Water District, Sonoma-Marín Saving Water Partnership

Water Savings Type (a)	End Use		Program Category	Estimated Annual Water Savings (AFY) (c)															Cumulative Water Savings (AF)
	Sector (b)	Indoor/Outdoor		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Water Smart Home Surveys Program	SFR	Both	Audits & Reports	13	24	30	31	39	42	38	42	43	39	33	23	14	8	4	422
Water Smart Commercial Surveys Program	CII	Both	Audits & Reports	14	18	17	15	14	9	6	8	7	6	5	4	3	3	3	133
HET Rebates Program	SFR	Indoor	HET	4	9	10	12	14	16	19	20	20	21	21	21	21	21	21	249
HET Rebates Program	MFR, CII	Indoor	HET	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13
UHET Distribution Program	SFR	Indoor	HET	0	0	0	0	20	23	23	22	22	22	21	21	21	20	20	234
HECW Rebates Program	SFR	Indoor	Clothes Washers	8	15	20	24	29	31	33	34	34	35	35	35	36	36	37	441
Water Smart Landscape Rebates Program	SFR	Outdoor	Irrigation Systems & Devices	0.6	1.1	1.3	1.4	1.6	1.8	2.0	2.3	2.4	2.6	2.2	2.3	2.9	3.4	3.4	31
WBIC Rebates Program	SFR	Outdoor	Irrigation Systems & Devices	0.1	0.1	0.2	0.8	1.4	1.6	1.8	2.1	2.6	3.1	3.5	4.3	4.7	4.5	4.1	35
WBIC Rebates Program	CII	Outdoor	Irrigation Systems & Devices	16.3	17.1	17.9	17.9	18	18	18	18	18	18	2	1	0	0	0	179
Swimming Pool Cover Rebates Program	SFR	Outdoor	Pools & Fountains	0	0.1	0.1	0.1	0.1	0.5	1.0	1.1	1.2	1.3	0.8	0.9	1.8	2.3	2.6	14
Large Landscape Audits Program	IRR	Outdoor	Audits & Reports	19	21	17	30	29	17	19	16	16	21	21	17	16	12	9	279
Hot Water Recirculation Rebate Program	SFR	Indoor	Cooling & Heating Systems	0	0	0	0	0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	2
Cash for Grass Rebates Program (d)	SFR	Outdoor	Turf Replacement	4	4	5	6	9	16	19	20	21	21	20	18	18	19	16	216
Cash for Grass Rebates Program (d)	IRR	Outdoor	Turf Replacement	0.5	1.0	1.5	2.0	2.5	3.0	3.5	3.9	4.4	4.9	4.4	3.9	3.5	3.0	2.5	44
AMI Leak Notifications Program	All	Both	Leaks and Water Losses	0	0	0	0	0	0	0	0	19	22	22	23	23	23	24	158
<i>Conservation Program Water Savings (Active Savings)</i>				<i>80</i>	<i>112</i>	<i>121</i>	<i>140</i>	<i>178</i>	<i>179</i>	<i>185</i>	<i>190</i>	<i>212</i>	<i>218</i>	<i>192</i>	<i>175</i>	<i>166</i>	<i>157</i>	<i>148</i>	<i>2,452</i>
<i>Passive Water Savings (e)</i>				<i>43</i>	<i>45</i>	<i>44</i>	<i>45</i>	<i>51</i>	<i>54</i>	<i>51</i>	<i>49</i>	<i>64</i>	<i>60</i>	<i>55</i>	<i>52</i>	<i>49</i>	<i>45</i>	<i>41</i>	<i>747</i>
Total Water Savings				122	156	165	185	229	234	236	239	276	278	247	227	214	201	189	3,199

Abbreviations

CII = Commercial, Industrial, Institutional
 HET = High Efficiency Toilet
 HECW = High Efficiency Clothes Washer

IRR = Irrigation
 SFR = Single-family residential
 UHET = Ultra-High Efficiency Toilet

WBIC = Weather-Based irrigation Controller

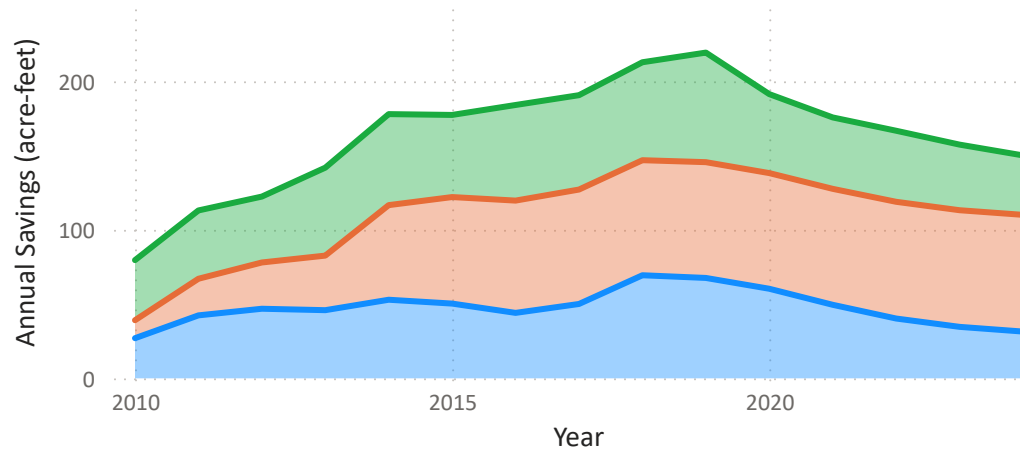
Notes

- (a)
- (b) Predominant sector for program participants.
- (c) Water savings are estimated per the AWE model based on program participation data. Program water saving assumptions are included in Appendix B.
- (d) The water savings for the cash for grass rebates program and the lawn be gone (sheet mulching) program are combined for purposes of this assessment.
- (e) Passive water savings are water savings associated with the natural change out of water using fixtures and devices with higher efficiency ones, due to plumbing code and market changes. Passive savings are estimated for the whole service area.

Figure 4-2
Estimated Annual Water Savings Achieved by Conservation Programs
 North Marin Water District, Sonoma-Marin Saving Water Partnership

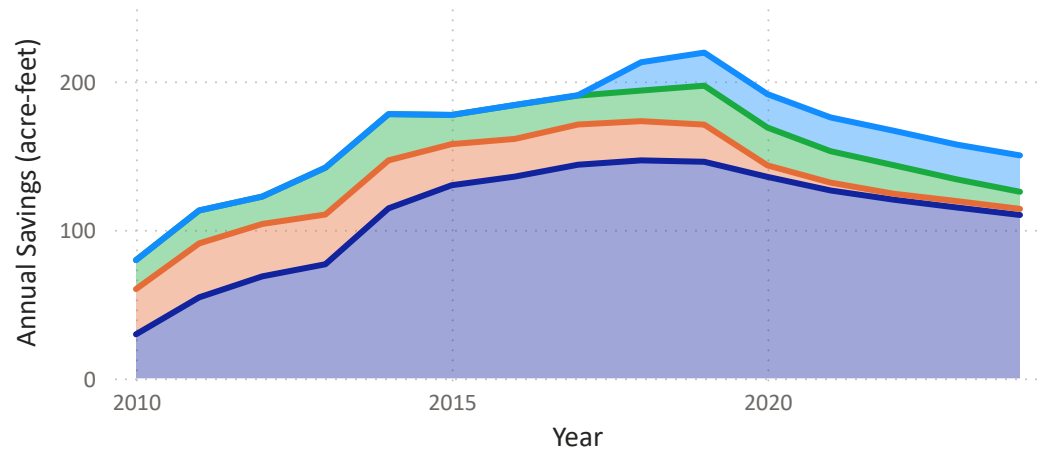
A. Active Conservation Savings by Year and End Use

End Use ● Both ● Indoor ● Outdoor

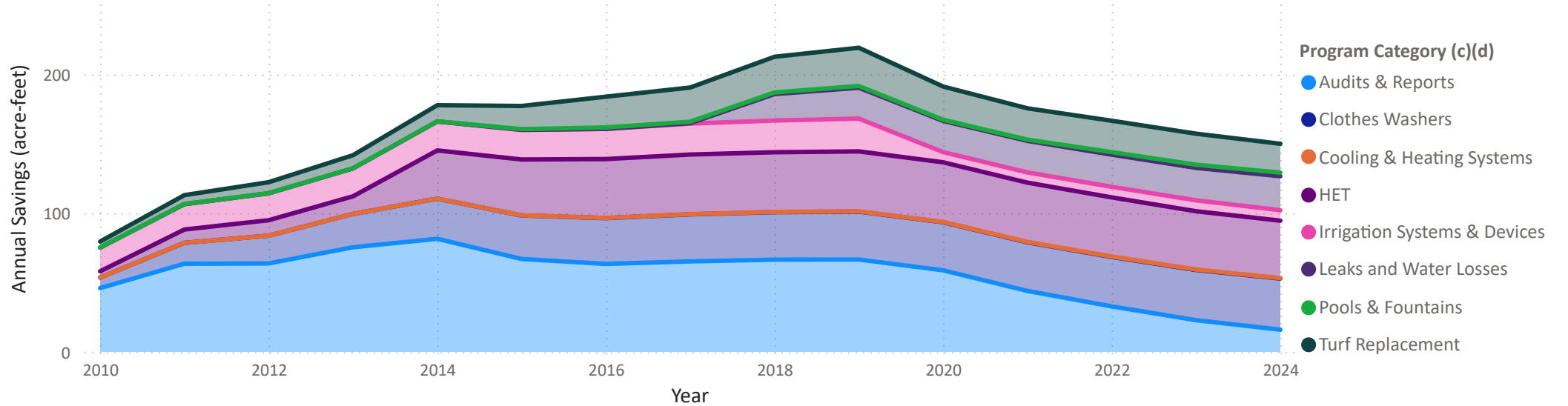


B. Active Conservation Savings by Year and Sector Group

Sector Group (b) ● Residential ● CII ● Irrigation ● Multiple



C. Active Conservation Savings by Year and Program Category



Abbreviations:

CII = commercial, industrial, institutional
 HET = high efficiency toilet

Notes:

- (a) See Table 4-4 for program end use, sector, category information and detailed savings by program.
- (b) Programs are summarized by Residential, CII, Irrigation, or Multiple sector groups based on their targeted sectors. Programs that cannot be exclusively assigned to the Residential, CII, Irrigation sector groups are assigned to the Multiple sector group.
- (c) Turf replacement includes both turf replacement and mulch rebate programs.
- (d) Program categories with minimal historical savings may not be visible from this figure.

5 WATER DEMAND PROJECTIONS

The purpose of this section is to document the basis, methodology, and resulting projected demands for the District through 2050. As described in more detail below, the future water demands for the District were estimated by:

1. Applying an estimated growth rate to accounts within each water use sector based on projected population and employment growth rates,
2. Evaluating and selecting water demand factors for each water use sector based on a review of recent average per-account water use representing three scenarios,
3. Estimating future passive savings using the Alliance for Water Efficiency (AWE) Water Conservation Tracking Tool (AWE model), and
4. Calculating estimated future water demand that incorporates the anticipated account growth, water demand factors, and estimated future passive water savings.

This methodology is consistent with California Water Code (CWC) § 10631(d)(4)(A), which requires that “Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.” The assumptions used as the bases for demand projections were developed in close coordination with the District and reflect a land-use-based approach consistent with the District’s community planning.

5.1 Basis for Account Growth Projections

Baseline water demand is estimated by multiplying the number of accounts by the sector-specific demand factors, before applying other adjustment factors. In order to estimate how accounts will grow within the District, recent historical account growth within the District was considered, as well as projected future growth in population and employment. As described below, it was assumed that, depending on the customer sector, the number of accounts would grow at the same rate as the projected population or employment growth.

Table 5-1 identifies the growth projection assumptions applied to each potable water use sector per the District’s direction and identifies the average annual growth rate in accounts observed within the District from 2015 to 2024 to provide context for the growth assumptions. Growth for all sectors is based on the Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC) Plan Bay Area 2050 population projections (ABAG, 2021).

Table 5-2 presents the District’s historical population. The District’s historical population for 2020 is from the District’s 2020 UWMP (EKI, 2021), and the historical population from 2021-2024 is based on a 2.56 persons per dwelling unit factor provided by the District.

Table 5-1 Historical and Projected Account Growth Rate by Customer Sector

Water Use Sector	Basis for Account Growth (b)	Average Annual Growth of Accounts (a)	
		Historical (2015-2024)	Projected Growth Through 2050
Single Family (c)	ABAG Population	0.11%	0.34%
Multifamily (c)	ABAG Population	0.61%	1.29%
Commercial	ABAG Population	1.00%	0.61%
Irrigation	ABAG Population	0.05%	0.61%
Recycled	ABAG Population	12.1%	0.61%

Abbreviations:

ABAG = Association of Bay Area Governments

Notes:

- (a) Growth of the number of accounts is presented on an average annual basis over the indicated period. When applied to account growth, the specific growth rate between each 5-year period was applied.
- (b) ABAG projections include population, households, and employment values (ABAG, 2021). The ABAG household projections project a growth of 3,435 households in the 10-year period between 2025 and 2035, which aligns with and is inclusive of the 2,607 new households provided by local 2021-2031 Housing Elements over the 8-year period.
- (c) To reflect a higher proportion of multi-family development from historical patterns, 50% of new households to be built within the District is allocated to single-family homes, and the remaining 50% is allocated to multi-family homes.

Table 5-2 Population and Employment Growth Projections
North Marin Water District, Sonoma-Marín Saving Water Partnership

Category	Growth Projections											Total Growth Rate 2025-2050	Average Annual Growth Rate 2025-2050
	2020	2021	2022	2023	2024	2025	2030	2035	2040	2045	2050		
Population													
Historical Population Estimates (a)	61,640	61,655	61,693	61,683	61,686	--	--	--	--	--	--	--	--
ABAG Population Projections (b)	--	--	--	--	--	62,064	63,955	65,846	67,715	69,584	71,452	15%	0.61%
Single Family Population (c)	--	--	--	--	--	44,512	44,985	45,514	46,423	47,334	48,246	8%	0.34%
Multifamily Population (c)	--	--	--	--	--	17,552	18,970	20,332	21,292	22,250	23,206	32%	1.29%

Abbreviations:

- = not available
- ABAG = Association of Bay Area Governments
- NMWD = North Marin Water District

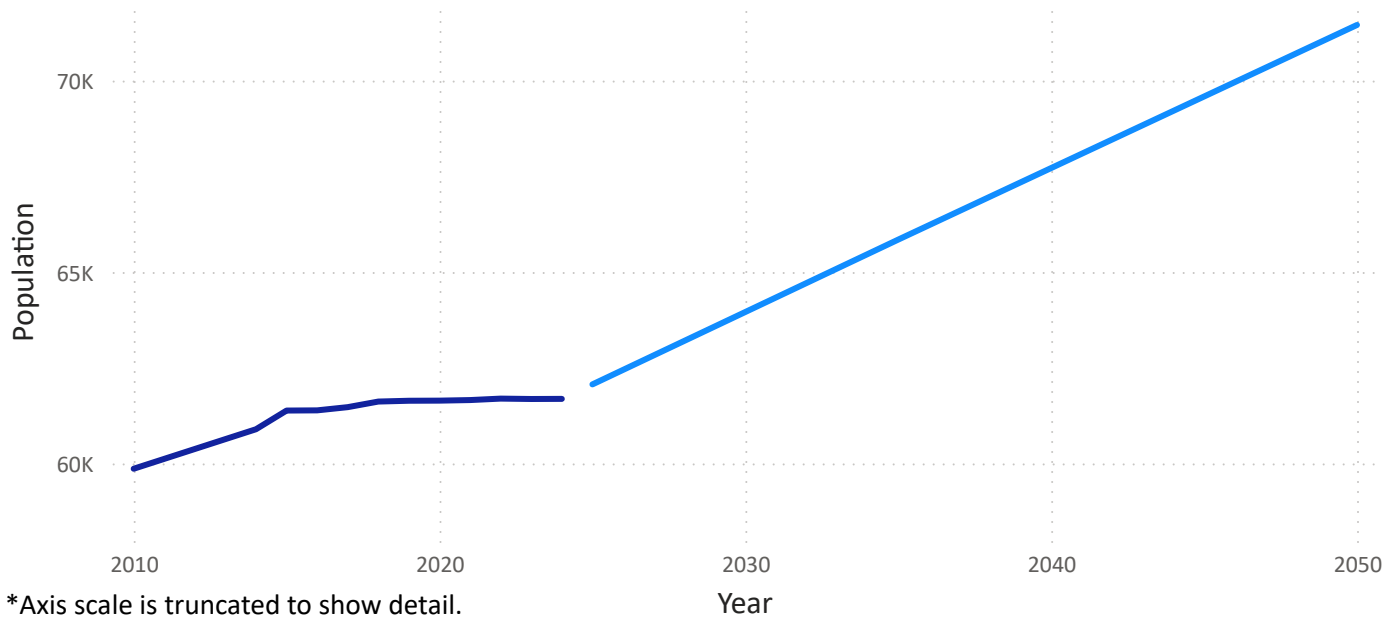
Notes:

- (a) Historical population estimates for 2021 - 2024 are calculated by multiplying the total number of active dwelling units by 2.56 persons per dwelling unit, provided by NMWD staff on February 7, 2025. Historical population for 2020 per NMWD, 2021.
- (b) Population projections are based on ABAG, 2021. The ABAG household projections projects a growth of 3,435 households in the 10-year period between 2025 and 2035, which aligns and is inclusive of the 2,607 new households provided by local 2021-2031 Housing Elements over the 8 year period.
- (c) Projected single family and multifamily population is estimated based on the assumption that 50% of new households to be built within NMWD will be single family homes and the remaining 50% will be multifamily homes to reflect a higher proportion of multifamily development from historical patterns.

Figure 5-1 Population and Employment Projections
 North Marin Water District, Sonoma-Marín Saving Water Partnership

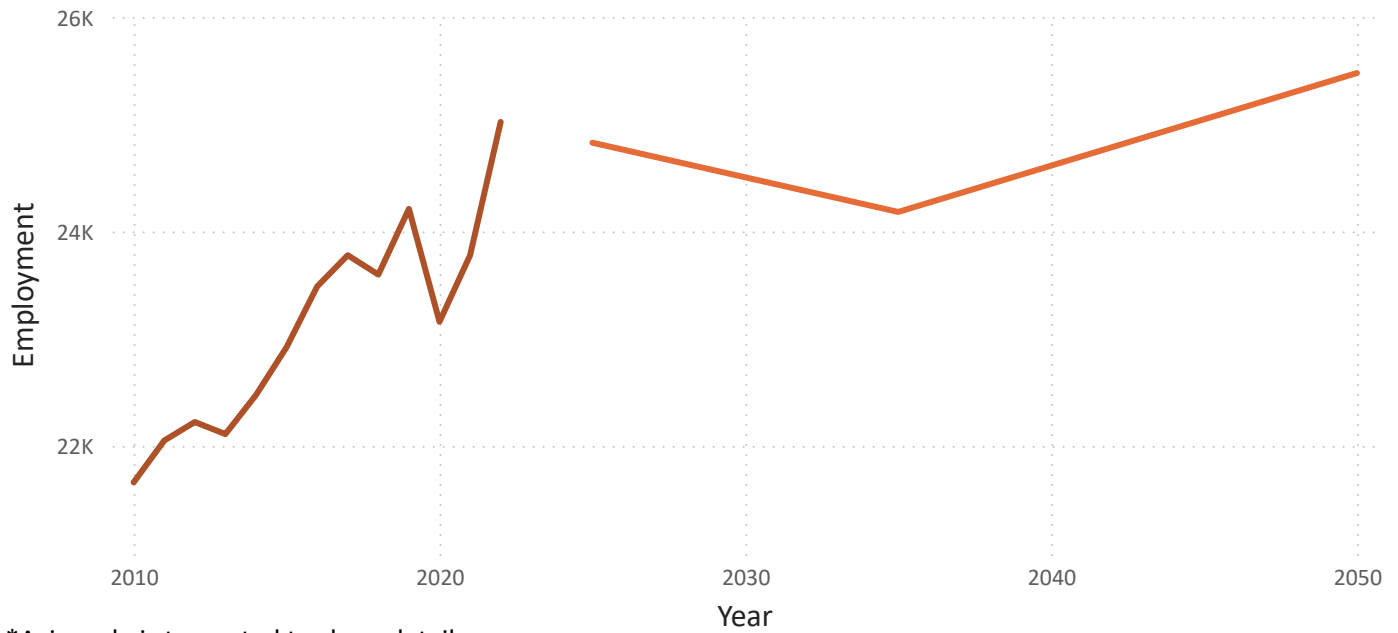
Population

Source ● Historical Population ● Projected Population



Employment

Source ● Historical Employment ● Projected Employment



5.2 Planned Development Within the Service Area

There are no development projects additional to the growth assumptions identified by District staff.

5.3 Water Demand Factors

Water use rates are influenced by a variety of factors, including weather, economic recession, and state and local regulations, among other drivers. Given this, selecting a “representative” baseline is important to developing the land-use-based water demand factors to estimate baseline water use by existing customers, which can then be extrapolated and applied to future growth within the District. **Table 5-3** shows the water demand factors used to estimate baseline water demand.

Table 5-3 Selected Water Demand Factors

Water Use Sector Group	Water Demand Factor	Units	Basis for Demand Factor
Water Consumption			
Single Family	281	GPD/account	Maximum of 2017-2019
Multi-family	258	GPD/account	Maximum of 2017-2019
CII Total (a)	1,230	GPD/account	Maximum of 2017-2019
Irrigation	1,879	GPD/account	Maximum of 2017-2019
Recycled	7,714	GPD/account	Maximum of 2017-2019
Non-Revenue Water			
Apparent Losses	4.0	GPD/connection	CY 2023 Water Loss Audit for Novato System
Real Losses	10.8	GPD/connection	
Unbilled Authorized	0.67	GPD/connection	
Abbreviations: CY = calendar year GPD = gallons per day			
Note: (a) Represents the combined demands of all CII sectors with mixed-use meters. The CII sectors are evaluated as a single group, as the same growth rate is applied uniformly across all CII sectors; therefore, it is mathematically equivalent to projecting each sector individually and summing the results. Final projected demands are then allocated back to each CII sector based on their relative proportions within the CII Total group.			

5.3.1 Potable Water

Water demand factors based on historical use within the District were used as the basis of future demand projections for potable water accounts. As discussed in Section 3.2, the District’s per-account water use declined over the past 15 years due to improvements in water use efficiency

and showed a significant response to key events such as the 2014-2017 drought, the 2021-2023 drought, and the COVID-19 pandemic. Current (2024) water use is below historical levels. Potable water demand factors are developed based on the maximum per-account annual water use by sector for 2017 through 2019, generally representing the lower levels of recent water use but considering rebound to pre-2020 levels.

5.3.2 Recycled Water

As discussed in Section 3.2, the District's per-account historical water use for recycled water followed similar trends to the District's potable account water use (i.e., 2024 water use is below historical levels). Therefore, the recycled water demand factor is similarly developed based on the maximum per-account annual water use by sector for 2017 through 2019.

5.3.3 Non-Revenue Water and Water Loss

Non-revenue water is water that has been produced but not billed and thus does not generate revenue for the supplier. To more fully capture total water use within the District, non-revenue water is estimated based on a sum of (1) unbilled authorized uses (such as water for fighting fires and flushing mains), (2) apparent water loss due to metering inaccuracies, and (3) real water loss due to distribution system leaks. Rates of non-revenue water in gpd per service connection are based on the District Calendar Year (CY) 2023 water loss report for the Novato System.

5.4 Passive Water Savings Estimate

Passive water savings are the water savings associated with the natural replacement of older toilets, showerheads, clothes washers, and other water-using appliances with newer high-efficiency devices that are available due to both market shifts and increasing efficiency mandated by the building code and other regulatory requirements. The AWE model was used to estimate future passive savings within the District (AWE, 2021). These future water savings are a result of plumbing/energy codes interacting with the natural replacement of toilets, showerheads, and other water-using appliances whose current or future efficiency is dictated by national, state, or local code requirements. The AWE model calculates efficient plumbing fixture saturation rates and takes into account historical and projected replacement of plumbing fixtures by utility programs, as well as natural replacement. The AWE model also considers estimates of historical population, residential building stock, number of accounts, and projected population and account growth to estimate future passive savings.

An adjustment factor of 80% is applied to the AWE model estimates to conservatively cap passive savings at the levels estimated in the 2020 Water Demand and Conservation Measure Report (EKI, 2020). The estimated passive savings are presented in **Table 5-4** and are subtracted from the water demand projected based on the water demand factors described in Section 5.3 above. Passive savings are only applied to potable water use.

Table 5-4 Projected Demand and Passive Conservation

	Projected Demand (AFY) (a)					
	2025	2030	2035	2040	2045	2050
Potable Water						
Baseline Potable Water Demand	8,527	8,752	8,980	9,220	9,460	9,700
Passive Water Conservation (b)	(49)	(249)	(396)	(504)	(595)	(676)
Total Potable Water Demand (c)	8,478	8,503	8,583	8,716	8,865	9,023
Non-Potable Demand						
Recycled Water Demand	800	824	849	873	897	921
Total Non-Potable Demand	800	824	849	873	897	921
Total Demand (c)	9,278	9,327	9,432	9,589	9,762	9,944
Abbreviations: AFY = acre-feet per year AWE = Alliance for Water Efficiency						
Notes: (a) Water demand projections are estimated based on growth in accounts shown in Table 5-1 and the water demand factors identified in Table 5-3 . Non-revenue water projections are estimated by water loss factors shown in Table 5-3 and the total growth in number of services from all sectors. (b) Passive water savings calculated from the AWE Conservation Tracking Tool; however, the savings were conservatively capped at the 2020 Water Demand and Conservation Measure Report estimates. (c) Totals may not sum due to rounding.						

5.5 Projected Water Demand Through 2050

Future potable water demand was projected for each sector based on their respective demand factors, non-revenue water estimated as a proportion of total potable water production, and estimated passive savings, and is shown in **Table 5-4**. Potable water demand is projected to increase to 9,023 AFY in 2050, which is a 30% increase over 2024 water demand, and recycled water demand is projected to increase to 921 AFY in 2050, an 18% increase over 2024 demand.

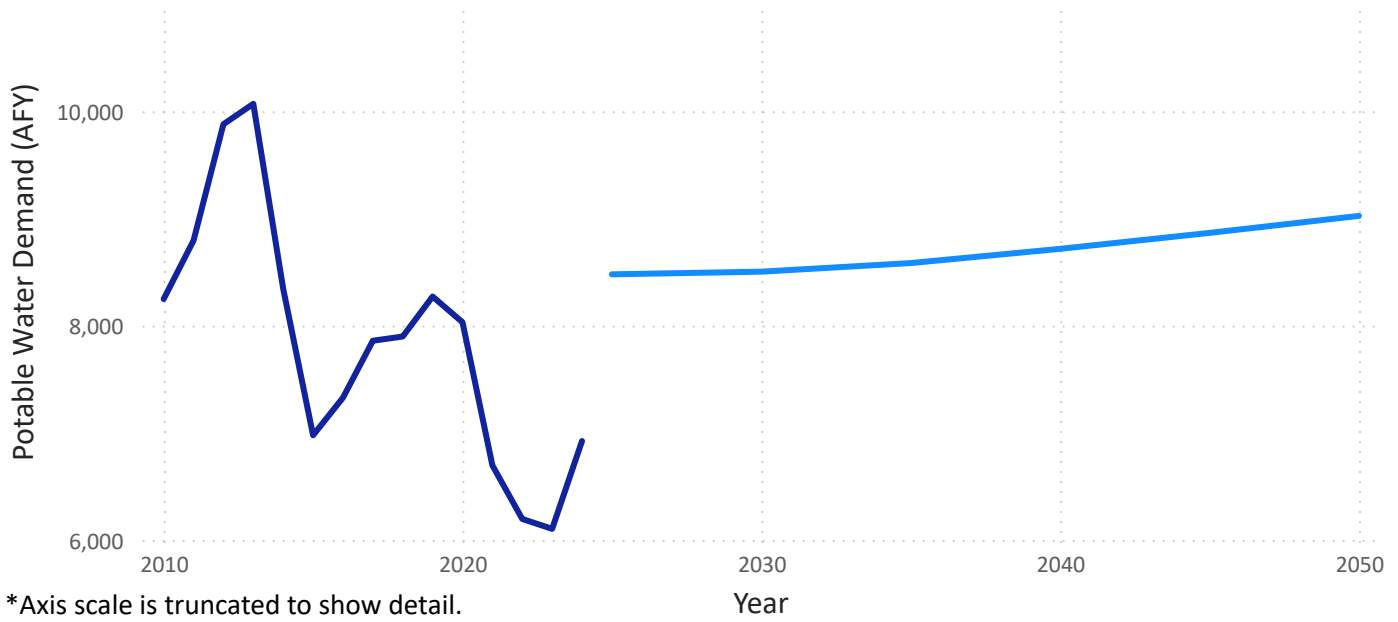
Table 5-5 Projected Water Demand by Sector

Water Use Sector	Projected Demand (AFY) (a)					
	2025	2030	2035	2040	2045	2050
Potable Water						
Single Family Residential	4,692	4,630	4,614	4,656	4,710	4,769
Multifamily Residential	1,193	1,229	1,271	1,305	1,341	1,379
Commercial	1,373	1,388	1,406	1,427	1,450	1,476
Irrigation	864	890	917	943	969	995
Non-Revenue Water	357	366	375	385	395	405
Total Potable Demand (b)(c)	8,478	8,503	8,583	8,716	8,865	9,023
Non-Potable Water						
Recycled Water	800	824	849	873	897	921
Total Non-Potable Water Demand	800	824	849	873	897	921
Abbreviation: AFY = acre-feet per year						
Notes: (a) Water demand projections are estimated based on growth in accounts shown in Table 5-1 and the water demand factors identified in Table 5-3 . Non-revenue water projections are estimated by water loss factors shown in Table 5-3 and the total growth in number of services from all sectors. (b) Passive savings for each sector calculated from the AWE Conservation Tracking Tool and adjusted to cap savings conservatively at levels estimated in the 2020 Water Demand and Conservation Measure Report. (c) Totals may not sum due to rounding.						

Figure 5-2 Water Demand Projections
 North Marin Water District, Sonoma-Marín Saving Water Partnership

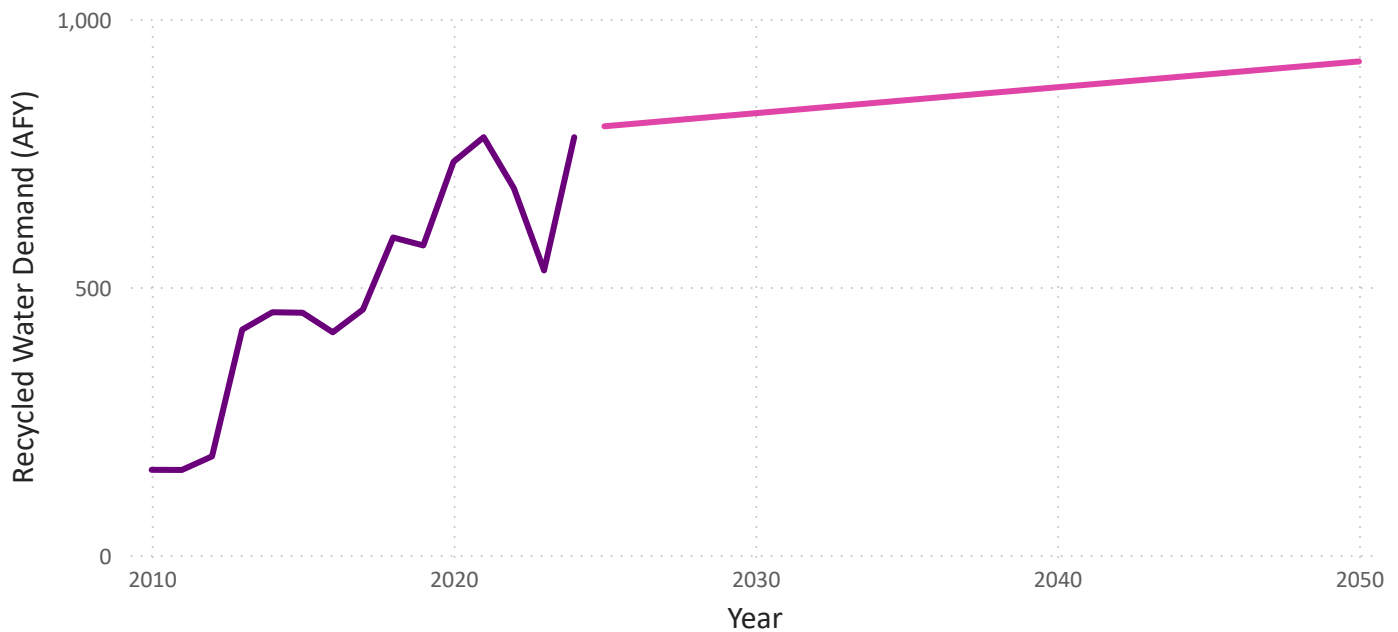
Potable Water Demand

Source ● Historical Demand ● Projected Demand



Recycled Water Demand

Source ● Historical Demand ● Projected Demand



Abbreviations:

AFY = acre-feet per year

5.6 Projected Compliance with UWUOs

To forecast the District's Objective compliance, an analysis was conducted comparing the District's projected water use to its Objectives for 2025, 2030, 2035, and 2040. The projected water demands subjective to the Objectives and the corresponding Objectives are calculated using the following data sources and assumptions:

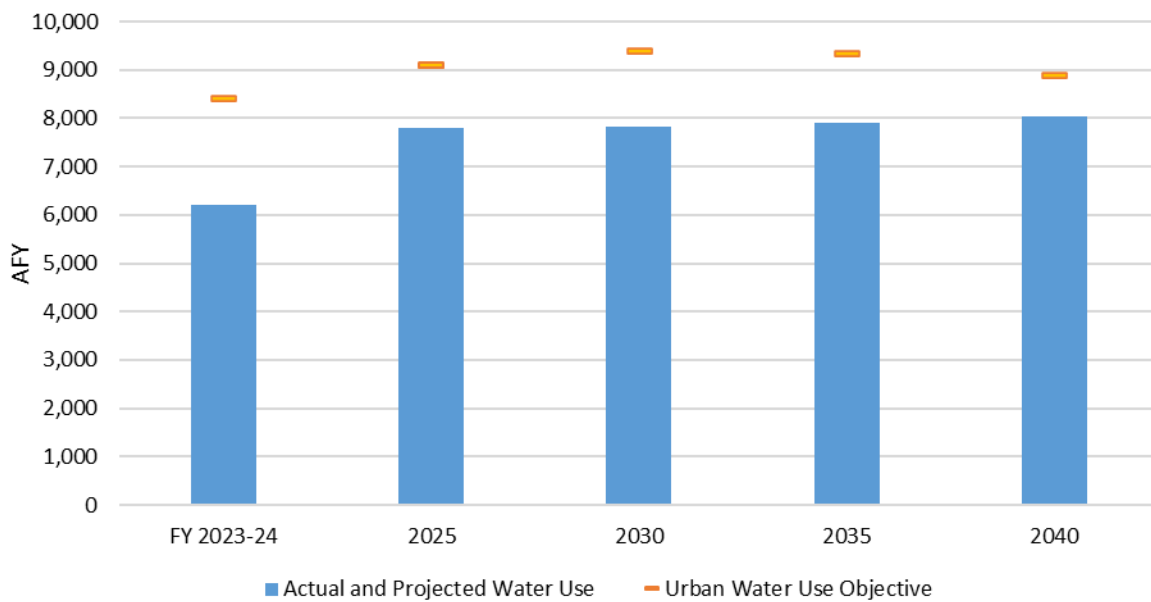
- Projected population, water use components subject to the objectives (e.g., residential water use and dedicated irrigation water use), and real water loss described in Sections 5.1 and 5.5;
- Decreasing Objective water use standards through 2040 as described in Section 2.2.1;
- Residential landscape area based on values reported in the District's FY 2023-24 UWUO Annual Report and increasing proportional to population projections;
- Existing (2024) CII landscape area on DIMs irrigated with potable water estimated from FY 2023-24 water use, assuming a LEF of 0.80;
- Existing (2024) CII landscape area on DIMs irrigated with recycled water estimated from FY 2023-24 water use, assuming a LEF of 1.0;
- Future CII landscape area on DIMs is increasing proportionally with District's irrigation and recycled water accounts.

The results of this analysis show that the District is anticipated to comply with its Objectives through 2040, as shown below in **Table 5-6** and **Figure 5-3**. **Figure 5-4** compares projected values of each Objective component from 2025 through 2040 to examine relative contributions to Objectives compliance. However, agencies are only assessed against the overall Objective (i.e., they are not required to comply with the individual water use standards as long as they meet the overall Objective).

Table 5-6 Actual and Projected Water Use vs. Urban Water Use Objectives

Year	Actual and Projected Water Use Subject to the Objectives (a) (AFY)	UWUO (AFY)
FY 2023-24	6,212	8,422
2025	7,798	9,092
2030	7,829	9,403
2035	7,913	9,350
2040	8,046	8,886

Figure 5-3 Actual and Projected Water Use vs. Urban Water Use Objectives



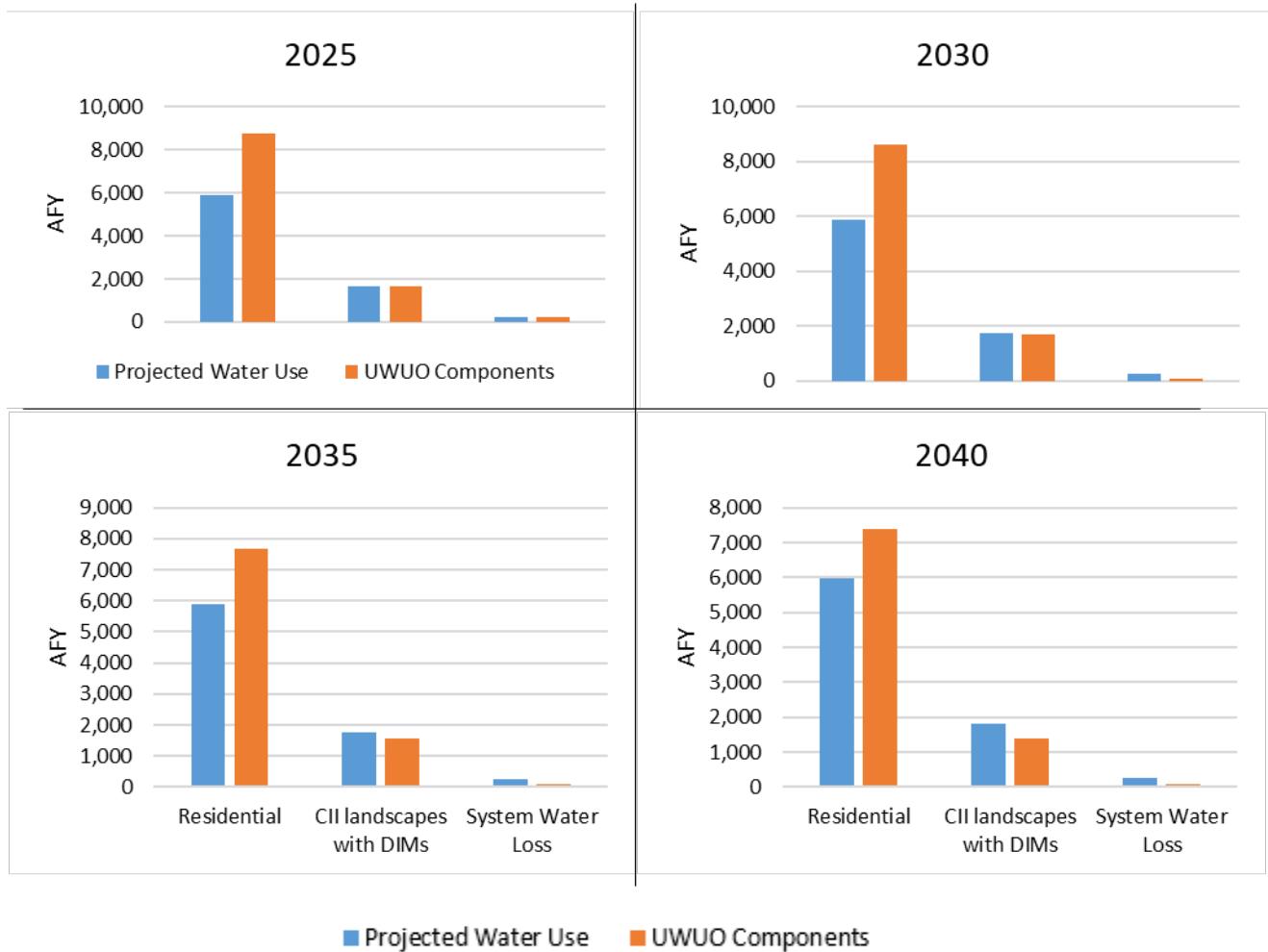
Abbreviations:

- AFY = acre-feet
- CY = calendar year
- FY = fiscal year
- UWUO = Urban Water Use Objective

Notes:

- (a) Calendar years unless otherwise noted.
- (b) Only includes the water use components that are subject to the Objective.

Figure 5-4 Projected Water Use vs. Urban Water Use Objectives by Component



Abbreviations:

AFY = acre-feet per year
 CII = commercial, industrial, and institutional
 DIM = dedicated irrigation meter

Notes:

This figure provides a comparison for each component to examine its relative contributions to Objectives compliance. However, agencies are only assessed against the overall Objective (i.e., they are not required to comply with the individual water use standards as long as they meet the overall Objective).

6 CONSERVATION MEASURES UPDATE

The following section evaluates current and potential conservation programs and measures for both the District and the SMSWP. The purpose of this section is to compile programs and measures that are prioritized by both the District and by all Water Contractors in the SMSWP collectively, and calculate the potential water savings and economic feasibility of the programs. Section 6.1 discusses the methodology used to prioritize conservation programs and measures. Section 6.2 describes the programs and measures given high priority for regional implementation by the nine Water Contractors collectively, and Section 6.2.3 describes programs and measures given high priority by the District. Next steps will include analyzing the potential water savings and cost-benefit for those programs selected by the District as both individual programs and in select program portfolios. By assessing the feasibility of these programs, the District can make more informed decisions regarding program selection and implementation.

6.1 Methodology for Screening of Potential Water Conservation Measures

A comprehensive ranking list of over 100 conservation programs and measures was developed (Appendix C) to help agencies prioritize future conservation efforts and update the suite of common measures for modeling and future implementation, as required for the 2025 UWMPs. The Water Contractors ranked their priority projects and measures, which will contribute to the broader goals of forecasting demand through 2050, evaluating demand management strategies, and meeting regulatory goals.

The list includes the measures from the prior (2015 and 2020) screenings, minus those that are now obsolete, and new measures and technologies. New measures came from the library of the AWE Conservation Tracking Tool, version 4.0, and other identified measures per literature or implemented by other suppliers, including those that are available to the industry since 2020. The list also included measures currently implemented by the Water Contractors and the priority rankings selected in 2020.

Each of the nine Water Contractors was first asked to review and identify any additional programs to add to the ranking list. Following receipt of feedback from the Water Contractors, each Water Contractor was asked to rank the list and identify:

- Priority (on a scale of one to five, with five being the highest priority) as a program to be implemented regionally through the SMSWP;
- Priority (on a scale of one to five, with five being the highest priority) as a program to be implemented locally through their agency;
- The current implementation status with options of (1) currently administered by their agency, (2) previously administered by their agency, or (3) current regional program through SMSWP.

The list of water conservation measures is organized into four categories, specifically: (1) agency actions and water rates, (2) public outreach and education, (3) device-based and financial incentive programs, and (4) policies and regulations.

6.2 Screening of Conservation Measures for Regional Implementation

The regional results of the water conservation measures prioritization screening are summarized for all Water Contractors combined, representing overall regional priorities and preferences (**Table 6-1**), which shows (1) the average prioritization ranking for all Water Contractors for each program for regional implementation, (2) the percentage of Water Contractors that prefer each program to be implemented at the regional level, and (3) an indication of each measure as a current SMSWP program or not.

Of the 116 measures and programs ranked, the Water Contractors screened these down to 11 high-priority measures that received an average score of three or more and were comprised of two of the four categories, including Public Outreach and Education Based Conservation Programs and Device-Based and Financial Incentive Programs.

6.2.1 Public Outreach and Education-Based Conservation Programs

Of the 14 public outreach and education-based water conservation programs included in the screening, the Water Contractors identified the following eight programs as high priority (average score of three or higher), with a preference for regional implementation through SMSWP:

- 1) Public Outreach through Print & Electronic Media - Focused on Outdoor Irrigation
- 2) School Education Programs
- 3) Promote QWEL Training
- 4) Public Outreach through Print & Electronic Media - Focused on Indoor Conservation
- 5) Educational Workshops
- 6) Garden Tour
- 7) Do-It-Yourself Home Energy and Water Savings Toolkit
- 8) Garden Sense Consultation

These eight programs are already being implemented by SMWSP.

6.2.2 Device and Financial Incentive-Based Conservation Programs

Of the 60 device- and financial incentive-based water conservation programs included in the screening list, the Water Contractors identified the following three programs as high priority (average score of three or higher), with a preference for regional implementation through SMSWP, through pass-through grant funding:

- 1) Landscape Conversion or Turf Removal – SFR
- 2) Landscape Conversion or Turf Removal – MFR and CII
- 3) High Efficiency Clothes Washer Rebate – Residential

Table 6-1 Regional Prioritization of Conservation Measures and Programs
Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)	Preference (b)	Sector	Indoor	Outdoor	Primary End Use	Current SMSWP Program
PUBLIC OUTREACH AND EDUCATION							
Public Outreach through Print & Electronic Media - Focused on Outdoor Irrigation	4.4	100%	All		X	Irrigation	✓
School Education Programs	4.0	100%	SFR, MFR	X	X	All	✓
Promote QWEL Training (Qualified Water efficient Landscaper)	3.9	89%	All		X	All Outdoor	✓
Public Outreach through Print & Electronic Media - Focused on Indoor Conservation	3.7	89%	All	X		All Indoor	✓
Educational Workshops	3.3	78%	All		X	All Outdoor	✓
Garden Tour	3.2	78%	SFR		X	All Outdoor	✓
Garden Sense Consultation	3.1	78%	SFR		X	All Outdoor	✓
Do-It-Yourself Home Energy and Water Savings Toolkit	3.2	78%	SFR	X	X	All	✓
DEVICE-BASED AND FINANCIAL INCENTIVE PROGRAMS							
Landscape Conversion or Turf Removal - SFR	3.3	67%	SFR		X	Irrigation	✗
Landscape Conversion or Turf Removal - MFR and CII	3.2	67%	MFR, CII		X	Irrigation	✗
High Efficiency Clothes Washer Rebate - Residential	3.1	67%	SFR, MFR	X		Clothes Washer	✗

Abbreviations:

AMI = advanced metering infrastructure

CalWEP = California Water Efficiency Partnership

CII = commercial, industrial, institutional

COM = commercial

HEU = High-Efficiency Urinals

IRR = irrigation

MFR = multi-family residential

MWELO = Model Water Efficient Landscape Ordinance

PRV = pressure reducing valve

SFR = single-family residential

SMSWP = Sonoma-Marín Saving Water Partnership

UHET = ultra high efficiency toilet

Notes:

(a) Each Water Contractor was asked to rank each conservation program or measure in terms of priority as a regionally-administered program, where 5 indicated highest priority and 1 indicated the lowest priority. Results are presented as an average of the responses of all nine Water Contractors.

(b) Presents the percentage of Water Contractors who indicated a priority of greater or equal to 3 for regional implementation.

6.2.3 Regional Program Screening Findings

During the May 2025 project workshop, the Water Contractors indicated that the three device- and financial incentive-based programs identified under Section 6.2.2 are already being implemented at the local level and expressed a preference for them to continue to be implemented at a local level. The takeaway from this exercise is that the existing SMWSP public and education-based programs should remain regional programs and that there is currently no preference for new regional programs.

6.3 Screening of Conservation Measures for Local Implementation

The local results of the water conservation program prioritization screening were summarized for all Water Contractors individually, representing their local priorities and preferences. Appendix C presents the results for the District and shows (1) the average prioritization ranking for each program for local implementation, (2) the targeted sector, (3) whether the program targets indoor or outdoor savings, (4) the primary end use, and (5) the implementation status as a local program.

6.3.1 Agency Actions and Water Rate Conservation Programs

Twelve (12) agency action and water rate-based conservation programs were identified for the District as high priority (score of three or higher) for potential future implementation. Of these programs, nine are programs or actions that have been implemented at the local level, either currently or in the past. The remaining three potential new programs identified as high priority are:

- 1) Behavior Based Customer Messaging Platforms
- 2) Water Budget-Based Billing for All Customers
- 3) Water Budget-Based Billing for Only Irrigation Customers

6.3.2 Public Outreach and Education Based Conservation Programs

Eight public outreach and education-based programs were identified as high priority (average score of three or higher) for potential future implementation. Of these programs, four would target outdoor water use, one would target indoor water use, and three would target both. All of these programs are currently implemented at the local level except one:

- 1) Provide Support with Smart Irrigation Controller Setup

6.3.3 Device and Financial Incentive Based Conservation Programs

Twenty-five (25) device- and financial incentive-based water conservation programs were identified as high priority (average score of three or higher) for potential future implementation, including seven that would target indoor water use, 14 that would target outdoor water use, one that would target both, and three that would target cooling towers. Of these programs, 19 are programs or actions that have been implemented at the local level, either currently or in the past, primarily targeting bathroom fixture replacements, irrigation nozzle upgrades, irrigation equipment improvements, and turf conversion. The remaining six potential new programs identified are as follows, all programs receiving a score of three: in general order of priority, with the first program (**bolded**) on the list receiving a score of five:

- 1) Laminar Flow Restrictor Rebate for Health Care Related Facilities
- 2) Incentivize Cooling Tower Upgrades
- 3) Rebates for Conductivity Controllers on Cooling Towers
- 4) Rotating Sprinkler Nozzle Giveaway
- 5) Incentivize Submetering for Existing Customers - MFR, CII
- 6) Incentivize Submetering of Cooling Towers for Existing Customers

6.3.4 Policy and Regulation-Based Conservation Programs

The District identified 17 policy and regulation-based programs as high priority (average score of three or higher), including seven that would target indoor water use, eight that would target outdoor water use, one that would target both, and one that would target cooling towers. Of these programs, ten are programs or actions that have been implemented at the local level, either currently or in the past. The remaining seven potential new programs identified are as follows, in general order of priority, with the first program (**bolded**) receiving a score of five:

- 1) Require <1.0 gal/flush Toilets in New Development**
- 2) Prohibit Once-through Cooling Systems
- 3) Require Plumbing for Recycled Water in New MFR Development
- 4) Demand Offset/Water Neutral Policy for Large New Developments
- 5) Require Cooling Tower Retrofits
- 6) Require Rain Barrels in New Development
- 7) Require Submetering of Landscaping for Existing MFR and Commercial Customers

6.4 Evaluation of Future Water Conservation Programs

Based on the conservation screening process described above, a suite of conservation programs to be considered for future implementation was evaluated. These programs were evaluated both individually and as components in four water conservation program scenarios, as shown in **Table 6-2**. The program scenarios each represent a potential approach or strategy for the District's future conservation programs, specifically:

- **Scenario A** represents the District's existing programs as a baseline,
- **Scenario B** represents programs ranked most highly for local implementation by the District,
- **Scenario C** focuses on programs that target outdoor water savings under Scenario B, and
- **Scenario D** focuses on programs that target water savings in CII customers under Scenario B.

Table 6-2 also identifies the customer sectors each program would target, as well as whether the program focuses on indoor or outdoor water use, or both.

The benefits and costs associated with implementation of these programs were evaluated using the AWE model, using a series of assumptions documented in Appendix B. Key assumptions and considerations related to the methodology used by the AWE model and in this analysis are provided below:

- Water savings assumptions were based on a combination of (1) District -specific water savings estimates, (2) information provided by District staff, (3) AWE model default assumptions, and (4) water savings factors developed based on other published literature sources.
- Costs to the utility were based on (1) rebate amounts of existing programs, (2) data used in the 2020 report (EKI, 2020) adjusted to 2025 dollars, or (3) AWE model default assumptions.
- Utility benefit (i.e., avoided cost of water) is assumed to be \$1,278/AF, consistent with the FY 2024-2025 cost of purchasing wholesale water from Sonoma Water.
- Financial assumptions related to customer water rates were provided by the District.
- Financial assumptions related to energy costs to the customer were assumed based on typical PG&E rates (PG&E, 2024).
- Assumed rate of program implementation was based on historical participation levels by District customers in similar programs.
- For purposes of near-term conservation program analysis, it is assumed that all programs are active from 2026 through 2030; water savings beyond this period reflect cumulative savings achieved over time from implementation during this five-year period.
- Lost revenue due to reduced water sales is not included as a cost.
- Additional program-specific considerations are provided as notes in the attached tables.

Table 6-3 presents a combination of individual water conservation measures, and identifies the following information for each program:

- **Net present value of costs and benefits** – represents the present value over the 25-year period, discounted to current 2025 dollars.
- **Benefit-to-cost ratio** – calculated as the present value of costs divided by the present value of benefits.
- **Water utility costs** – costs that the District, as a water utility, will incur to operate the program, including administrative costs.
- **Customer costs** – the costs customers will incur to implement a program in the District’s service area.
- **Utility benefits** – the avoided cost to the District to produce the volume of water saved.
- **Customer benefits** – the savings from reduced water/sewer utility bills and energy savings resulting from reduced use of hot water.

- **Total water utility costs** – includes costs to the District for program implementation from 2026 to 2030.
- **Water savings in 2030** – one-year estimate of water savings in 2030.
- **Water utility cost of water saved for individual programs** – cost of water saved divided by the lifetime water savings of that program.
- **Water utility cost of water saved for program scenarios** – weighted average of water utility cost of water saved for individual programs by the cumulative savings through 2050.

The analysis estimates active program savings based on the AWE model and does not include additional savings anticipated from passive savings (i.e., water savings associated with the natural replacement of less efficient water-using fixtures and appliances due to both market shifts and increasing efficiency mandated by the building code and other regulatory requirements). Based on this analysis, and the assumptions presented in Appendix B, the benefit-cost ratios for the District range from 0.2 to 11.5. A benefit-cost ratio value greater than one indicates that the cost of implementing the program would be cheaper than purchasing supplies from Sonoma Water.

Table 6-4 presents the results of the analysis of the four conservation program scenarios identified in **Table 6-3**, and includes a summary of costs and benefits to the District and customers, estimated cumulative water savings through 2050 (based on assumed program implementation from 2026-2030), and the estimated cost of water saved to the District. Based on this, the District’s preferred water conservation measures for local implementation (i.e., Scenario B) have a benefit-to-cost ratio of 1.4, slightly above its existing programs (i.e., Scenario A) at 1.3. The benefit-to-cost ratio of outdoor programs (i.e., Scenario C) is 0.6, and CII programs (i.e., Scenario D) is 2.8. The projected cumulative water savings associated with implementation of locally preferred measures (i.e., Scenario B) is 1,088 AF by 2030 and 1,549 by 2050, at a cost of approximately \$949 /AF. The figure in **Table 6-4** shows active savings in 2030 associated with each scenario, as well as anticipated passive savings.

Table 6-2 Conservation Program Scenarios
North Marin Water District, Sonoma-Marín Water Saving Partnership

Program	Sector	Indoor/ Outdoor	Note	Program Scenario (a)			
				(A) Baseline	(B) Highly-Ranked Local Programs	(C) Highly-Ranked Outdoor Programs	(D) Highly-Ranked CII Programs
AMI Leak Notifications Program	All	Both		X	X		
Water Smart Home Surveys Program	SFR	Both		X	X		
Water Smart Commercial Surveys Program	CII	Both		X	X		X
HET Rebates Program	SFR, MFR, CII	Indoor		X	X		
UHET Distribution Program	SFR	Indoor		X			
HECW Rebates Program	SFR	Indoor		X	X		
Water Smart Landscape Rebates Program	SFR	Outdoor		X	X	X	
Residential WBIC Rebates Program	SFR	Outdoor		X	X	X	
Commercial WBIC Rebates Program	CII	Outdoor		X	X	X	X
Swimming Pool Cover Rebates Program	SFR	Outdoor		X	X	X	
Large Landscape Audits Program	IRR	Outdoor		X	X	X	X
Hot Water Recirculation Rebate Program	SFR	Indoor		X	X		
Cash for Grass Rebates Program	SFR	Outdoor		X	X	X	
Cash for Grass Rebates Program	IRR	Outdoor		X	X	X	X
High Efficiency Faucet Aerator / Showerhead Giveaway - Residential Customers	SFR, MFR, CII	Indoor		X	X		
Rain Barrel Rebate	SFR	Outdoor		X	X	X	
Incentivize Gray Water Retrofit for Existing SFR Customers	SFR	Outdoor		X	X	X	
Behavior Based Customer Messaging Platforms	SFR, MFR	Both			X		
Water Savings Incentive Program for CII	CII	Indoor	(b)		X		X

Abbreviations

AMI = Advanced Metering Infrastructure
CII = Commercial, Industrial, and Institutional
HECW = High-efficiency clothes washer

HET= High-efficiency toilet
MFR = multi-family residential
SFR = single-family residential

UHET = ultra-high-efficiency toilet
WBIC = weather-based irrigation controller

Notes

- (a) The program scenarios represent four potential approaches to program selection. Scenario 1 represents existing programs as a baseline, Scenario 2 represents programs prioritized for local implementation, Scenario 3 focuses on outdoor water savings, and Scenario 4 focuses on CII programs.
- (b) Preference for various CII devices are combined into a custom incentive program where a rebate is given per unit of water saved.

Table 6-3 Costs and Savings of Potential Conservation Programs
 North Marin Water District, Sonoma-Marín Water Saving Partnership

Program (a)	Sector	Indoor/ Outdoor	Net Present Value of Benefits		Net Present Value of Cost		Benefit to Cost Ratio		Water Utility Costs 2026-2030 (b)	Water Savings in 2030 (AFY)	Water Utility Cost of Water Saved (\$/AF)
			Water Utility	Customers	Water Utility	Customers	Water Utility	Customers			
AMI Leak Notifications Program	All	Both	\$143,722	\$335,579	\$94,841	\$521,628	1.5	0.6	\$103,558	24.8	\$843
Water Smart Home Surveys Program	SFR	Both	\$28,271	\$139,705	\$33,892	\$10,168	0.8	13.7	\$38,200	5.1	\$1,512
Water Smart Commercial Surveys Program	CII	Both	\$13,635	\$66,840	\$28,835	\$35,755	0.5	1.9	\$32,500	2.4	\$2,666
HET Rebates Program	SFR, MFR, CII	Indoor	\$55,978	\$130,704	\$39,438	\$0	1.4	-	\$75,000	3.7	\$1,217
UHET Distribution Program	SFR	Indoor	\$387,912	\$905,741	\$73,317	\$14,100	5.3	64.2	\$252,200	21.9	\$571
HECW Rebates Program	SFR	Indoor	\$33,694	\$211,748	\$11,488	\$87,920	2.9	2.4	\$14,406	2.3	\$410
Water Smart Landscape Rebates Program	SFR	Outdoor	\$24,489	\$57,180	\$18,490	\$14,223	1.3	4.0	\$22,100	2.4	\$928
Residential WBIC Rebates Program	SFR	Outdoor	\$24,356	\$56,868	\$8,810	\$3,388	2.8	16.8	\$10,530	2.4	\$445
Commercial WBIC Rebates Program	CII	Outdoor	\$25,126	\$58,668	\$3,514	\$1,506	7.2	39.0	\$4,200	2.4	\$172
Swimming Pool Cover Rebates Program	SFR	Outdoor	\$14,456	\$33,754	\$15,316	\$17,673	0.9	1.9	\$17,420	2.6	\$1,331
Large Landscape Audits Program	IRR	Outdoor	\$52,662	\$122,960	\$31,053	\$38,506	1.7	3.2	\$35,000	9.4	\$743
Hot Water Recirculation Rebate Program	SFR	Indoor	\$1,428	\$31,523	\$2,502	\$13,470	0.6	2.3	\$2,990	0.1	\$2,154
Cash for Grass Rebates Program	SFR	Outdoor	\$46,861	\$109,415	\$207,024	\$1,242,144	0.2	0.1	\$247,442	4.6	\$5,431
Cash for Grass Rebates Program	IRR	Outdoor	\$27,649	\$64,557	\$40,728	\$244,371	0.7	0.3	\$48,680	2.7	\$1,811
High Efficiency Faucet Aerator / Showerhead Giveaway - Residential Customers	SFR, MFR, CII	Indoor	\$55,794	\$857,462	\$4,869	\$0	11.5	-	\$15,450	3.7	\$250

Table 6-3 Costs and Savings of Potential Conservation Programs
North Marin Water District, Sonoma-Marin Water Saving Partnership

Program (a)	Sector	Indoor/ Outdoor	Net Present Value of Benefits		Net Present Value of Cost		Benefit to Cost Ratio		Water Utility Costs 2026-2030 (b)	Water Savings in 2030 (AFY)	Water Utility Cost of Water Saved (\$/AF)
			Water Utility	Customers	Water Utility	Customers	Water Utility	Customers			
Rain Barrel Rebate	SFR	Outdoor	\$20,574	\$48,039	\$121,334	\$273,002	0.2	0.2	\$138,000	3.7	\$7,407
Incentivize Gray Water Retrofit for Existing SFR Customers	SFR	Outdoor	\$43,323	\$101,156	\$36,081	\$21,648	1.2	4.7	\$43,125	4.2	\$1,024
Behavior Based Customer Messaging Platforms	SFR, MFR	Both	\$103,589	\$511,891	\$49,177	\$0	2.1	-	\$53,690	17.7	\$607
Water Savings Incentive Program for CII	CII	Indoor	\$449,008	\$1,048,394	\$97,304	\$472,617	4.6	2.2	\$141,400	22.6	\$272

Abbreviations

AFY = acre-feet per year

CII = Commercial, Industrial, and Institutional

MFR = multi-family residential

SFR = Single-family residential

sq ft = square feet

\$/AF = dollars per acre-foot

Notes

- (a) Estimated water savings, benefits, and costs are calculated using the AWE model. Program savings, cost, and implementation rate assumptions used are presented in Appendix
- (b) For purposes of near-term conservation program analysis, it is assumed that all programs are active from 2026 through 2030.

Table 6-4 Comparison of Program Scenarios – Costs and Savings
North Marin Water District, Sonoma-Marin Water Saving Partnership

Scenario (a)	Present Value of Benefits		Present Value of Cost		Benefit to Cost Ratio		Water Savings in 2030 (AFY)	Cumulative Active Water Savings (AF)					Water Utility Cost of Water Saved (\$/AF) (b)
	Water Utility	Customers	Water Utility	Customers	Water Utility	Customers		2025	2030	2035	2040	2045	
(A) Baseline	\$ 856,208	\$ 2,996,320	\$ 676,693	\$ 2,017,874	1.3	1.5	74	230	511	657	800	904	\$1,103
(B) Highly-Ranked Local Programs	\$ 1,006,437	\$ 3,617,111	\$ 734,540	\$ 2,458,719	1.4	1.5	90	312	597	756	926	1,059	\$872
(C) Highly-Ranked Outdoor Programs	\$ 279,496	\$ 652,598	\$ 482,351	\$ 1,856,461	0.6	0.4	34	107	228	265	265	265	\$2,135
(D) Highly-Ranked CII Programs	\$ 568,080	\$ 1,361,419	\$ 201,434	\$ 792,755	2.8	1.7	40	124	281	382	518	631	\$415

Abbreviations

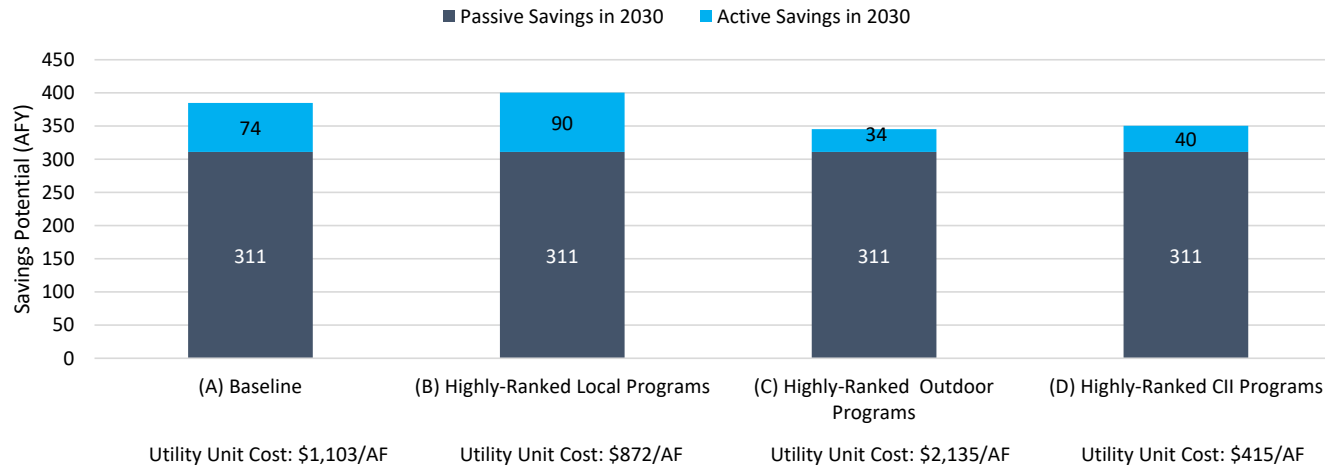
AF = acre-feet

\$/AF = dollars per acre-foot

Notes

- (a) For purposes of near-term conservation program analysis, it is assumed that all programs are active from 2026 through 2030. Cumulative water savings achieved beyond 2030 reflect the ongoing benefit of program implementation.
- (b) The water utility cost is based on the cumulative savings achieved through 2050 cumulative water savings.

Comparison of Program Scenarios - Savings in 2030



7 CONCLUSIONS

Although there have been no updates to the UWMP regulations since 2020, the MCCWL framework and related regulations will influence the 2025 UWMPs, as they will inform the water demand and conservation planning components. This project forecasted water demand through 2050 in accordance with CWC requirements and evaluated both historical and anticipated implementation of conservation programs.

7.1 Historical, Current, and Projected Water Demand

Water demand projections are developed consistent with CWC § 10631(d)(4)(A), which requires that “Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.” The assumptions used as the bases for demand projections were developed in close coordination with the District and reflect a land-use-based approach consistent with ABAG and MTC’s Plan Bay Area 2050. It should be noted that all demand and conservation projections have limitations and should be considered estimates that require revisiting as factors that affect demand arise, such as economic or population shifts, extreme hydrological conditions, etc.

The methodology used to develop demand projections herein is also consistent with the CWC §10635(b)(4) requirement to consider climate change on projected demands.⁶ The District’s per-account water use declined significantly over the past 15 years as a result of the District’s conservation efforts and showed significant response to key events such as the 2014-2017 drought, the 2021-2023 drought, and the COVID-19 pandemic. The demand factors evaluated herein are based on water use during the 2017-2019 period, which assumes a rebound in demand following the recent drought and represents a higher level of demand compared to current levels. Thus, the periods used to develop the demand projections reflect conditions representative of the hotter, drier weather expected as a result of climate change.

Although MCCWL Objective water use standards are expected to become more stringent over time, the District is projected to remain in compliance with its Objectives through 2040 based on forecasted population and baseline water use, prior to accounting for active conservation savings.

7.2 Conservation Measures Participation, Savings, and Update

Participation data indicate that several of the District’s conservation programs, particularly the Water Smart Surveys Programs, Residential HET Rebates Program, HECW Rebates Program, Cash for Grass and Lawn Be Gone Rebate Programs, have been widely adopted and/or successful in achieving water savings between 2010 and 2024. Most programs have had a lower adoption

⁶ CWC §10635(b)(4) requires that suppliers consider plausible changes on projected supplies and demands under climate change conditions specific to their five-year drought risk assessments. Section 4.5 of the draft 2020 UWMP Guidebook more generally recommends that consideration of climate change be incorporated into all demand projections.

rate over the recent five years compared to historical rates, with higher popularity observed during drought periods.

A benefit-cost analysis of future program scenarios shows that all options yield a benefit-to-cost ratio at or greater than one, meaning program implementation is more cost-effective than purchasing additional water supplies from Sonoma Water. Because the District already implements an extensive set of mature and cost-effective programs, new measures generally target remaining, harder-to-reach savings at a higher incremental cost. The preferred program portfolio achieves an estimated benefit-to-cost ratio of 1.3, while its existing programs are at 1.2.

8 REFERENCES

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APPENDIX A

Methodology for Estimating Indoor and Outdoor Water Use

Methodology for Estimating Indoor and Outdoor Water Use

This appendix documents the methodology used in Section 3.3 of the *2025 Water Demand and Conservation Measure Update* for the nine participating members of the Sonoma-Marín Saving Water Partnership (Water Contractors) prepared by EKI Environment & Water (EKI).

For customer accounts without dedicated irrigation meters, the amount of water used indoors versus outdoors is not directly measured and must be estimated. Traditionally, indoor and outdoor water use has been estimated using the “minimum winter month” method, which assumes that water use during the lowest-demand winter month is entirely attributable to indoor consumption. However, winter irrigation is common in California and this assumption tends to overestimate indoor water use.

EKI has developed the method below to estimate water use for meters with mixed indoor and outdoor water use (i.e. mixed-use meters, or MUMs) using an annual irrigation scaling factor developed based on data collected from dedicated irrigation meters. This method is consistent with the “Seasonal Adjustment Method” utilized in the Department of Water Resources’ residential indoor water use study to inform water use efficiency standards as part of the *Making Conservation a California Way of Life* Legislation (DWR, 2021).

1 DATA SOURCES

The analysis is based on potable water consumption data covering calendar year 2024. While multi-year water consumption data are available, indoor and outdoor use estimates were derived from the most recent complete calendar year (2024) to reflect current usage and seasonal patterns.

The dataset was parsed for the analysis herein and includes the following fields:

- **Year and Month** – Derived from service period or billing date.
- **Sector Group** – Consolidated customer sectors, including Single Family, Multi-family, Commercial/Industrial/Institutional (CII Total), and Irrigation.
- **Consumption** – Monthly water use converted to acre-feet.
- **Water Type** – Only potable water use was included in the analysis.

Potable irrigation accounts were used to infer the seasonal profile of outdoor water use. Estimates of indoor and outdoor use were produced for sector groups where both types of use are present (e.g., Single Family, Multi-family, CII Total).

2 METHODOLOGY

This section describes the method used to estimate the indoor and outdoor components of total annual water use for each sector group.

2.1 Step 1: Identify Analysis Year

The most recent year with complete monthly data (2024) was selected to represent current conditions and ensure seasonal variation is captured accurately.

2.2 Step 2: Calculate Seasonal Scaling Factor

Potable dedicated irrigation meters (DIMs) were assumed to represent purely outdoor water use. Monthly water use in the most recent year (2024) was aggregated for all irrigation accounts (i.e. accounts on DIMs), and a seasonal scaling factor (SF) was calculated as:

$$\text{Scaling Factor (SF)} = \frac{\text{Max (monthly use)}}{\text{Min (monthly use)}}$$

This metric reflects the ratio between peak summer irrigation and baseline winter irrigation, which is assumed to persist year-round at a reduced level. The metric also reflects the local conditions and climatic conditions during 2024. As shown on Figure 2-1, the variations in monthly water use from DIMs generally follow a consistent pattern: highest water use in the summer months and early fall (July through September), lowest water use in the winter month and early spring (January through March).

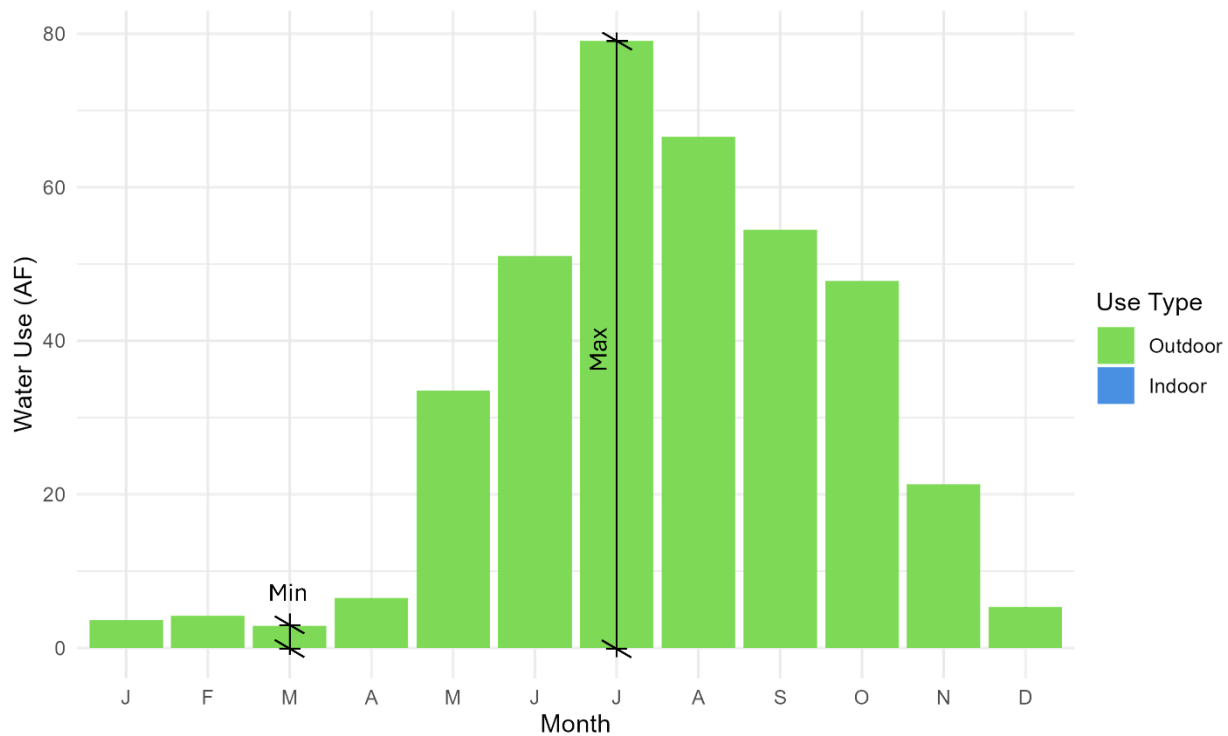


Figure 2-1 Example Irrigation Outdoor Use by DIMs Used to Calculate Scaling Factor

2.3 Step 3: Filter Target Sector Groups

The analysis focuses on three sector groups on MUMs expected to include both indoor and outdoor use:

- Single Family
- Multi-family
- CII Total

Only potable water demand from MUMs is considered.

2.4 Step 4: Extract Seasonal and Annual Demand

Monthly potable water demand by MUMs was aggregated by sector group. The representative low-irrigation month (winter) is selected by finding the minimum water use across the months of January, February, and March. Similarly, the high-irrigation month (summer) is selected by finding the maximum

water use from the months of July, August, and September. Total annual demand was also computed for each sector group.

2.5 Step 5: Estimate Indoor and Outdoor Use

The SF calculated under Step 2 are used to estimate the proportion of water used for irrigation purposes by MUMs. This method assumes that indoor water use is generally consistent over the course of the year and that customers within the Water Contractor’s service area experience similar irrigation patterns. This assumption tends to hold more strongly for residential customers. However, for CII customers, although some use water through MUMs for outdoor irrigation, they may also have seasonally variable indoor demands, such as cooling towers. As a result, this method may underestimate indoor use and overestimate outdoor use in service areas with significant CII cooling demands.

Figure 2-2 illustrates the annual water use pattern and the components of the equations below used to derive estimated indoor and outdoor water use for sectors with MUMs.

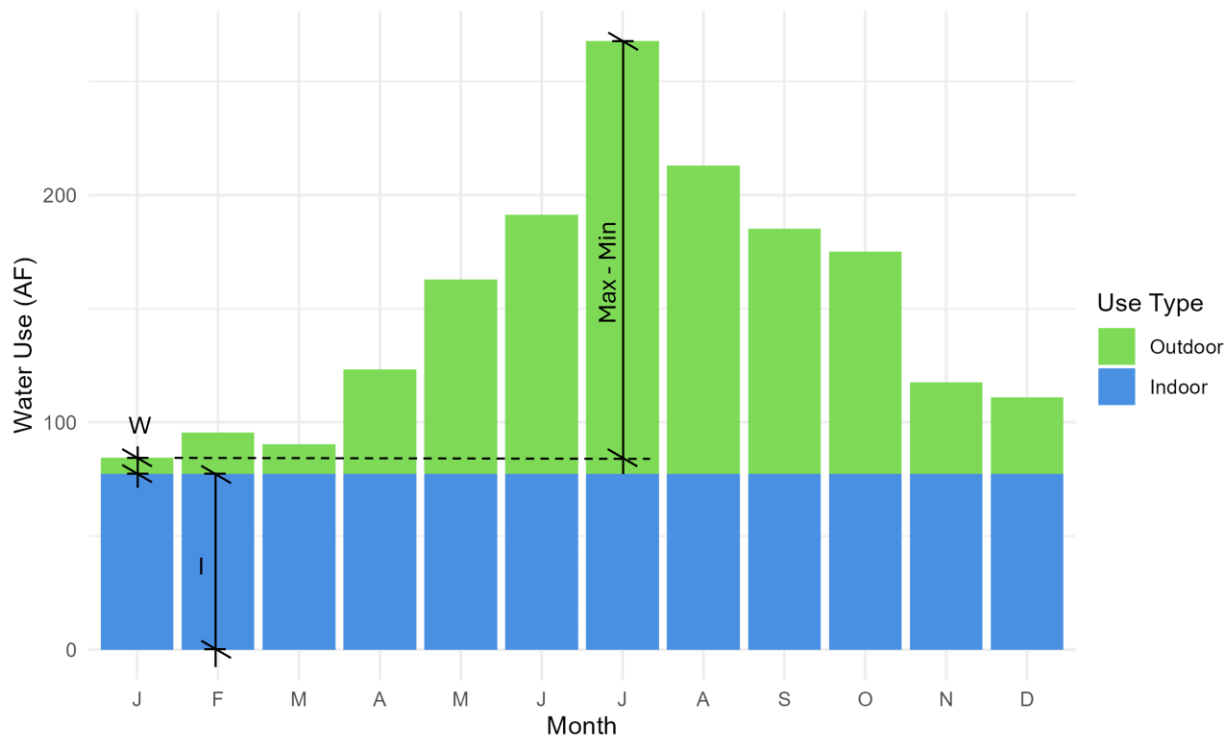


Figure 2-2 Indoor and Outdoor Separation Methodology for Water Use on MUMs

Indoor use was estimated as the month with the least water use in January, February, or March, adjusted to remove residual winter irrigation using the SF.

Winter irrigation is estimated as:

$$\begin{aligned}
 SF &= \frac{W + (Max - Min)}{W} \\
 &= 1 + \frac{Max - Min}{W} \\
 \Rightarrow W &= \frac{Max - Min}{SF - 1}
 \end{aligned}$$

Where:

- W = Outdoor winter irrigation during the lowest water use month
- Max = Max monthly use in one of July, August, or September
- Min = Min monthly use in January, February, or March
- SF = Scaling factor

Indoor monthly use is then:

$$I = Min - W$$

Indoor annual use is computed as:

$$I \times 12$$

Outdoor annual use is then the residual between total annual use and indoor annual use:

$$\text{Outdoor Annual Use} = \text{Total Annual Use} - \text{Indoor Annual Use}$$

3 ASSUMPTIONS AND LIMITATIONS

- DIMs reflect purely outdoor use, with consistent year-round patterns across groups.
- Low point of outdoor irrigation happens in one of January, February, or March; similarly peak summer irrigation happens in one of July, August, or September.
- Indoor water use is assumed to be consistent throughout the year.
- Customers within each sector group are assumed to exhibit similar usage patterns.
- The scaling factor derived from DIMs is representative of outdoor demand across all MUMs, which is a stronger assumption for residential customers but less so for CII customers due to seasonal cooling demands.

4 REFERENCES

DWR, 2021. *Recommendations for urban water use efficiency standards, variances, performance measures, and annual water use reporting* (Report No. WUES-DWR-2021-01A). California Department of Water Resources. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/2018-Water-Conservation-Legislation/Performance-Measures/UWUE_STD_VAR_PM_REPORT_WUES-DWR-2021-01A_COMPLETE.pdf

APPENDIX B

Conservation Program Saving Assumptions

Table B-1 Conservation Program Savings Assumptions
North Marin Water District, Sonoma-Marín Saving Water Partnership

Agency Program Name	Units	Savings Assumption (gpd/unit)	Life of Savings (Years)	Decay Rate (%/Yr)	Free Riders (% activity)	Source(s)
Water Smart Home Surveys Program	Household	35.1	5	20%	0%	Per detailed conservation savings analysis performed for 2020 Demand/Cons Report.
Water Smart Commercial Surveys Program	Site	321.1	5	20%	0%	Calculated based on the potential water savings from CII audits per Reference 3 and typical CII water usage in the service area.
HET Rebates Program	Toilet	9.4	25	0%	23%	Per detailed conservation savings analysis performed for 2020 Demand/Cons Report.
UHET Distribution Program	Toilet	21	25	0%	0%	AWE Tool Conservation Program Library.
HECW Rebates Program	Washer	14.2	15	0%	0%	Per detailed conservation savings analysis performed for 2020 Demand/Cons Report.
Water Smart Landscape Rebates Program	Household	25	10	0%	0%	AWE Tool Conservation Program Library
Residential WBIC Rebates Program	Controller	26.1	10	0%	0%	AWE Tool Conservation Program Library.
Commercial WBIC Rebates Program	Controller	727.0	10	0%	0%	AWE Tool Conservation Program Library.
Swimming Pool Cover Rebates Program	Household	17.4	5	0%	0%	(a)
Large Landscape Audits Program	Site	893.0	5	20%	0%	AWE Tool Conservation Program Library.
Hot Water Recirculation Rebate Program	Household	5.4	10	0%	0%	Calculated based on the hot water recirculation system savings and system useful life in References 1 and 2.
Cash for Grass Rebates Program	Square Feet	0.03	10	0%	0%	Per detailed conservation savings analysis performed for 2020 Demand/Cons Report.
Cash for Grass Rebates Program for Irrigation Accounts	Square Feet	0.1	10	0%	0%	AWE Tool Conservation Program Library.
AMI Leak Notifications Program (SFR)	AMI Meter	0.7	1	0%	0%	AWE Tool Conservation Program Library.
AMI Leak Notifications Program (MFR, CII, IRR)	AMI Meter	2.0	1	0%	0%	AWE Tool Conservation Program Library.
High Efficiency Faucet Aerator / Showerhead Giveaway - Residential Customers	Showerhead	2.4	10	0%	0%	AWE Tool Conservation Program Library.
Rain Barrel Rebate	Household	9.6	5	0%	0%	AWE Tool Conservation Program Library for an average cistern at approximately 1,000 gallons per household.
Incentivize Gray Water Retrofit for Existing SFR Customers	Household	10.9	10	0%	0%	AWE Tool Conservation Program Library.
Behavior Based Customer Messaging Platforms	Household	10.3	1	0%	0%	AWE Tool Conservation Program Library for Home Water Report.
Water Savings Incentive Program for CII	gpd	1	25	0%	0%	Inputs based on per gpd reduced

Table B-1 Conservation Program Savings Assumptions

North Marin Water District, Sonoma-Marín Saving Water Partnership

Abbreviations

AMI = advanced metering infrastructure

AWE = Alliance for Water Efficiency Water Conservation Tracking Tool

CII = commercial, industrial, institutional

gpd = gallons per day

HET = high-efficiency toilet

HECW = high-efficiency clothes washer

IRR = irrigation

MFR = multi-family residential

SFR = single-family residential

UHET = ultra-high-efficiency toilet

WBIC = weather-based irrigation controller

Notes

(a) Calculated assuming a 500 square foot pool; 95% reduction in evaporation based in Reference 1; the cover is being used properly 50% of the time; and an annual evaporation rate of 45 inches.

References

1. NM OSE, 1999. Water conservation guide for commercial, institutional, and industrial users. New Mexico Office of the State Engineer.
2. ORNL, 2002. A case study of five homes in Palo Alto, California: Potential for savings using on-demand hot-water recirculation systems (ORNL/TM-2002/245). Oak Ridge National Library.
3. USDOE, 2001. Pump lifecycle costs: A Guide to LLC Analysis for Pumping Systems. U.S. Department of Energy, January 2001.
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Table B-2 Conservation Program Cost Assumptions
North Marin Water District, Sonoma-Marín Saving Water Partnership

Agency Program Name	Units	Utility Cost per Unit (a)	Customer Cost per Unit	Source(s)
Water Smart Home Surveys Program	Household	\$200	\$60	Consistent with 2020 Demand/Cons Report and adjusted to 2025 dollars.
Water Smart Commercial Surveys Program	Site	\$2,500	\$3,100	Consistent with 2020 Demand/Cons Report and adjusted to 2025 dollars.
HET Replacement Program	Toilet	\$130	\$150	Utility cost based on District's rebate amount. Assumes a total HET cost of \$250.
UHET Distribution Program	Toilet	\$260	\$50	Utility cost based on District's rebate amount. Assumes a total UHET cost of \$250.
HECW Rebates Program	Washer	\$98	\$750	Utility cost based on District's rebate amount. Customer cost based on cost of a low-end ENERGY STAR residential washer model.
Water Smart Landscape Rebates Program	Household	\$260	\$200	Utility cost and customer cost based on District's rebate amount and that NMWD rebates up to 50% of approve items.
Residential WBIC Rebates Program	Controller	\$130	\$50	Utility cost based on AWE Tool Conservation Program Library adjusted to 2025 dollars. Assumes a total cost of \$150 for a single family controller.
Commercial WBIC Rebates Program	Controller	\$1,400	\$600	Utility cost based on District's rebate amount. Assumes a total cost of \$1,700 for a typical large landscape controller with 24 stations.
Swimming Pool Cover Rebates Program	Household	\$130	\$150	Utility cost based on District's rebate amount. Assumes a total cost of \$250 for a typical pool cover.
Large Landscape Audits Program	Site	\$2,500	\$3,100	Similar to Water Smart Commercial Surveys Program
Hot Water Recirculation Rebate Program	Household	\$130	\$700	Utility cost based on District's rebate amount. Assumes a total cost of \$800 for installation.
Cash for Grass Rebates Program	Square Feet	\$2	\$12	Utility cost based on District's rebate amount. Customer cost from Marin Municipal Water District's SWSA modeling.
Cash for Grass Rebates Program for Irrigation Accounts	Square Feet	\$2	\$12	Utility cost based on District's rebate amount. Customer cost from Marin Municipal Water District's SWSA modeling.
AMI Leak Notifications Program (SFR)	AMI Meter	\$1	\$5.5	Utility cost from AWE Tool Conservation Program Library. Customer costs based on Note (b).
AMI Leak Notifications Program (MFR, CII, IRR)	AMI Meter	\$1	\$5.5	Similar to SFR AMI Leak Notifications Program.
High Efficiency Faucet Aerator / Showerhead Giveaway - Residential Customers	Showerhead	\$10	\$0.0	Utility cost from AWE Tool Conservation Program Library. Assumes no customer cost.
Rain Barrel Rebate	Household	\$400	\$900	Utility cost based on AWE Tool Conservation Program Library adjusted to 2025 dollars. Assumes a total cost of \$1200 for a 1,000 gallon rain barrel

Table B-2 Conservation Program Cost Assumptions
North Marin Water District, Sonoma-Marín Saving Water Partnership

Agency Program Name	Units	Utility Cost per Unit (a)	Customer Cost per Unit	Source(s)
Incentivize Gray Water Retrofit for Existing SFR Customers	Household	\$125	\$75	Utility cost based on District's rebate amount. Assumes a total cost of \$200 for purchase of a Laundry-to-Landscape kit.
Behavior Based Customer Messaging Platforms	Household	\$7	\$0	Utility cost based on AWE Tool Conservation Program Library adjusted to 2025 dollars. Assumes no cost to customers.
Water Savings Incentive Program for CII	GPD Reduced	\$7	\$34	(c)

Abbreviations

AMI = advanced metering infrastructure

AWE = Alliance for Water Efficiency Water Conservation Tracking Tool

CII = commercial, industrial, institutional

gpd = gallons per day

HET = high-efficiency toilet

HECW = high-efficiency clothes washer

IRR = irrigation

MFR = multi-family residential

SFR = single-family residential

SWSA = Strategic Water Supply Assessment

UHET = ultra-high-efficiency toilet

WBIC = weather-based irrigation controller

Notes

(a) Utility cost for rebate programs includes a 30% administrative cost in addition to the District's rebate amount.

(b) An average household leak is estimated to be 180 gallons per week per Reference 3. It is assumed that fixing such leak costs \$200, averaged across the entire

(c) Utility cost for each gpd reduced calculated from the average of Santa Rosa's Sustained Reduction program and Marin Municipal's Custom Rebate program. Customer cost assumed to be five times the District's rebate amount.

References

1. AWE, 2021. Water Conservation Tracking Tool. Version 4.0. Alliance for Water Efficiency.

2. EKI, 2020. 2020 Water Demand Analysis and Water Conservation Measure Update North Marin Water District. EKI Environment & Water, Inc., December 2020.

3. USEPA, 2025. Water Sense Statistics and Facts. United States Environmental Protection Agency, accessed October 14, 2025.

<https://www.epa.gov/watersense/statistics-and-facts>

Table B-3 Conservation Program Implementation Rate Assumptions

North Marin Water District, Sonoma-Marín Saving Water Partnership

Agency Program Name	Units	Implementation Rate	Unit	Source(s)
Water Smart Home Surveys Program	Household	38	Household / Year	Based on past program participation rates from 2020–2024.
Water Smart Commercial Surveys Program	Site	2.6	Site / Year	Based on past program participation rates from 2020–2024.
HET Rebates Program	Toilet	100	Toilet / Year	Based on past program participation rates from 2020–2024.
UHET Distribution Program	Toilet	194	Toilet / Year	Based on past program participation rates from 2013-2015 as no participation was reported for 2020-2024.
HECW Rebates Program	Washer	29	Washer / Year	Based on past program participation rates from 2020-2024.
Water Smart Landscape Rebates Program	Household	17	Household / Year	Based on past program participation rates from 2020–2024.
Residential WBIC Rebates Program	Controller	16	Controller / Year	Based on past program participation rates from 2020–2024.
Commercial WBIC Rebates Program	Controller	0.6	Controller / Year	Based on past program participation rates from 2020–2024.
Swimming Pool Cover Rebates Program	Household	27	Household / Year	Based on past program participation rates from 2020–2024.
Large Landscape Audits Program	Site	2.8	Site / Year	Based on past program participation rates from 2020–2024.
Large Landscape Budgets Program	Site	44	Site / Year	Assumes all irrigation accounts will participate.
Hot Water Recirculation Rebate Program	Household	4.6	Household / Year	Based on past program participation rates from 2020–2024.
Cash for Grass Rebates Program	Square Feet	24,744	Square Feet / Year	Based on past program participation rates from 2020–2024.
Cash for Grass Rebates Program for Irrigation Accounts	Square Feet	4,868	Square Feet / Year	Based on past program participation rates from 2008-2019..
AMI Leak Notifications Program (SFR)	AMI Meter	14,607	AMI Meter / Year	Based on past program participation rates from 2020–2024.
AMI Leak Notifications Program (MFR, CII, IRR)	AMI Meter	5,381	AMI Meter / Year	Based on past program participation rates from 2020–2024.

Table B-3 Conservation Program Implementation Rate Assumptions

North Marin Water District, Sonoma-Marín Saving Water Partnership

Agency Program Name	Units	Implementation Rate	Unit	Source(s)
High Efficiency Faucet Aerator / Showerhead Giveaway - Residential Customers	Showerhead	309	Showerhead / Year	Assume 1% of SFR customers will participate. Assumes 2 showerheads per account.
Rain Barrel Rebate	Household	69	Household / Year	Assume 0.6% of SFR customers will participate.
Incentivize Gray Water Retrofit for Existing SFR Customers	Household	69	Household / Year	Assume 0.6% of SFR customers will participate.
Behavior Based Customer Messaging Platforms	Household	1,534	Household / Year	Assume 8% of residential customers will participate.
Water Savings Incentive Program for CII	GPD Reduced	4,040	GPD Reduced / Year	Based on 2010-2024 program participation from the City of Santa Rosa.

Abbreviations

AMI = advanced metering infrastructure

AWE = Alliance for Water Efficiency Water Conservation Tracking Tool

CII = commercial, industrial, institutional

HET = high-efficiency toilet

HECW = high-efficiency clothes washer

IRR = Irrigation

MFR = multi-family residential

SFR = single-family residential

UHET = ultra-high-efficiency toilet

WBIC = weather-based irrigation controller

WEMP = Water Efficiency Master Plan

APPENDIX C

Prioritization and Screening of Future Water Conservation Measures

Table C-1 Regional Prioritization of Conservation Measures and Programs
Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)		Preference (b)		Current SMSWP Program
	Regional	Local	Regional	Local	
AGENCY ACTIONS AND WATER RATES					
Increase Enforcement of Customer Pressure Reducing Valve (PRV) Requirement	1.5	1.6	25%	25%	✗
Increase Enforcement of Indoor Fixture Retrofit at Time of Sale	1.7	2.4	33%	56%	✗
Increase Enforcement of State Water Waste Regulations	2.0	2.6	38%	63%	✗
Rate Structure Evaluation	2.0	2.0	25%	50%	✗
Regional UHET and/or Urinal Bulk Purchase Program	1.3	1.	11%	0%	✗
Water Budgeting/Monitoring for Large Landscape Accounts	1.8	2.9	33%	67%	✗
Establish Separate Pricing Structure for Irrigation Accounts	1.4	2.7	13%	50%	✗
Implementation or Modification of Tiered Water Rates (Conservation Pricing)	2.4	3.3	38%	75%	✗
Water Budget Based Billing for All Customers	1.3	1.9	11%	33%	✗
Water Budget Based Billing for Only Irrigation Customers	1.7	2.9	22%	56%	✗
Install AMI for Existing Accounts	2.6	4.3	25%	88%	✗
Install AMI for High Water Users and Large Landscape Accounts	2.8	4.4	50%	88%	✗
Install AMI in New Development	2.4	4.3	38%	88%	✗
End Point Leak Detection and Flow Monitoring	2.1	3.0	25%	50%	✗
CalWEP District Distribution Program	1.8	2.3	33%	33%	✗
Behavior Based Customer Messaging Platforms	1.9	2.9	25%	63%	✗
Average by Program Type	1.9	2.8			
PUBLIC OUTREACH AND EDUCATION					
Water Use Surveys/Audits - CII	2.3	2.9	44%	56%	✓
Water Use Surveys/Audits - MFR	2.7	3.1	67%	67%	✓
Water Use Surveys/Audits - SFR	2.6	3.0	67%	67%	✗
Garden Sense Consultation	3.1	2.3	78%	56%	✓
Educational Workshops	3.3	2.7	78%	56%	✓

Table C-1 Regional Prioritization of Conservation Measures and Programs
Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)		Preference (b)		Current SMSWP Program
	Regional	Local	Regional	Local	
Garden Tour	3.2	1.6	78%	11%	✓
SFR Home Water Report	2.0	2.8	44%	67%	✗
Promote Green Building and Certification	2.4	1.3	56%	11%	✗
Provide Support with Smart Irrigation Controller Setup	2.7	2.6	67%	56%	✗
Public Outreach through Print & Electronic Media - Focused on Indoor Conservation	3.7	3.4	89%	89%	✓
Public Outreach through Print & Electronic Media - Focused on Outdoor Irrigation	4.4	4.1	100%	89%	✓
Promote QWEL Training (Qualified Water efficient Landscaper)	3.9	2.6	89%	33%	✓
School Education Programs	4.0	2.6	100%	67%	✓
Do-It-Yourself Home Energy and Water Savings Toolkit	3.2	2.2	78%	44%	✓
Average by Program Type	3.1	2.7			
DEVICE-BASED AND FINANCIAL INCENTIVE PROGRAMS					
High Efficiency Faucet Aerator / Showerhead Giveaway - CII Customers	2.4	3.1	44%	56%	✗
High Efficiency Faucet Aerator / Showerhead Giveaway - Residential Customers	2.7	4.0	56%	89%	✗
Toilet Flapper Giveaway - Residential and CII	2.2	3.0	44%	67%	✗
UHET Direct Installation - Residential and CII	1.7	2.2	33%	33%	✗
Urinal Direct Installation - CII	1.7	2.0	44%	33%	✗
Thermostatic Shut-Off Valve Showerheads/Tub Spouts Rebates	1.7	1.8	33%	33%	✗
HET (<1.28 gal/flush) Replacement Rebates	2.3	2.6	44%	44%	✗
High Efficiency Urinal (<0.25 gal/flush) Replacement Rebates - CII	2.1	2.6	44%	44%	✗
Plumber Initiated UHET and / or HEU Retrofit Program	1.7	2.0	22%	22%	✗
Direct Install of Efficient Indoor Fixtures - Commercial and Industrial	1.9	2.4	33%	44%	✗
Direct Install of Efficient Indoor Fixtures - Government Buildings	2.1	2.4	44%	44%	✗
Direct Install of Efficient Indoor Fixtures - Low Income Residential	2.3	2.9	44%	56%	✗
Direct Install of Efficient Indoor Fixtures - Residential	2.3	2.7	44%	44%	✗

Table C-1 Regional Prioritization of Conservation Measures and Programs
Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)		Preference (b)		Current SMSWP Program
	Regional	Local	Regional	Local	
High Efficiency Clothes Washer Install - Low Income Residential Customers	1.6	1.7	22%	11%	✗
High Efficiency Clothes Washer Rebate - Residential	3.1	3.1	67%	67%	✗
High Efficiency Clothes Washer Rebate Program - CII	2.0	2.8	44%	78%	✗
Efficient Dishwasher Rebates	1.9	1.9	44%	44%	✗
Indoor Fixture Program For Hotels & Motels	2.0	2.8	44%	67%	✗
Indoor Fixture Program For Schools	2.1	2.0	44%	33%	✗
Water Savings Incentive Program for CII	1.8	2.9	33%	78%	✗
Nonresidential Incentive for Self-closing or Metering Faucets	1.9	2.6	22%	44%	✗
Laminar Flow Restrictor Rebate for Health Care Related Facilities	1.9	2.8	22%	67%	✗
Autoclave (Steam-Sterilizer) Retrofit Rebates	1.3	1.4	11%	22%	✗
Air Cooled Ice Machine Rebates	1.7	1.9	22%	44%	✗
Connectionless Food Steamer Rebates	2.0	1.9	33%	44%	✗
Commercial Kitchen High Efficiency Dishwasher Rebate	1.3	1.8	11%	33%	✗
Dipper Well Rebates	2.2	2.3	44%	67%	✗
Hot Water on Demand Pump System Rebate/ Hot Water Recirculating System	1.7	2.2	33%	56%	✗
Dry Vacuum Pumps	1.3	1.9	11%	44%	✗
Ozone Laundry Washer Rebate - CII	1.6	2.1	22%	56%	✗
Plumbing Flow Control Valve - CII (Faucets and Showerheads)	1.9	2.7	22%	56%	✗
Incentivize Cooling Tower Upgrades	1.3	2.1	11%	56%	✗
Rebates for Conductivity Controllers on Cooling Towers	1.6	2.1	22%	56%	✗
Sustained Reduction, or rebates for any CII project which demonstrates water savings	1.6	2.0	22%	33%	✗
Landscape Conversion or Turf Removal - MFR and CII	3.2	4.7	67%	100%	✗
Landscape Conversion or Turf Removal - SFR	3.3	4.8	67%	100%	✗
Mulch Rebate	2.4	3.4	44%	67%	✗

Table C-1 Regional Prioritization of Conservation Measures and Programs
Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)		Preference (b)		Current SMSWP Program
	Regional	Local	Regional	Local	
Incentivize Irrigation Equipment Upgrades - SFR	2.0	3.4	33%	67%	✗
Commerical Landscape Irrigation Improvement Program (CLIIP) Rebates	2.4	3.5	50%	75%	✗
Rotating Sprinkler Nozzle Giveaway	2.4	2.8	56%	56%	✗
Nozzle Replacement Irrigation - Residential	1.9	2.9	33%	44%	✗
Nozzle Replacement Irrigation CII - Large Landscape	1.9	3.0	33%	56%	✗
In-Stem Flow Regulators	1.9	2.1	33%	33%	✗
Smart Irrigation Controller (Weather-Based Irrigation Controller) Giveaway - Large Landscape	1.9	2.3	44%	44%	✗
Smart Irrigation Controller (Weather-Based Irrigation Controller) Giveaway - SFR	1.9	2.7	44%	44%	✗
Soil Moisture Sensor Giveaway	2.0	2.1	44%	22%	✗
Soil Moisture Sensor Rebate	1.9	2.0	44%	22%	✗
Pilot Spring Irrigation Repairs Rebate	2.0	2.2	44%	33%	✗
Rain Barrel Rebate	2.2	3.1	44%	67%	✗
Rain Barrel Rebate - MFR & Large Landscapes	2.0	2.9	33%	56%	✗
Incentivize Gray Water Retrofit for Existing SFR Customers	1.9	2.7	22%	56%	✗
Incentivize Gray Water Systems for New CII Development	1.8	1.9	22%	33%	✗
Incentivize Submetering for Existing Customers - MFR, CII	1.7	2.4	33%	56%	✗
Incentivize Submetering of Cooling Towers for Existing Customers	1.1	1.9	0%	33%	✗
Flow Sensor Rebate Irrigation System	1.7	2.3	33%	44%	✗
SFR Wireless Flow Monitor	1.7	2.0	33%	33%	✗
Incentivize Replacement of Pressure Reducing Valves (PRVs) with 60-70 psi PRVs	1.4	1.7	11%	22%	✗
Pool Removal Rebates	1.8	2.6	22%	44%	✗
Swimming Pool and Hot Tub Cover Rebates	1.6	2.7	33%	56%	✗
Tiered Water Rate Exemption Assitance Program	1.0	1.4	0%	11%	✗
Average by Program Type	1.9	2.5			

Table C-1 Regional Prioritization of Conservation Measures and Programs
Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)		Preference (b)		Current SMSWP Program
	Regional	Local	Regional	Local	
POLICIES AND REGULATIONS					
Demand Offset/Water Neutral Policy for Large New Developments	2.7	3.7	44%	78%	✗
Prohibit Once through Cooling Systems	2.7	3.9	44%	78%	✗
Require <0.25 gal/flush Urinals in New Development	1.6	1.9	22%	33%	✗
Require <1.0 gal/flush Toilets in New Development	2.1	3.1	33%	56%	✗
Require Cooling Tower Retrofits	2.2	2.6	44%	56%	✗
Require High Efficiency Clothes Washers in New Development	1.7	2.6	22%	44%	✗
Require Hot Water on Demand / Structured Plumbing in New Residential Development	2.0	2.4	44%	56%	✗
Require Irrigation Designers / Installers be Certified (QWEL)	1.6	1.9	22%	33%	✗
Require On-Site Water Reuse Systems (Grey Water or Black Water) for Large CII Developments	1.8	1.9	33%	33%	✗
Require Plumbing for Gray Water in New SFR Development	2.2	1.9	33%	33%	✗
Require Plumbing for Recycled Water in New CII Development	1.6	3.0	11%	56%	✗
Require Plumbing for Recycled Water in New MFR Development	1.8	2.3	33%	33%	✗
Require Rain Barrels in New Development	1.8	2.0	33%	44%	✗
Require Submetering by Unit for Existing Commercial Customers	1.8	2.1	33%	44%	✗
Require Submetering by Unit for New Commercial Developments	1.6	2.8	22%	67%	✗
Require Submetering for New MFR Developments	2.1	2.4	44%	44%	✗
Require Submetering for New Mobile Home Park Developments	2.2	2.1	33%	44%	✗
Require Submetering of Cooling Towers for Existing Customers	1.8	2.3	22%	33%	✗
Require Submetering of Cooling Towers for New Development	1.1	2.1	0%	33%	✗
Require Submetering of Existing MFR (and Mobile Home Park) Customers	1.3	1.7	11%	22%	✗
Require Submetering of Landscaping for Existing MFR and Commercial Customers	1.3	2.0	11%	33%	✗
Require Submetering of Landscaping for New MFR and Commercial Developments	1.8	2.8	11%	44%	✗
Require Swimming Pool and Hot Tub Covers	1.6	2.4	11%	33%	✗

Table C-1 Regional Prioritization of Conservation Measures and Programs
Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)		Preference (b)		Current SMSWP Program
	Regional	Local	Regional	Local	
Require Water Efficiency Plan Reviews for New CII Development	1.8	2.8	22%	56%	✗
Require Weather Adjusting Smart Irrigation Controllers, Rain Sensors, and/or Soil Moisture Sensors in New Development	1.8	3.1	22%	56%	✗
Restrict Landscape Irrigation to Designated Days/Times	1.3	2.1	11%	33%	✗
Water Conserving Landscape and Irrigation Codes, More Stringent than MWEL0	2.2	3.6	33%	67%	✗
Water Waste Ordinance	2.7	4.2	33%	78%	✗
Average by Program Type	1.9	2.6			

Abbreviations:

AMI = advanced metering infrastructure

CalWEP = California Water Efficiency Partnership

CII = commercial, industrial, institutional

COM = commercial

HEU = High-Efficiency Urinals

IRR = irrigation

MFR = multi-family residential

MWEL0 = Model Water Efficient Landscape Ordinance

PRV = pressure reducing valve

SFR = single-family residential

SMSWP = Sonoma-Marín Saving Water Partnership

UHET = ultra high efficiency toilet

Notes:

(a) Each Water Contractor was asked to rank each conservation program or measure in terms of priority as a regionally-administered program, and as a locally administered program, where 5 indicated highest priority and 1 indicated the lowest priority. Results are presented as an average of the responses of all nine Water Contractors.

(b) Presents the percentage of Water Contractors who indicated a priority of greater or equal to 3 for regional or local implementation.

Table C-2 Prioritization of Conservation Measures and Programs
North Marin Water District, Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)	Sector	Indoor	Outdoor	Primary End Use	Local Program
AGENCY ACTIONS AND WATER RATES						
Increase Enforcement of Customer Pressure Reducing Valve (PRV) Requirement	2	All	X	X	Water loss; Irrigation	No
Install AMI for Existing Accounts	5	All	X	X	Water loss; Irrigation	Yes, currently
Install AMI for High Water Users and Large Landscape Accounts	5	All		X	Water loss; Irrigation	Yes, currently
Install AMI in New Development	5	All	X	X	Water loss; Irrigation	Yes, currently
Regional UHET and/or Urinal Bulk Purchase Program	2	All	X		Toilet / Urinal	Yes, previously
Increase Enforcement of State Water Waste Regulations	4	All	X		Irrigation	Yes, currently
Establish Separate Pricing Structure for Irrigation Accounts	2	IRR		X	Irrigation	Yes, currently
Behavior Based Customer Messaging Platforms	4	All	X	X	All	No
Rate Structure Evaluation	3	All	X	X	All	Yes, currently
Water Budgeting/Monitoring for Large Landscape Accounts	3	IRR	X	X	Irrigation	Yes, previously
Implementation or Modification of Tiered Water Rates (Conservation Pricing)	3	All	X	X	All	Yes, currently
Water Budget Based Billing for All Customers	3	All	X	X	All	No
Water Budget Based Billing for Only Irrigation Customers	3	CII, IRR		X	Irrigation	No
End Point Leak Detection and Flow Monitoring	3	All	X	X	Water loss; Irrigation	Yes, currently
CalWEP District Distribution Program	2	SFR, MFR, COM	X	X	All	No
Increase Enforcement of Indoor Fixture Retrofit at Time of Sale	5	All	X	X	Faucet, Showerhead	Yes, currently
PUBLIC OUTREACH AND EDUCATION						
Public Outreach through Print & Electronic Media - Focused on Indoor Conservation	5	All	X		All Indoor	Yes, currently
Public Outreach through Print & Electronic Media - Focused on Outdoor Irrigation	5	All		X	Irrigation	Yes, currently
Water Use Surveys/Audits - CII	4	CII	X	X	All	Yes, currently
Water Use Surveys/Audits - MFR	4	MFR	X		All	Yes, currently

Table C-2 Prioritization of Conservation Measures and Programs
 North Marin Water District, Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)	Sector	Indoor	Outdoor	Primary End Use	Local Program
Water Use Surveys/Audits - SFR	4	SFR	X	X	All	Yes, currently
Garden Tour	2	SFR		X	All Outdoor	Yes, currently
SFR Home Water Report	1	SFR	X	X	All	No
Promote Green Building and Certification	1	CII	X	X	All	No
Garden Sense Consultation	3	SFR		X	All Outdoor	Yes, currently
Educational Workshops	3	All		X	All Outdoor	Yes, currently
Provide Support with Smart Irrigation Controller Setup	3	All		X	Irrigation	No
Promote QWEL Training (Qualified Water efficient Landscaper)	1	All		X	All Outdoor	Yes, currently
School Education Programs	1	SFR, MFR	X	X	All	Yes, currently
DEVICE-BASED AND FINANCIAL INCENTIVE PROGRAMS						
High Efficiency Faucet Aerator / Showerhead Giveaway - CII Customers	2	CII	X		Faucet, Showerhead	Yes, currently
High Efficiency Clothes Washer Rebate - Residential	5	SFR, MFR	X		Clothes Washer	No
Toilet Flapper Giveaway - Residential and CII	2	All	X		Toilet	Yes, currently
UHET Direct Installation - Residential and CII	1	CII	X		Toilet	No
Urinal Direct Installation - CII	1	CII	X		Urinal	No
Thermostatic Shut-Off Valve Showerheads/Tub Spouts Rebates	1	SFR, MFR, CII	X		Shower	No
Landscape Conversion or Turf Removal - MFR and CII	5	MFR, CII		X	Irrigation	Yes, currently
High Efficiency Urinal (<0.25 gal/flush) Replacement Rebates - CII	2	CII	X		Urinal	Yes, currently
Plumber Initiated UHET and / or HEU Retrofit Program	1	All	X		Toilet / Urinal	No
Direct Install of Efficient Indoor Fixtures - Commercial and Industrial	1	CII	X		Faucet, Showerhead	No
Direct Install of Efficient Indoor Fixtures - Government Buildings	1	CII	X		Faucet, Showerhead	No
Direct Install of Efficient Indoor Fixtures - Low Income Residential	1	SFR, MFR	X		Toilet, Faucet, Showerhead	No

Table C-2 Prioritization of Conservation Measures and Programs
 North Marin Water District, Sonoma-Marin Saving Water Partnership

Conservation Measure/Program	Prioritization (a)	Sector	Indoor	Outdoor	Primary End Use	Local Program
Direct Install of Efficient Indoor Fixtures - Residential	1	SFR, MFR	X		Toilet, Faucet, Showerhead	No
Landscape Conversion or Turf Removal - SFR	5	SFR		X	Irrigation	Yes, currently
High Efficiency Clothes Washer Install - Low Income Residential Customers	1	SFR, MFR	X		Clothes Washer	No
Mulch Rebate	5	SFR		X	Irrigation	Yes, currently
High Efficiency Clothes Washer Rebate Program - CII	1	CII	X		Clothes Washer	Yes, currently
Efficient Dishwasher Rebates	1	SFR	X		Dishwashers	No
Indoor Fixture Program For Hotels & Motels	2	CII	X		All Indoor	No
Indoor Fixture Program For Schools	1	CII	X		All Indoor	No
Water Savings Incentive Program for CII	1	CII	X		All Indoor	No
Nonresidential Incentive for Self-closing or Metering Faucets	1	CII	X		Faucet	No
Incentivize Irrigation Equipment Upgrades - SFR	5	SFR		X	Irrigation	Yes, currently
Autoclave (Steam-Sterilizer) Retrofit Rebates	1	CII	X		CII Equipment	No
Air Cooled Ice Machine Rebates	1	CII	X		CII Equipment	Yes, previously
Connectionless Food Steamer Rebates	1	CII	X		CII Equipment	No
Commercial Kitchen High Efficiency Dishwasher Rebate	1	Commercial	X		Dishwashers	No
Dipper Well Rebates	1	CII	X		CII Equipment	No
Commercial Landscape Irrigation Improvement Program (CLIIP) Rebates	5	Commercial		X	Irrigation	Yes, currently
Dry Vacuum Pumps	1	CII	X		CII Equipment	No
Ozone Laundry Washer Rebate - CII	1	CII	X		Clothes Washer	No
Plumbing Flow Control Valve - CII (Faucets and Showerheads)	1	Commercial	X		Faucet	No
Nozzle Replacement Irrigation - Residential	5	SFR, MFR		X	Irrigation	Yes, currently
Nozzle Replacement Irrigation CII - Large Landscape	5	CII		X	Irrigation	Yes, currently

Table C-2 Prioritization of Conservation Measures and Programs
North Marin Water District, Sonoma-Marin Saving Water Partnership

Conservation Measure/Program	Prioritization (a)	Sector	Indoor	Outdoor	Primary End Use	Local Program
Sustained Reduction, or rebates for any CII project which demonstrates water savings	1	CII	X	X	All	No
Smart Irrigation Controller (Weather-Based Irrigation Controller) Giveaway - SFR	5	SFR		X	Irrigation	Yes, currently
Rain Barrel Rebate	5	SFR		X	Irrigation	Yes, currently
Rain Barrel Rebate - MFR & Large Landscapes	5	MFR, CII		X	Irrigation	Yes, currently
Pool Removal Rebates	5	SFR, MFR		X	Pool/Hot Tub	Yes, currently
Swimming Pool and Hot Tub Cover Rebates	5	SFR, MFR		X	Pool/Hot Tub	Yes, currently
HET (<1.28 gal/flush) Replacement Rebates	4	SFR, MFR	X		Toilet	Yes, currently
Do-It-Yourself Home Energy and Water Savings Toolkit	4	SFR	X	X	All	Yes, currently
Hot Water on Demand Pump System Rebate/ Hot Water Recirculating System	4	SFR, MFR	X		Hot Water	Yes, currently
In-Stub Flow Regulators	1	Commercial		X	Irrigation	No
Smart Irrigation Controller (Weather-Based Irrigation Controller) Giveaway - Large Landscape	4	MFR, CII		X	Irrigation	Yes, currently
Incentivize Gray Water Retrofit for Existing SFR Customers	4	SFR		X	Irrigation / Gray Water	Yes, currently
Soil Moisture Sensor Giveaway	2	All		X	Irrigation	No
Soil Moisture Sensor Rebate	2	All		X	Irrigation	No
Pilot Spring Irrigation Repairs Rebate	1	MFR, COM, IRR		X	Irrigation	No
High Efficiency Faucet Aerator / Showerhead Giveaway - Residential Customers	3	SFR, MFR	X		Faucet, Showerhead	Yes, currently
Laminar Flow Restrictor Rebate for Health Care Related Facilities	3	Institutional	X		Faucet	No
Incentivize Cooling Tower Upgrades	3	CII	X		Cooling Towers	No
Incentivize Gray Water Systems for New CII Development	1	CII		X	Irrigation / Gray Water	No
Rebates for Conductivity Controllers on Cooling Towers	3	CII	X		Cooling Towers	No
Rotating Sprinkler Nozzle Giveaway	3	All		X	Irrigation	No
Flow Sensor Rebate Irrigation System	1	SFR, MFR		X	Irrigation	No

Table C-2 Prioritization of Conservation Measures and Programs
 North Marin Water District, Sonoma-Marin Saving Water Partnership

Conservation Measure/Program	Prioritization (a)	Sector	Indoor	Outdoor	Primary End Use	Local Program
SFR Wireless Flow Monitor	1	SFR	X	X	Water Loss	No
Incentivize Replacement of Pressure Reducing Valves (PRVs) with 60-70 psi PRVs	1	All	X	X	Water loss; Irrigation	No
Incentivize Submetering for Existing Customers - MFR, CII	3	MFR, COM, IRR		X	All Indoor	No
Incentivize Submetering of Cooling Towers for Existing Customers	3	CII	X		Cooling Towers	No
Tiered Water Rate Exemption Assistance Program	1	SFR	X	X	Showerhead, Clothes Washer, Irrigation	No
POLICIES AND REGULATIONS						
Require <1.0 gal/flush Toilets in New Development	5	All	X		Toilet	No
Require High Efficiency Clothes Washers in New Development	5	SFR, MFR	X		Clothes Washer	Yes, currently
Require Weather Adjusting Smart Irrigation Controllers, Rain Sensors, and/or Soil Moisture Sensors in New Development	5	All		X	Irrigation	Yes, currently
Water Conserving Landscape and Irrigation Codes, More Stringent than MWEL0	5	All		X	Irrigation	Yes, currently
Water Waste Ordinance	5	All		X	All Outdoor	Yes, currently
Prohibit Once through Cooling Systems	4	CII	X	X	CII Equipment	No
Require Hot Water on Demand / Structured Plumbing in New Residential Development	2	SFR, MFR	X		Shower/Sink	No
Require Irrigation Designers / Installers be Certified (QWEL)	2	All		X	Irrigation	No
Require On-Site Water Reuse Systems (Grey Water or Black Water) for Large CII Developments	2	CII		X	Irrigation / Recycled Water	No
Require Plumbing for Gray Water in New SFR Development	2	SFR		X	Irrigation / Gray Water	Yes, currently
Require <0.25 gal/flush Urinals in New Development	4	CII	X		Urinal	Yes, currently
Require Plumbing for Recycled Water in New CII Development	4	CII		X	Irrigation / Recycled Water	Yes, currently
Require Plumbing for Recycled Water in New MFR Development	4	MFR		X	Irrigation / Recycled Water	No
Require Submetering by Unit for Existing Commercial Customers	2	CII	X		All Indoor	No
Require Submetering by Unit for New Commercial Developments	2	CII	X		All Indoor	No

Table C-2 Prioritization of Conservation Measures and Programs
North Marin Water District, Sonoma-Marín Saving Water Partnership

Conservation Measure/Program	Prioritization (a)	Sector	Indoor	Outdoor	Primary End Use	Local Program
Require Submetering for New MFR Developments	2	MFR	X		All Indoor	No
Require Submetering for New Mobile Home Park Developments	2	MFR	X		All Indoor	No
Require Submetering of Cooling Towers for Existing Customers	2	CII	X		Cooling Towers	No
Require Submetering of Cooling Towers for New Development	2	CII	X		Cooling Towers	No
Require Submetering of Existing MFR (and Mobile Home Park) Customers	2	MFR	X		All Indoor	No
Require Submetering of Landscaping for New MFR and Commercial Developments	4	CII		X	Irrigation	Yes, currently
Require Water Efficiency Plan Reviews for New CII Development	4	CII	X	X	All Indoor	Yes, currently
Restrict Landscape Irrigation to Designated Days/Times	4	All		X	Irrigation	Yes, previously
Demand Offset/Water Neutral Policy for Large New Developments	3	All	X	X	All	No
Require Cooling Tower Retrofits	3	CII	X		Cooling Towers	No
Require Rain Barrels in New Development	3	SFR		X	Irrigation	No
Require Submetering of Landscaping for Existing MFR and Commercial Customers	3	MFR, CII		X	Irrigation	No
Require Swimming Pool and Hot Tub Covers	3	SFR,MFR		X	Pool/Hot Tub	Yes, previously

Abbreviations

AMI = advanced metering infrastructure

CalWEP = California Water Efficiency Partnership

CII = commercial, industrial, institutional

COM = commercial

HEU = High-Efficiency Urinals

IRR = irrigation

MFR = multi-family residential

MWEL0 = Model Water Efficient Landscape Ordinance

PRV = pressure reducing valve

SFR = single-family residential

SMSWP = Sonoma-Marín Saving Water Partnership

UHET = ultra high efficiency toilet

Notes

(a) Each Water Contractor was asked to rank conservation programs and measures in terms of priority as a locally-administered program, where 5 indicated highest priority and 1 indicated the lowest priority.

Appendix C: Agency Notification Letters



999 Rush Creek Place
P.O. Box 146
Novato, CA 94948-0146

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415-897-4133

EMAIL
info@nmwd.com

WEB
www.nmwd.com

February 2, 2026

To: Interested Parties

Re: Notice of Preparation of the 2025 Urban Water Management Plan and Water Shortage Contingency Plan

The California Urban Water Management Planning Act (Water Code §10608–10656) requires the North Marin Water District (District) to update its Urban Water Management Plan (UWMP) and associated Water Shortage Contingency Plan (WSCP) for its Novato Service Area every 5 years. The UWMP and WSCP are due to the California Department of Water Resources by July 1, 2026.

The District is currently reviewing its existing UWMP and WSCP, which were updated in 2021, and is considering revisions to those documents. The UWMP integrates land use, water needs and supply, and demand management measures to document the District's ability to provide a reliable supply of water to its customers. The associated WSCP considers dry-year water supply planning, including strategies to address water supply shortage conditions and emergencies.

The District coordinates with its wholesale water supplier, nearby water agencies, public entity stakeholders, and other interested parties in preparing the UWMP and WSCP. A draft of the 2025 UWMP and WSCP will be made available for public review, and a public hearing will be scheduled in 2026.

If your agency would like to participate or provide input during the preparation of the District's 2025 UWMP and WSCP, please contact me at (415) 897-4133 or emiller@nmwd.com.

Sincerely,

Eric Miller
AGM/Chief Engineer

Email Distribution List:

Sonoma County Water Agency
County of Marin, Public Works
County of Marin, Local Agency Formation Commission
County of Sonoma, Permit Sonoma
City of Cotati
City of Novato
City of Petaluma
City of Rohnert Park
City of Santa Rosa
City of Sonoma
Las Gallinas Valley Sanitary District
Marin Water
Novato Sanitary District
Town of Windsor
Valley of the Moon Water District

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Appendix D: Public Hearing Notices

PLACEHOLDER

Appendix E: Distribution System Map from 2025
Novato Water System Master Plan Update

Appendix F: Water Shortage Contingency Plan



**NORTH MARIN
WATER DISTRICT**

**Water Shortage Contingency Plan
2025 Update
North Marin Water District**

June 2026

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Table 6-5	Preparation Actions for a Catastrophe
Table 9-1	Water Shortage Contingency Plan — Penalties and Charges

ATTACHMENTS

- Attachment 1. Sonoma County Water Agency Annual Water Supply and Demand Assessment Procedures
- Attachment 2. Drought Response Tool Quantitative Assessment
- Attachment 3. 2023 Operational Area Marin County Multi-Jurisdictional Hazard Mitigation Plan
- Attachment 4. 2024 Sonoma County Water Agency Local Hazard Mitigation Plan
- Attachment 5. Water Shortage Contingency Plan Resolutions

1. INTRODUCTION

CWC § 10640

(a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

North Marin Water District's (NMWD's or District's) Water Shortage Contingency Plan (WSCP) has been developed to serve as a flexible framework of planned response measures to mitigate future water supply shortages. This WSCP builds upon and supersedes the WSCP that was presented in the 2020 Urban Water Management Plan (UWMP).

The WSCP includes the stages of response to a water shortage caused by drought or by supply interruptions caused by infrastructure failure, regulatory mandate, or catastrophic human-caused or natural events. The primary objective of the WSCP is to ensure that the District has in place the necessary resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during water supply shortages and interruptions. The WSCP also includes procedures to conduct an annual assessment of water supply and demand in order to determine whether water shortage conditions are likely to exist in the forthcoming year, and to proactively begin the process of implementing WSCP stages of action, as appropriate.

This WSCP has been prepared in accordance with California Water Code (CWC) § 10640 and CWC § 10632 of the Urban Water Management Plan (UWMP) Act. Text from the UWMP Act has been included in grey text boxes with italicized font at beginning of relevant sections of this WSCP. The information presented in the respective WSCP sections and the associated text and tables are collectively intended to fulfill the requirements of that sub-section of the UWMP Act.

2. WATER SUPPLY RELIABILITY ANALYSIS

CWC § 10632 (a) (1) *The analysis of water supply reliability conducted pursuant to Section 10635.*

This section provides a summary of the District’s water supply reliability analysis, recognizing that the WSCP is intended to be a standalone document that can be adopted and amended independently.

The District relies and plans to rely on two main water supply sources, including surface water supplies from the Sonoma County Water Agency (Sonoma Water) and local surface water (i.e., Stafford Lake).

The reliability analysis was performed based on, among other things, Sonoma Water’s water reliability analysis and the District’s local surface water supplies. Based on the service reliability analysis, the District is expected to have adequate water supplies during normal years, single dry years, and multiple dry years to meet projected demands through 2050.

A Drought Risk Assessment (DRA) was also conducted during the water supply reliability assessment, which evaluates the effects on available water supply sources of an assumed five-year drought commencing the year after the assessment is completed (i.e., from 2026 through 2030). Based on the DRA, the District is expected to have sufficient water supply from 2026 to 2030 in this multi-year drought scenario, although as described in this WSCP, there are a number of actions that the District will implement to reduce demands and further ensure supply reliability at various levels of water shortage.

3. PRIOR DROUGHT ACTIONS

The District has historically developed different strategies for reducing water demand during water shortages. The District's actions in response to the recent severe drought that occurred in California between 2014 and 2017 are discussed below.

On 1 April 2015, Governor Brown issued the fourth in a series of Executive Orders regarding actions necessary to address California's severe drought conditions. Executive Order B-29-15 directed the State Water Resources Control Board (SWRCB) to impose the first ever mandatory restrictions on urban water suppliers to achieve a statewide 25% reduction in potable urban water usage through February 2016. The Executive Order also required commercial, industrial, and institutional (CII) users to implement water efficiency measures, prohibited irrigation with potable water of ornamental turf in public street medians, and prohibited irrigation with potable water outside newly constructed homes and buildings that were not delivered by drip or microspray systems, along with numerous other directives.

On 5 May 2015, the SWRCB adopted Resolution 2015-0032 that mandated minimum actions by water suppliers and their customers to conserve water supplies into 2016 and assigned a mandatory water conservation savings goal to each water supplier based on a measurement of their residential water use in gallons per capita per day (R-GPCD). The Office of Administrative Law approved the regulations and modified the CWC on 18 May 2015. On 2 February 2016, the SWRCB voted to extend the emergency regulations until October 2016 with some modifications. On 9 May 2016, the Governor issued Executive Order B-37-16, which directed the SWRCB to extend the emergency regulations through the end of January 2017 as well as make certain water use restrictions permanent. On 18 May 2016, the SWRCB adopted Resolution 2016-0029 that adjusted the water conservation savings goal and replaced the February 2016 emergency regulation. The SWRCB may take separate action to make some of the requirements of the regulations permanent in response to the Executive Order.

The mandatory conservation standards included in CWC § 865(c) range from 8% for suppliers with an R-GPCD below 65 R-GPCD, up to 36% for suppliers with an R-GPCD of greater than 215 GPCD. As with previous emergency drought regulations adopted by the SWRCB in 2014, the new water conservation regulation was primarily intended to reduce outdoor urban water use. Based on their R-GPCD, the District was required to reduce water use by 24% relative to its 2013 water use.

Through enactment of its 2010 WSCP, the District surpassed these reduction targets. During the June 2015 through May 2016 compliance period, the District surpassed its water use reduction target with a cumulative savings of 31% relative to its 2013 use. In June 2016, the District adopted its 2015 UWMP and associated WSCP update. In April 2017, Governor Brown ended the State of Emergency Drought.

In March 2021, the District activated the 2016 WSCP to respond to a water shortage emergency and approved Emergency Water Conservation Ordinance 41 for the Novato Service Area. The Ordinance was subsequently amended in April and May of 2021 to add specific water use prohibitions to go into effect 1 July 2021 aimed at a 20% reduction in water use as compared to 2020. Ordinance 41 calls for 20% voluntary reductions through 30 June 2021 and a service area wide mandatory reduction of 20% from 1 July 2021 to 1 November 2021. On 4 April 2023, the District rescinded Ordinance 41 after the drought was declared officially over.

4. ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

CWC § 10632 (a) (2)

The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:

(A) The written decision-making process that an urban water supplier will use each year to determine its water supply reliability.

(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:

(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.

(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.

(iii) Existing infrastructure capabilities and plausible constraints.

(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.

(v) A description and quantification of each source of water supply.

CWC § 10632.1

An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.

CWC § 10632.2

An urban water supplier shall follow, where feasible and appropriate, the prescribed procedures and implement determined shortage response actions in its water shortage contingency plan, as identified in subdivision (a) of Section 10632, or reasonable alternative actions, provided that descriptions of the alternative actions are submitted with the annual water shortage assessment report pursuant to Section 10632.1. Nothing in this section prohibits an urban water supplier from taking actions not specified in its water shortage contingency plan, if needed, without having to formally amend its urban water management plan or water shortage contingency plan.

On an annual basis, the District will conduct an Annual Assessment to identify whether there is likely to be a water shortage condition in the following year. Because a substantial source of the District's potable water supply is from Sonoma Water, the evaluation of Sonoma Water supplies for a particular year will be based on information provided by Sonoma Water.

For purposes of this assessment, a water shortage condition is defined as an anticipated shortfall of up to 20%, corresponding to Water Shortage Level 2. Each element of the Annual Assessment is described below, along with the key data inputs and methodologies for determining these elements, and expected timing of the decision process.

1. Evaluation Criteria

The evaluation criteria that will be used to identify whether the District is likely to experience a water shortage in the coming year include:

- a. **Sonoma Water Available Supply** –Sonoma Water will develop and present the draft annual assessment to the Technical Advisory Committee (TAC) at the April meeting. The final annual assessment will be presented at the June TAC meeting. The District is a member of the TAC and the Water Advisory Committee (WAC) that represents the major cities and water districts that receive water delivered by Sonoma Water aqueduct system. The District will conduct the Annual Assessment regarding Sonoma Water available supply as part of a coordinated effort led by Sonoma Water.

Further details about the evaluation criteria and procedure used by Sonoma Water in conducting an Annual Assessment can be found in **Attachment 1** of this WSCP. As discussed in **Attachment 1**, evaluation criteria used by Sonoma Water include:

- Unconstrained customer demand for each of Sonoma Water’s wholesale customers, considering weather, growth, and other influencing factors;
 - Russian River operations, including current reservoir releases from Lake Sonoma and Mendocino and anticipated releases to meet in-stream flow requirements and water demand;
 - Hydrology and watershed conditions, including Lake Sonoma and Lake Mendocino cumulative inflows and storage levels, soil moisture, and snowpack; and
 - Potter Valley Project inflows, including Lake Pillsbury storage levels and observed and projected project transfers.
- b. **Stafford Lake Available Supply** –The Stafford Lake supply availability is not the primary driver when considering a water shortage condition. It is possible that in a given year, this supply may be low or limited and yet Sonoma Water supply is not. In general, a normal rainfall year provides sufficient runoff to fill the lake allowing for production from this source to supplement Sonoma Water supply.
 - c. **State Regulatory Conditions** - Evaluation of any state-mandated drought or water use restrictions known during preparation of the Annual Assessment.

These criteria will be assessed by District staff with detailed knowledge of District operations. The data used to support these assessments may include, but are not limited to: regional rainfall data, Sonoma Water lake storage levels and Forecast Informed Reservoir Operation (FIRO) outputs, annual Marin County briefing by the Monterey Office of the National Weather Service, “Precipitation Outlook” data (1-3 month outlooks) from the National Oceanic and Atmospheric Administration’s (NOAA’s) Climate Prediction Center, and system demand.

2. Water Supply

On the basis of the evaluation criteria above and available supporting information, the District will quantify the projected available supply over the forthcoming year. This quantification will likely be a range, and subject to revision as new data are available and as conditions evolve.

3. Unconstrained Customer Demand

Unconstrained customer demands (i.e., the expected water use in the absence of shortage-caused reductions in water use) will be evaluated and estimated for the forthcoming year based on:

- A comparison of projected demand with consideration for customer demands relative to prior years (e.g., last 3 years),
- Evaluation of current and anticipated weather conditions,
- New demands anticipated during the coming year (e.g., new accounts coming online), and
- Any other potentially pertinent factors identified by the District (e.g., pandemic-related stay-at-home orders).

4. Planned Water Use for Current Year Considering Dry Subsequent Year

The District will compare the estimated unconstrained demands to the anticipated supplies for the current year, assuming that the following year will be dry (i.e., a 20% supply shortfall), using the Evaluation Criteria identified above.

5. Infrastructure Considerations

The District will evaluate how infrastructure capabilities and constraints may affect its ability to deliver supplies to meet expected customer water demands in the coming year. The constraints and capabilities are expected to include, among other things:

- Anticipated capital projects and upgrades, and
- Anticipated maintenance and repairs.

6. Team Members and Decision Makers

Key team members involved in the evaluation and decision-making process described herein include key staff of the Engineering and Operations Departments, the Auditor-Controller, and the General Manager.

7. Timeline

Table 4-1 Annual Assessment Procedures Decision-Making Timeline

Decision-Making Step	Start Date	End Date
Determining water supplies by source for the current year	December	January
Calculating the water supply reliability using spreadsheet, computer model, or other method	March	April
Determining shortages and response actions	April	May
Preparing and presenting preliminary report to District Board	February	May
Updating assessment based on final water supplies	April	May
Using WSCP to activate the appropriate protocols	April	May
Obtain Draft Annual Assessment from Sonoma Water; Provide Comments on Sonoma Water Draft Assessment; Incorporate Sonoma Water’s draft Annual Assessment to the District’s Annual Assessment	April	April
Preparing annual water shortage assessment report	April	May
Preparing decision-making documents for approval	April	May
Obtain Final Annual Assessment from Sonoma Water and update the District’s assessment	May	June
Implementing WSCP actions as approved	May	June
Sending final annual water shortage assessment report to the State	June	No later than July 1 st of each year beginning in 2022
NOTES:		

Consistent with California Water Code (CWC) § 10632.1, the District will perform and submit an Annual Assessment to DWR by July 1st of each year beginning in 2022.

5. WATER SHORTAGE LEVELS

CWC § 10632 (a) (3)

(A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.

(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagraph (A) by developing and including a cross-reference relating its existing categories to the six standard water shortage levels.

Consistent with the requirements of CWC § 10632(a)(3), this WSCP is based on the six water shortage levels (also referred to as “stages”) shown in **Table 5-1**. These stages are intended to address shortage caused by any condition, including the catastrophic interruption of water supplies.

Table 5-1 Water Shortage Contingency Plan Levels (DWR Table 8-1)

☒	Checked box indicates the supplier uses the standard six levels of water shortage (and supplier will not complete this table).		
Standard Shortage Levels	Percent Shortage Range	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%	-	-
2	Up to 20%	-	-
3	Up to 30%	-	-
4	Up to 40%	-	-
5	Up to 50%	-	-
6	>50%	-	-

6. SHORTAGE RESPONSE ACTIONS

CWC § 10632 (a) (4)

Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions.

(B) Locally appropriate demand reduction actions to adequately respond to shortages.

(C) Locally appropriate operational changes.

(D) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

CWC § 10632 (b)

For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

This section describes the response actions the District will take to deal with the shortages associated with each of the six stages enumerated in Section 5. The response actions consist primarily of demand reduction measures and associated penalties or charges as well as enforcement and operational changes as detailed in the tables below.

6.1. Supply Augmentation

There are currently no supply augmentation actions planned in the District's shortage response actions. However, as discussed in Section 6.7 of the UWMP, potential transfer and exchange opportunities exist with other Sonoma Water contractors under the Restructured Agreement.

6.2. Demand Reduction Methods

Consumption reduction methods are actions that are taken by the District to reduce water demand within the Novato service area. These actions, summarized in **Table 6-1** and **Table 6-2**, include expanded customer outreach, various customer rebates, decreased line flushing, increased water waste patrols and a Drought Revenue Recovery Surcharge. The monthly and cumulative annual water savings impacts associated with each restriction, prohibition and consumption reduction method were quantitatively estimated using the Drought Response Tool (DRT) for each stage of action, as described in Section 6.5 and included in **Attachment 2**.

Table 6-1 Demand Reduction Actions (DWR Table 8-3)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
1	Other	Percentage	0.5%	Encourage the non-commercial washing of privately owned vehicles, trailers and boats only from a bucket and except that a hose equipped with a shut-off nozzle may be used for a quick rinse.	No
1	CII - Restaurants may only serve water upon request	Percentage	0.1%	Request restaurants, hotels, cafes, cafeterias, bars or other public places where food or drink are served/purchased to serve water only upon request.	No
1	Other	Percentage	0.5%	Navy style showering will be promoted (e.g., turn on water to wet person or persons, turn off water, lather up, scrub, then turn on water for a quick rinse, then turn off shower with free push button showerhead control valves available to customers upon request).	No
1	CII - Lodging establishment must offer opt out of linen service	Percentage	0.5%	Request hotel and motel operators to provide guests with the option of choosing not to have towels and linens laundered daily.	No
1	Other	Percentage	1%	Enforce water-waste prohibitions as defined in District Regulation 15, Section B.	No
1	Other - Prohibit use of potable water for washing hard surfaces	Percentage	1%	Prohibit washing of sidewalks, driveways, parking areas, tennis courts, patios or other exterior paved areas except by the Novato Fire Protection District or other public agency for the purpose of public safety.	No
2	Other	Percentage	Up to 10%	Continue with actions and measures from Stage 1 except where superseded by more stringent requirements.	Yes
2	Other - Prohibit use of potable water for construction and dust control	Percentage	0.1%	Prohibit use of potable water for dust control at construction sites or other locations.	Yes

Table 6-1 Demand Reduction Actions (DWR Table 8-3)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
2	Other	Percentage	1%	Prohibit any use of potable water from a fire hydrant except for fighting fire, human consumption, essential construction needs or use in connection with animals.	Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	3%	Require repair of all leaks within 48 hours	Yes
2	Landscape - Limit landscape irrigation to specific days	Percentage	5%	Restrict irrigation to three days per week, between the hours of 7pm and 9am.	Yes
2	Other water feature or swimming pool restriction	Percentage	1%	Prohibit refilling completely drained swimming pools and/or initial filling of any swimming pools.	Yes
3	Other	Percentage	Up to 20%	Continue with action and measures from Stage 2 except where superseded by more stringent requirements.	Yes
3	Moratorium or Net Zero Demand Increase on New Connections	Percentage	Not available	Restrict new potable service connections to the District unless customer can comply with demand reduction measures and/or other criteria identified and defined at the time this stage is enacted.	Yes
3	Other	Percentage	0.5%	Prohibit non-commercial washing of privately-owned motor vehicles, trailers and boats except from a bucket and except that a hose equipped with a shutoff nozzle may be used for a quick rinse.	Yes
3	Landscape - Other landscape restriction or prohibition	Percentage	5%	Prohibit watering of any lawn, garden, landscaped area, tree, shrub or other plant except from a hand-held hose or container or drip irrigation system. Sprinklers can be used if customer maintains a volume or percent reduction pursuant to the NMWD Board of Directors determination compared to a District calculated or average prior year's use in a similar billing period.	Yes

Table 6-1 Demand Reduction Actions (DWR Table 8-3)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
3	Landscape - Other landscape restriction or prohibition	Percentage	Not available	Prohibit watering any portion of a golf course with potable or raw water except the tees and greens, unless the customer maintains the specified water use reduction and mandated by the District.	Yes
3	Other	Percentage	1%	Prohibit any non-residential use by a vehicle washing facility in excess of the volume percent or reduction pursuant to the NMWD Board of Directors determination.	Yes
3	Landscape - Limit landscape irrigation to specific days	Percentage	10%	Restrict landscape irrigation to two days per week between the hours of 7pm and 9am the following day.	Yes
3	Landscape - Other landscape restriction or prohibition	Percentage	10%	Prohibit landscape irrigation during or within 48 hours of measurable precipitation.	Yes
3	Landscape - Other landscape restriction or prohibition	Percentage	2%	Prohibit irrigating with potable water of lawn area on public street medians.	Yes
4	Other	Percentage	Up to 30%	Continue with action and measures from Stage 3 except where superseded by more stringent requirements.	Yes
4	Landscape - Limit landscape irrigation to specific days	Percentage	14%	Limit irrigation to one day per week between the hours of 7pm and 9am the following day.	Yes
4	Landscape - Other landscape restriction or prohibition	Percentage	0.5%	Planting any new landscaping, except for designated drought resistant landscaping authorized by NMWD.	Yes
4	Landscape - Prohibit certain types of landscape irrigation	Percentage	1%	Golf courses may only use private well or recycled water for general irrigation.	Yes

Table 6-1 Demand Reduction Actions (DWR Table 8-3)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
4	Landscape - Other landscape restriction or prohibition	Percentage	0.5%	No new annual plants, vegetables, flowers or vines may be planted until the Stage 4 mandatory period is over. An exception will be considered on a case by case basis for customers who are eliminating existing thirsty landscaping and replacing same with drought resisting landscaping prescribed by NMWD.	Yes
4	Other	Percentage	0.1%	Prohibit use of single-pass cooling systems.	Yes
5	Other	Percentage	Up to 40%	Continue with action and measures from Stage 4 except where superseded by more stringent requirements.	Yes
5	Landscape - Other landscape restriction or prohibition	Percentage	20%	Watering any residential lawn, or any commercial or industrial area lawn maintained for aesthetic purposes, at any time day or night during the period of March 1, through September 30. (These designated lawns will be allowed to dry up for the summer). Affected customers will be advised on tested methods for re-greening the lawns at minimum expense beginning on October 1, during a Stage 4 mandatory period if operating conditions permit. By following the prescribed instructions, the affected customers will likely avoid the cost of replacing lawns.)	Yes
5	Landscape - Other landscape restriction or prohibition	Percentage	5%	All day and nighttime sprinkling will be discontinued. Any and all outside watering will be done only with a hand-held nozzle. An exception will be made to permit drip irrigation for established perennial plants and trees using manual or automatic time-controlled water application sufficient only for assured plant survival.	Yes
5	Other	Percentage	Not available	Limit deliveries of water to outside service area customers to that needed for human consumption, sanitation and public safety only or as stipulated in outside service agreements.	Yes

Table 6-1 Demand Reduction Actions (DWR Table 8-3)

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
6	Other	Percentage	Up to 50%	Continue with action and measures from Stage 5 except where superseded by more stringent requirements.	Yes
6	Other	Percentage	Up to 55%	All residential and CII customers shall reach a water reduction of fifty five percent (55 percent) from previous use.	Yes

Table 6-2 Supply Augmentation and Other Actions (DWR Table 8-2)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage	Shortage Gap Reduction Value	
1	Expand Public Information Campaign	Percentage	0.5%	Distribute water bill inserts with information about water shortage and conservation.
1	Expand Public Information Campaign	Percentage	0.2%	Distribute special issue of WaterLine newsletter.
1	Other Actions	Percentage	0.5%	Encourage voluntary rationing.
1	Other Actions	Percentage	0.5%	Pursue vigorous enforcement of water wasting regulations and provisions of the District's Water Conservation Regulation 15.
1	Other Actions	Percentage	0.5%	Request customers to make conscious efforts to conserve water.
1	Other Actions	Percentage	Not available	Request other governmental agencies demonstrate leadership and implement restrictive water use programs.
1	Other Actions	Percentage	0.5%	Distribute water saving kits upon customer request, to assure availability to existing and new customers.
1	Other Actions	Percentage	Not available	Encourage private sector use of alternate sources of water such as recycled water or private wells.
1	Other Actions	Percentage	0.5%	Encourage nighttime irrigation
1	Other Actions	Percentage	0.5%	Customers will be encouraged not to regularly flush their toilets for disposal of urine only.
2	Other Actions	Percentage	4%	Continue with actions and measures from Stage 1 except where superseded by more stringent requirements.
2	Expand Public Information Campaign	Percentage	1%	Promote District water conservation and rebate programs.
2	Other Actions	Percentage	Not available	The District can back-feed Stafford Lake using Sonoma Water supply to offset local supply shortage in the lake.
3	Other Actions	Percentage	1%	Increase enforcement and water waste patrols.
3	Other Actions	Percentage	5%	Continue with action and measures from Stage 2 except where superseded by more stringent requirements.
4	Other Actions	Percentage	5%	Continue with action and measures from Stage 3 except where superseded by more stringent requirements.

Table 6-2 Supply Augmentation and Other Actions (DWR Table 8-2)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage	Shortage Gap Reduction Value	
5	Other Actions	Percentage	5%	Continue with action and measures from Stage 4 except where superseded by more stringent requirements.
6	Other Actions	Percentage	6%	Continue with action and measures from Stage 5 except where superseded by more stringent requirements.

6.3. Defining Water Features

CWC § 10632 (b)

For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

As required by CWC §10632 (b), the District distinguishes between “decorative water features” such as ponds, lakes, and fountains that are artificially supplied with water and “recreational water features” such as swimming pools and spas.

6.4. Operational Changes

The water shortage response actions included in **Table 6-2** include operational changes that the District will implement during each stage of action, including measures to: 1) reduce system losses through a reduction in line flushing and fire training exercises, (2) increase enforcement and patrols, (3) proactive calls to customers, and (4) conduct leak surveys during droughts.

6.5. Prohibitions on End Uses

Restrictions and prohibitions associated with each stage in the District’s WSCP are presented in **Table 6-1**. As discussed above, these responses focus on the reduction of non-essential water uses such as ornamental landscape irrigation, and preserve water uses that are essential to the health, safety, welfare, and economic vitality of the District’s customers. In addition, mandatory prohibitions are enforced at all times (see **Table 6-1**).

6.6. Shortage Response Action Effectiveness

In order to evaluate and ensure that effective actions will be implemented with the proper level of intensity, the District employed the DRT, an Excel spreadsheet model developed by EKI Environment and

Water, Inc. The DRT model calculates monthly savings anticipated by implementing each stage of action as detailed below.

6.6.1. Baseline Water Use Profile

Water demand factors based on historical use within the District were used as the basis of future demand projections for potable water accounts. The District's per account water use declined over the past 15 years due to improvements in water use efficiency and showed a significant response to key events such as the 2014-2017 drought, the 2021-2023 drought, and the COVID-19 pandemic. Current water use is below historical levels, therefore, the District developed a pre-drought baseline water use profile that reflected usage patterns within the District's service area by major water use sector in fiscal year (FY) 2019 that was used to guide development of the WSCP. Key findings from this analysis are presented below.

Residential Per Capita Demand

The District's baseline residential gallons per capita per day (R-GPCD) demand during FY 2019 was approximately 81 R-GPCD. As shown in **Table 6-3** and its associated chart, this R-GPCD is lower than the statewide average of 85 R-GPCD.

Proportion of Outdoor Water Use

As shown on **Table 6-4** and associated charts, outdoor water use, which can generally be considered as a "discretionary water use", was estimated to be approximately 52% of the District's potable consumption during this pre-drought time period. Dedicated irrigation meters for potable water accounted for 9% of the total potable irrigation demand. The remaining irrigation water uses within the District's service area are supplied by recycled water.

The DRT estimates indoor water use to be equivalent to the lowest monthly water use for each sector, accounting for the number of days in each month. Outdoor water use for each sector was estimated to be the difference between the total water use and the estimated indoor water use. If District customers tend to irrigate more heavily during winter months, an underestimation of the proportion of outdoor water use would occur.

The proportion of outdoor water use within the residential and commercial sectors is estimated to be approximately 52 percent. This indicates that there is the potential to achieve significant potable water savings across these sectors, simply by focusing on outdoor uses. If the proportion of outdoor water use is being underestimated by the DRT method, then even more substantial savings may be achieved through targeting outdoor water use. As further shown in **Table 6-4** and its associated charts, the seasonal variation in baseline potable water use reflects increased irrigation demands during the summer and fall months. Therefore, the greatest potential for reductions in non-essential water use are expected during these months.

Table 6-3 Baseline Residential Per Capita Water Demand

	Baseline Residential Per Capita Water Demand (R-GPCD)
NMWD (a)	81
Statewide Average (c)	85

NOTES:
 (a) District R-GPCD calculated using 2019 metered data.
 (b) State-wide R-GPCD for 2019 obtained from data provided at California State Water Resources Control Board Water Conservation Portal - Conservation Reporting, http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.shtml, accessed March 2021.

Chart 6-3 Baseline Residential Per Capita Water Demand

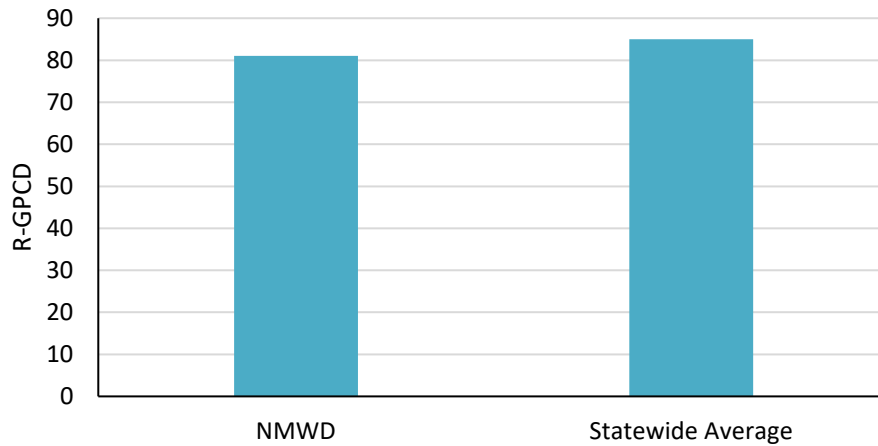


Table 6-4 Baseline Water Use Profile

Sector	End-Use	Baseline (2019) Water Use													Annual % of Total by Sector
		July	August	September	October	November	December	January	February	March	April	May	June	Annual	
Residential	Indoor	240	240	232	240	232	240	240	216	240	232	240	232	2,821	50.3%
	Outdoor	446	327	557	351	306	183	164	57	87	0	114	197	2,789	49.7%
	<i>Subtotal Residential</i>	686	567	789	591	538	423	403	274	326	232	354	429	5,611	
CII	Indoor	51	51	50	51	50	51	51	46	51	50	51	50	605	49.8%
	Outdoor	135	50	121	48	50	23	22	8	18	0	101	33	609	50.2%
	<i>Subtotal CII</i>	186	101	171	100	99	74	73	54	69	50	153	83	1,214	
Dedicated Irrigation	Outdoor	157	60	189	59	100	29	31	4	14	3	27	27	699	100%
Non-Revenue	Non-Revenue	55	34	64	40	42	25	27	16	21	13	28	27	392	100%
Total	Indoor	291	291	282	291	282	291	291	263	291	282	291	282	3,426	43.3%
	Outdoor	738	437	867	458	456	235	217	69	119	3	242	257	4,097	51.8%
	Non-Revenue	55	34	64	40	42	25	27	16	21	13	28	27	392	5.0%
	Total	1,084	762	1,213	789	780	551	535	348	431	298	561	565	7,916	

NOTES:
 (a) Volumes are in units of AF.
 (b) Indoor water use was estimated to be the lowest monthly water use for each sector, accounting for the number of days in each month. Outdoor water use for each sector was estimated to be the difference between the total water use and the estimated indoor water use.

Chart 6-4A Baseline Year (2019) Annual Water Use by Sector and End Use

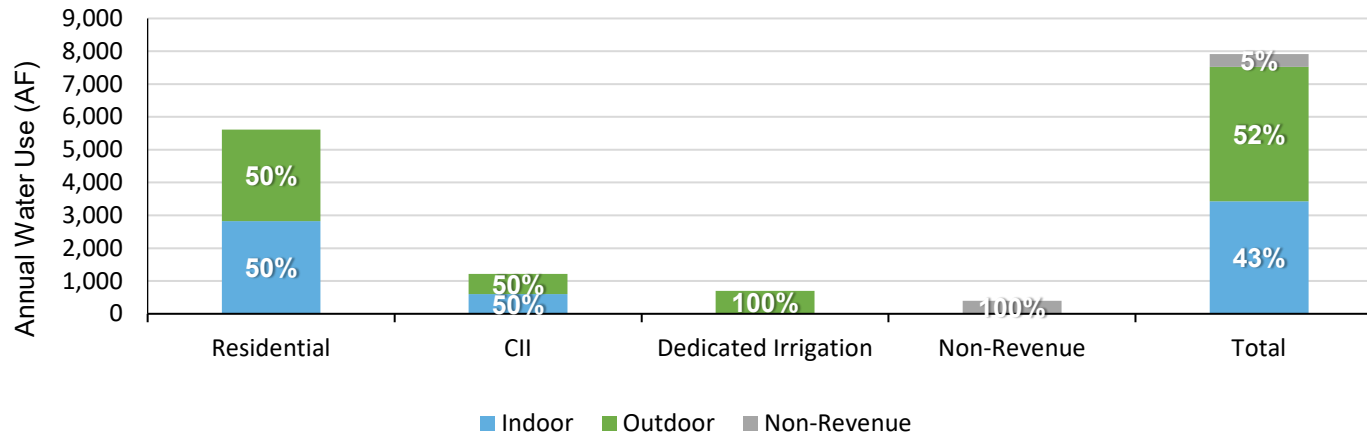
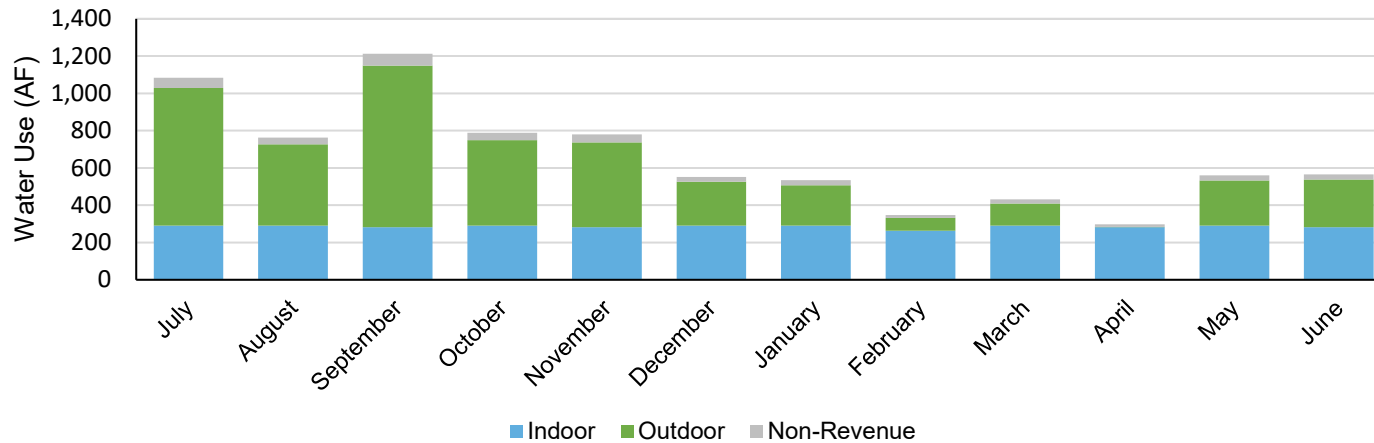


Chart 6-4B Baseline Year (2019) Monthly Indoor vs. Outdoor Water Use



6.6.2. Shortage Response Action Effectiveness

The DRT provides a quantitative framework that allows the District to systematically estimate the monthly and cumulative annual demand reductions expected to result from particular combinations of drought response actions and associated implementation rates. Data inputs to the DRT include total production, class-specific water use, population, and assumptions regarding the split between indoor and outdoor water use for each customer class.

For each drought response action, the user specifies:

- The customer class(es) and end use(s) that are affected;
- The percent savings for that end use for each account that implements the action. These are based on evaluations reported in the literature, or where such studies are not available, on best estimates based on the District's experience; and
- The percentage of accounts assumed to implement the action, which is presumed to be the result of the intensity level of the District's program implementation, including but not limited to, marketing and enforcement activities.

An additional critical DRT user input is a set of constraints on demand reductions to ensure that usage levels do not endanger health and safety or result in unacceptable economic impacts. The DRT will not permit estimated usage reductions to violate these constraints, regardless of the demand reduction actions selected. The constraints are:

- A minimum residential indoor per capita daily usage of 25 gallons,
- A maximum residential outdoor usage reduction of 100%,
- A maximum Commercial, industrial, and institutional (CII) indoor usage reduction of 30%, and
- A maximum CII outdoor usage reduction of 100%.

Based on the foregoing data, the DRT model calculates the resulting monthly savings. The District adjusted the combination of actions and implementation levels to achieve the targeted savings levels at each of the six stages of action.

For each stage of action, the modeling targeted the mid-range of the required demand reduction range, ergo:

- 5% for Stage 1,
- 15% for Stage 2,
- 25% for Stage 3,
- 35% for Stage 4,
- 45% for Stage 5, and
- 55% for Stage 6.

The key DRT inputs and outputs for each of the stages of action are reproduced in **Attachment 2**.

Table 6-1 and **Table 6-2** show the water shortage reduction actions, savings assumptions, and implementation rates that are required for the District to achieve the required annual demand reductions

for each of the six stages of action. At each stage, there are two types of demand-reduction actions identified:

- Restrictions on customer water usage; and
- Consumption reduction actions by the District to encourage decreased water usage.

Many actions are implemented across a number of stages, some at increasing implementation levels. Therefore the actions in **Table 6-1** and **Table 6-2** are listed as a row under the first stage at which they are implemented. The percentages shown in the tables represent end user savings.

6.7. Emergency Response Plan

In accordance with the Emergency Services Act, the District has developed an Emergency Operation Plan (EOP). This EOP guides response to unpredicted catastrophic events that might impact water delivery including regional power outages, earthquakes, or other disasters. The EOP outlines standard operating procedures for all levels of emergency, from minor accidents to major disasters. The EOP has been coordinated with Sonoma Water and neighboring water purveyors. In addition, the District is a member of the California Water/Wastewater Agency Response Network (CalWarn) which provides mutual aid assistance between neighboring water agencies in the event of an emergency.

Table 6-5 summarizes some of the actions in the event of specific catastrophic events.

Table 6-5 Preparation Actions for a Catastrophe

Possible Catastrophe	Summary of Actions
Earthquake	<ul style="list-style-type: none"> • Perform assessments of District facilities and provide inspection reports per the EOP • Perform corrective actions to damaged facilities • Shut-off isolation valves and above ground use of flexible piping for ruptured mains
Fire	<ul style="list-style-type: none"> • Monitor system performance and override controls to optimize flow to zone affected • Activate additional system pumping • Monitor tank storage levels and keep levels as high as possible • Coordinate communications to customers with Fire Department • Storage supplies for fire flows
Power outage or grid failure	<ul style="list-style-type: none"> • Coordinate with PG&E and Marin Emergency Operations Center (EOC) • Note: Portable emergency generators available for most Sonoma Water facilities and key NMWD facilities
Severe Winter Storms	<ul style="list-style-type: none"> • Schedule stand-by personnel • Check underground facility sump pumps • Monitor NWS weather updates • Note: Portable emergency generators available for most Sonoma Water facilities and key NMWD facilities
Hot Weather	<ul style="list-style-type: none"> • Coordinate with PG&E and Marin EOC • Note: Portable emergency generators available for most Sonoma Water facilities and key NMWD facilities

NOTES: Infrastructure Priority: 1 = sources of supply; 2 = storage reservoirs; 3 = pump stations. Communication and reporting to City of Novato EOC and/or Marin County EOC per EOP.

7. SEISMIC RISK ASSESSMENT

CWC § 10632.5

(a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

Impacts associated with earthquakes and liquefaction are discussed in the *2023 Marin County Operational Area Multi-Jurisdictional Hazard Mitigation Plan* (County LHMP; Marin County, 2023), which is included in **Attachment 3**. The County LHMP assesses Marin County's vulnerabilities to various hazards, including seismic hazards, and presents mitigation strategies that are planned over the next five years.

The County LHMP includes a discussion of the probability of a seismic event affecting Marin County, citing an ABAG projection of a 52 percent chance of an earthquake of magnitude 6.7 or greater on one of the faults affecting Marin County between now and 2036. The County LHMP notes that much of the Marin County infrastructure is located in areas of Bay Mud, as well as in current and former marshlands that have been artificially filled. These areas are vulnerable to liquefaction during seismic events. The County LHMP includes an assessment of the County's vulnerability in the event of a major seismic event, and estimates that an earthquake on the San Andreas Fault of magnitude 7.8 would result in a total building damage of approximately \$1.26 trillion.

Further discussion of seismic risks specific to Sonoma Water's water system is provided in the *Sonoma County Water Agency Local Hazard Mitigation Plan*, dated 19 September 2024 (Sonoma Water LHMP; Sonoma Water, 2024), which is included in **Attachment 4**. The Sonoma Water LHMP specifically assesses Sonoma Water's natural hazard risks and vulnerabilities facing Sonoma Water infrastructure and provides a plan of action to address these vulnerabilities. The Sonoma Water LHMP identifies a series of mitigation measures to address seismic risk, including seismic retrofits of distribution system components to protect against damage due to liquefaction and lateral spread hazard and installation of automated throttling valves at aqueducts and interties to minimize uncontrolled releases out of Sonoma Water facilities. For more detail regarding planned mitigation measures to address seismic risks, please refer to **Attachment 4**.

As part of any capital project design for key infrastructure such as pump stations, major pipelines, and storage tanks, the District employs the expertise of a geotechnical engineer to evaluate seismic risks for the project. These projects subsequently include design elements that minimize that risk such flexible expansion joints, anchoring systems, and others. The District performed a comprehensive seismic risk assessment of all Novato Service Area water storage tanks in 1997, including a long-term capital improvement plan to retrofit existing tanks to better withstand an earthquake (NMWD, 2019).

The District's Stafford Lake Dam (No. 88.000) is inspected and monitored regularly in accordance with the State's Division of Safety of Dams (DSOD) protocols. The dam inspection and monitoring program includes

a comprehensive instrumentation system consisting of piezometers, seepage monitoring, and survey monumentation (elevation and lateral movement), with annual reporting to the state. In addition, the District updated the Emergency Action Plan for the Stafford Dam in 2020 in coordination with the DSOD and the California Office of Emergency Services (CalOES).

8. COMMUNICATION PROTOCOLS

CWC § 10632 (a) (5)

Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:

(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to Section 10632.1.

(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1.

(C) Any other relevant communications.

Each stage of the WSCP is implemented with a formal declaration by the District Board of Directors upon the determination that Sonoma Water or another governing authority (e.g., the SWRCB) has required a voluntary or mandatory reduction in water use due to a water supply shortage or emergency.

Even before formal declaration of a water shortage, a public information program will be activated to provide customers with as much advance notice as possible. Following declaration of a shortage, District customers would need to be provided notice of water shortage rules and regulations via a variety of media and communications methods.

Coordination between the District and with other public agencies can begin prior to formal declaration of a water shortage and can be accomplished through regular meetings, e-mail group updates, and presentations. In a regional water shortage scenario, the District would use public outreach resources and materials provided by Sonoma Water. In addition to these materials, the District may develop its own materials to communicate with customers, such as a dedicated customer service hotline, and expand its normal public outreach to support its water conservation efforts (see Chapter 9 of the 2025 UWMP).

As discussed in Chapter 9 of the 2025 UWMP, the several District staff members jointly share the responsibility for water conservation. Staff time dedicated to water conservation and enforcement action will increase with the severity of a supply shortage. Additional duties may be assigned to current employees or hiring of temporary staff may be considered to meet staffing needs during extreme water shortages.

In the event of a current or predicted water shortage, the District will communicate all pertinent water shortage information, including but not limited to shortage response actions triggered, to customers, the public, and government agencies through the following methods, as determined by the District at the time of the water shortage to be most effective and appropriate for communicating said information:

- Direct mail newsletter to customers;
- Email blast to customers;
- Social media posts;
- Newspaper advertisements and public notices;
- Website updates; and
- Bill inserts and bill text announcements.

9. COMPLIANCE AND ENFORCEMENT

- ☑ **CWC § 10632 (a) (6)** *For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions as determined pursuant to Section 10632.2.*

Table 9-1 summarizes the penalties, charges and other enforcement actions for any customer violating the District’s rules and regulations related to water use prohibitions and the District’s WSCP. Customers in violation will receive a written or verbal warning and order that the violation be corrected immediately or within a specified time determined to be reasonable. Water service may be disconnected due to non-compliance with the warning. If water service is disconnected, reconnection or turn-on fees shall be paid in an amount as determined by the District’s Late Charge and Shut-off Policy (Board Policy Number 6). If that violation reoccurs, water service may be disconnected again with reconnection or turn-on fees in an amount as determined by the District’s Late Charge and Shut-off Policy (Board Policy 6). Any water service that is disconnected twice shall be reconnected with a flow-restricting device. The District may also impose additional administrative charges, penalties, and water shortage surcharges in an amount approved by the Board of Directors from time to time.

Table 9-1 Water Shortage Contingency Plan — Penalties and Charges

Penalty or Charge	Stage When Penalty Takes Effect
Written Notice with time frame for correction	Any Stage
Personal contact with follow up written notice	Any Stage
Installation of flow restricting device	Any Stage
Imposition of water waste fees	Any Stage
Disconnection of service	Any Stage

10. LEGAL AUTHORITIES

CWC § 10632 (a) (7)

(A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.

(B) A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1.

(C) A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

The District has authority under Water Code Section 350 through 358, Section 375 through 378, and Section 31026 through 31029 and District Ordinance 41 to require water rationing, conservation, and/or water use prohibitions, and to enforce penalties. Relevant code sections and an adopted water shortage contingency resolution are included as **Attachment 5** of this WSCP.

In the event that a water shortage is triggered, the District shall declare a water shortage emergency and shall coordinate with the City and County for the possible proclamation of a local emergency.

The District's WSCP update was adopted on 16 June 2026. The adoption ordinance is included as **Attachment 5** of this WSCP.

The District shall declare a water shortage emergency in accordance with Water Code Chapter 3 (commencing with Section 350) of Division 1 general provision regarding water shortage emergencies. The District shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency. The District will also coordinate with Sonoma Water as appropriate.

11. FINANCIAL CONSEQUENCES OF WSCP

CWC § 10632 (a) (8)

A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:

(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) of Division 1.

Since the District bills its customers per unit volume of water consumed, the District would experience a reduction in revenue upon implementation of the WSCP. To compensate for the expected revenue reduction caused by water conservation, the District reserves the authority to implement temporary water rate increases, as adopted by resolution of the District's Board of Directors (see discussion on the Temporary Drought Revenue Recovery Surcharge below). Additionally, the District's Board of Directors may adopt a resolution to establish a water rate structure, including excess water use surcharges, that provides incentives to conserve water. Individual customers may seek a waiver of excess water use surcharges through a variance process. The District also reserves the authority to reduce expenses during implementation of the WSCP, using the following potential mitigation actions:

- Reducing or deferring operation and maintenance expenses; and
- Deferring capital improvement projects.

Other potential actions to mitigate revenue impacts of the WSCP include:

- Increasing any fixed readiness-to-serve charges; and
- Using financial reserves.

In the event that mandatory water use restrictions or mandatory reduction in water use is triggered (Stage 2 or higher), a Temporary Drought Revenue Recovery Surcharge may be implemented. The Temporary Drought Revenue Recovery Surcharge will serve to mitigate the revenue loss resulting from a reduction in water use, as well as the liquidated damages assessed by the Sonoma County Water Agency pursuant to the water shortage and apportionment provisions of the Restructured Agreement for Water Supply. The Temporary Drought Revenue Recovery Surcharge shall be a quantity charge for each 1,000 gallons as specified in District Regulation 54.

12. MONITORING AND REPORTING

CWC § 10632 (a) (9) *For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.*

The District's local surface water supply and Sonoma Water supply turnouts are all equipped with water meters. In addition, each potable water customer is metered. Non-residential landscape irrigation is metered separately from indoor use at most non-residential sites. In addition, the District has fully implemented Automatic Meter Infrastructure (AMI) system for all meters that provides hourly and daily water use consumption data, and the District is able to document leaks, high water use and also customer demand reductions along with other water use analytics. The District contacts individual customers via email, phone call or text to resolve issues related to leaks and high water use episodes.

Sonoma Water updated its billing (turnout) meters to automatic read technology in 2024, resulting in 24-hour daily flow measurement.

The District will use an appropriate method for monitoring and reporting on the implementation of the WSCP. Monitoring metrics could include, but are not limited to water production, water consumption, gallons per capita per day, residential gallons per capita per day, water budget performance, and other metrics as determined by the District or the State at such time of the enactment of the WSCP.

13. WSCP REFINEMENT PROCEDURES

- ☑ **CWC § 10632 (a) (10)** *Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.*

As part of the Annual Assessment, the District's team members will review the results of prior monitoring and reporting to determine the effectiveness of the WSCP. In addition, the District will consult with other Sonoma Water contractors and Sonoma Water directly. If modifications to shortage response actions are needed, the District team will present the proposed modifications to the Board of Directors and request changes to the WSCP by resolution.

The WSCP is implemented as an adaptive management plan. The District will evaluate the need to revise its WSCP every year after performing its Annual Assessment. The evaluation will consider effectiveness of WSCP actions and any anticipated water supply shortages assessed by the Annual Assessment. If the WSCP is revised, the District Board of Directors will adopt a new resolution adopting the revised WSCP, and if necessary, declare a water shortage level to implement.

14. PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

CWC § 10632 (c) *The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.*

As described in Chapter 9 the District informed the public and the appropriate agencies of: (1) its intent to prepare a WSCP, (2) where the WSCP was available for public review, and (3) when the public hearing regarding the WSCP would be held. All notifications were completed in compliance with the stipulations of Section 6066 of the Government Code.

A copy of the adopted 2025 WSCP including any amendments will be provided to the Department of Water Resources (DWR), the California State Library, and Sonoma and Marin Counties within 30 days of the adoption (**Attachment 5**). An electronic copy of the adopted 2025 WSCP will be submitted to the DWR using the DWR online submittal tool.

A copy of the adopted 2025 WSCP will be available for public review on the District's website within 30 days after filing the plan with DWR.

15. REFERENCES

DWR, 2026. Urban Water Management Plan Guidebook 2025, Draft Final, California Department of Water Resources, March 2026.

Marin County, 2023. 2023 Marin County Operational Area Multi-Jurisdictional Hazard Mitigation Plan, 2023.

NMWD, 2019. 2018 Novato Water System Master Plan Update, September 2019. North Marin Water District.

Sonoma Water, 2024. Sonoma County Water Agency Local Hazard Mitigation Plan, dated 16 October 2024.

ATTACHMENT 1

SONOMA COUNTY WATER AGENCY ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Section 2: Water Supply Reliability Analysis

The water supply and demand assessment and the drought risk assessment are presented in Section 6 of the 2025 Plan and summarized below.

2.1 Water Supply and Demand Assessment (2030 – 2050)

The water supply and demand assessment described in Section 6.3 of the Plan provides a comparison of the projected water supply and demand for Sonoma Water from 2030 through 2050. The conclusion of the assessment is that Sonoma Water expects to have adequate water supply through the 2050 planning horizon, including in dry years. In the event of an unexpected shortage, Sonoma Water will work with its customers to reduce water demands, or to utilize additional local water sources, or both.

2.2 Drought Risk Assessment (2026 – 2030)

The drought risk assessment described in Section 6.5 of the Plan compares the estimated water supplies and demands for the next five years assuming that the next five years are similar to the five consecutive driest years on record (1987-1991). The comparison shows that Sonoma Water has adequate water supply to meet demands.

The key issues that may create a water shortage condition include drought conditions and emergencies resulting from events such as earthquakes and contamination.

Section 3: Annual Water Supply and Demand Assessment Procedures

This section presents the procedures used by Sonoma Water to conduct an annual water supply and demand assessment (annual assessment). The annual assessment is required to be submitted to DWR by July 1 of each year. The assessment forecasts near-term water supply conditions to ensure shortage response actions are triggered in a timely manner. The annual assessment provides a description and quantification of each source of Sonoma Water's water supply compared to water demands for the current year, with consideration of one subsequent dry year.

One of the most important functions provided by Sonoma Water is to monitor water supply conditions to gauge the likelihood of water shortages so that Sonoma Water's wholesale customers will be prepared to respond to the shortages. Sonoma Water constantly monitors the reservoir levels at Lake Pillsbury, Lake Mendocino, and Lake Sonoma and estimates flows in and out of those reservoirs, weather forecasts, and natural flows into and diversions from the Russian River and Dry Creek. By using this data as well as historical data regarding water use in different climatic conditions, Sonoma Water can project when a water shortage may be imminent.

The following subsections describe the decision-making process and data and methodologies used. Sonoma Water may modify these procedures based on its experience developing the annual assessment.

3.1 Decision Making Process

This section presents the decision-making process and timeline (see Table 3-1) that Sonoma Water uses each year to determine its water supply reliability. The timeline is approximate and may be adjusted by Sonoma Water in coordination with the water contractors, as long as the final annual assessment is submitted to DWR by July 1.

Table 3-1. Annual Assessment Timeline						
Task	January	February	March	April	May	June
Monitor and forecast water supply conditions (continuous)						
Sonoma Water's customers develop and provide water demand forecast by February 1.						
1. Present draft annual assessment to Sonoma Water's customers						
2. Receive review comments						
3. Present final annual assessment to the TAC						
4. Present annual assessment to the Board of Directors						
5. Submit annual assessment to DWR (due July 1 st)						

Note: The timelines presented in Table 1 are approximate and may be adjusted by Sonoma Water in coordination with the water contractors.

For the demand portion of the annual assessment, Sonoma Water uses the unconstrained water demand projections from the last adopted Plan unless more recent demand projections are provided by its customers. Sonoma Water staff provides the water contractors and Marin Water an opportunity to update their demand projections each year (typically by February 1). For Sonoma Water's other customers, which are not required to prepare their own Plans, Sonoma Water staff use the most recent demand data to develop demand projections considering population growth, available local supplies, and other factors. The annual assessment considers all demands on Sonoma Water's system to establish the supply available for Sonoma Water's customers including those that must complete and submit their own annual assessments to DWR.

For the supply portion of the annual assessment, Sonoma Water staff monitor water supply conditions (reservoir levels, stream/river flows, soil moisture, precipitation, etc.) to confirm adequate water supply and storage levels to meet customer demands and minimum instream flow requirements. The annual assessment reflects actual supply conditions up to the date of the assessment (typically March or April) and projects available water supply through the remainder of the year and one subsequent dry year using the Russian River System Model (RR ResSim). Sonoma Water uses modeling results to evaluate the potential for a water shortage condition to occur.

Each year, Sonoma Water presents and submits the annual assessment following the steps described below.

- 1. Share results of draft annual assessment with Sonoma Water's customers.** The draft annual assessment is shared with the TAC ad-hoc committee, typically in April. The assessment would also be shared with Sonoma Water's other customers if a shortage is projected. If a shortage is forecast, particularly during the critical months of July to October, implementation of shortage response actions would be coordinated with all the customers.
- 2. Receive review comments.** Sonoma Water's customers provide their review comments, if any, through the TAC. Sonoma Water communicates directly with Sonoma Water's other customers to obtain their review comments.

3. **Present final annual assessment to the TAC.** If there are comments on the draft assessment that require substantive changes, Sonoma Water will revise the assessment and present the final annual assessment report at the next TAC meeting. The annual assessment may be presented to the WAC. Sonoma Water will coordinate through the TAC to identify if any water supply gaps exist for each customer when considering both Sonoma Water supplies and local supplies. The assessment will be provided directly to Sonoma Water's other customers.
4. **Optional presentation of the annual assessment to the Board of Directors.** The annual assessment may be presented to Sonoma Water's Board of Directors during one of their regularly scheduled meetings, particularly if a shortage is anticipated or if an existing shortage condition is to be ended.
5. **Submit annual assessment to DWR.** Sonoma Water will submit the annual assessment report to DWR by July 1 of each year. Sonoma Water also posts the final annual assessment report online at <https://www.sonomawater.org/water-supply>.

3.2 Data and Methodologies

This section presents the key data inputs and assessment methodology that will be used to evaluate Sonoma Water's water supply. The evaluation criteria, water supply constraints, unconstrained demand, planned water use, and infrastructure considerations are described.

3.2.1 Evaluation Criteria

The evaluation criteria that will be relied on for each annual assessment include the key data inputs and the constraints that are imposed on the water supplies.

The key data inputs that are used by Sonoma Water staff to forecast water supply for the remainder of the current year and a subsequent dry year include the items described below.

- **Unconstrained customer demand.** Current and subsequent calendar year unconstrained demand for each of Sonoma Water's wholesale customers considering weather, growth, and other influencing factors.
- **Russian River operations.** Current reservoir releases from Lake Sonoma and Lake Mendocino, including anticipated releases to meet in-stream flow requirements and water demands and based on reservoir curves and forecast informed reservoir operations (FIRO) decision support tools.
- **Hydrology and watershed conditions.** Lake Sonoma and Lake Mendocino inflows and storage levels, and soil moisture.
- **Potter Valley Project inflows.** Lake Pillsbury storage levels and observed and projected project transfers. As discussed in Section 1.4.1 of the Plan, there is great uncertainty around the future of this project. The assumed Eel River transfers into the Russian River watershed will be based on information available at the time of the annual assessment, including recent observed transfers and anticipated conditions.
- **Weather forecasts and historical hydrological records.** Weather forecasts combined with historical records will be used to evaluate probabilities using statistical methods.

The water supply constraints are due to a variety of agreements and decisions, as follows.

- **Lake Sonoma storage level.** Sonoma Water’s water rights permits include a provision that requires Sonoma Water to impose a 30 percent reduction in deliveries from the Russian River to its service area when Lake Sonoma storage levels drop below 100,000 acre-feet (ac-ft) before July 15 of any year. This provision is described in more detail in Section 5.1.6.1 in the 2025 Plan.
- **Lake Mendocino storage level.** Having a sufficient supply of water in Lake Mendocino in the fall is of critical importance to the salmonid species in the Russian River and to meet municipal and industrial demands and agricultural irrigation needs.
- **Minimum instream flow requirements.** The minimum instream flow schedule varies based on the hydrologic classifications of Normal, Dry, and Critical water supply conditions as defined in Decision 1610 and modified by Temporary Urgency Change Petitions (TUCP) filed by Sonoma Water. As of development of the 2025 Plan, it is assumed Sonoma Water will continue to use storage thresholds at Lake Mendocino as the index for minimum instream flows. Minimum instream flow requirements for the Russian River and Dry Creek are met by releases from Coyote Valley Dam and Warm Springs Dam.
- **Flood control operations criteria.** The United States Army Corps of Engineers (USACE) determines the schedule and amount of water released from Lake Mendocino and Lake Sonoma during flood control operations when storage levels exceed the water supply storage pool. Until recently, rules of the water control manuals for Lake Mendocino and Lake Sonoma required the flood control pool to be empty except during periods of high flows downstream. Based on the 2025 update to Lake Mendocino’s Water Control Manual, USACE, at their discretion, can retain up to 11,650 ac-ft within the flood control pool and manage it using FIRO procedures. At Lake Sonoma, USACE is currently authorized to retain up to an additional 19,000 ac-ft in the flood control pool and manage it using FIRO procedures under a planned deviation to the Water Control Manual. In 2023, 2024, and 2025 an additional 30,000 ac-ft was retained between the two reservoirs going into the dry season each year.
- **The 2025 Russian River Biological Opinion.** The 2025 Russian River Biological Opinion places certain terms and conditions on Sonoma Water with respect to its water supply operations. See Section 1.4.2 of the Plan for details.

3.2.2 Water Supply

The Russian River provides most of Sonoma Water’s water supply, with groundwater from the Santa Rosa Plain Sub-basin as a secondary source. Sonoma Water diverts water from the Russian River near Forestville and conveys the water via its transmission system to its customers. Sonoma Water’s Plan (Section 5) provides a more detailed description of the water supplies. The method used to forecast the quantity of water supply is described in Section 3.2.4 below.

Almost all of Sonoma Water’s customers, surplus customers, and Russian River customers have other water supplies, in addition to those provided by Sonoma Water, which include local surface water, local groundwater, and recycled water. These local supplies are not included in Sonoma Water’s annual assessment, as each customer develops its own assessment of their available supplies.

3.2.3 Unconstrained Customer Demand

The assessment presents unconstrained demands from Sonoma Water's customers for the current year and one subsequent dry year, considering weather, growth, and other influencing factors. The unconstrained water demands are provided by the customers or developed by Sonoma Water.

3.2.4 Planned Water Use for Current Year Considering Dry Subsequent Year

The assessment presents an evaluation of the amount of anticipated water supplies for the current year as well as the amount of supplies available to meet demands should the following year be dry. As defined by DWR reporting requirements, the dry year represents the 12-month period between July 1 and June 30 of the following calendar year. Although Sonoma Water's analysis is performed using available hydrologic data on a water-year basis (the 12-month period between October 1 and September 30 of the following calendar year), the results are presented on a monthly basis from July through June for the annual assessment. The methodology to develop the annual assessment follows the general approach described below.

1. **Quantify current year water supply.** Starting with actual observed conditions at the time of the assessment, Sonoma Water will project conditions through the remainder of the water year using RR ResSim and a combination of forecasted and historical hydrology representing the most similar hydrologic conditions to the current year. Since the current year as defined in the annual assessment ends June 30, the last 3 months in the current water year represent the first 3 months of the subsequent dry year in the annual assessment (July through September).
2. **Quantify subsequent year supply.** Sonoma Water will base the estimate of the remaining subsequent dry year water supplies (October through June) on a statistical analysis of the historical precipitation record using the tenth percentile water year based on total Russian River unimpaired flow. The details of the methodology and selected modeling assumptions will be described in each annual assessment report.
3. **Identify infrastructure constraints.** The existing infrastructure capabilities and plausible constraints as they impact Sonoma Water's ability to deliver supplies to meet expected customer water use needs in the coming year will be considered. Examples of plausible constraints include water rights curtailments, minimum instream flows, and groundwater production capacity.
4. **Quantify unconstrained water demand.** The unconstrained water demands for all the customers will be provided by the customers or developed by Sonoma Water staff.
5. **Compare projected water supplies to demands.** The water supplies identified in the annual assessment will represent the water demand that can be met while maintaining adequate storage in Lake Mendocino and Lake Sonoma.
6. **Identify and quantify anticipated water supply shortages, if any.** The forecast of water supplies in comparison to water demands will identify and quantify any anticipated water shortages. The forecast will be coordinated with Sonoma Water's customers, surplus customers, and Russian River customers. Depending on the extent of the forecast shortage, the appropriate shortage stage will be selected. If the early winter season has been wet and the forecast is for a wet season, there would be no concerns. If the season was dry in the early wet season, there would be a potential concern and river flows and reservoir levels would be monitored more closely. Depending on the extent of precipitation in the latter portion of the wet season, the forecast could be changed to no concern or to an anticipated shortage.

7. **Implications of forecasted water shortage.** Depending on the extent of the forecasted water shortage for the current calendar year and particularly the summer months, Sonoma Water may implement voluntary reductions of its diversions and request its customers to conserve and utilize local supplies. The State Water Resources Control Board (SWRCB) could also mandate reduction of diversions by Sonoma Water. For example, mandatory reductions of water diverted from the Russian River would be required (as specified in Sonoma Water’s water rights, see Section 5.1.6.1 in the 2025 Plan for more detail) if Lake Sonoma levels reached 100,000 ac-ft by July 15 of a given year. Such reductions would be implemented in accordance with the applicable provisions of the Restructured Agreement for Water Supply between Sonoma Water and its retail customers and consistent with the defined shortage stages. If a shortage is identified, the water shortage allocation methodology specified by the Restructured Agreement would be used to allocate the reduced supply to each customer. Each of Sonoma Water’s customers will develop their own annual assessments that will include estimates of their projected quantity of local water supplies.

The forecast of the amount of available water supplies will be developed by Sonoma Water using RR ResSim. The model is used as a planning tool to simulate the effects of various climatic conditions, levels of demand, and operational criteria on the water supply available for use by Sonoma Water and others.

3.2.5 Infrastructure Considerations

The annual assessment includes an evaluation of how infrastructure capabilities and constraints may affect Sonoma Water’s ability to deliver supplies to meet expected customer water use needs in the current year.

3.2.6 Water Shortage Levels

Sonoma Water’s shortage levels are presented in Table 4-1. The shortage is defined as the unmet unconstrained demand divided by the unconstrained demand, which can be expressed as follows for when the forecast supply is less than the unconstrained demand:

Table 4-2. Water Shortage Contingency Plan Shortage Levels (DWR Table 8-1)

Shortage Level	Percent Shortage Range	Shortage Response Actions
1	Up to 10%	Reduction in Russian River diversions by Sonoma Water of up to 10%. Sonoma Water’s wholesale customers each have voluntary reduction of wholesale water deliveries as determined by shortage allocation.
2	10 - 20%	Reduction in Russian River diversions by Sonoma Water of 10% to 20%. Sonoma Water’s wholesale customers each have voluntary reduction of wholesale water deliveries as determined by shortage allocation.
3	20 - 30%	Reduction in Russian River diversions by Sonoma Water of 20% to 30%. Sonoma Water’s wholesale customers each have mandatory reduction of wholesale water deliveries as determined by shortage allocation.
4	30 - 40%	Reduction in Russian River diversions by Sonoma Water of 30% to 40%. Sonoma Water’s wholesale customers each have mandatory reduction of wholesale water deliveries as determined by shortage allocation.
5	40 - 50%	Reduction in Russian River diversions by Sonoma Water of 40% to 50%. Sonoma Water’s wholesale customers each have mandatory reduction of wholesale water deliveries as determined by shortage allocation.
6	>50%	Reduction in Russian River diversions by Sonoma Water greater than 50%. Sonoma Water’s wholesale customers each have mandatory reduction of wholesale water deliveries as determined by shortage allocation.

Shortage, percent = ((unconstrained demand – forecast supply)/ unconstrained demand) X 100

The extent of the shortage of Sonoma Water’s supplies does not translate to the same proportion of shortage for many of Sonoma Water’s customers because the supply provided by Sonoma Water only represents a portion of their respective water supply portfolio. Many of these customers have their own local surface water, groundwater, and/or recycled water supplies. Each of these customers will develop its own annual water supply and demand assessment and, if a shortage is forecast, determine its own shortage level that considers their local supplies.

The allocation of Sonoma Water’s supplies to its customers in the event of a shortage is based on the procedures set forth in the Restructured Agreement for Water Supply. Section 3.5(a) of the Restructured Agreement describes the way Sonoma Water is to allocate water to its customers in the event of a water supply shortage, and Section 3.5(b) of the Restructured Agreement describes the manner in which Sonoma Water is to allocate water to its customers in the event of a temporary impairment of the capacity of some or all of Sonoma Water’s transmission system. Section 3.5(d) of the Restructured Agreement requires Sonoma Water to “have an adopted water shortage allocation methodology sufficient to inform each Customer of the water that would be available to it pursuant to Section 3.5(a) in the event of reasonably anticipated shortages, which methodology shall be consistent with this Section 3.5 and shall be included in the Urban Water Management Plan prepared pursuant to Section 2.7.”

On January 4, 2022, Sonoma Water’s Board of Directors adopted the 2021 Water Shortage Allocation Methodology and Model to be used to inform each Sonoma Water customer of the water that would be available to it pursuant to Section 3.5 of the Restructured Agreement in the event of reasonably anticipated shortages. The 2021 Model adoption completed work that began in 2010 to update Sonoma Water’s previous annual Water Shortage Allocation Methodology and Model. The 2021 Model includes a new monthly methodology to allocate water supply in the summer months when diversions from the Russian River may be constrained due to reduced flows or water availability.

Section 4: Shortage Response Actions

Sonoma Water regularly monitors supply and demand conditions to forecast potential water shortages. If a water shortage is anticipated, Sonoma Water would implement one or more potential shortage response actions. This section describes demand reduction, supply augmentation, operational changes, the emergency response plan, the seismic risk assessment and mitigation plan, and shortage response action effectiveness.

4.1 Demand Reduction

As a wholesale supplier, Sonoma Water has no ability to directly restrict the use of water by end users, or to impose financial penalties on end users for excessive use. Under the Restructured Agreement, Sonoma Water has several methods available to ensure that its contractors do not use more than the amount of water allocated by Sonoma Water during a shortage.

If it appeared that a water supply shortage might occur, Sonoma Water’s first stage of action would be to notify its customers and the public of that possibility. Depending on the severity of the shortage, Sonoma Water would work with its customers to encourage voluntary demand reduction measures. Sonoma Water would also encourage its customers to maximize use of local water supplies. Finally, Sonoma Water would take steps to publicize the potential shortage, and to encourage agricultural and non-Sonoma Water-related diverters from the Russian River and Dry Creek to reduce diversions to the extent possible.

ATTACHMENT 2

DROUGHT RESPONSE TOOL QUANTITATIVE ASSESSMENT

[Home](#)
[Input Baseline Year Water Use](#)
[Baseline Year Water Use Profile](#)
[Drought Response Actions](#)
[Estimated Water Savings](#)
[Drought Response Tracking](#)

1 - Home

North Marin Water District

Enter Agency Information	
Agency Name	North Marin Water District
Total Population Served	61,658
Conservation Goal (%)	5%
Drought Stage	Stage 1
Number of Residential Accounts	18,699
Number of Commercial, Industrial, and Institutional (CII) Accounts	909
Number of Dedicated Irrigation Accounts	356
Baseline Year(s)	2019
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	100%
Comments	

FY

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.

Home

Input Baseline
Year Water Use

Baseline Year
Water Use
Profile

Drought
Response
Actions

Estimated
Water Savings

Drought
Response
Tracking

1 - Home

North Marin Water District

6 - DROUGHT RESPONSE TRACKING

Track production and water savings against the conservation target.

1 - Home

North Marin Water District

For questions about this tool or for additional information, contact:

Anona Dutton, P.G., C.Hg.
adutton@ekiconsult.com
(650) 292-9100



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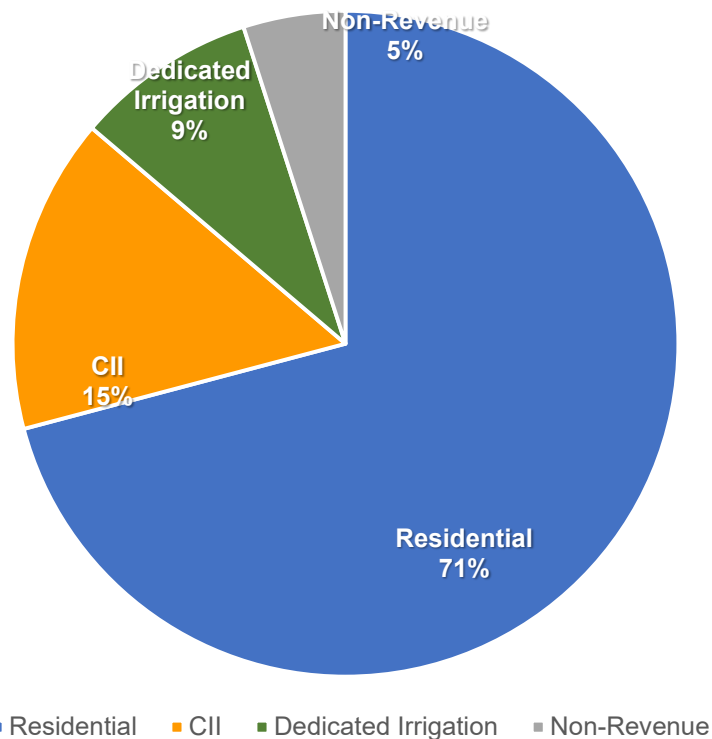
2 - Input Baseline Year (2019) Water Use North Marin Water District

Input Baseline Year (2019) Production and Water Use							
Units: <input type="text" value="(af)"/>							
Select the units to input monthly production and use data. Enter the total monthly potable water production for the Baseline Year. Next, enter monthly water use data by sector for the Baseline Year. If you bill on a bi-monthly basis, divide your billing data between the months that the billing cycle includes. If your single-family and multi-family accounts are tracked separately, enter the combined water use for both sectors in the Residential Water Use column. If your commercial, industrial, and institutional (CII) accounts are tracked separately, enter the combined water use for each sector in the CII Water Use column. Your non-revenue water use is calculated by subtracting your monthly residential, CII, and dedicated irrigation water uses from your monthly production. Your monthly residential gallons per capita per day (R-GPCD) is calculated by dividing your monthly residential water use by your population entered in Worksheet 1 - Home.							
Date	Total Production (af)	Residential Water Use (af)	CII Water Use (af)	Dedicated Irrigation Water Use (af)	Non-Revenue Water Use (af)	Total R-GPCD	Comments
July	1,084	686	186	157	55	117	NRW is assumed to be 4%.
August	762	567	101	60	34	97	Water use is reported on a fiscal-year basis.
September	1,213	789	171	189	64	139	
October	789	591	100	59	40	101	
November	780	538	99	100	42	95	
December	551	423	74	29	25	72	
January	535	403	73	31	27	69	
February	348	274	54	4	16	52	
March	431	326	69	14	21	56	
April	298	232	50	3	13	41	
May	561	354	153	27	28	60	
June	565	429	83	27	27	76	

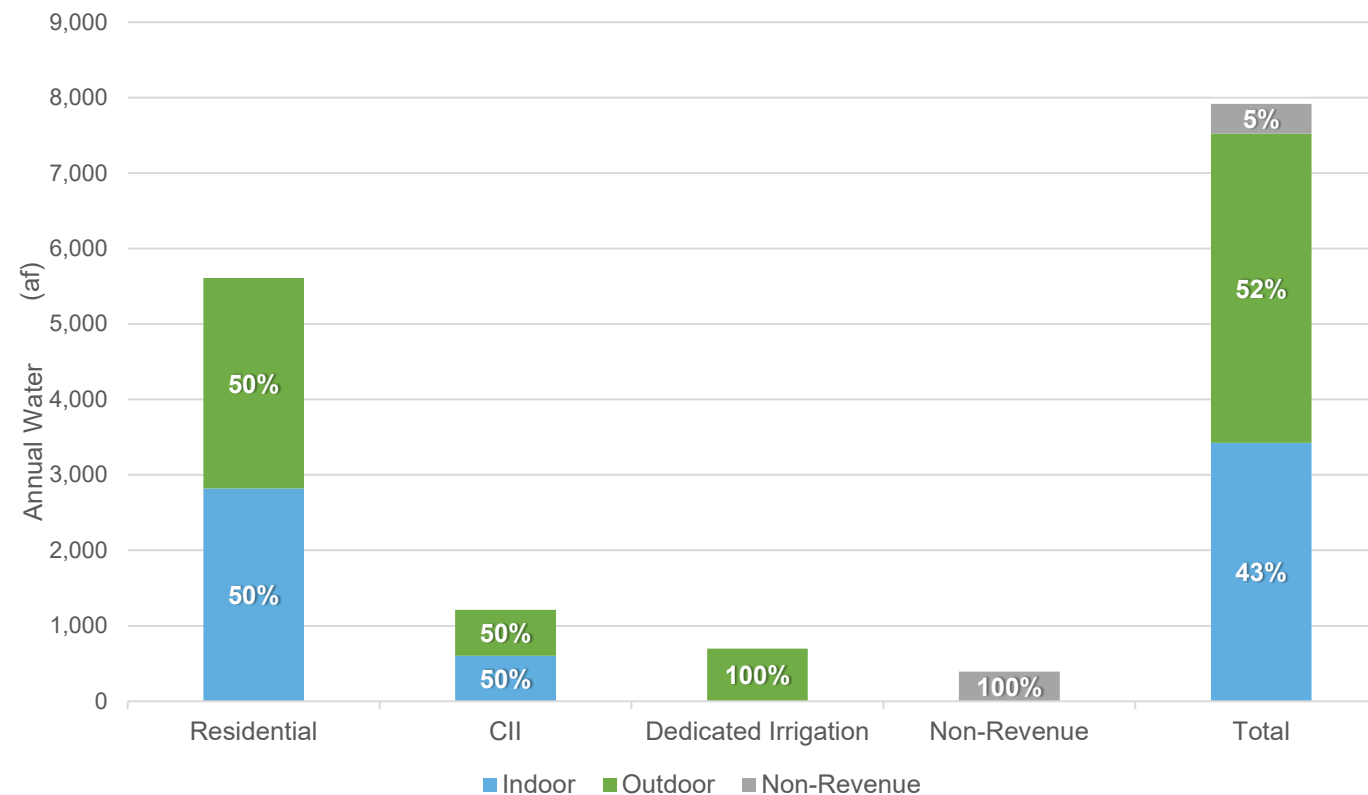
3 - Baseline Year (2019) Water Use Profile North Marin Water District

Baseline Year (2019) Annual Water Use Summary						
Units: <input type="text" value="(af)"/>						
<i>A summary of your Baseline Year water use by sector and major end use category is shown below. Select the units in which your production and use data are displayed.</i>						
Water Use	Total Production (af)	Water Use (af)				Comments
		Residential	CII	Dedicated Irrigation	Non-Revenue	
Total	7,916	5,611	1,214	699	392	
Total Indoor	3,426	2,821	605	--	--	
Total Outdoor	4,097	2,789	609	699	--	
Total Non-Revenue	392	--	--	--	392	
Total Indoor %	43%	50%	50%	0%	--	
Total Outdoor %	52%	50%	50%	100%	--	
Total Non-Revenue %	5%	--	--	--	100%	

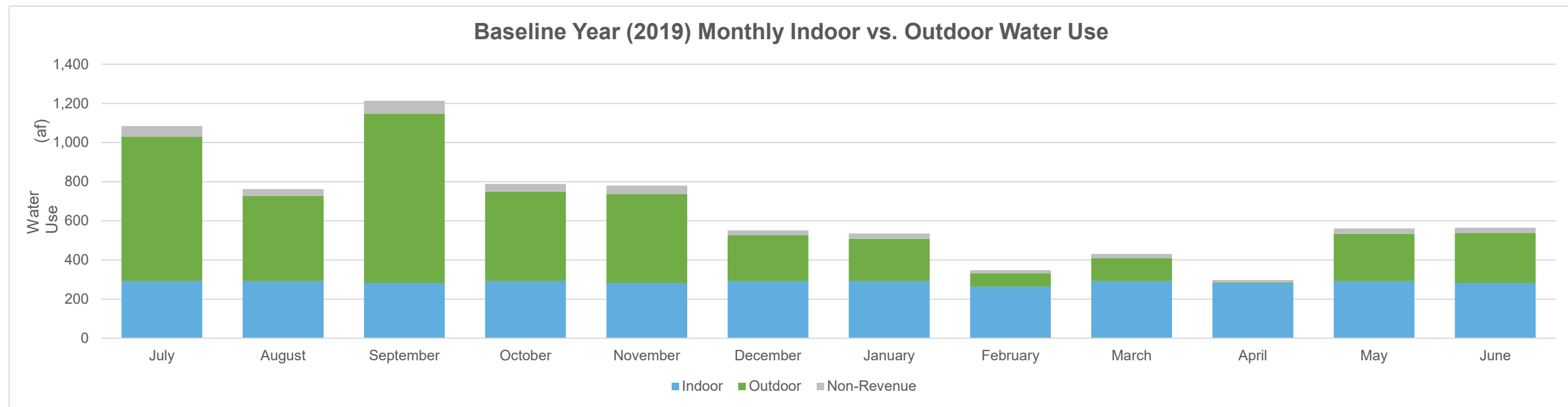
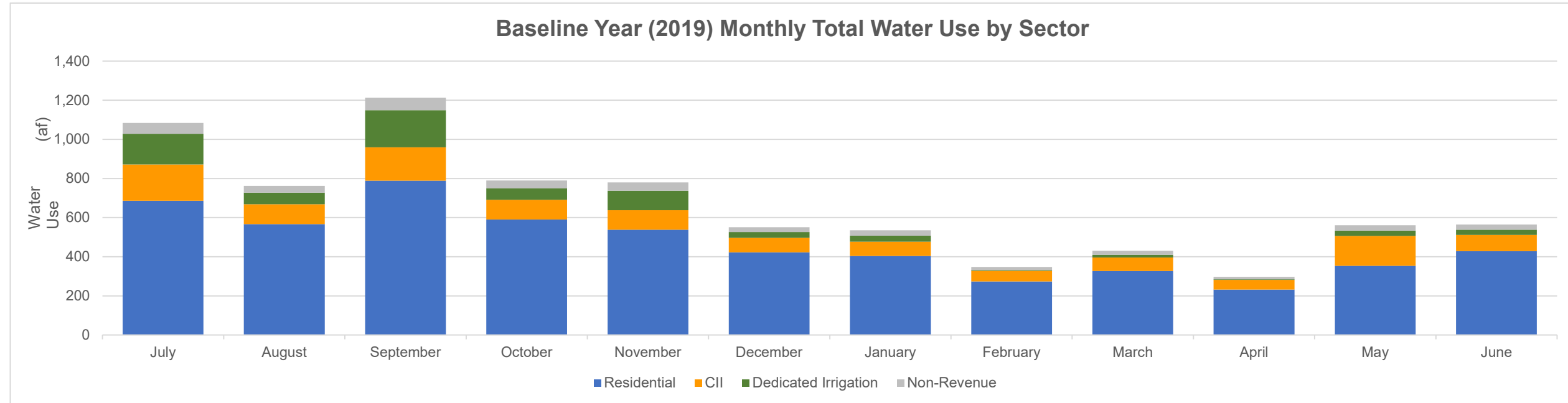
Baseline Year (2019) Percent Annual Water Use by Sector



Baseline Year (2019) Annual Water Use by Sector and End Use

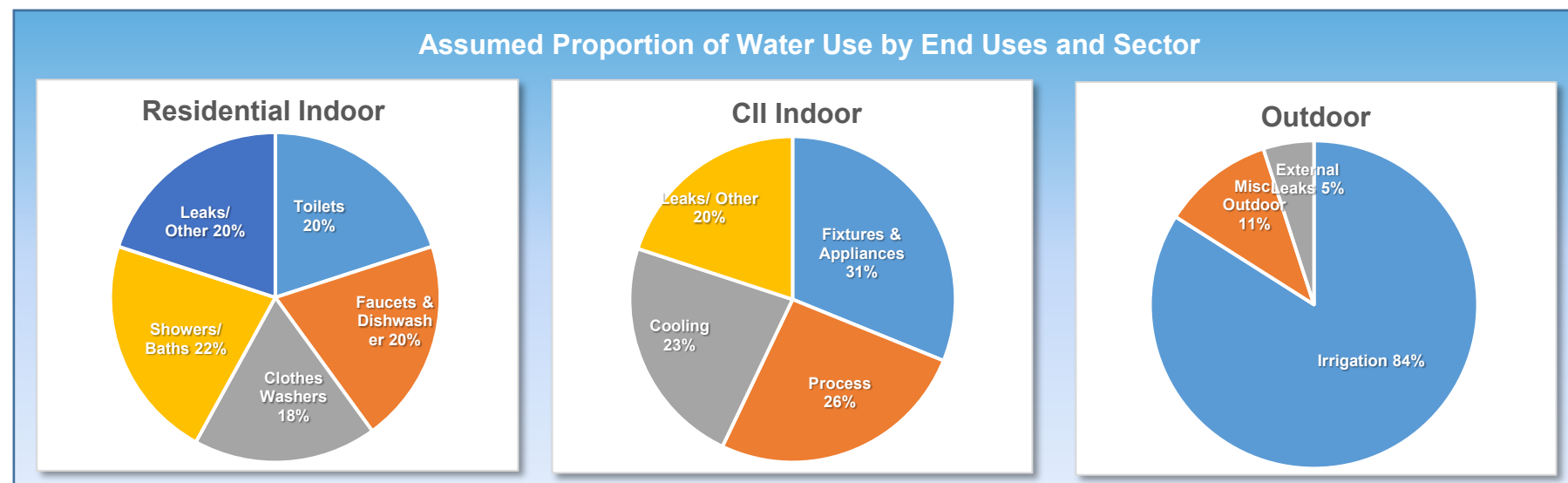


3 - Baseline Year (2019) Water Use Profile North Marin Water District



4 - Drought Response Actions - Stage 1 North Marin Water District

Maximum Savings Potential		
<i>Use the default values or enter your own criteria for the maximum savings potential. Estimated water savings within each sector will not exceed the maximum savings criteria.</i>		
Minimum Residential Indoor GPCD	40	R-GPCD
Maximum Residential Outdoor Savings	75%	of Baseline Residential Outdoor Water Use
Maximum CII Indoor Savings	10%	of Baseline CII Indoor Water Use
Maximum CII Outdoor Savings	75%	of Baseline CII Outdoor Water Use
Maximum Dedicated Irrigation Account Savings	75%	of Baseline Dedicated Irrigation Water Use
Maximum Non-Revenue Water Savings	50%	of Baseline Non-Revenue Water Use
Resulting Total Maximum Annual Savings Potential	43%	of Total Baseline Production



4 - Drought Response Actions - Stage 1 North Marin Water District

Drought Response Actions						
<p><i>Select the Drought Response Actions you would like to include in your estimated savings calculations. For each selected action, use the default end use savings estimates and implementation rates or input your own values. The "End Use Savings" estimates the percent water use reduction that could occur at a particular end use as a result of a specific action. The "Implementation Rate" refers to the estimated percentage of accounts that will implement a specific action. The water savings potential at each end use is capped based on the assumed distribution of end use water demands shown in the pie charts above. A dash (-) indicates that professional judgement was used to establish the default value, or that savings are expected to be accounted for as part of a Public Information Program; additional basis for the default values are included in the User Manual.</i></p>						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Possible Mandatory Prohibitions	All Outdoor	<input checked="" type="checkbox"/>	14%	75%	--	--
Prohibit Irrigation with Potable Water Outside of Newly Constructed Homes and Buildings that is not Delivered by Drip or Microspray Systems	Irrigation	<input type="checkbox"/>			--	--
Require Shut-Off Nozzles on Hoses for Vehicle Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%	See Appendix D of the DRP	--
Prohibit Use of Potable Water to Wash Sidewalks and Driveways	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit the Use of Potable Water for Street Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit Irrigation with Potable Water in a Manner that causes Runoff	Irrigation	<input checked="" type="checkbox"/>	3%	50%	DeOreo et al., 2011	--
Prohibit Irrigation with Potable Water within 48 Hours following Measurable Rainfall	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Irrigation of Ornamental Turf with Potable Water on Street Medians	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Provide Linen Service Opt Out Options	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Prohibit Serving Drinking Water other than upon Request in Eating or Drinking Establishments	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--

4 - Drought Response Actions - Stage 1 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Agency Actions						
Media Campaign, Newspaper Articles, Website	All	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Promote Water Conservation / Rebate Programs	All	<input checked="" type="checkbox"/>		50%	--	--
Water Efficiency Workshops, Public Events	All	<input type="checkbox"/>	0.5%	25%	EBMUD, 2011	--
Water Bill Inserts	All	<input checked="" type="checkbox"/>	0.5%	100%	EBMUD, 2011	--
Promote / Expand Use of Recycled Water	Irrigation	<input checked="" type="checkbox"/>	100%		--	--
Home or Mobile Water Use Reports	All	<input type="checkbox"/>	5%	10%	WaterSmart Software, 2015	--
Decrease Frequency and Length of Line Flushing	Non Revenue Water	<input type="checkbox"/>	25%	50%	See Appendix D of the DRP	Reduced flushing by 50%.
Audit and Reduce System Water Loss	Non Revenue Water	<input type="checkbox"/>	45%	50%	DWR, 2015	Target 50% of leakage.
Implement Drought Rate Structure / Water Budgets	All	<input type="checkbox"/>	5%	100%	CUWCC, 2015	--
Establish Retrofit on Resale Ordinance	All Residential Indoor	<input type="checkbox"/>	21%	6%	SFPUC, 2004	First Tuesday, 2015
Require Net Zero Demand Increase on New Connections	All	<input type="checkbox"/>			--	--
Moratorium on New Connections	All	<input type="checkbox"/>			--	--
Move to Monthly Metering / Billing	All	<input type="checkbox"/>	5%	10%	See Appendix D of the DRP	--
Increase Water Waste Patrols / Enforcement	All	<input checked="" type="checkbox"/>			--	--
Establish Drought Hotline	All	<input type="checkbox"/>			--	--
Reduce Distribution System Pressures	Non Revenue Water	<input type="checkbox"/>	4.5%	100%	CUWCC, 2010; DWR, 2015	--
► Dedicated Irrigation						
Conduct Irrigation Account Surveys	Irrigation	<input type="checkbox"/>	30%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	38%	50%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Require Repair of all Leaks within 24 hours	External Leaks	<input type="checkbox"/>	100%	5%	--	--
Customer Water Budgets						
Establish Water Budget - 25% Reduction	Irrigation	<input type="checkbox"/>	25%	50%	--	--
Establish Water Budget - 50% Reduction	Irrigation	<input type="checkbox"/>	50%	50%	--	--
Establish Water Budget - 75% Reduction	Irrigation	<input type="checkbox"/>	75%	50%	--	--

4 - Drought Response Actions - Stage 1 North Marin Water District

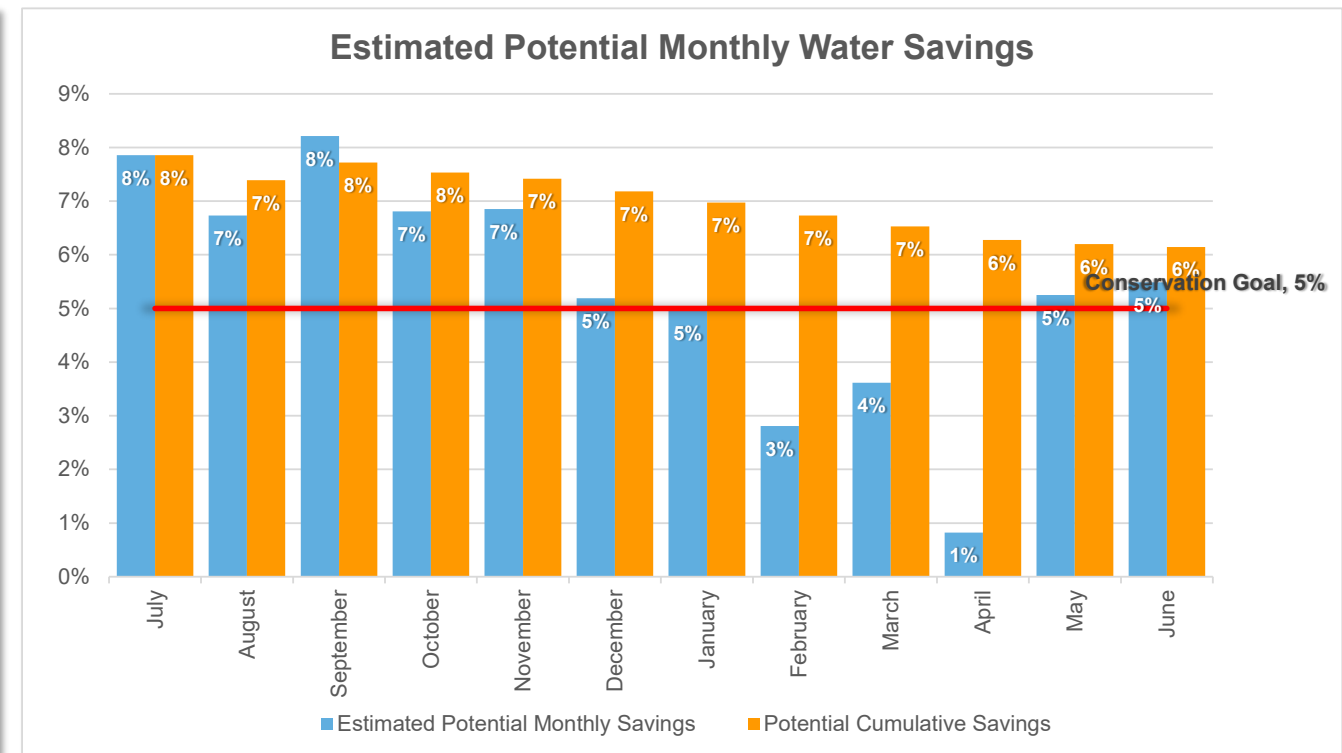
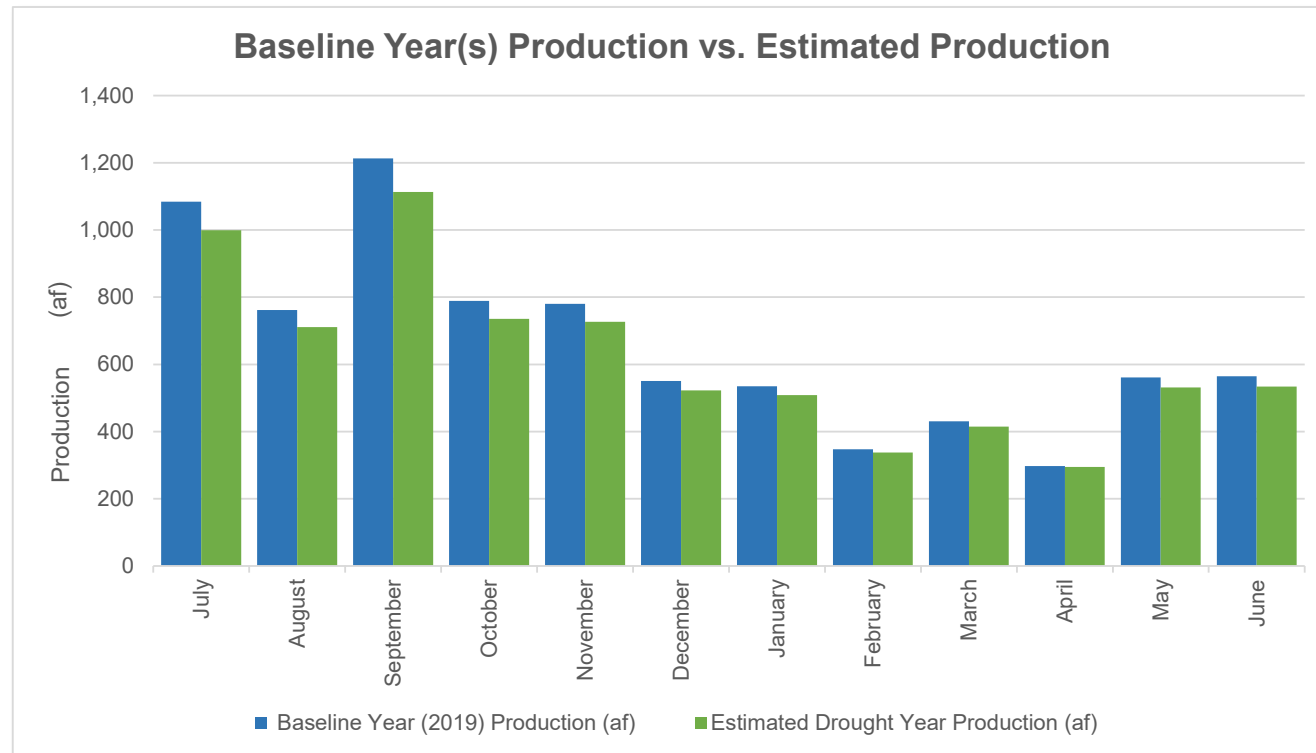
Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Residential						
Conduct Water Use Surveys Targeting High Water Users	All Residential Uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	38%	75%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Repair of all Leaks within 24 hours	Leaks	<input type="checkbox"/>	100%	35%	--	--
Require Pool Covers	Misc. Outdoor	<input type="checkbox"/>	28%	25%	Maddaus & Mayer, 2001	--
Prohibit Filling of Pools	Misc. Outdoor	<input type="checkbox"/>	55%	25%	DeOreo et al., 2011	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All Residential Uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All Residential Uses	<input type="checkbox"/>	20%	50%	--	--
► CII						
Conduct CII Surveys Targeting High Water Users	All CII uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	38%	75%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit Use of Potable Water for Construction and Dust Control	Misc. Outdoor	<input type="checkbox"/>		100%	--	--
Prohibit Single-Pass Cooling Systems	Cooling	<input type="checkbox"/>	80%	1%	Vickers, 2001	--
Require Repair of all Leaks within 24 hours	Leaks	<input type="checkbox"/>	100%	5%	--	--
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Water-Efficient Pre-Rinse Spray Valves	Fixtures & Appliances	<input type="checkbox"/>	0.8%	50%	EPA, 2015; Pacific Institute, 2003	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All CII uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All CII uses	<input type="checkbox"/>	20%	50%	--	--
Establish Water Budget - 30% Reduction	All CII uses	<input type="checkbox"/>	30%	50%	--	--

4 - Drought Response Actions - Stage 1 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Residential Customer Actions to Encourage						
Install Bathroom Faucet Aerators	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Install a Water-Efficient Showerhead	Showers/Baths	<input type="checkbox"/>			--	--
Turn Off Water when Brushing Teeth, Shaving, Washing Dishes, or Cooking	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Fill the Bathtub Halfway	Showers/Baths	<input type="checkbox"/>			--	--
Wash Only Full Loads of Clothes	Clothes Washers	<input type="checkbox"/>			--	--
Install a High-Efficiency Toilet	Toilets	<input type="checkbox"/>			--	--
Take Shorter Showers	Showers/Baths	<input type="checkbox"/>			--	--
Run Dishwasher Only When Full	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Reduce Outdoor Irrigation	Irrigation	<input type="checkbox"/>			--	--
Install Drip-Irrigation	Irrigation	<input type="checkbox"/>			--	--
Use Mulch	Irrigation	<input type="checkbox"/>			--	--
Plant Drought Resistant Trees and Plants	Irrigation	<input type="checkbox"/>			--	--
Use a Broom to Clean Outdoor Areas	Misc. Outdoor	<input type="checkbox"/>			--	--
Flush Less Frequently	Toilets	<input type="checkbox"/>			--	--
Re-Use Shower or Bath Water for Irrigation	Irrigation	<input type="checkbox"/>			--	--
Wash Car at Facility that Recycles the Water	Misc. Outdoor	<input type="checkbox"/>			--	--

5 - Estimated Water Savings - Stage 1 North Marin Water District

Estimated Monthly Water Use and Savings Summary						
Units: <input type="text" value="(af)"/>						
<i>This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.</i>						
Month	Baseline Year (2019) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
July	1,084	999	8%	8%	5%	
August	762	711	7%	7%	5%	
September	1,213	1,113	8%	8%	5%	
October	789	736	7%	8%	5%	
November	780	726	7%	7%	5%	
December	551	522	5%	7%	5%	
January	535	508	5%	7%	5%	
February	348	338	3%	7%	5%	
March	431	415	4%	7%	5%	
April	298	295	1%	6%	5%	
May	561	532	5%	6%	5%	
June	565	534	5%	6%	5%	



Home | **Input Baseline Year Water Use** | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

1 - Home North Marin Water District

Enter Agency Information	
Agency Name	North Marin Water District
Total Population Served	61,658
Conservation Goal (%)	15%
Drought Stage	Stage 2
Number of Residential Accounts	18,699
Number of Commercial, Industrial, and Institutional (CII) Accounts	909
Number of Dedicated Irrigation Accounts	356
Baseline Year(s)	2019
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	100%
Comments	

FY

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.

Home

Input Baseline
Year Water Use

Baseline Year
Water Use
Profile

Drought
Response
Actions

Estimated
Water Savings

Drought
Response
Tracking

1 - Home

North Marin Water District

6 - DROUGHT RESPONSE TRACKING

Track production and water savings against the conservation target.

1 - Home

North Marin Water District

For questions about this tool or for additional information, contact:

Anona Dutton, P.G., C.Hg.
adutton@ekiconsult.com
 (650) 292-9100



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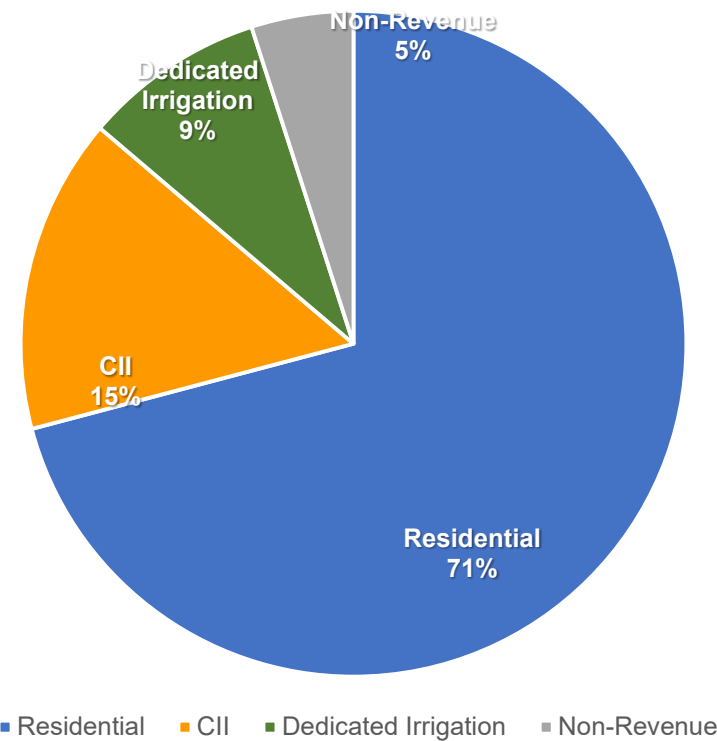
2 - Input Baseline Year (2019) Water Use North Marin Water District

Input Baseline Year (2019) Production and Water Use							
Units: <input type="text" value="(af)"/>							
Select the units to input monthly production and use data. Enter the total monthly potable water production for the Baseline Year. Next, enter monthly water use data by sector for the Baseline Year. If you bill on a bi-monthly basis, divide your billing data between the months that the billing cycle includes. If your single-family and multi-family accounts are tracked separately, enter the combined water use for both sectors in the Residential Water Use column. If your commercial, industrial, and institutional (CII) accounts are tracked separately, enter the combined water use for each sector in the CII Water Use column. Your non-revenue water use is calculated by subtracting your monthly residential, CII, and dedicated irrigation water uses from your monthly production. Your monthly residential gallons per capita per day (R-GPCD) is calculated by dividing your monthly residential water use by your population entered in Worksheet 1 - Home.							
Date	Total Production (af)	Residential Water Use (af)	CII Water Use (af)	Dedicated Irrigation Water Use (af)	Non-Revenue Water Use (af)	Total R-GPCD	Comments
July	1,084	686	186	157	55	117	NRW is assumed to be 4%.
August	762	567	101	60	34	97	Water use is reported on a fiscal-year basis.
September	1,213	789	171	189	64	139	
October	789	591	100	59	40	101	
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December	551	423	74	29	25	72	
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April	298	232	50	3	13	41	
May	561	354	153	27	28	60	
June	565	429	83	27	27	76	

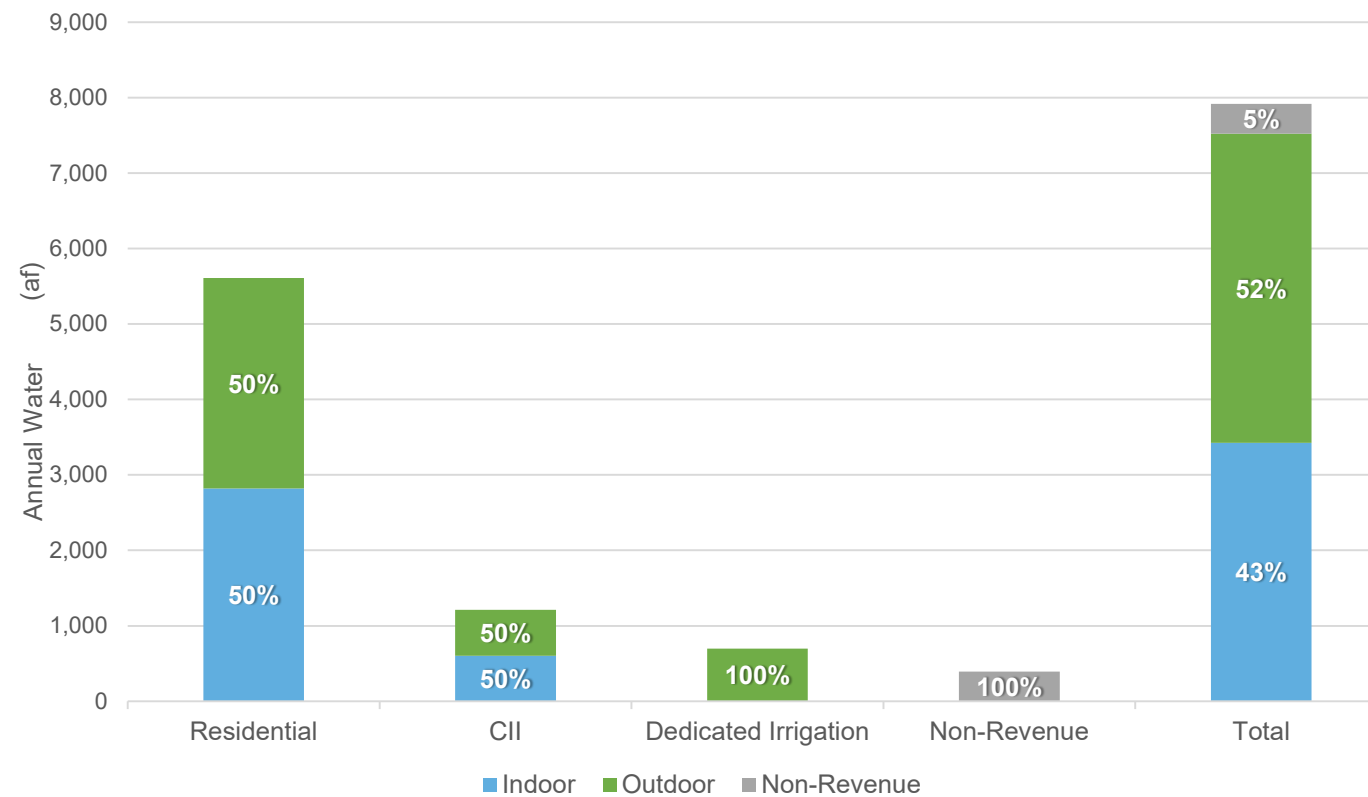
3 - Baseline Year (2019) Water Use Profile North Marin Water District

Baseline Year (2019) Annual Water Use Summary						
Units: <input type="text" value="(af)"/>						
<i>A summary of your Baseline Year water use by sector and major end use category is shown below. Select the units in which your production and use data are displayed.</i>						
Water Use	Total Production (af)	Water Use (af)				Comments
		Residential	CII	Dedicated Irrigation	Non-Revenue	
Total	7,916	5,611	1,214	699	392	
Total Indoor	3,426	2,821	605	--	--	
Total Outdoor	4,097	2,789	609	699	--	
Total Non-Revenue	392	--	--	--	392	
Total Indoor %	43%	50%	50%	0%	--	
Total Outdoor %	52%	50%	50%	100%	--	
Total Non-Revenue %	5%	--	--	--	100%	

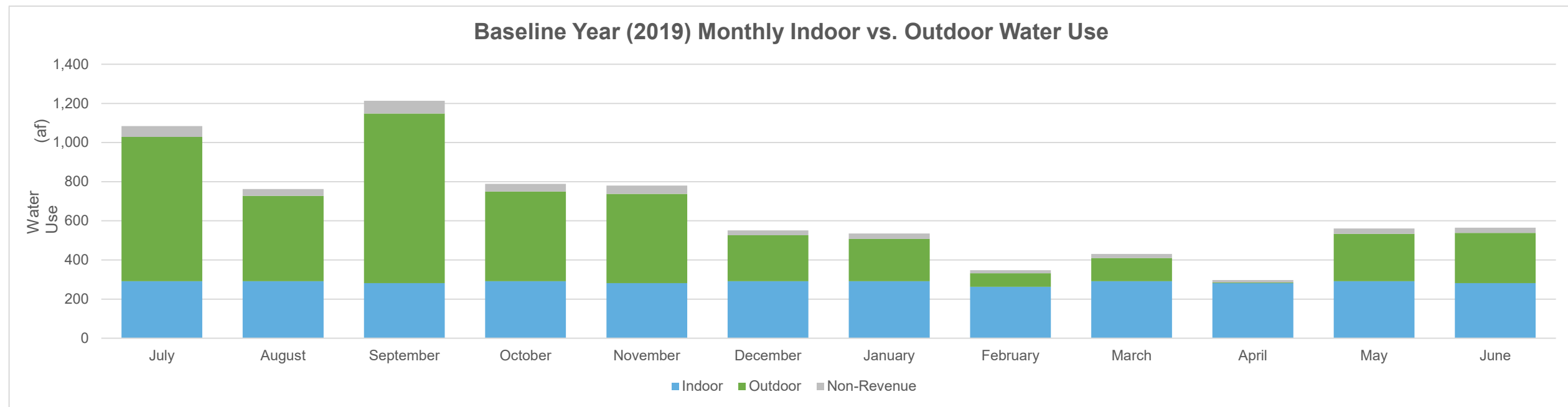
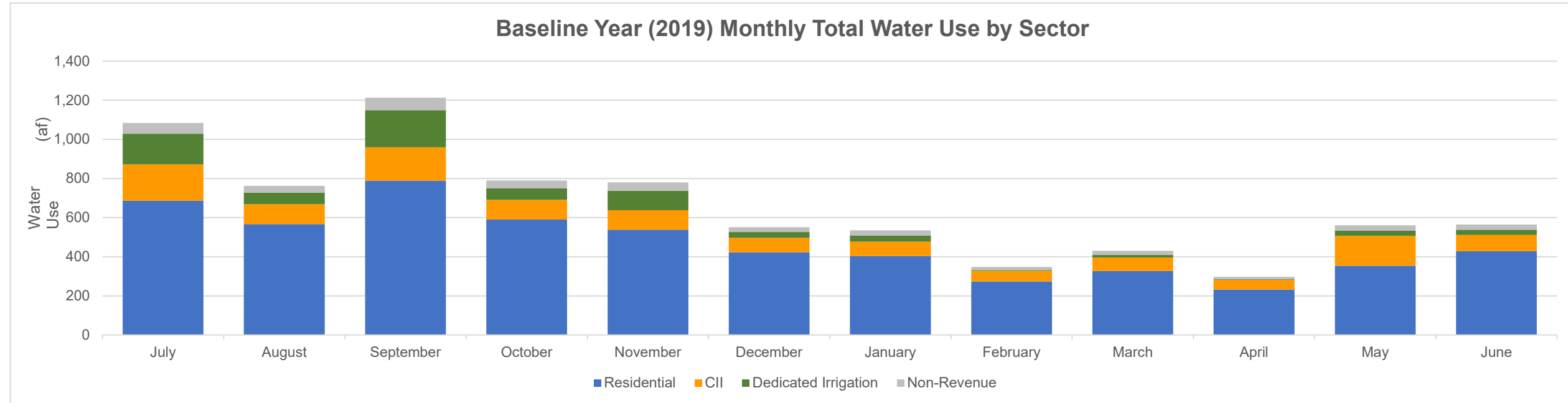
Baseline Year (2019) Percent Annual Water Use by Sector



Baseline Year (2019) Annual Water Use by Sector and End Use

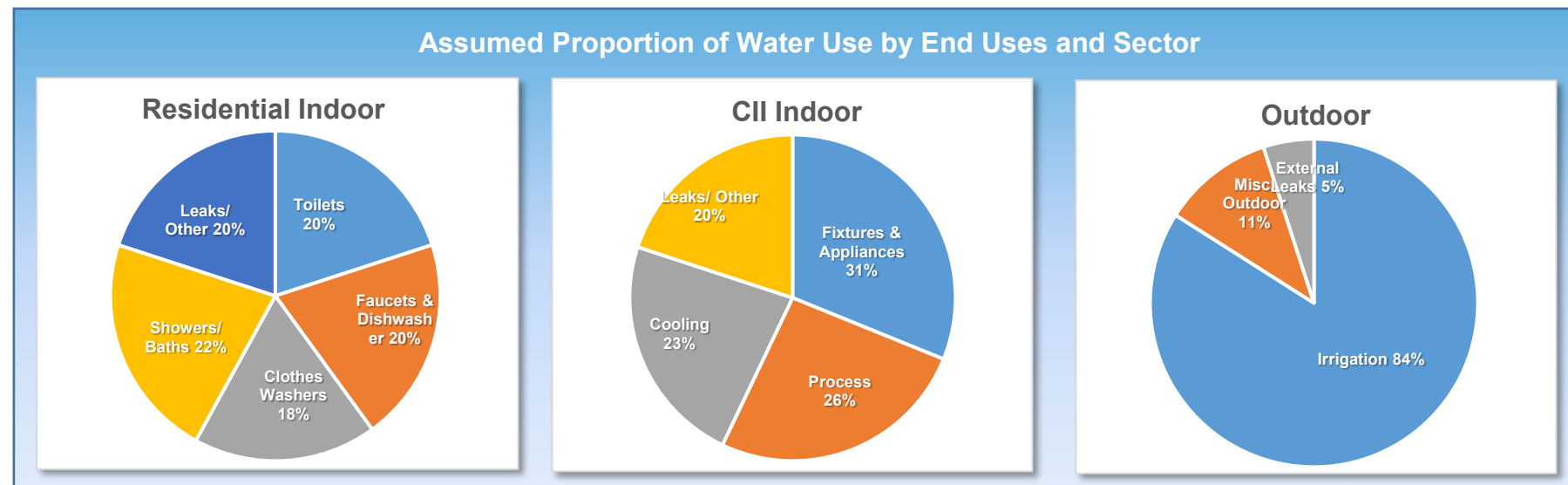


3 - Baseline Year (2019) Water Use Profile North Marin Water District



4 - Drought Response Actions - Stage 2 North Marin Water District

Maximum Savings Potential		
<i>Use the default values or enter your own criteria for the maximum savings potential. Estimated water savings within each sector will not exceed the maximum savings criteria.</i>		
Minimum Residential Indoor GPCD	40	R-GPCD
Maximum Residential Outdoor Savings	75%	of Baseline Residential Outdoor Water Use
Maximum CII Indoor Savings	10%	of Baseline CII Indoor Water Use
Maximum CII Outdoor Savings	75%	of Baseline CII Outdoor Water Use
Maximum Dedicated Irrigation Account Savings	75%	of Baseline Dedicated Irrigation Water Use
Maximum Non-Revenue Water Savings	50%	of Baseline Non-Revenue Water Use
Resulting Total Maximum Annual Savings Potential	43%	of Total Baseline Production



4 - Drought Response Actions - Stage 2 North Marin Water District

Drought Response Actions						
<p><i>Select the Drought Response Actions you would like to include in your estimated savings calculations. For each selected action, use the default end use savings estimates and implementation rates or input your own values. The "End Use Savings" estimates the percent water use reduction that could occur at a particular end use as a result of a specific action. The "Implementation Rate" refers to the estimated percentage of accounts that will implement a specific action. The water savings potential at each end use is capped based on the assumed distribution of end use water demands shown in the pie charts above. A dash (-) indicates that professional judgement was used to establish the default value, or that savings are expected to be accounted for as part of a Public Information Program; additional basis for the default values are included in the User Manual.</i></p>						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Possible Mandatory Prohibitions	All Outdoor	<input checked="" type="checkbox"/>	14%	75%	--	--
Prohibit Irrigation with Potable Water Outside of Newly Constructed Homes and Buildings that is not Delivered by Drip or Microspray Systems	Irrigation	<input type="checkbox"/>			--	--
Require Shut-Off Nozzles on Hoses for Vehicle Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%	See Appendix D of the DRP	--
Prohibit Use of Potable Water to Wash Sidewalks and Driveways	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit the Use of Potable Water for Street Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit Irrigation with Potable Water in a Manner that causes Runoff	Irrigation	<input checked="" type="checkbox"/>	3%	50%	DeOreo et al., 2011	--
Prohibit Irrigation with Potable Water within 48 Hours following Measurable Rainfall	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Irrigation of Ornamental Turf with Potable Water on Street Medians	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Provide Linen Service Opt Out Options	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Prohibit Serving Drinking Water other than upon Request in Eating or Drinking Establishments	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--

4 - Drought Response Actions - Stage 2 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Agency Actions						
Media Campaign, Newspaper Articles, Website	All	<input checked="" type="checkbox"/>	1.0%	75%	EBMUD, 2011	--
Promote Water Conservation / Rebate Programs	All	<input checked="" type="checkbox"/>		50%	--	--
Water Efficiency Workshops, Public Events	All	<input checked="" type="checkbox"/>	1.0%	75%	EBMUD, 2011	--
Water Bill Inserts	All	<input checked="" type="checkbox"/>	1.0%	100%	EBMUD, 2011	--
Promote / Expand Use of Recycled Water	Irrigation	<input checked="" type="checkbox"/>	100%		--	--
Home or Mobile Water Use Reports	All	<input type="checkbox"/>	5%	10%	WaterSmart Software, 2015	--
Decrease Frequency and Length of Line Flushing	Non Revenue Water	<input type="checkbox"/>	25%	50%	See Appendix D of the DRP	Reduced flushing by 50%.
Audit and Reduce System Water Loss	Non Revenue Water	<input type="checkbox"/>	45%	50%	DWR, 2015	Target 50% of leakage.
Implement Drought Rate Structure / Water Budgets	All	<input type="checkbox"/>	5%	100%	CUWCC, 2015	--
Establish Retrofit on Resale Ordinance	All Residential Indoor	<input type="checkbox"/>	21%	6%	SFPUC, 2004	First Tuesday, 2015
Require Net Zero Demand Increase on New Connections	All	<input type="checkbox"/>			--	--
Moratorium on New Connections	All	<input type="checkbox"/>			--	--
Move to Monthly Metering / Billing	All	<input type="checkbox"/>	5%	10%	See Appendix D of the DRP	--
Increase Water Waste Patrols / Enforcement	All	<input checked="" type="checkbox"/>			--	--
Establish Drought Hotline	All	<input type="checkbox"/>			--	--
Reduce Distribution System Pressures	Non Revenue Water	<input type="checkbox"/>	4.5%	100%	CUWCC, 2010; DWR, 2015	--
► Dedicated Irrigation						
Conduct Irrigation Account Surveys	Irrigation	<input type="checkbox"/>	30%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 3 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	17%	85%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Require Repair of all Leaks within 24 hours	External Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Customer Water Budgets						
Establish Water Budget - 25% Reduction	Irrigation	<input type="checkbox"/>	25%	50%	--	--
Establish Water Budget - 50% Reduction	Irrigation	<input type="checkbox"/>	50%	50%	--	--
Establish Water Budget - 75% Reduction	Irrigation	<input type="checkbox"/>	75%	50%	--	--

4 - Drought Response Actions - Stage 2 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Residential						
Conduct Water Use Surveys Targeting High Water Users	All Residential Uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 3 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	17%	85%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	35%	--	--
Require Pool Covers	Misc. Outdoor	<input type="checkbox"/>	28%	25%	Maddaus & Mayer, 2001	--
Prohibit Filling of Pools	Misc. Outdoor	<input type="checkbox"/>	55%	25%	DeOreo et al., 2011	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All Residential Uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All Residential Uses	<input type="checkbox"/>	20%	50%	--	--
► CII						
Conduct CII Surveys Targeting High Water Users	All CII uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 3 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	17%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit Use of Potable Water for Construction and Dust Control	Misc. Outdoor	<input checked="" type="checkbox"/>		100%	--	--
Prohibit Single-Pass Cooling Systems	Cooling	<input type="checkbox"/>	80%	1%	Vickers, 2001	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Water-Efficient Pre-Rinse Spray Valves	Fixtures & Appliances	<input type="checkbox"/>	0.8%	50%	EPA, 2015; Pacific Institute, 2003	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All CII uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All CII uses	<input type="checkbox"/>	20%	50%	--	--
Establish Water Budget - 30% Reduction	All CII uses	<input type="checkbox"/>	30%	50%	--	--

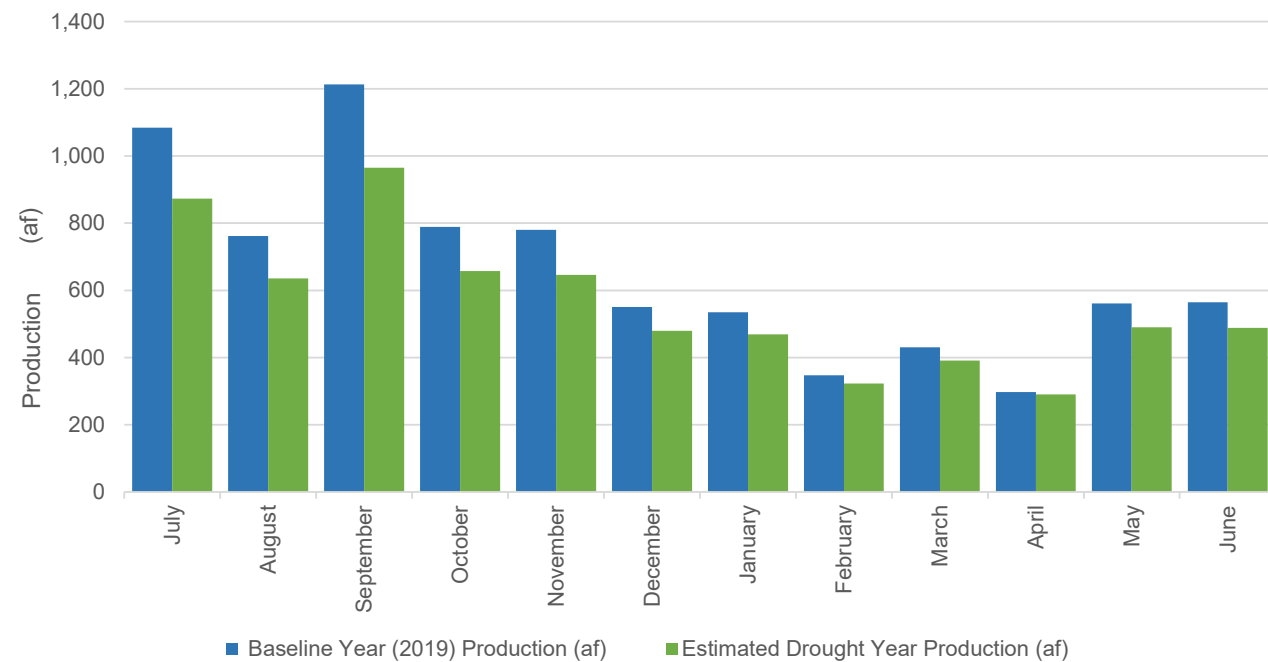
4 - Drought Response Actions - Stage 2
North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Residential Customer Actions to Encourage						
Install Bathroom Faucet Aerators	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Install a Water-Efficient Showerhead	Showers/Baths	<input type="checkbox"/>			--	--
Turn Off Water when Brushing Teeth, Shaving, Washing Dishes, or Cooking	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Fill the Bathtub Halfway	Showers/Baths	<input type="checkbox"/>			--	--
Wash Only Full Loads of Clothes	Clothes Washers	<input type="checkbox"/>			--	--
Install a High-Efficiency Toilet	Toilets	<input type="checkbox"/>			--	--
Take Shorter Showers	Showers/Baths	<input type="checkbox"/>			--	--
Run Dishwasher Only When Full	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Reduce Outdoor Irrigation	Irrigation	<input type="checkbox"/>			--	--
Install Drip-Irrigation	Irrigation	<input type="checkbox"/>			--	--
Use Mulch	Irrigation	<input type="checkbox"/>			--	--
Plant Drought Resistant Trees and Plants	Irrigation	<input type="checkbox"/>			--	--
Use a Broom to Clean Outdoor Areas	Misc. Outdoor	<input type="checkbox"/>			--	--
Flush Less Frequently	Toilets	<input type="checkbox"/>			--	--
Re-Use Shower or Bath Water for Irrigation	Irrigation	<input type="checkbox"/>			--	--
Wash Car at Facility that Recycles the Water	Misc. Outdoor	<input type="checkbox"/>			--	--

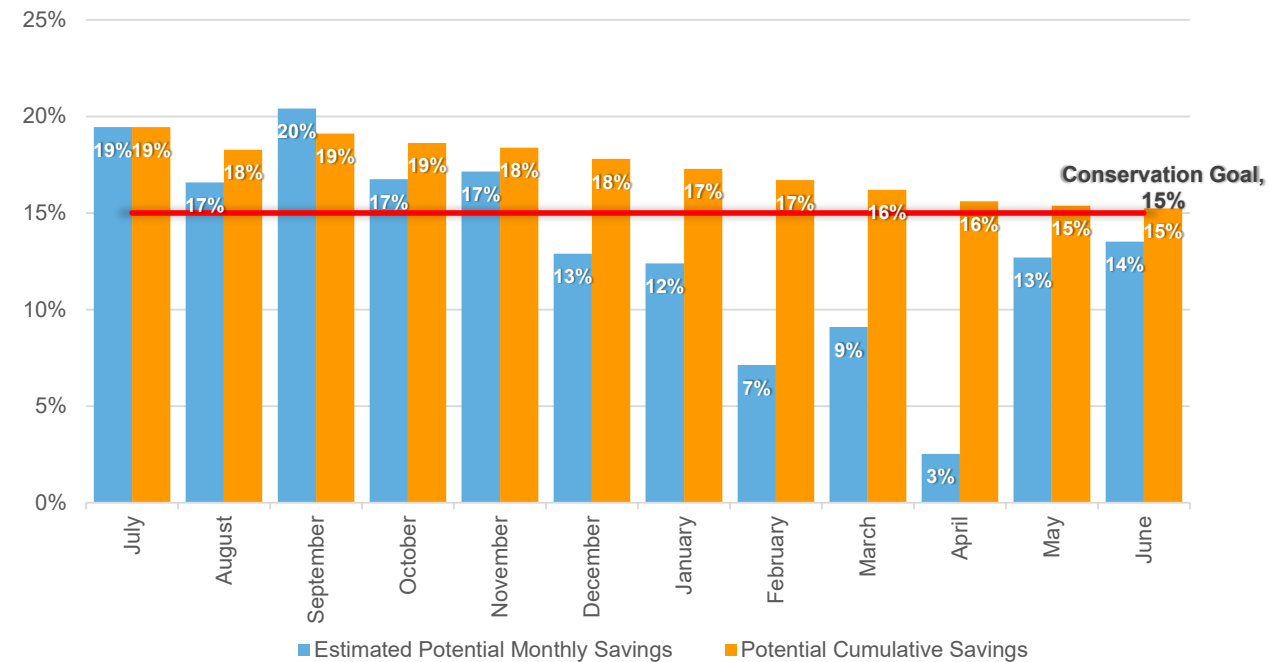
5 - Estimated Water Savings - Stage 2 North Marin Water District

Estimated Monthly Water Use and Savings Summary						
Units: <input type="text" value="(af)"/>						
<i>This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.</i>						
Month	Baseline Year (2019) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
July	1,084	873	19%	19%	15%	
August	762	636	17%	18%	15%	
September	1,213	965	20%	19%	15%	
October	789	657	17%	19%	15%	
November	780	646	17%	18%	15%	
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January	535	469	12%	17%	15%	
February	348	323	7%	17%	15%	
March	431	392	9%	16%	15%	
April	298	290	3%	16%	15%	
May	561	490	13%	15%	15%	
June	565	488	14%	15%	15%	

Baseline Year(s) Production vs. Estimated Production



Estimated Potential Monthly Water Savings



Home Input Baseline Year Water Use Baseline Year Water Use Profile Drought Response Actions Estimated Water Savings Drought Response Tracking

1 - Home North Marin Water District

Enter Agency Information	
Agency Name	North Marin Water District
Total Population Served	61,658
Conservation Goal (%)	25%
Drought Stage	Stage 3
Number of Residential Accounts	18,699
Number of Commercial, Industrial, and Institutional (CII) Accounts	909
Number of Dedicated Irrigation Accounts	356
Baseline Year(s)	2019
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	100%
Comments	

FY

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.

Home

Input Baseline
Year Water Use

Baseline Year
Water Use
Profile

Drought
Response
Actions

Estimated
Water Savings

Drought
Response
Tracking

1 - Home

North Marin Water District

6 - DROUGHT RESPONSE TRACKING

Track production and water savings against the conservation target.

1 - Home

North Marin Water District

For questions about this tool or for additional information, contact:

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adutton@ekiconsult.com
(650) 292-9100



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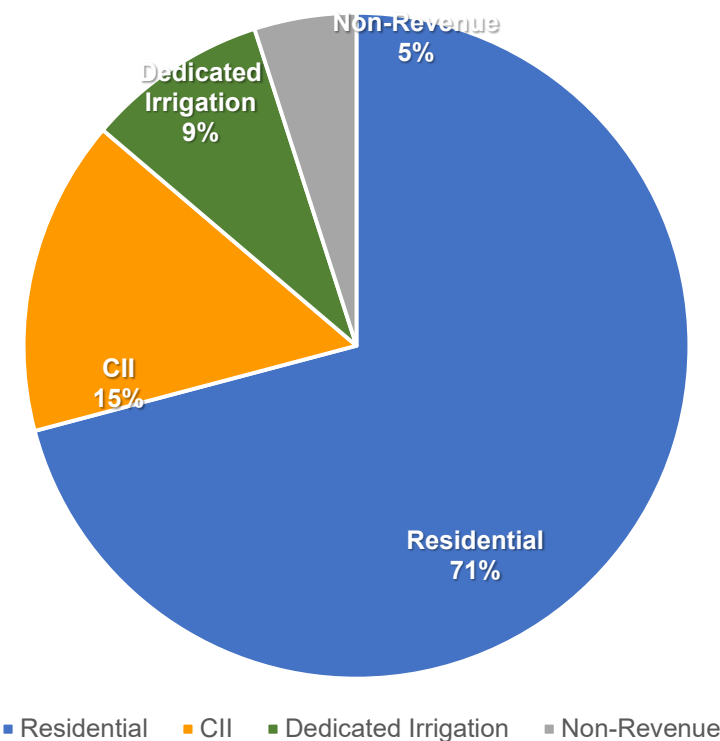
2 - Input Baseline Year (2019) Water Use North Marin Water District

Input Baseline Year (2019) Production and Water Use							
Units: <input type="text" value="(af)"/>							
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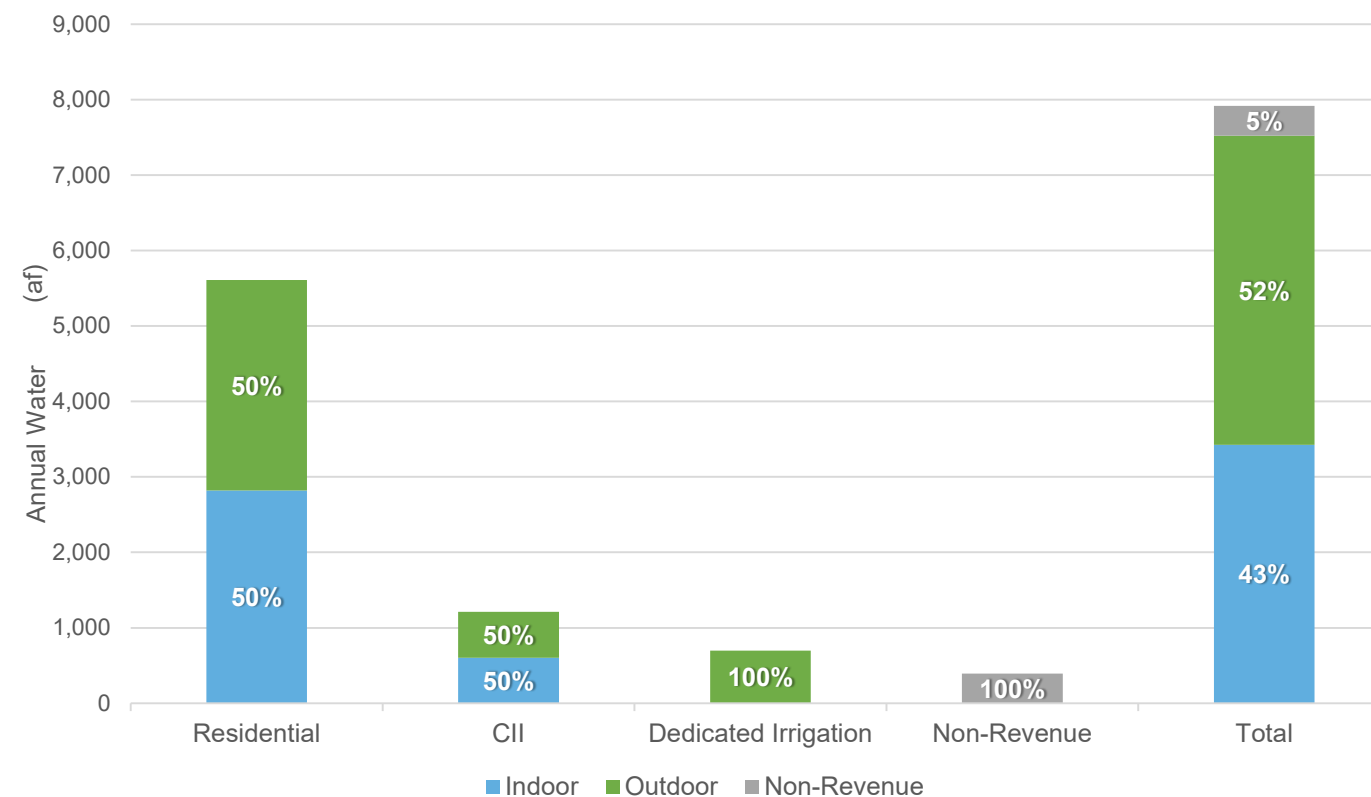
3 - Baseline Year (2019) Water Use Profile North Marin Water District

Baseline Year (2019) Annual Water Use Summary						
Units: <input type="text" value="(af)"/>						
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Total Indoor	3,426	2,821	605	--	--	
Total Outdoor	4,097	2,789	609	699	--	
Total Non-Revenue	392	--	--	--	392	
Total Indoor %	43%	50%	50%	0%	--	
Total Outdoor %	52%	50%	50%	100%	--	
Total Non-Revenue %	5%	--	--	--	100%	

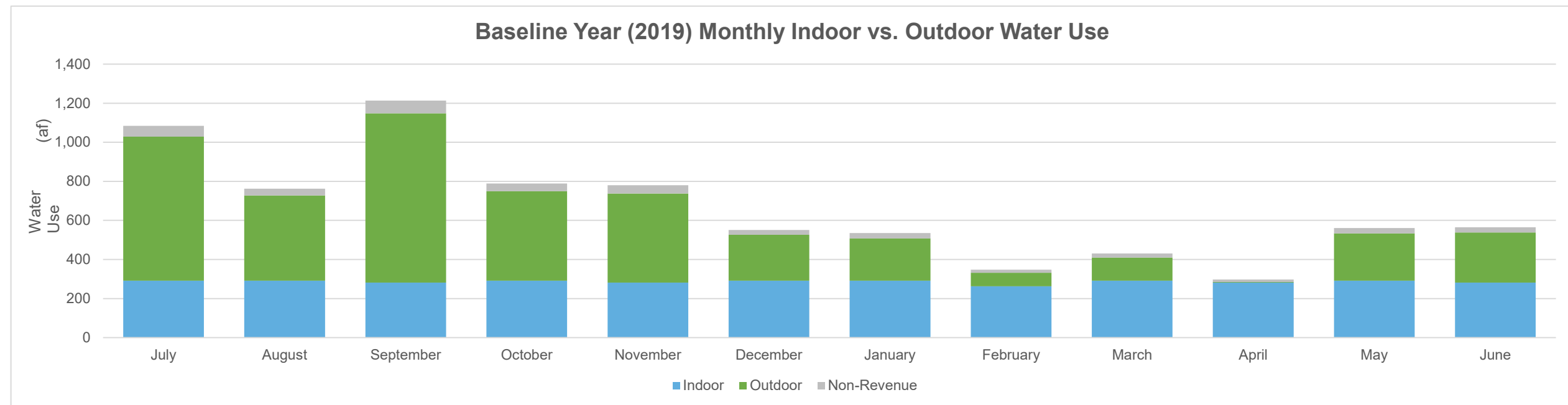
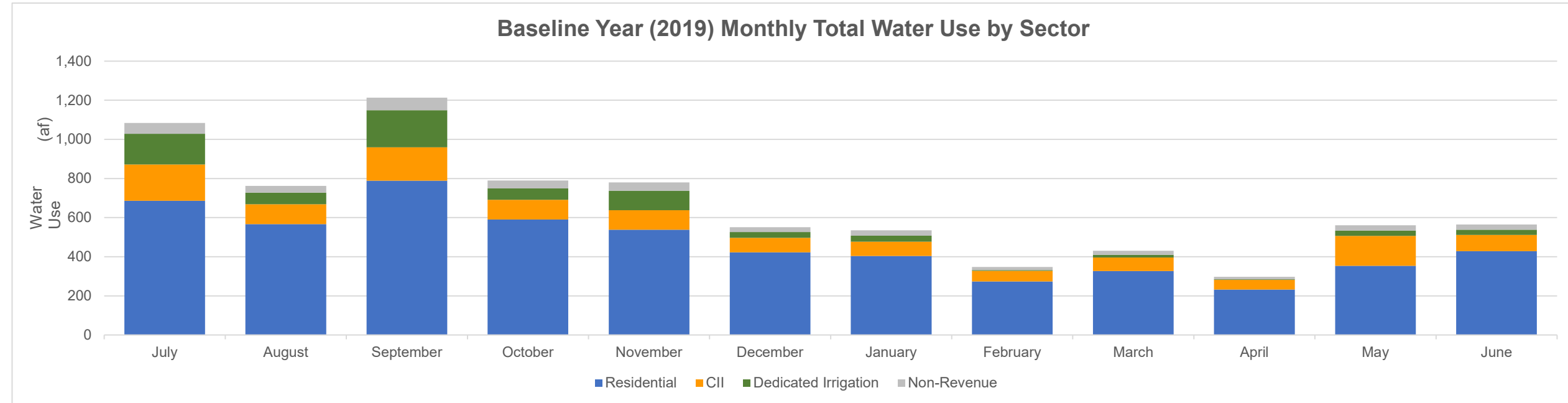
Baseline Year (2019) Percent Annual Water Use by Sector



Baseline Year (2019) Annual Water Use by Sector and End Use

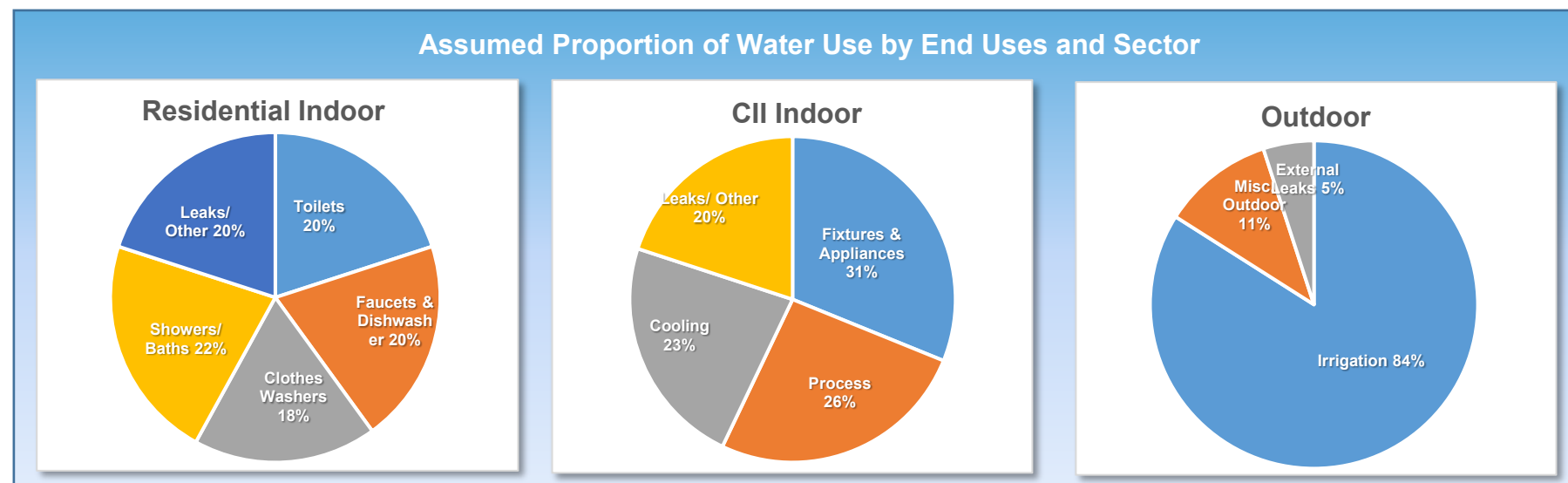


3 - Baseline Year (2019) Water Use Profile North Marin Water District



4 - Drought Response Actions - Stage 3 North Marin Water District

Maximum Savings Potential		
<i>Use the default values or enter your own criteria for the maximum savings potential. Estimated water savings within each sector will not exceed the maximum savings criteria.</i>		
Minimum Residential Indoor GPCD	25	R-GPCD
Maximum Residential Outdoor Savings	75%	of Baseline Residential Outdoor Water Use
Maximum CII Indoor Savings	50%	of Baseline CII Indoor Water Use
Maximum CII Outdoor Savings	75%	of Baseline CII Outdoor Water Use
Maximum Dedicated Irrigation Account Savings	75%	of Baseline Dedicated Irrigation Water Use
Maximum Non-Revenue Water Savings	50%	of Baseline Non-Revenue Water Use
Resulting Total Maximum Annual Savings Potential	59%	of Total Baseline Production



4 - Drought Response Actions - Stage 3 North Marin Water District

Drought Response Actions						
<p><i>Select the Drought Response Actions you would like to include in your estimated savings calculations. For each selected action, use the default end use savings estimates and implementation rates or input your own values. The "End Use Savings" estimates the percent water use reduction that could occur at a particular end use as a result of a specific action. The "Implementation Rate" refers to the estimated percentage of accounts that will implement a specific action. The water savings potential at each end use is capped based on the assumed distribution of end use water demands shown in the pie charts above. A dash (-) indicates that professional judgement was used to establish the default value, or that savings are expected to be accounted for as part of a Public Information Program; additional basis for the default values are included in the User Manual.</i></p>						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Possible Mandatory Prohibitions	All Outdoor	<input checked="" type="checkbox"/>	14%	75%	--	--
Prohibit Irrigation with Potable Water Outside of Newly Constructed Homes and Buildings that is not Delivered by Drip or Microspray Systems	Irrigation	<input type="checkbox"/>			--	--
Require Shut-Off Nozzles on Hoses for Vehicle Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%	See Appendix D of the DRP	--
Prohibit Use of Potable Water to Wash Sidewalks and Driveways	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit the Use of Potable Water for Street Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit Irrigation with Potable Water in a Manner that causes Runoff	Irrigation	<input checked="" type="checkbox"/>	3%	50%	DeOreo et al., 2011	--
Prohibit Irrigation with Potable Water within 48 Hours following Measurable Rainfall	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Irrigation of Ornamental Turf with Potable Water on Street Medians	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Provide Linen Service Opt Out Options	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Prohibit Serving Drinking Water other than upon Request in Eating or Drinking Establishments	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--

4 - Drought Response Actions - Stage 3 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Agency Actions						
Media Campaign, Newspaper Articles, Website	All	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Promote Water Conservation / Rebate Programs	All	<input checked="" type="checkbox"/>		50%	--	--
Water Efficiency Workshops, Public Events	All	<input checked="" type="checkbox"/>	0.5%	25%	EBMUD, 2011	--
Water Bill Inserts	All	<input checked="" type="checkbox"/>	0.5%	100%	EBMUD, 2011	--
Promote / Expand Use of Recycled Water	Irrigation	<input checked="" type="checkbox"/>	100%		--	--
Home or Mobile Water Use Reports	All	<input type="checkbox"/>	5%	10%	WaterSmart Software, 2015	--
Decrease Frequency and Length of Line Flushing	Non Revenue Water	<input type="checkbox"/>	25%	50%	See Appendix D of the DRP	Reduced flushing by 50%.
Audit and Reduce System Water Loss	Non Revenue Water	<input type="checkbox"/>	45%	50%	DWR, 2015	Target 50% of leakage.
Implement Drought Rate Structure / Water Budgets	All	<input type="checkbox"/>	5%	100%	CUWCC, 2015	--
Establish Retrofit on Resale Ordinance	All Residential Indoor	<input type="checkbox"/>	21%	6%	SFPUC, 2004	First Tuesday, 2015
Require Net Zero Demand Increase on New Connections	All	<input type="checkbox"/>			--	--
Moratorium on New Connections	All	<input type="checkbox"/>			--	--
Move to Monthly Metering / Billing	All	<input type="checkbox"/>	5%	10%	See Appendix D of the DRP	--
Increase Water Waste Patrols / Enforcement	All	<input checked="" type="checkbox"/>			--	--
Establish Drought Hotline	All	<input type="checkbox"/>			--	--
Reduce Distribution System Pressures	Non Revenue Water	<input type="checkbox"/>	4.5%	100%	CUWCC, 2010; DWR, 2015	--
► Dedicated Irrigation						
Conduct Irrigation Account Surveys	Irrigation	<input type="checkbox"/>	30%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Require Repair of all Leaks within 24 hours	External Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Customer Water Budgets						
Establish Water Budget - 25% Reduction	Irrigation	<input type="checkbox"/>	25%	50%	--	--
Establish Water Budget - 50% Reduction	Irrigation	<input type="checkbox"/>	50%	50%	--	--
Establish Water Budget - 75% Reduction	Irrigation	<input type="checkbox"/>	75%	50%	--	--

4 - Drought Response Actions - Stage 3 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Residential						
Conduct Water Use Surveys Targeting High Water Users	All Residential Uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	35%	--	--
Require Pool Covers	Misc. Outdoor	<input checked="" type="checkbox"/>	28%	25%	Maddaus & Mayer, 2001	--
Prohibit Filling of Pools	Misc. Outdoor	<input checked="" type="checkbox"/>	55%	25%	DeOreo et al., 2011	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All Residential Uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All Residential Uses	<input type="checkbox"/>	20%	50%	--	--
► CII						
Conduct CII Surveys Targeting High Water Users	All CII uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	38%	75%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit Use of Potable Water for Construction and Dust Control	Misc. Outdoor	<input checked="" type="checkbox"/>		100%	--	--
Prohibit Single-Pass Cooling Systems	Cooling	<input type="checkbox"/>	80%	1%	Vickers, 2001	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Water-Efficient Pre-Rinse Spray Valves	Fixtures & Appliances	<input type="checkbox"/>	0.8%	50%	EPA, 2015; Pacific Institute, 2003	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All CII uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All CII uses	<input type="checkbox"/>	20%	50%	--	--
Establish Water Budget - 30% Reduction	All CII uses	<input type="checkbox"/>	30%	50%	--	--

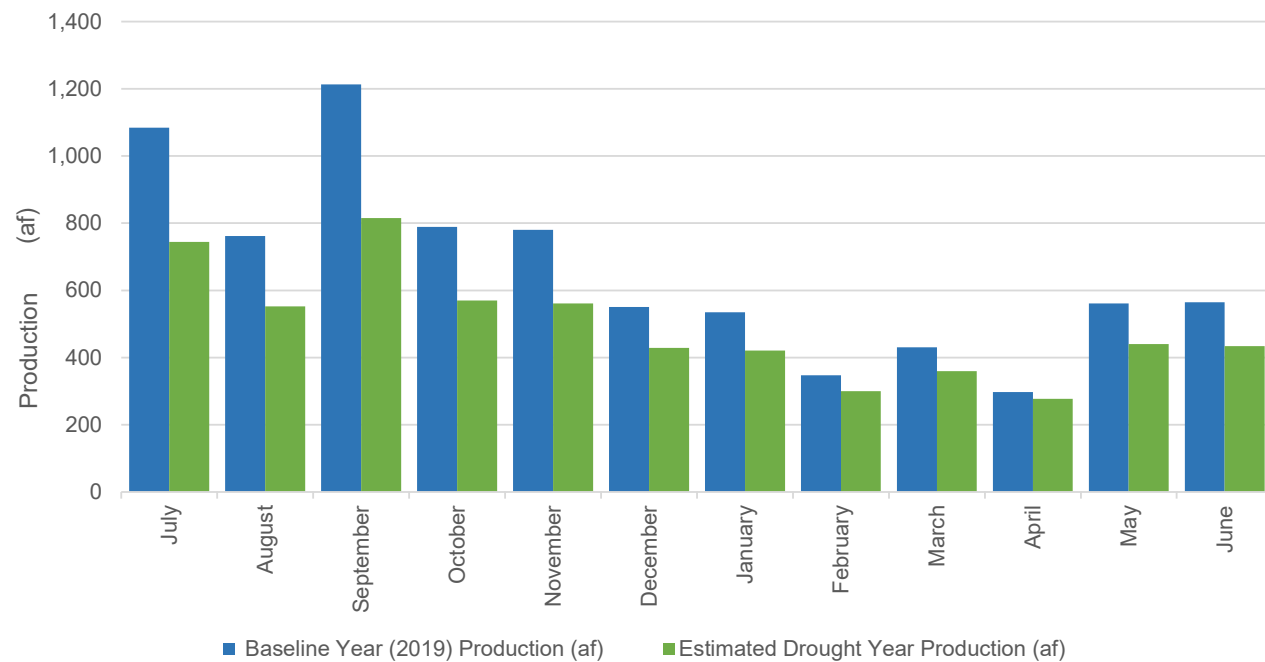
4 - Drought Response Actions - Stage 3 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
▶ Residential Customer Actions to Encourage						
Install Bathroom Faucet Aerators	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Install a Water-Efficient Showerhead	Showers/Baths	<input type="checkbox"/>			--	--
Turn Off Water when Brushing Teeth, Shaving, Washing Dishes, or Cooking	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Fill the Bathtub Halfway	Showers/Baths	<input type="checkbox"/>			--	--
Wash Only Full Loads of Clothes	Clothes Washers	<input type="checkbox"/>			--	--
Install a High-Efficiency Toilet	Toilets	<input type="checkbox"/>			--	--
Take Shorter Showers	Showers/Baths	<input type="checkbox"/>			--	--
Run Dishwasher Only When Full	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Reduce Outdoor Irrigation	Irrigation	<input type="checkbox"/>			--	--
Install Drip-Irrigation	Irrigation	<input type="checkbox"/>			--	--
Use Mulch	Irrigation	<input type="checkbox"/>			--	--
Plant Drought Resistant Trees and Plants	Irrigation	<input type="checkbox"/>			--	--
Use a Broom to Clean Outdoor Areas	Misc. Outdoor	<input type="checkbox"/>			--	--
Flush Less Frequently	Toilets	<input type="checkbox"/>			--	--
Re-Use Shower or Bath Water for Irrigation	Irrigation	<input type="checkbox"/>			--	--
Wash Car at Facility that Recycles the Water	Misc. Outdoor	<input type="checkbox"/>			--	--

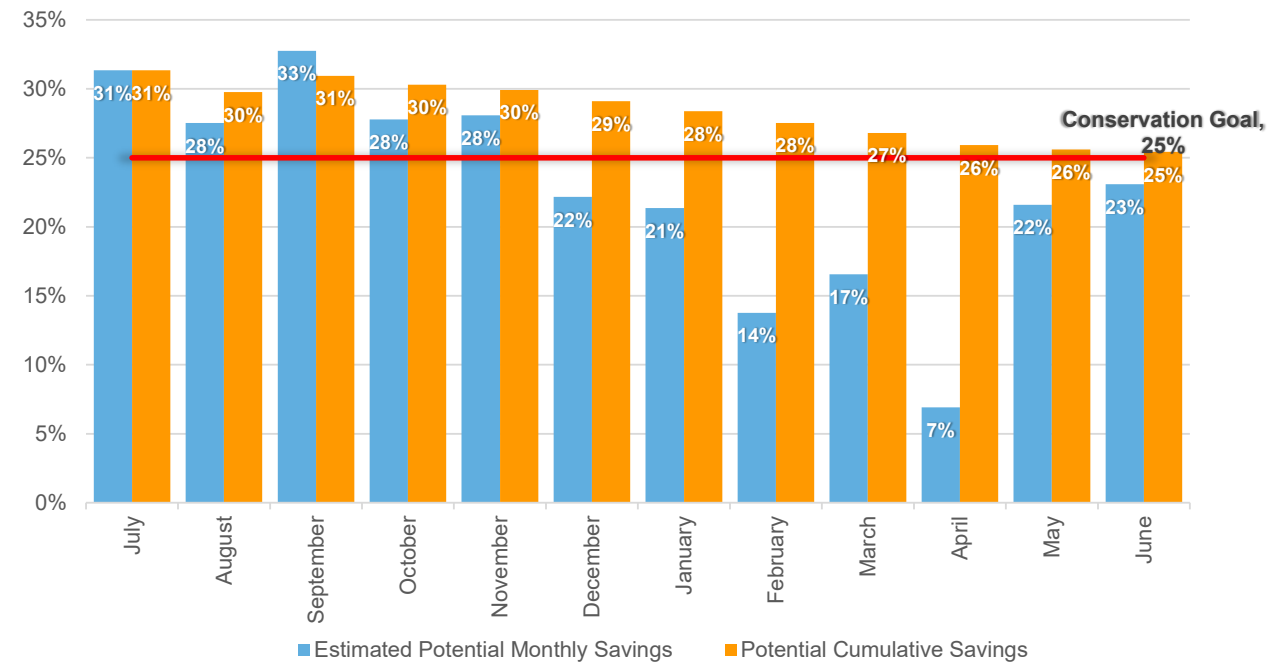
5 - Estimated Water Savings - Stage 3 North Marin Water District

Estimated Monthly Water Use and Savings Summary						
Units: <input type="text" value="(af)"/>						
<i>This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.</i>						
Month	Baseline Year (2019) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
July	1,084	744	31%	31%	25%	
August	762	552	28%	30%	25%	
September	1,213	816	33%	31%	25%	
October	789	570	28%	30%	25%	
November	780	561	28%	30%	25%	
December	551	429	22%	29%	25%	
January	535	421	21%	28%	25%	
February	348	300	14%	28%	25%	
March	431	359	17%	27%	25%	
April	298	277	7%	26%	25%	
May	561	440	22%	26%	25%	
June	565	434	23%	25%	25%	

Baseline Year(s) Production vs. Estimated Production



Estimated Potential Monthly Water Savings



Home | **Input Baseline Year Water Use** | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

1 - Home North Marin Water District

Enter Agency Information	
Agency Name	North Marin Water District
Total Population Served	61,658
Conservation Goal (%)	35%
Drought Stage	Stage 4
Number of Residential Accounts	18,699
Number of Commercial, Industrial, and Institutional (CII) Accounts	909
Number of Dedicated Irrigation Accounts	356
Baseline Year(s)	2019
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	100%
Comments	

FY

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.

Home

Input Baseline
Year Water Use

Baseline Year
Water Use
Profile

Drought
Response
Actions

Estimated
Water Savings

Drought
Response
Tracking

1 - Home

North Marin Water District

6 - DROUGHT RESPONSE TRACKING

Track production and water savings against the conservation target.

1 - Home

North Marin Water District

For questions about this tool or for additional information, contact:

Anona Dutton, P.G., C.Hg.
adutton@ekiconsult.com
(650) 292-9100



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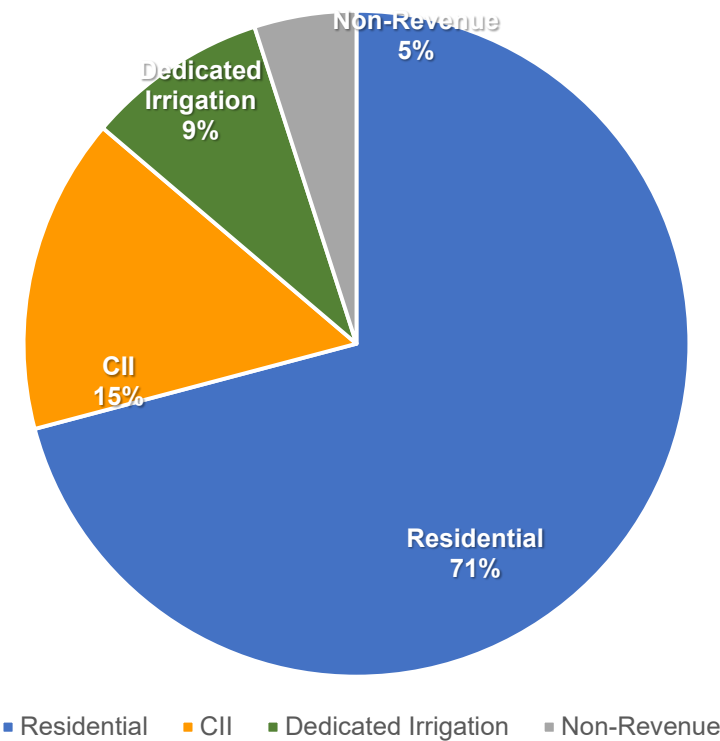
2 - Input Baseline Year (2019) Water Use North Marin Water District

Input Baseline Year (2019) Production and Water Use							
Units: <input type="text" value="(af)"/>							
Select the units to input monthly production and use data. Enter the total monthly potable water production for the Baseline Year. Next, enter monthly water use data by sector for the Baseline Year. If you bill on a bi-monthly basis, divide your billing data between the months that the billing cycle includes. If your single-family and multi-family accounts are tracked separately, enter the combined water use for both sectors in the Residential Water Use column. If your commercial, industrial, and institutional (CII) accounts are tracked separately, enter the combined water use for each sector in the CII Water Use column. Your non-revenue water use is calculated by subtracting your monthly residential, CII, and dedicated irrigation water uses from your monthly production. Your monthly residential gallons per capita per day (R-GPCD) is calculated by dividing your monthly residential water use by your population entered in Worksheet 1 - Home.							
Date	Total Production (af)	Residential Water Use (af)	CII Water Use (af)	Dedicated Irrigation Water Use (af)	Non-Revenue Water Use (af)	Total R-GPCD	Comments
July	1,084	686	186	157	55	117	NRW is assumed to be 4%.
August	762	567	101	60	34	97	Water use is reported on a fiscal-year basis.
September	1,213	789	171	189	64	139	
October	789	591	100	59	40	101	
November	780	538	99	100	42	95	
December	551	423	74	29	25	72	
January	535	403	73	31	27	69	
February	348	274	54	4	16	52	
March	431	326	69	14	21	56	
April	298	232	50	3	13	41	
May	561	354	153	27	28	60	
June	565	429	83	27	27	76	

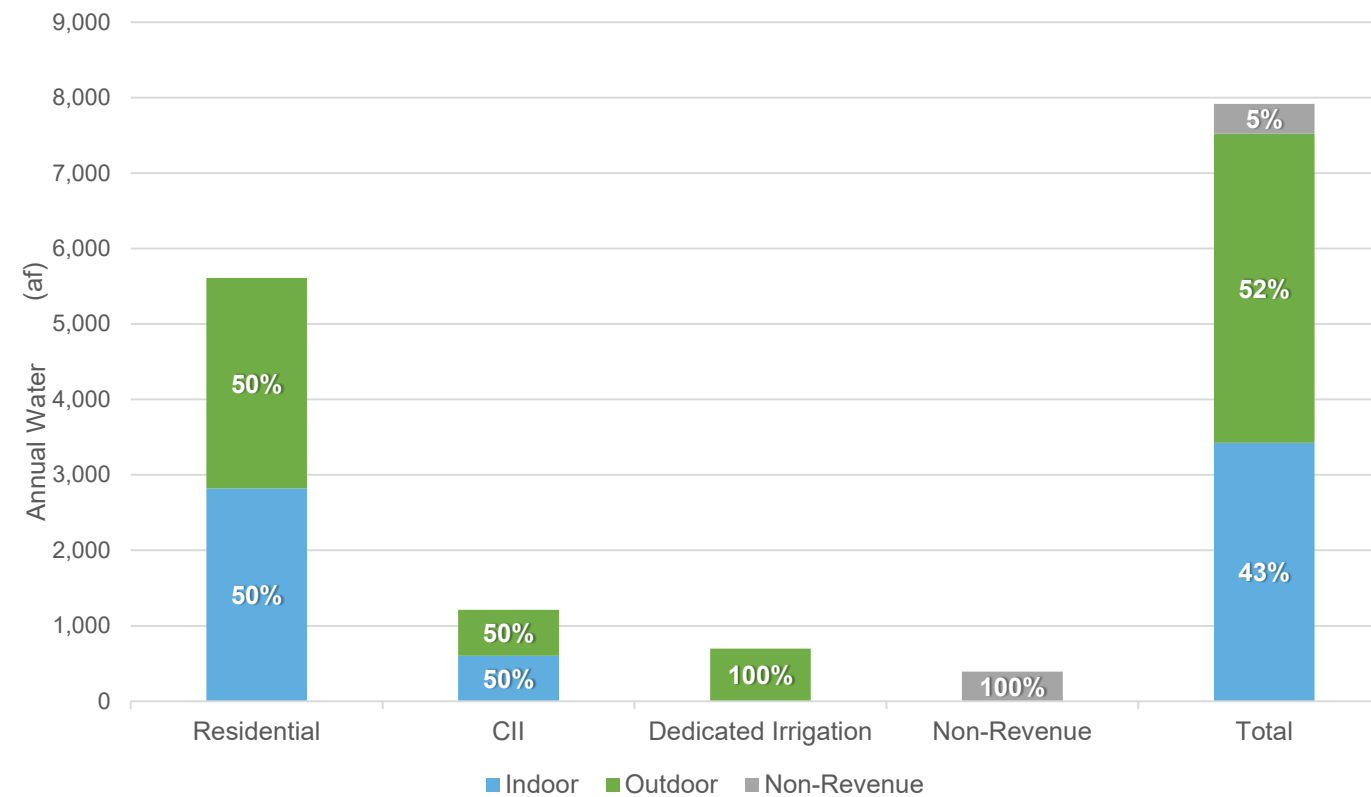
3 - Baseline Year (2019) Water Use Profile North Marin Water District

Baseline Year (2019) Annual Water Use Summary						
Units: <input type="text" value="(af)"/>						
<i>A summary of your Baseline Year water use by sector and major end use category is shown below. Select the units in which your production and use data are displayed.</i>						
Water Use	Total Production (af)	Water Use (af)				Comments
		Residential	CII	Dedicated Irrigation	Non-Revenue	
Total	7,916	5,611	1,214	699	392	
Total Indoor	3,426	2,821	605	--	--	
Total Outdoor	4,097	2,789	609	699	--	
Total Non-Revenue	392	--	--	--	392	
Total Indoor %	43%	50%	50%	0%	--	
Total Outdoor %	52%	50%	50%	100%	--	
Total Non-Revenue %	5%	--	--	--	100%	

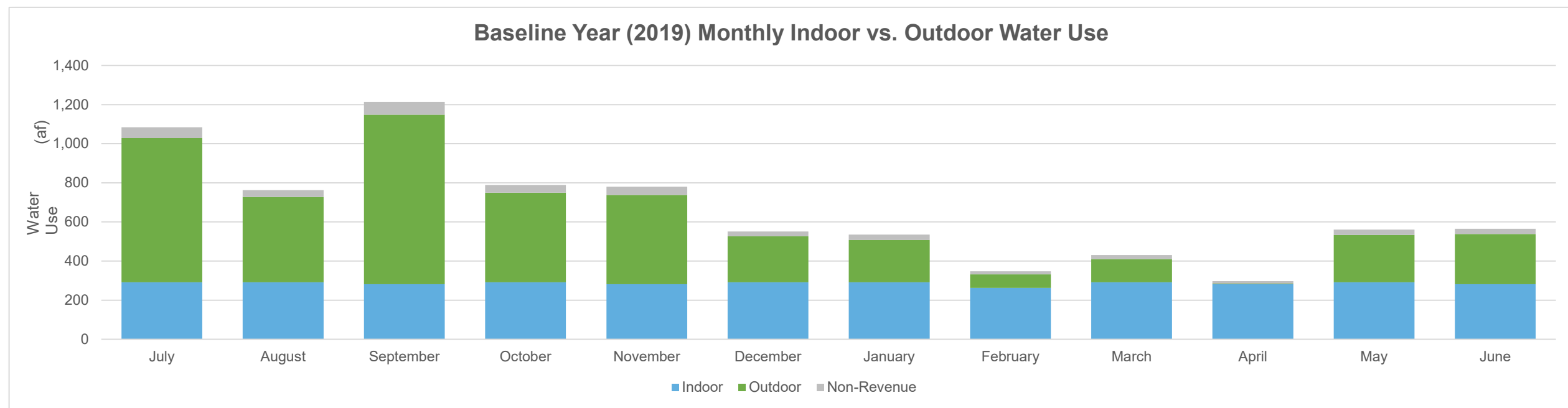
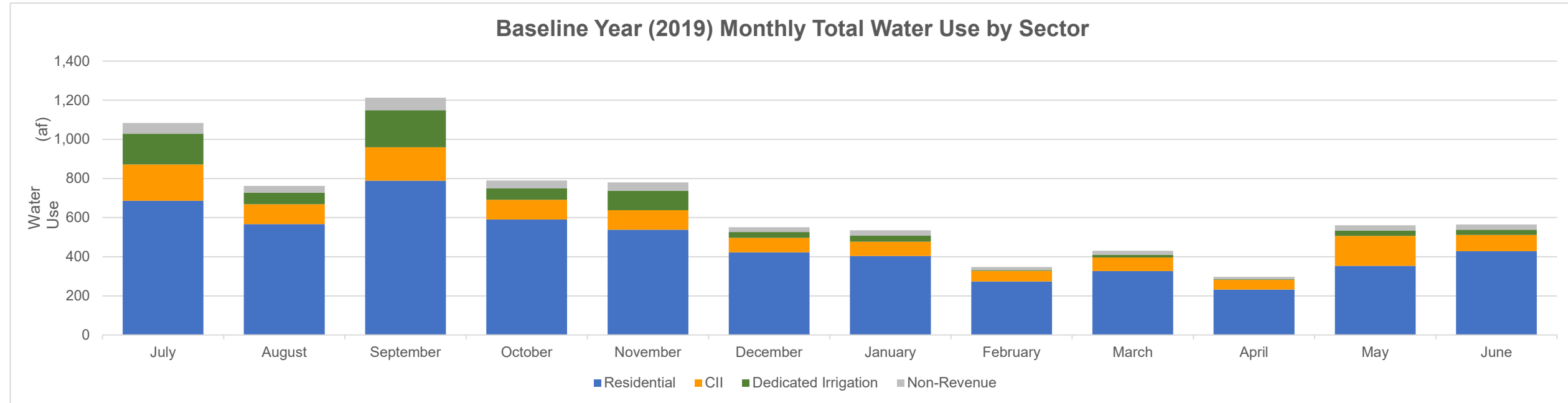
Baseline Year (2019) Percent Annual Water Use by Sector



Baseline Year (2019) Annual Water Use by Sector and End Use

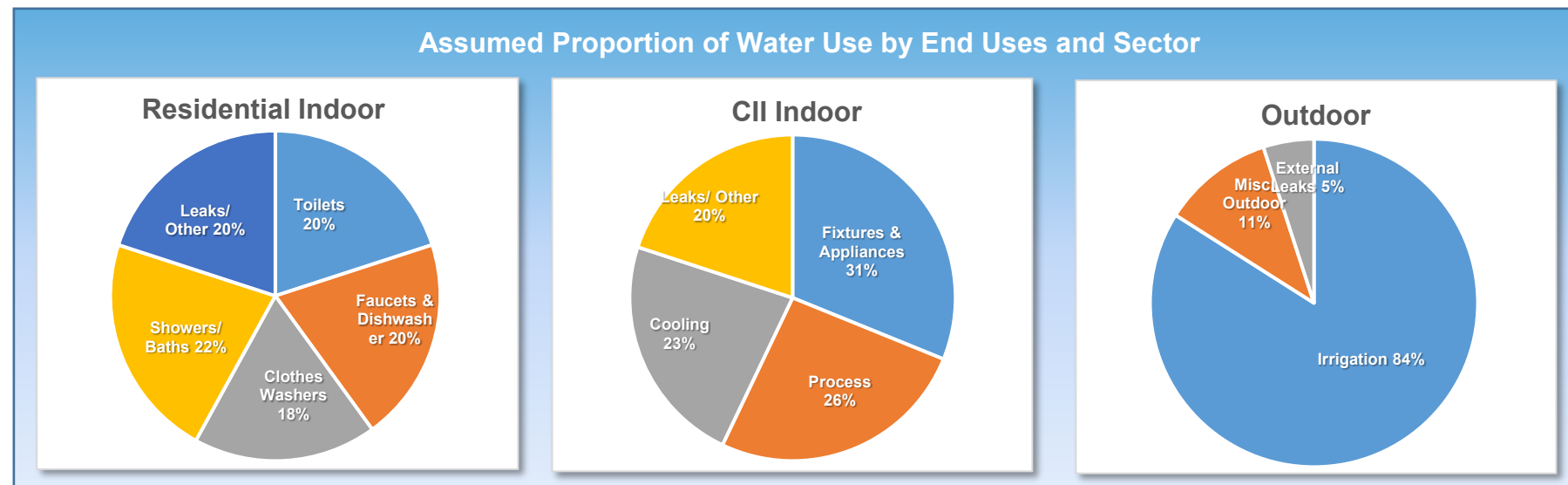


3 - Baseline Year (2019) Water Use Profile North Marin Water District



4 - Drought Response Actions - Stage 4 North Marin Water District

Maximum Savings Potential		
<i>Use the default values or enter your own criteria for the maximum savings potential. Estimated water savings within each sector will not exceed the maximum savings criteria.</i>		
Minimum Residential Indoor GPCD	25	R-GPCD
Maximum Residential Outdoor Savings	75%	of Baseline Residential Outdoor Water Use
Maximum CII Indoor Savings	50%	of Baseline CII Indoor Water Use
Maximum CII Outdoor Savings	75%	of Baseline CII Outdoor Water Use
Maximum Dedicated Irrigation Account Savings	75%	of Baseline Dedicated Irrigation Water Use
Maximum Non-Revenue Water Savings	50%	of Baseline Non-Revenue Water Use
Resulting Total Maximum Annual Savings Potential	59%	of Total Baseline Production



4 - Drought Response Actions - Stage 4 North Marin Water District

Drought Response Actions						
<p><i>Select the Drought Response Actions you would like to include in your estimated savings calculations. For each selected action, use the default end use savings estimates and implementation rates or input your own values. The "End Use Savings" estimates the percent water use reduction that could occur at a particular end use as a result of a specific action. The "Implementation Rate" refers to the estimated percentage of accounts that will implement a specific action. The water savings potential at each end use is capped based on the assumed distribution of end use water demands shown in the pie charts above. A dash (-) indicates that professional judgement was used to establish the default value, or that savings are expected to be accounted for as part of a Public Information Program; additional basis for the default values are included in the User Manual.</i></p>						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Possible Mandatory Prohibitions	All Outdoor	<input checked="" type="checkbox"/>	14%	75%	--	--
Prohibit Irrigation with Potable Water Outside of Newly Constructed Homes and Buildings that is not Delivered by Drip or Microspray Systems	Irrigation	<input type="checkbox"/>			--	--
Require Shut-Off Nozzles on Hoses for Vehicle Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%	See Appendix D of the DRP	--
Prohibit Use of Potable Water to Wash Sidewalks and Driveways	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit the Use of Potable Water for Street Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit Irrigation with Potable Water in a Manner that causes Runoff	Irrigation	<input checked="" type="checkbox"/>	3%	50%	DeOreo et al., 2011	--
Prohibit Irrigation with Potable Water within 48 Hours following Measurable Rainfall	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Irrigation of Ornamental Turf with Potable Water on Street Medians	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Provide Linen Service Opt Out Options	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Prohibit Serving Drinking Water other than upon Request in Eating or Drinking Establishments	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--

4 - Drought Response Actions - Stage 4 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Agency Actions						
Media Campaign, Newspaper Articles, Website	All	<input checked="" type="checkbox"/>	1.5%	80%	EBMUD, 2011	--
Promote Water Conservation / Rebate Programs	All	<input checked="" type="checkbox"/>		50%	--	--
Water Efficiency Workshops, Public Events	All	<input checked="" type="checkbox"/>	1.5%	80%	EBMUD, 2011	--
Water Bill Inserts	All	<input checked="" type="checkbox"/>	1.5%	100%	EBMUD, 2011	--
Promote / Expand Use of Recycled Water	Irrigation	<input checked="" type="checkbox"/>	100%		--	--
Home or Mobile Water Use Reports	All	<input type="checkbox"/>	5%	10%	WaterSmart Software, 2015	--
Decrease Frequency and Length of Line Flushing	Non Revenue Water	<input type="checkbox"/>	25%	50%	See Appendix D of the DRP	Reduced flushing by 50%.
Audit and Reduce System Water Loss	Non Revenue Water	<input type="checkbox"/>	45%	50%	DWR, 2015	Target 50% of leakage.
Implement Drought Rate Structure / Water Budgets	All	<input type="checkbox"/>	5%	100%	CUWCC, 2015	--
Establish Retrofit on Resale Ordinance	All Residential Indoor	<input type="checkbox"/>	21%	6%	SFPUC, 2004	First Tuesday, 2015
Require Net Zero Demand Increase on New Connections	All	<input type="checkbox"/>			--	--
Moratorium on New Connections	All	<input type="checkbox"/>			--	--
Move to Monthly Metering / Billing	All	<input type="checkbox"/>	5%	10%	See Appendix D of the DRP	--
Increase Water Waste Patrols / Enforcement	All	<input checked="" type="checkbox"/>			--	--
Establish Drought Hotline	All	<input type="checkbox"/>			--	--
Reduce Distribution System Pressures	Non Revenue Water	<input type="checkbox"/>	4.5%	100%	CUWCC, 2010; DWR, 2015	--
► Dedicated Irrigation						
Conduct Irrigation Account Surveys	Irrigation	<input type="checkbox"/>	30%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	79%	60%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Require Repair of all Leaks within 24 hours	External Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Customer Water Budgets						
Establish Water Budget - 25% Reduction	Irrigation	<input type="checkbox"/>	25%	50%	--	--
Establish Water Budget - 50% Reduction	Irrigation	<input type="checkbox"/>	50%	50%	--	--
Establish Water Budget - 75% Reduction	Irrigation	<input type="checkbox"/>	75%	50%	--	--

4 - Drought Response Actions - Stage 4 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Residential						
Conduct Water Use Surveys Targeting High Water Users	All Residential Uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	79%	60%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	35%	--	--
Require Pool Covers	Misc. Outdoor	<input checked="" type="checkbox"/>	28%	25%	Maddaus & Mayer, 2001	--
Prohibit Filling of Pools	Misc. Outdoor	<input checked="" type="checkbox"/>	55%	25%	DeOreo et al., 2011	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All Residential Uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All Residential Uses	<input type="checkbox"/>	20%	50%	--	--
► CII						
Conduct CII Surveys Targeting High Water Users	All CII uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	79%	60%		
Prohibit Use of Potable Water for Construction and Dust Control	Misc. Outdoor	<input checked="" type="checkbox"/>		100%	--	--
Prohibit Single-Pass Cooling Systems	Cooling	<input checked="" type="checkbox"/>	80%	1%	Vickers, 2001	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Water-Efficient Pre-Rinse Spray Valves	Fixtures & Appliances	<input type="checkbox"/>	0.8%	50%	EPA, 2015; Pacific Institute, 2003	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All CII uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All CII uses	<input type="checkbox"/>	20%	50%	--	--
Establish Water Budget - 30% Reduction	All CII uses	<input type="checkbox"/>	30%	50%	--	--

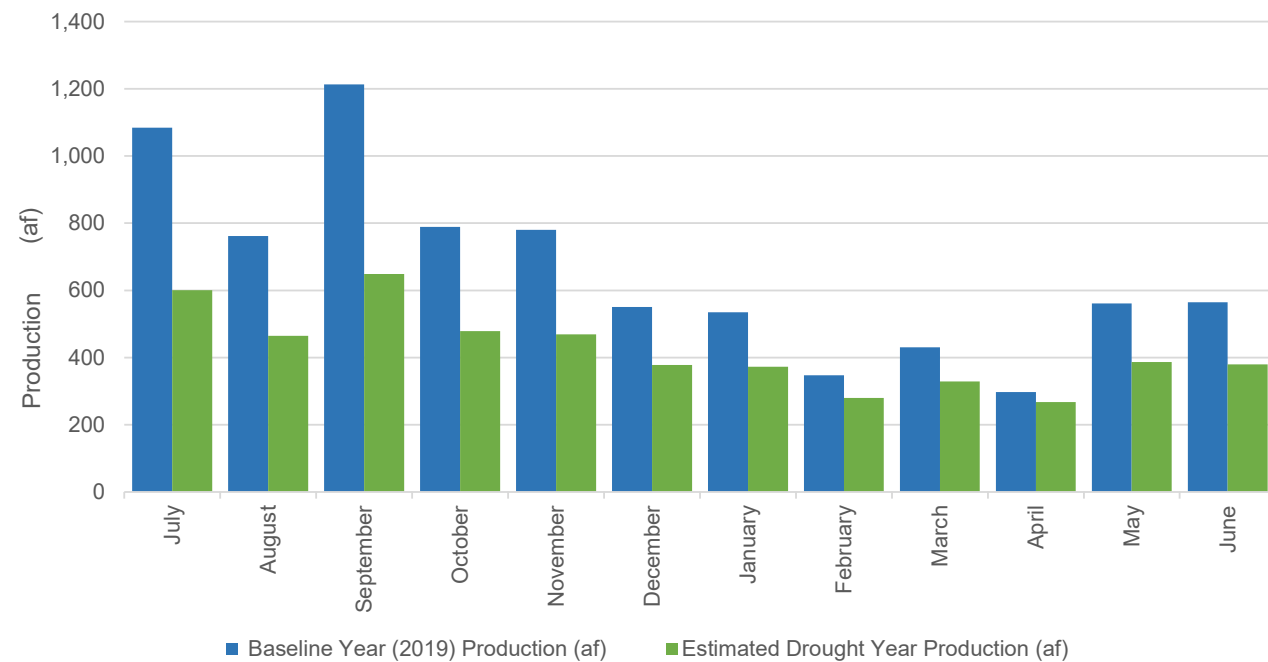
4 - Drought Response Actions - Stage 4 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Residential Customer Actions to Encourage						
Install Bathroom Faucet Aerators	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Install a Water-Efficient Showerhead	Showers/Baths	<input type="checkbox"/>			--	--
Turn Off Water when Brushing Teeth, Shaving, Washing Dishes, or Cooking	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Fill the Bathtub Halfway	Showers/Baths	<input type="checkbox"/>			--	--
Wash Only Full Loads of Clothes	Clothes Washers	<input type="checkbox"/>			--	--
Install a High-Efficiency Toilet	Toilets	<input type="checkbox"/>			--	--
Take Shorter Showers	Showers/Baths	<input type="checkbox"/>			--	--
Run Dishwasher Only When Full	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Reduce Outdoor Irrigation	Irrigation	<input type="checkbox"/>			--	--
Install Drip-Irrigation	Irrigation	<input type="checkbox"/>			--	--
Use Mulch	Irrigation	<input type="checkbox"/>			--	--
Plant Drought Resistant Trees and Plants	Irrigation	<input type="checkbox"/>			--	--
Use a Broom to Clean Outdoor Areas	Misc. Outdoor	<input type="checkbox"/>			--	--
Flush Less Frequently	Toilets	<input type="checkbox"/>			--	--
Re-Use Shower or Bath Water for Irrigation	Irrigation	<input type="checkbox"/>			--	--
Wash Car at Facility that Recycles the Water	Misc. Outdoor	<input type="checkbox"/>			--	--

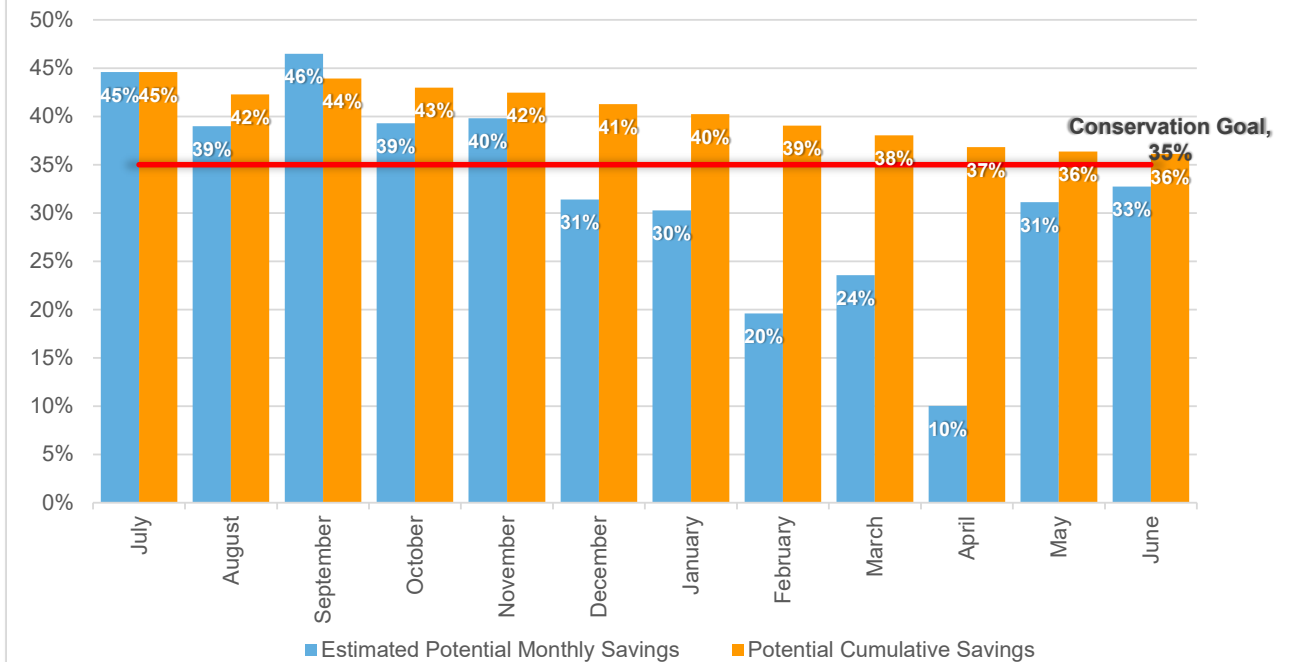
5 - Estimated Water Savings - Stage 4 North Marin Water District

Estimated Monthly Water Use and Savings Summary						
Units: <input type="text" value="(af)"/>						
<i>This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.</i>						
Month	Baseline Year (2019) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
July	1,084	601	45%	45%	35%	
August	762	465	39%	42%	35%	
September	1,213	649	46%	44%	35%	
October	789	479	39%	43%	35%	
November	780	469	40%	42%	35%	
December	551	378	31%	41%	35%	
January	535	373	30%	40%	35%	
February	348	280	20%	39%	35%	
March	431	329	24%	38%	35%	
April	298	268	10%	37%	35%	
May	561	387	31%	36%	35%	
June	565	380	33%	36%	35%	

Baseline Year(s) Production vs. Estimated Production



Estimated Potential Monthly Water Savings



Home | **Input Baseline Year Water Use** | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

1 - Home North Marin Water District

Enter Agency Information	
Agency Name	North Marin Water District
Total Population Served	61,658
Conservation Goal (%)	45%
Drought Stage	Stage 5
Number of Residential Accounts	18,699
Number of Commercial, Industrial, and Institutional (CII) Accounts	909
Number of Dedicated Irrigation Accounts	356
Baseline Year(s)	2019
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	100%
Comments	

FY

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.

Home

Input Baseline
Year Water Use

Baseline Year
Water Use
Profile

Drought
Response
Actions

Estimated
Water Savings

Drought
Response
Tracking

1 - Home

North Marin Water District

6 - DROUGHT RESPONSE TRACKING

Track production and water savings against the conservation target.

1 - Home

North Marin Water District

For questions about this tool or for additional information, contact:

Anona Dutton, P.G., C.Hg.

adutton@ekiconsult.com

(650) 292-9100



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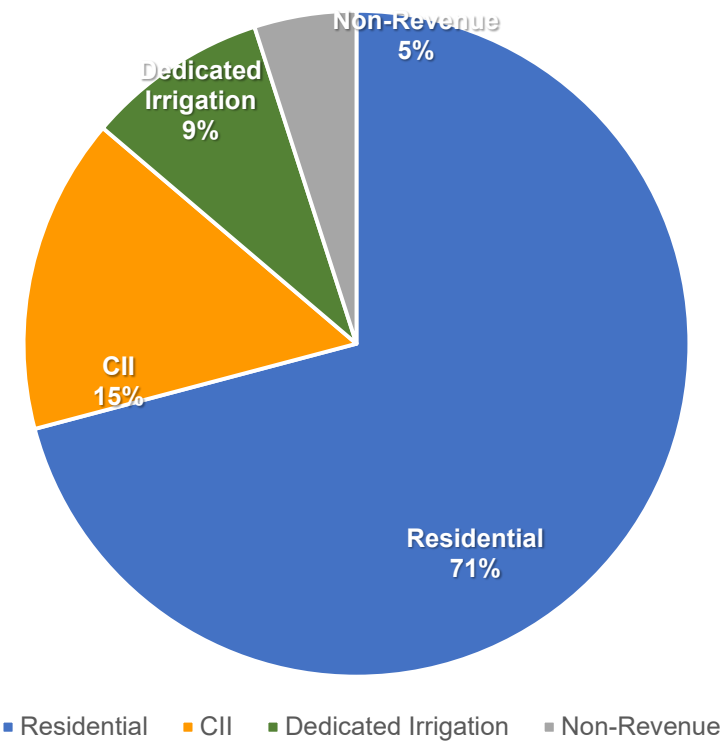
2 - Input Baseline Year (2019) Water Use North Marin Water District

Input Baseline Year (2019) Production and Water Use							
Units: <input type="text" value="(af)"/>							
Select the units to input monthly production and use data. Enter the total monthly potable water production for the Baseline Year. Next, enter monthly water use data by sector for the Baseline Year. If you bill on a bi-monthly basis, divide your billing data between the months that the billing cycle includes. If your single-family and multi-family accounts are tracked separately, enter the combined water use for both sectors in the Residential Water Use column. If your commercial, industrial, and institutional (CII) accounts are tracked separately, enter the combined water use for each sector in the CII Water Use column. Your non-revenue water use is calculated by subtracting your monthly residential, CII, and dedicated irrigation water uses from your monthly production. Your monthly residential gallons per capita per day (R-GPCD) is calculated by dividing your monthly residential water use by your population entered in Worksheet 1 - Home.							
Date	Total Production (af)	Residential Water Use (af)	CII Water Use (af)	Dedicated Irrigation Water Use (af)	Non-Revenue Water Use (af)	Total R-GPCD	Comments
July	1,084	686	186	157	55	117	NRW is assumed to be 4%.
August	762	567	101	60	34	97	Water use is reported on a fiscal-year basis.
September	1,213	789	171	189	64	139	
October	789	591	100	59	40	101	
November	780	538	99	100	42	95	
December	551	423	74	29	25	72	
January	535	403	73	31	27	69	
February	348	274	54	4	16	52	
March	431	326	69	14	21	56	
April	298	232	50	3	13	41	
May	561	354	153	27	28	60	
June	565	429	83	27	27	76	

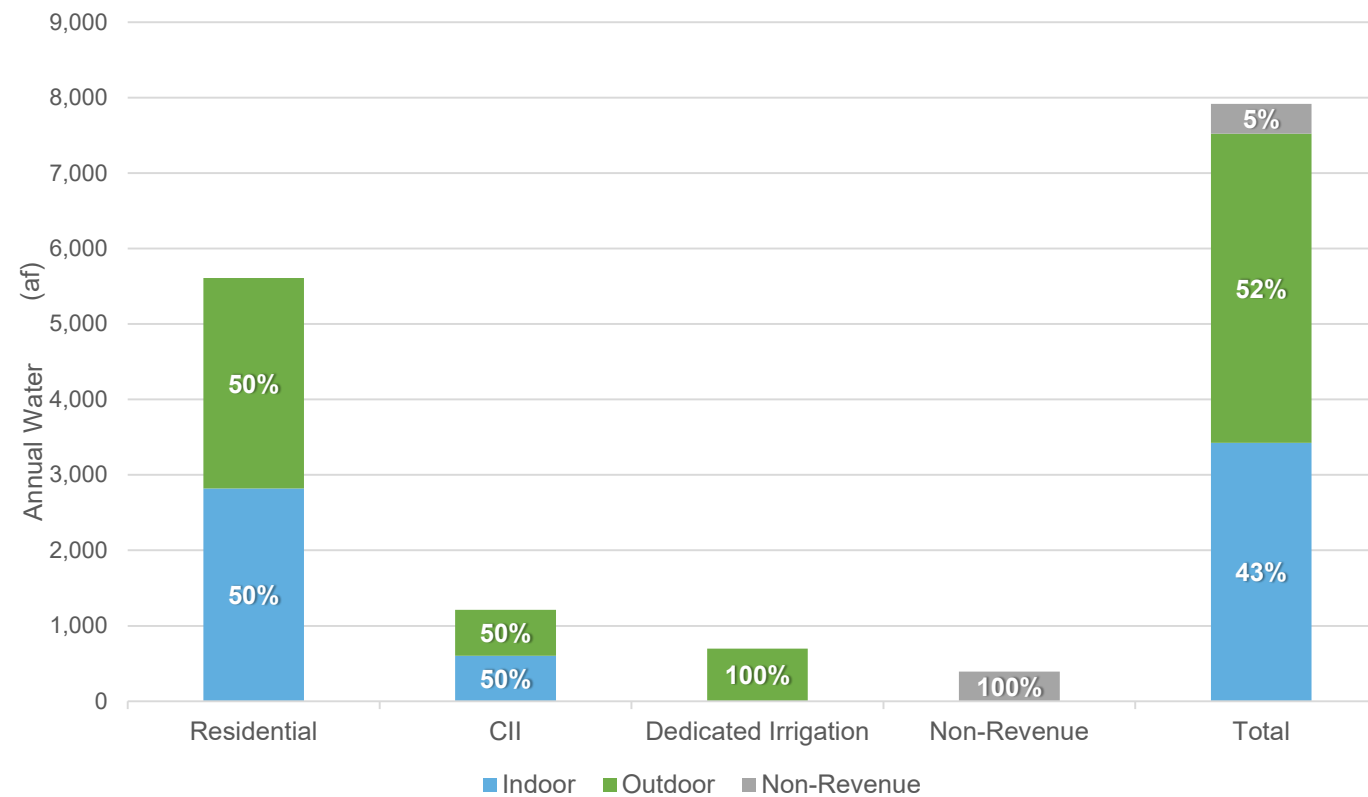
3 - Baseline Year (2019) Water Use Profile North Marin Water District

Baseline Year (2019) Annual Water Use Summary						
Units: <input type="text" value="(af)"/>						
<i>A summary of your Baseline Year water use by sector and major end use category is shown below. Select the units in which your production and use data are displayed.</i>						
Water Use	Total Production (af)	Water Use (af)				Comments
		Residential	CII	Dedicated Irrigation	Non-Revenue	
Total	7,916	5,611	1,214	699	392	
Total Indoor	3,426	2,821	605	--	--	
Total Outdoor	4,097	2,789	609	699	--	
Total Non-Revenue	392	--	--	--	392	
Total Indoor %	43%	50%	50%	0%	--	
Total Outdoor %	52%	50%	50%	100%	--	
Total Non-Revenue %	5%	--	--	--	100%	

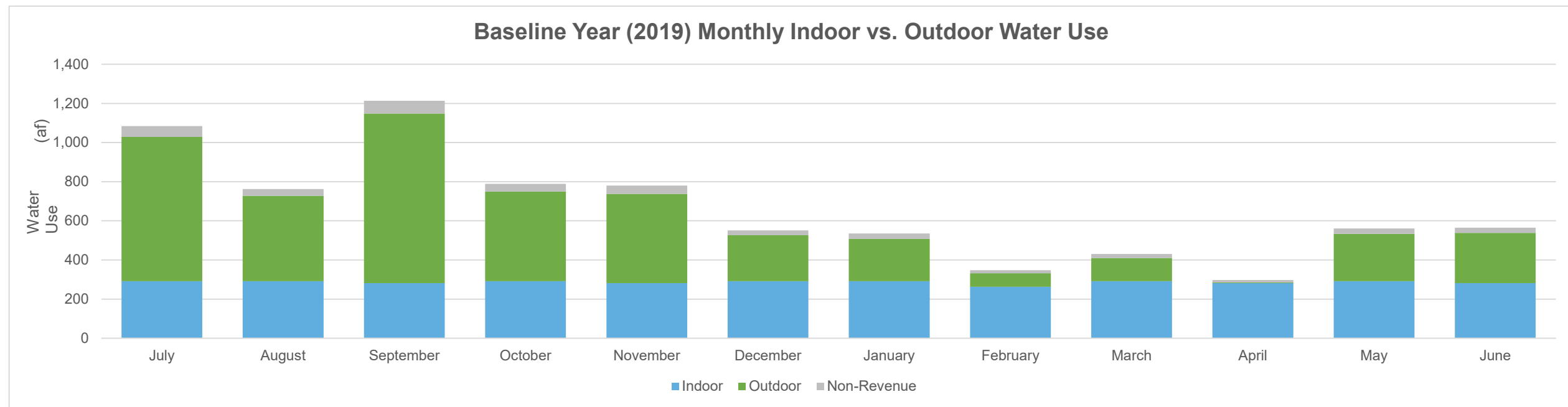
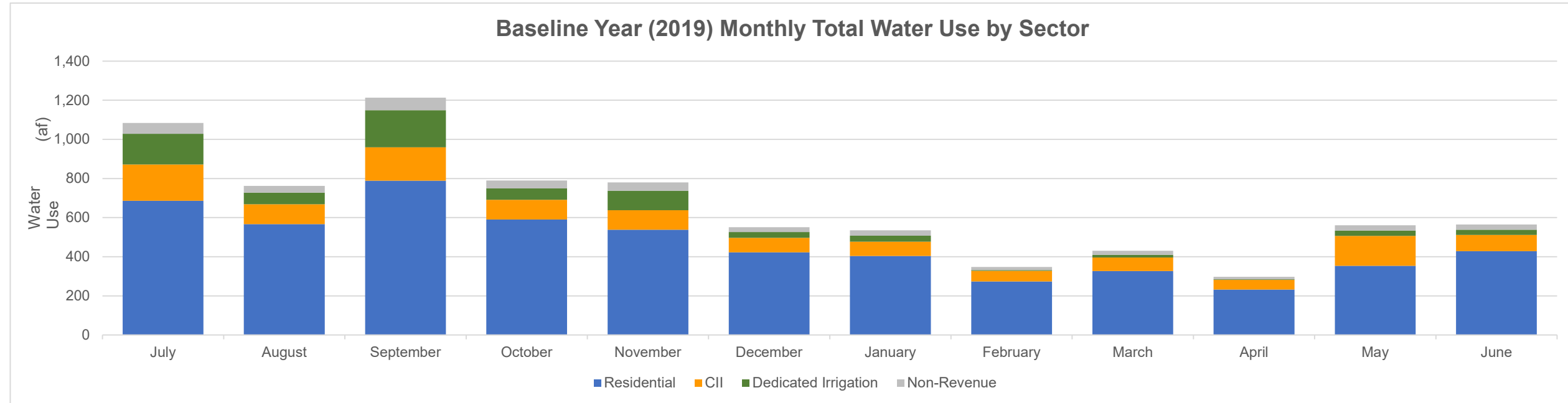
Baseline Year (2019) Percent Annual Water Use by Sector



Baseline Year (2019) Annual Water Use by Sector and End Use

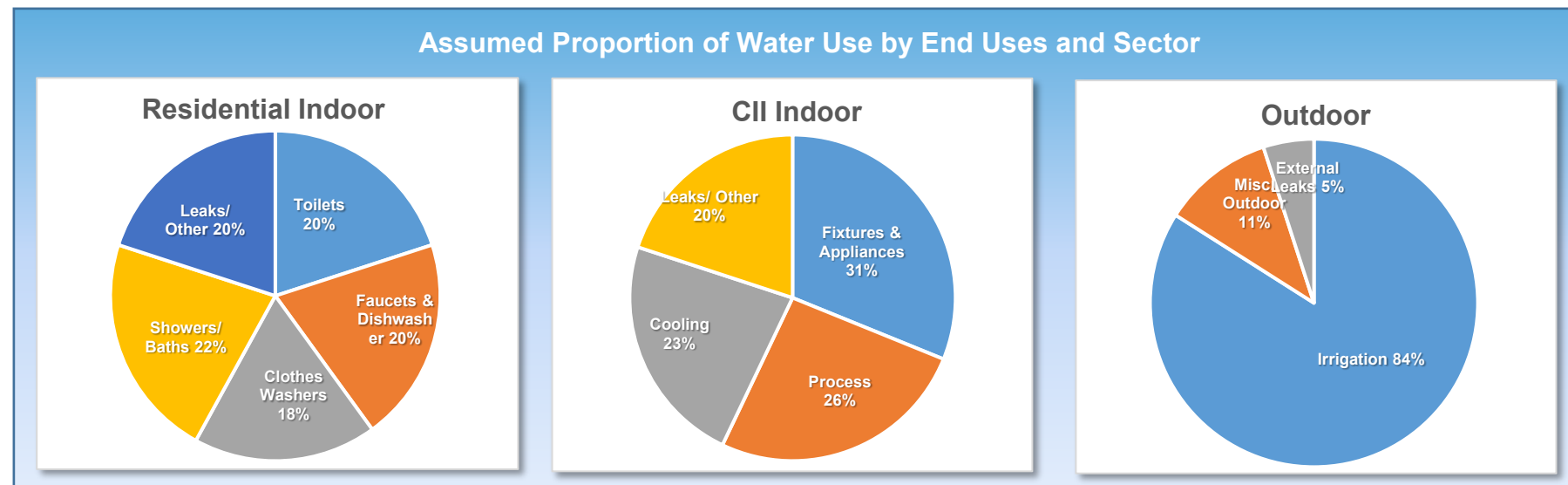


3 - Baseline Year (2019) Water Use Profile North Marin Water District



4 - Drought Response Actions - Stage 5 North Marin Water District

Maximum Savings Potential		
<i>Use the default values or enter your own criteria for the maximum savings potential. Estimated water savings within each sector will not exceed the maximum savings criteria.</i>		
Minimum Residential Indoor GPCD	25	R-GPCD
Maximum Residential Outdoor Savings	100%	of Baseline Residential Outdoor Water Use
Maximum CII Indoor Savings	30%	of Baseline CII Indoor Water Use
Maximum CII Outdoor Savings	100%	of Baseline CII Outdoor Water Use
Maximum Dedicated Irrigation Account Savings	100%	of Baseline Dedicated Irrigation Water Use
Maximum Non-Revenue Water Savings	50%	of Baseline Non-Revenue Water Use
Resulting Total Maximum Annual Savings Potential	70%	of Total Baseline Production



4 - Drought Response Actions - Stage 5 North Marin Water District

Drought Response Actions						
<p><i>Select the Drought Response Actions you would like to include in your estimated savings calculations. For each selected action, use the default end use savings estimates and implementation rates or input your own values. The "End Use Savings" estimates the percent water use reduction that could occur at a particular end use as a result of a specific action. The "Implementation Rate" refers to the estimated percentage of accounts that will implement a specific action. The water savings potential at each end use is capped based on the assumed distribution of end use water demands shown in the pie charts above. A dash (-) indicates that professional judgement was used to establish the default value, or that savings are expected to be accounted for as part of a Public Information Program; additional basis for the default values are included in the User Manual.</i></p>						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Possible Mandatory Prohibitions	All Outdoor	<input checked="" type="checkbox"/>	14%	90%	--	--
Prohibit Irrigation with Potable Water Outside of Newly Constructed Homes and Buildings that is not Delivered by Drip or Microspray Systems	Irrigation	<input type="checkbox"/>			--	--
Require Shut-Off Nozzles on Hoses for Vehicle Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%	See Appendix D of the DRP	--
Prohibit Use of Potable Water to Wash Sidewalks and Driveways	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit the Use of Potable Water for Street Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit Irrigation with Potable Water in a Manner that causes Runoff	Irrigation	<input checked="" type="checkbox"/>	3%	50%	DeOreo et al., 2011	--
Prohibit Irrigation with Potable Water within 48 Hours following Measurable Rainfall	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Irrigation of Ornamental Turf with Potable Water on Street Medians	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Provide Linen Service Opt Out Options	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Prohibit Serving Drinking Water other than upon Request in Eating or Drinking Establishments	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--

4 - Drought Response Actions - Stage 5 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Agency Actions						
Media Campaign, Newspaper Articles, Website	All	<input checked="" type="checkbox"/>	1.5%	80%	EBMUD, 2011	--
Promote Water Conservation / Rebate Programs	All	<input checked="" type="checkbox"/>		50%	--	--
Water Efficiency Workshops, Public Events	All	<input checked="" type="checkbox"/>	1.5%	80%	EBMUD, 2011	--
Water Bill Inserts	All	<input checked="" type="checkbox"/>	1.5%	100%	EBMUD, 2011	--
Promote / Expand Use of Recycled Water	Irrigation	<input checked="" type="checkbox"/>	100%		--	--
Home or Mobile Water Use Reports	All	<input type="checkbox"/>	5%	10%	WaterSmart Software, 2015	--
Decrease Frequency and Length of Line Flushing	Non Revenue Water	<input type="checkbox"/>	25%	50%	See Appendix D of the DRP	Reduced flushing by 50%.
Audit and Reduce System Water Loss	Non Revenue Water	<input type="checkbox"/>	45%	50%	DWR, 2015	Target 50% of leakage.
Implement Drought Rate Structure / Water Budgets	All	<input type="checkbox"/>	5%	100%	CUWCC, 2015	--
Establish Retrofit on Resale Ordinance	All Residential Indoor	<input type="checkbox"/>	21%	6%	SFPUC, 2004	First Tuesday, 2015
Require Net Zero Demand Increase on New Connections	All	<input type="checkbox"/>			--	--
Moratorium on New Connections	All	<input type="checkbox"/>			--	--
Move to Monthly Metering / Billing	All	<input type="checkbox"/>	5%	10%	See Appendix D of the DRP	--
Increase Water Waste Patrols / Enforcement	All	<input checked="" type="checkbox"/>			--	--
Establish Drought Hotline	All	<input type="checkbox"/>			--	--
Reduce Distribution System Pressures	Non Revenue Water	<input type="checkbox"/>	4.5%	100%	CUWCC, 2010; DWR, 2015	--
► Dedicated Irrigation						
Conduct Irrigation Account Surveys	Irrigation	<input type="checkbox"/>	30%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	90%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input checked="" type="checkbox"/>	100%	70%		
Require Repair of all Leaks within 24 hours	External Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Customer Water Budgets						
Establish Water Budget - 25% Reduction	Irrigation	<input type="checkbox"/>	25%	50%	--	--
Establish Water Budget - 50% Reduction	Irrigation	<input type="checkbox"/>	50%	50%	--	--
Establish Water Budget - 75% Reduction	Irrigation	<input type="checkbox"/>	75%	50%	--	--

4 - Drought Response Actions - Stage 5 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Residential						
Conduct Water Use Surveys Targeting High Water Users	All Residential Uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	79%	90%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input checked="" type="checkbox"/>	100%	70%		
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	35%	--	--
Require Pool Covers	Misc. Outdoor	<input checked="" type="checkbox"/>	28%	25%	Maddaus & Mayer, 2001	--
Prohibit Filling of Pools	Misc. Outdoor	<input checked="" type="checkbox"/>	55%	25%	DeOreo et al., 2011	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All Residential Uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All Residential Uses	<input type="checkbox"/>	20%	50%	--	--
► CII						
Conduct CII Surveys Targeting High Water Users	All CII uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 7PM and 9AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 0 Day/Week, 10 Minutes/Day, Between 7PM and 9AM	Irrigation	<input checked="" type="checkbox"/>	100%	70%		
Prohibit Use of Potable Water for Construction and Dust Control	Misc. Outdoor	<input checked="" type="checkbox"/>		100%	--	--
Prohibit Single-Pass Cooling Systems	Cooling	<input checked="" type="checkbox"/>	80%	1%	Vickers, 2001	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	10%	--	--
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Water-Efficient Pre-Rinse Spray Valves	Fixtures & Appliances	<input type="checkbox"/>	0.8%	50%	EPA, 2015; Pacific Institute, 2003	--
Customer Water Budgets						
Establish Water Budget - 10% Reduction	All CII uses	<input type="checkbox"/>	10%	50%	--	--
Establish Water Budget - 20% Reduction	All CII uses	<input type="checkbox"/>	20%	50%	--	--
Establish Water Budget - 30% Reduction	All CII uses	<input type="checkbox"/>	30%	50%	--	--

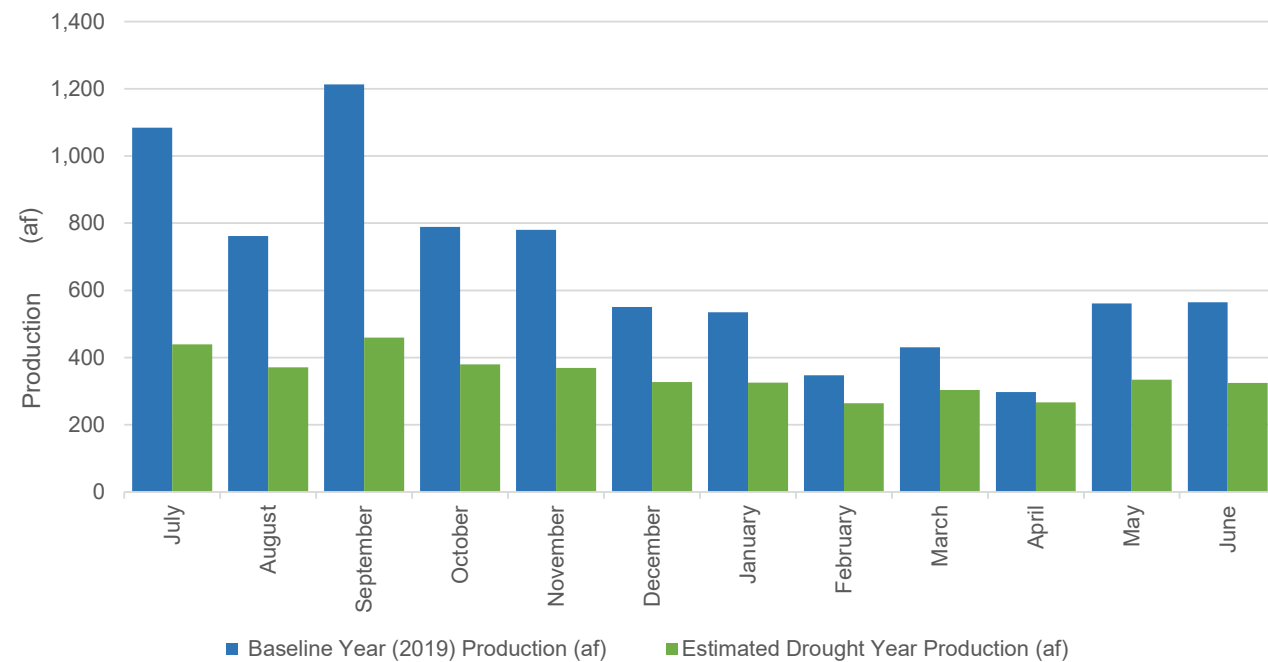
4 - Drought Response Actions - Stage 5 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Residential Customer Actions to Encourage						
Install Bathroom Faucet Aerators	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Install a Water-Efficient Showerhead	Showers/Baths	<input type="checkbox"/>			--	--
Turn Off Water when Brushing Teeth, Shaving, Washing Dishes, or Cooking	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Fill the Bathtub Halfway	Showers/Baths	<input type="checkbox"/>			--	--
Wash Only Full Loads of Clothes	Clothes Washers	<input type="checkbox"/>			--	--
Install a High-Efficiency Toilet	Toilets	<input type="checkbox"/>			--	--
Take Shorter Showers	Showers/Baths	<input type="checkbox"/>			--	--
Run Dishwasher Only When Full	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Reduce Outdoor Irrigation	Irrigation	<input type="checkbox"/>			--	--
Install Drip-Irrigation	Irrigation	<input type="checkbox"/>			--	--
Use Mulch	Irrigation	<input type="checkbox"/>			--	--
Plant Drought Resistant Trees and Plants	Irrigation	<input type="checkbox"/>			--	--
Use a Broom to Clean Outdoor Areas	Misc. Outdoor	<input type="checkbox"/>			--	--
Flush Less Frequently	Toilets	<input type="checkbox"/>			--	--
Re-Use Shower or Bath Water for Irrigation	Irrigation	<input type="checkbox"/>			--	--
Wash Car at Facility that Recycles the Water	Misc. Outdoor	<input type="checkbox"/>			--	--

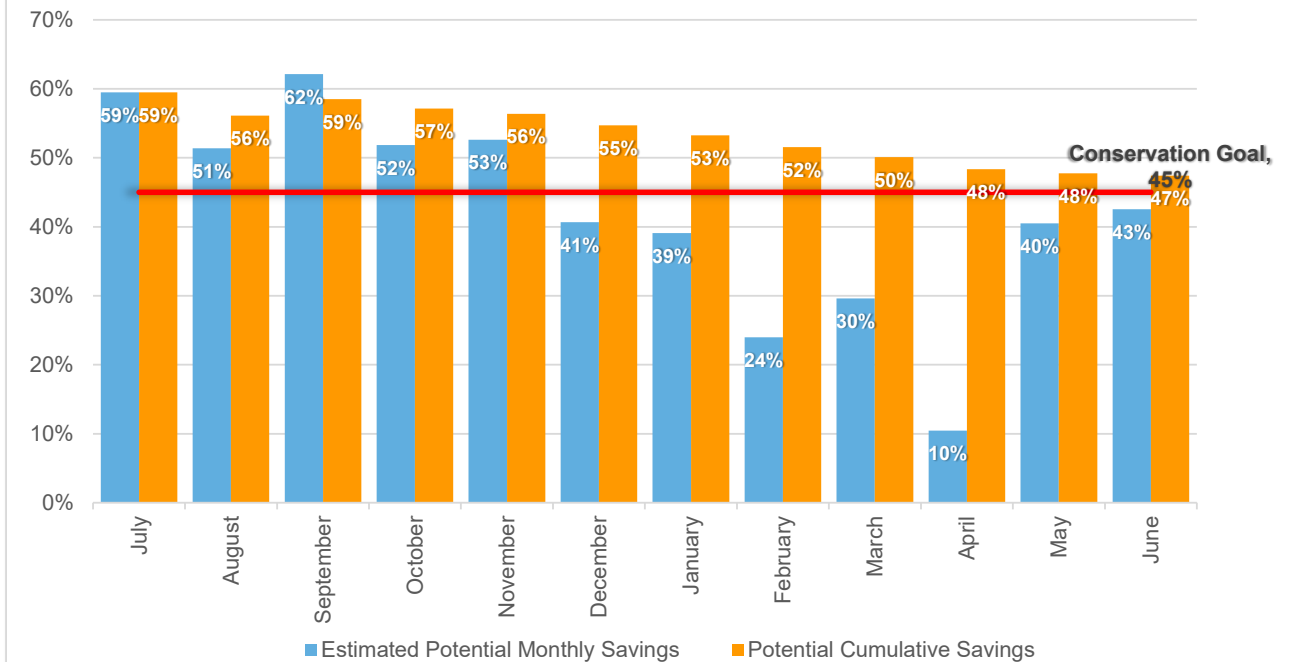
5 - Estimated Water Savings - Stage 5 North Marin Water District

Estimated Monthly Water Use and Savings Summary						
Units: <input type="text" value="(af)"/>						
<i>This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.</i>						
Month	Baseline Year (2019) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
July	1,084	439	59%	59%	45%	
August	762	371	51%	56%	45%	
September	1,213	459	62%	59%	45%	
October	789	380	52%	57%	45%	
November	780	369	53%	56%	45%	
December	551	327	41%	55%	45%	
January	535	326	39%	53%	45%	
February	348	264	24%	52%	45%	
March	431	303	30%	50%	45%	
April	298	267	10%	48%	45%	
May	561	334	40%	48%	45%	
June	565	324	43%	47%	45%	

Baseline Year(s) Production vs. Estimated Production



Estimated Potential Monthly Water Savings



- Home
- Input Baseline Year Water Use
- Baseline Year Water Use Profile
- Drought Response Actions
- Estimated Water Savings
- Drought Response Tracking

1 - Home
North Marin Water District

Enter Agency Information	
Agency Name	North Marin Water District
Total Population Served	61,658
Conservation Goal (%)	55%
Drought Stage	Stage 6
Number of Residential Accounts	18,699
Number of Commercial, Industrial, and Institutional (CII) Accounts	909
Number of Dedicated Irrigation Accounts	356
Baseline Year(s)	2019
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	100%
Comments	

FY

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.

Home

Input Baseline
Year Water Use

Baseline Year
Water Use
Profile

Drought
Response
Actions

Estimated
Water Savings

Drought
Response
Tracking

1 - Home

North Marin Water District

6 - DROUGHT RESPONSE TRACKING

Track production and water savings against the conservation target.

1 - Home**North Marin Water District**

For questions about this tool or for additional information, contact:

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adutton@ekiconsult.com
(650) 292-9100



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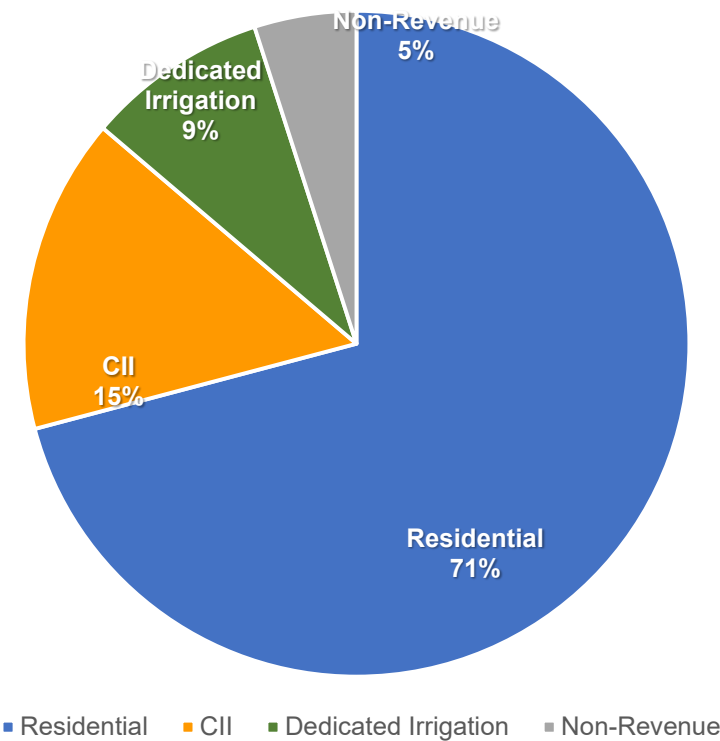
2 - Input Baseline Year (2019) Water Use North Marin Water District

Input Baseline Year (2019) Production and Water Use							
Units: <input type="text" value="(af)"/>							
Select the units to input monthly production and use data. Enter the total monthly potable water production for the Baseline Year. Next, enter monthly water use data by sector for the Baseline Year. If you bill on a bi-monthly basis, divide your billing data between the months that the billing cycle includes. If your single-family and multi-family accounts are tracked separately, enter the combined water use for both sectors in the Residential Water Use column. If your commercial, industrial, and institutional (CII) accounts are tracked separately, enter the combined water use for each sector in the CII Water Use column. Your non-revenue water use is calculated by subtracting your monthly residential, CII, and dedicated irrigation water uses from your monthly production. Your monthly residential gallons per capita per day (R-GPCD) is calculated by dividing your monthly residential water use by your population entered in Worksheet 1 - Home.							
Date	Total Production (af)	Residential Water Use (af)	CII Water Use (af)	Dedicated Irrigation Water Use (af)	Non-Revenue Water Use (af)	Total R-GPCD	Comments
July	1,084	686	186	157	55	117	NRW is assumed to be 4%.
August	762	567	101	60	34	97	Water use is reported on a fiscal-year basis.
September	1,213	789	171	189	64	139	
October	789	591	100	59	40	101	
November	780	538	99	100	42	95	
December	551	423	74	29	25	72	
January	535	403	73	31	27	69	
February	348	274	54	4	16	52	
March	431	326	69	14	21	56	
April	298	232	50	3	13	41	
May	561	354	153	27	28	60	
June	565	429	83	27	27	76	

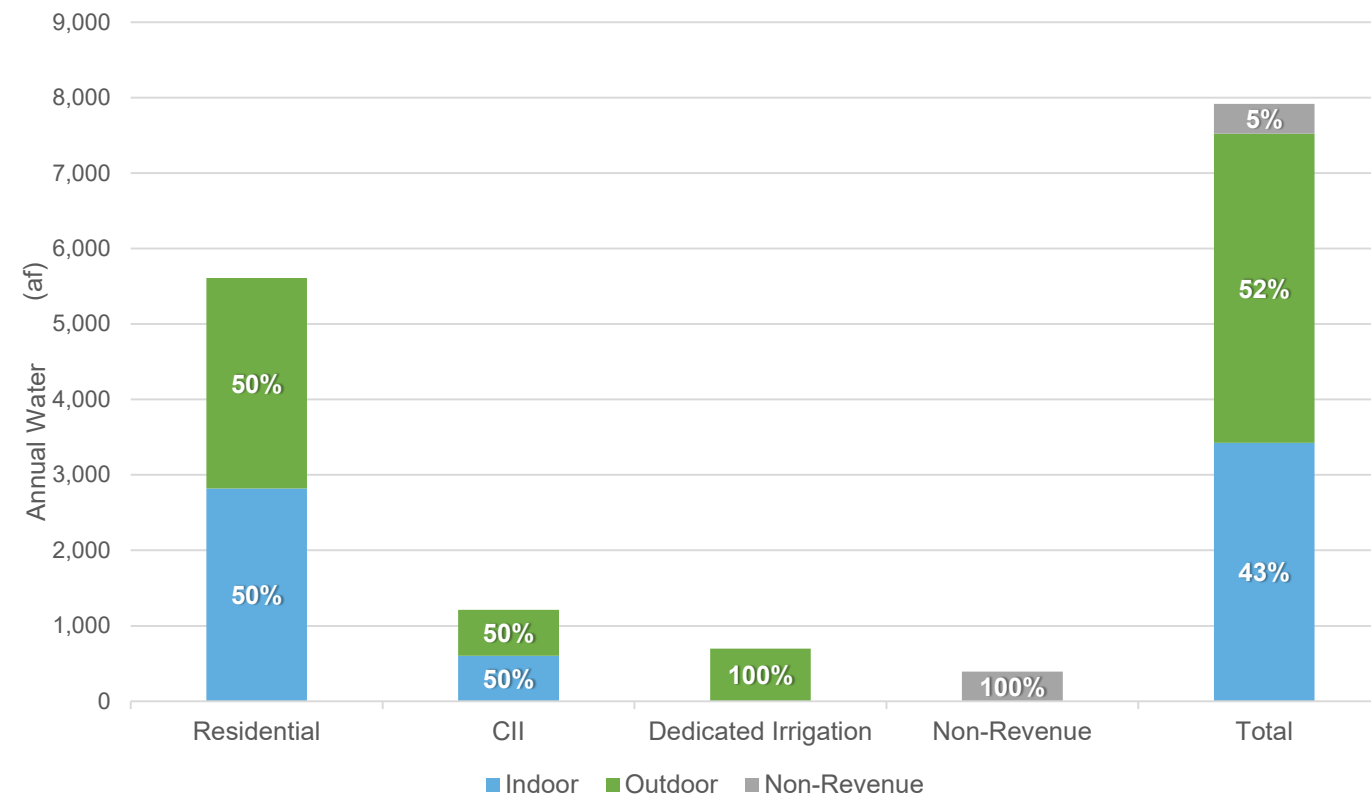
3 - Baseline Year (2019) Water Use Profile North Marin Water District

Baseline Year (2019) Annual Water Use Summary						
Units: <input type="text" value="(af)"/>						
<i>A summary of your Baseline Year water use by sector and major end use category is shown below. Select the units in which your production and use data are displayed.</i>						
Water Use	Total Production (af)	Water Use (af)				Comments
		Residential	CII	Dedicated Irrigation	Non-Revenue	
Total	7,916	5,611	1,214	699	392	
Total Indoor	3,426	2,821	605	--	--	
Total Outdoor	4,097	2,789	609	699	--	
Total Non-Revenue	392	--	--	--	392	
Total Indoor %	43%	50%	50%	0%	--	
Total Outdoor %	52%	50%	50%	100%	--	
Total Non-Revenue %	5%	--	--	--	100%	

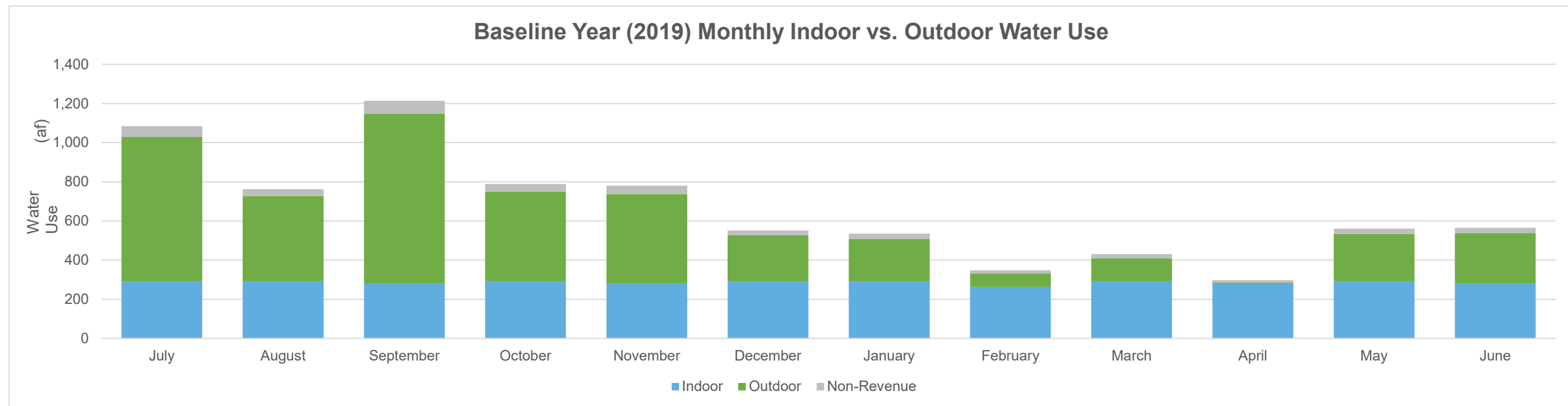
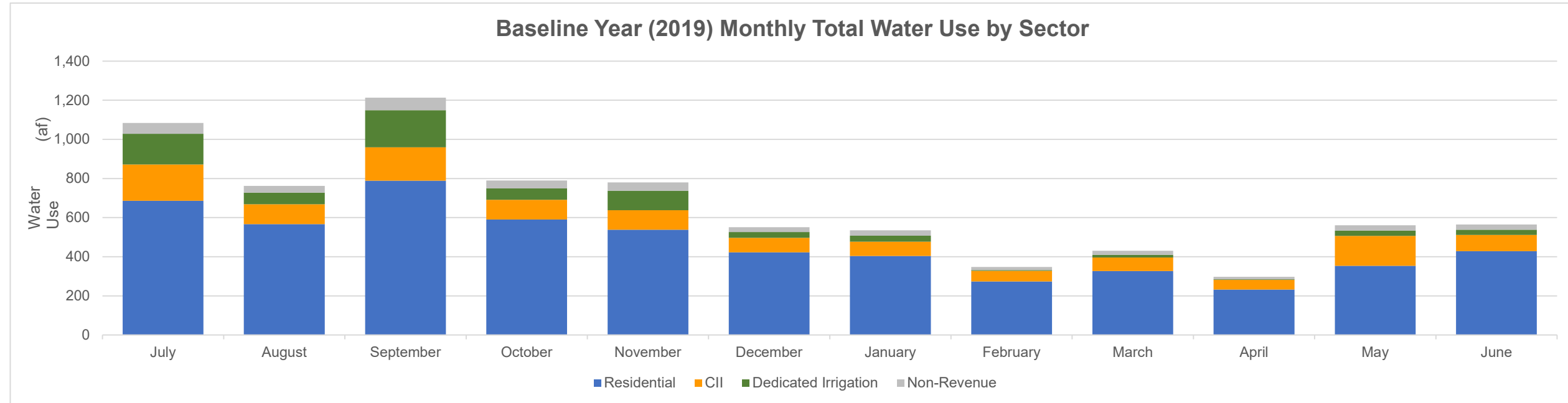
Baseline Year (2019) Percent Annual Water Use by Sector



Baseline Year (2019) Annual Water Use by Sector and End Use

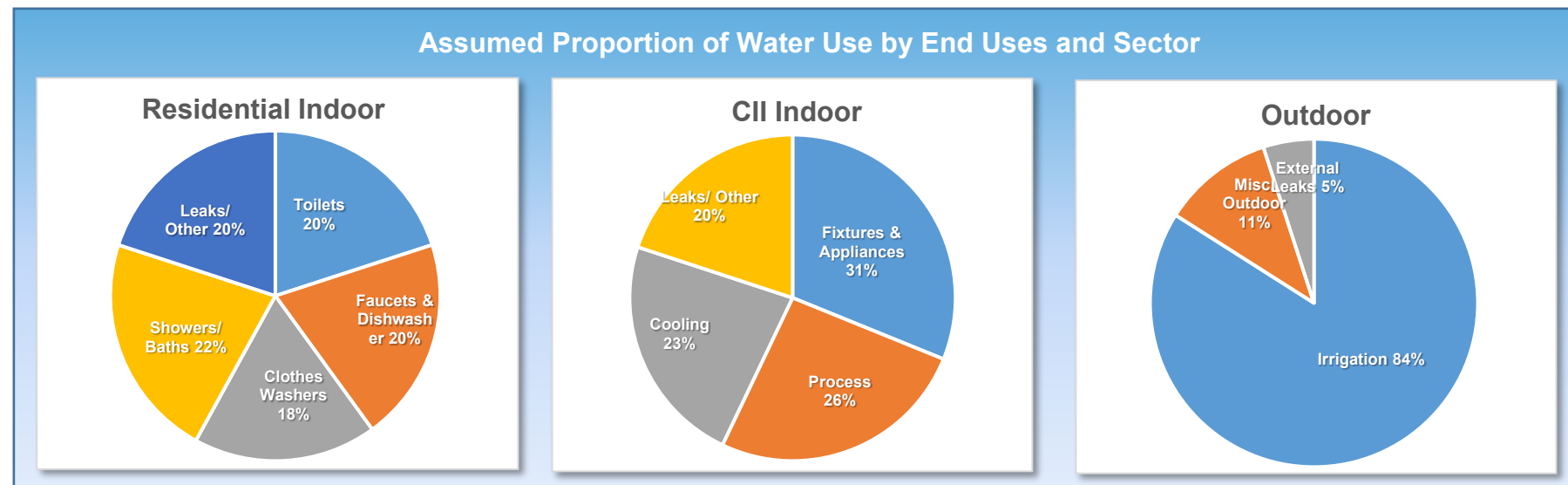


3 - Baseline Year (2019) Water Use Profile North Marin Water District



4 - Drought Response Actions - Stage 6 North Marin Water District

Maximum Savings Potential		
<i>Use the default values or enter your own criteria for the maximum savings potential. Estimated water savings within each sector will not exceed the maximum savings criteria.</i>		
Minimum Residential Indoor GPCD	25	R-GPCD
Maximum Residential Outdoor Savings	100%	of Baseline Residential Outdoor Water Use
Maximum CII Indoor Savings	30%	of Baseline CII Indoor Water Use
Maximum CII Outdoor Savings	100%	of Baseline CII Outdoor Water Use
Maximum Dedicated Irrigation Account Savings	100%	of Baseline Dedicated Irrigation Water Use
Maximum Non-Revenue Water Savings	50%	of Baseline Non-Revenue Water Use
Resulting Total Maximum Annual Savings Potential	70%	of Total Baseline Production



4 - Drought Response Actions - Stage 6 North Marin Water District

Drought Response Actions						
<p><i>Select the Drought Response Actions you would like to include in your estimated savings calculations. For each selected action, use the default end use savings estimates and implementation rates or input your own values. The "End Use Savings" estimates the percent water use reduction that could occur at a particular end use as a result of a specific action. The "Implementation Rate" refers to the estimated percentage of accounts that will implement a specific action. The water savings potential at each end use is capped based on the assumed distribution of end use water demands shown in the pie charts above. A dash (-) indicates that professional judgement was used to establish the default value, or that savings are expected to be accounted for as part of a Public Information Program; additional basis for the default values are included in the User Manual.</i></p>						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Possible Mandatory Prohibitions	All Outdoor	<input checked="" type="checkbox"/>	14%	85%	--	--
Prohibit Irrigation with Potable Water Outside of Newly Constructed Homes and Buildings that is not Delivered by Drip or Microspray Systems	Irrigation	<input type="checkbox"/>			--	--
Require Shut-Off Nozzles on Hoses for Vehicle Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%	See Appendix D of the DRP	--
Prohibit Use of Potable Water to Wash Sidewalks and Driveways	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit the Use of Potable Water for Street Washing	Misc. Outdoor	<input checked="" type="checkbox"/>	17%	50%		--
Prohibit Irrigation with Potable Water in a Manner that causes Runoff	Irrigation	<input checked="" type="checkbox"/>	3%	50%	DeOreo et al., 2011	--
Prohibit Irrigation with Potable Water within 48 Hours following Measurable Rainfall	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Irrigation of Ornamental Turf with Potable Water on Street Medians	Irrigation	<input checked="" type="checkbox"/>			--	--
Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Provide Linen Service Opt Out Options	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--
Prohibit Serving Drinking Water other than upon Request in Eating or Drinking Establishments	Fixtures & Appliances	<input checked="" type="checkbox"/>	0.5%	50%	EBMUD, 2011	--

4 - Drought Response Actions - Stage 6 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Agency Actions						
Media Campaign, Newspaper Articles, Website	All	<input checked="" type="checkbox"/>	1.5%	80%	EBMUD, 2011	--
Promote Water Conservation / Rebate Programs	All	<input checked="" type="checkbox"/>		50%	--	--
Water Efficiency Workshops, Public Events	All	<input checked="" type="checkbox"/>	1.5%	80%	EBMUD, 2011	--
Water Bill Inserts	All	<input checked="" type="checkbox"/>	1.5%	100%	EBMUD, 2011	--
Promote / Expand Use of Recycled Water	Irrigation	<input checked="" type="checkbox"/>	100%		--	--
Home or Mobile Water Use Reports	All	<input type="checkbox"/>	5%	10%	WaterSmart Software, 2015	--
Decrease Frequency and Length of Line Flushing	Non Revenue Water	<input type="checkbox"/>	25%	50%	See Appendix D of the DRP	Reduced flushing by 50%.
Audit and Reduce System Water Loss	Non Revenue Water	<input type="checkbox"/>	45%	50%	DWR, 2015	Target 50% of leakage.
Implement Drought Rate Structure / Water Budgets	All	<input type="checkbox"/>	5%	100%	CUWCC, 2015	--
Establish Retrofit on Resale Ordinance	All Residential Indoor	<input type="checkbox"/>	21%	6%	SFPUC, 2004	First Tuesday, 2015
Require Net Zero Demand Increase on New Connections	All	<input type="checkbox"/>			--	--
Moratorium on New Connections	All	<input type="checkbox"/>			--	--
Move to Monthly Metering / Billing	All	<input type="checkbox"/>	5%	10%	See Appendix D of the DRP	--
Increase Water Waste Patrols / Enforcement	All	<input checked="" type="checkbox"/>			--	--
Establish Drought Hotline	All	<input type="checkbox"/>			--	--
Reduce Distribution System Pressures	Non Revenue Water	<input type="checkbox"/>	4.5%	100%	CUWCC, 2010; DWR, 2015	--
► Dedicated Irrigation						
Conduct Irrigation Account Surveys	Irrigation	<input type="checkbox"/>	30%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input checked="" type="checkbox"/>	100%	95%		
Require Repair of all Leaks within 24 hours	External Leaks	<input checked="" type="checkbox"/>	100%	5%	--	--
Customer Water Budgets						
Establish Water Budget - 25% Reduction	Irrigation	<input type="checkbox"/>	25%	50%	--	--
Establish Water Budget - 50% Reduction	Irrigation	<input type="checkbox"/>	50%	50%	--	--
Establish Water Budget - 75% Reduction	Irrigation	<input type="checkbox"/>	75%	50%	--	--

4 - Drought Response Actions - Stage 6 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
► Agency Drought Actions / Restrictions						
► Residential						
Conduct Water Use Surveys Targeting High Water Users	All Residential Uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit use of Potable Water for Irrigation	Irrigation	<input type="checkbox"/>	100%	50%		
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	35%	--	--
Require Pool Covers	Misc. Outdoor	<input checked="" type="checkbox"/>	28%	25%	Maddaus & Mayer, 2001	--
Prohibit Filling of Pools	Misc. Outdoor	<input checked="" type="checkbox"/>	55%	25%	DeOreo et al., 2011	--
Customer Water Budgets						
Establish Water Budget - 55% Reduction	All Residential Uses	<input checked="" type="checkbox"/>	55%	90%	--	--
Establish Water Budget - 20% Reduction	All Residential Uses	<input type="checkbox"/>	20%	50%	--	--
► CII						
Conduct CII Surveys Targeting High Water Users	All CII uses	<input type="checkbox"/>	10%	10%	EBMUD, 2011	--
Limit Irrigation Days, Time and Duration (Select One)						
Limit Irrigation to 2 Days/Week, 15 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	38%	80%	UC IPM, 2014	--
Limit Irrigation to 1 Day/Week, 10 Minutes/Day, Between 9PM and 6AM	Irrigation	<input type="checkbox"/>	79%	50%		
Prohibit Use of Potable Water for Construction and Dust Control	Misc. Outdoor	<input checked="" type="checkbox"/>		100%	--	--
Prohibit Single-Pass Cooling Systems	Cooling	<input checked="" type="checkbox"/>	80%	1%	Vickers, 2001	--
Require Repair of all Leaks within 24 hours	Leaks	<input checked="" type="checkbox"/>	100%	10%	--	--
Prohibit Vehicle Washing Except with Recycled Water	Misc. Outdoor	<input checked="" type="checkbox"/>	50%	50%	EBMUD, 2008	--
Require Water-Efficient Pre-Rinse Spray Valves	Fixtures & Appliances	<input type="checkbox"/>	0.8%	50%	EPA, 2015; Pacific Institute, 2003	--
Customer Water Budgets						
Establish Water Budget - 55% Reduction	All CII uses	<input checked="" type="checkbox"/>	55%	90%	--	--
Establish Water Budget - 20% Reduction	All CII uses	<input type="checkbox"/>	20%	50%	--	--
Establish Water Budget - 30% Reduction	All CII uses	<input type="checkbox"/>	30%	50%	--	--

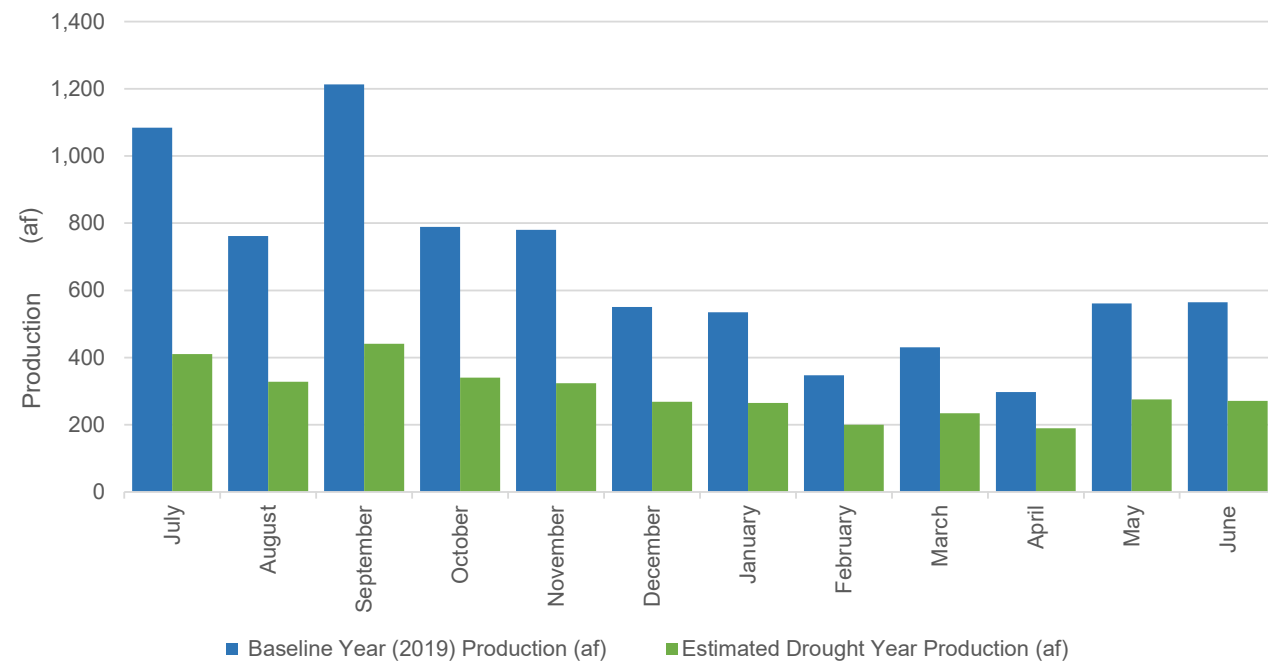
4 - Drought Response Actions - Stage 6 North Marin Water District

Drought Response Actions						
Action Description	End Use(s)	Implement Program	End Use Savings (%)	Implementation Rate	Source of Default Savings Estimate	Source of Default Implementation Rate
▶ Residential Customer Actions to Encourage						
Install Bathroom Faucet Aerators	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Install a Water-Efficient Showerhead	Showers/Baths	<input type="checkbox"/>			--	--
Turn Off Water when Brushing Teeth, Shaving, Washing Dishes, or Cooking	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Fill the Bathtub Halfway	Showers/Baths	<input type="checkbox"/>			--	--
Wash Only Full Loads of Clothes	Clothes Washers	<input type="checkbox"/>			--	--
Install a High-Efficiency Toilet	Toilets	<input type="checkbox"/>			--	--
Take Shorter Showers	Showers/Baths	<input type="checkbox"/>			--	--
Run Dishwasher Only When Full	Faucets and Dishwashers	<input type="checkbox"/>			--	--
Reduce Outdoor Irrigation	Irrigation	<input type="checkbox"/>			--	--
Install Drip-Irrigation	Irrigation	<input type="checkbox"/>			--	--
Use Mulch	Irrigation	<input type="checkbox"/>			--	--
Plant Drought Resistant Trees and Plants	Irrigation	<input type="checkbox"/>			--	--
Use a Broom to Clean Outdoor Areas	Misc. Outdoor	<input type="checkbox"/>			--	--
Flush Less Frequently	Toilets	<input type="checkbox"/>			--	--
Re-Use Shower or Bath Water for Irrigation	Irrigation	<input type="checkbox"/>			--	--
Wash Car at Facility that Recycles the Water	Misc. Outdoor	<input type="checkbox"/>			--	--

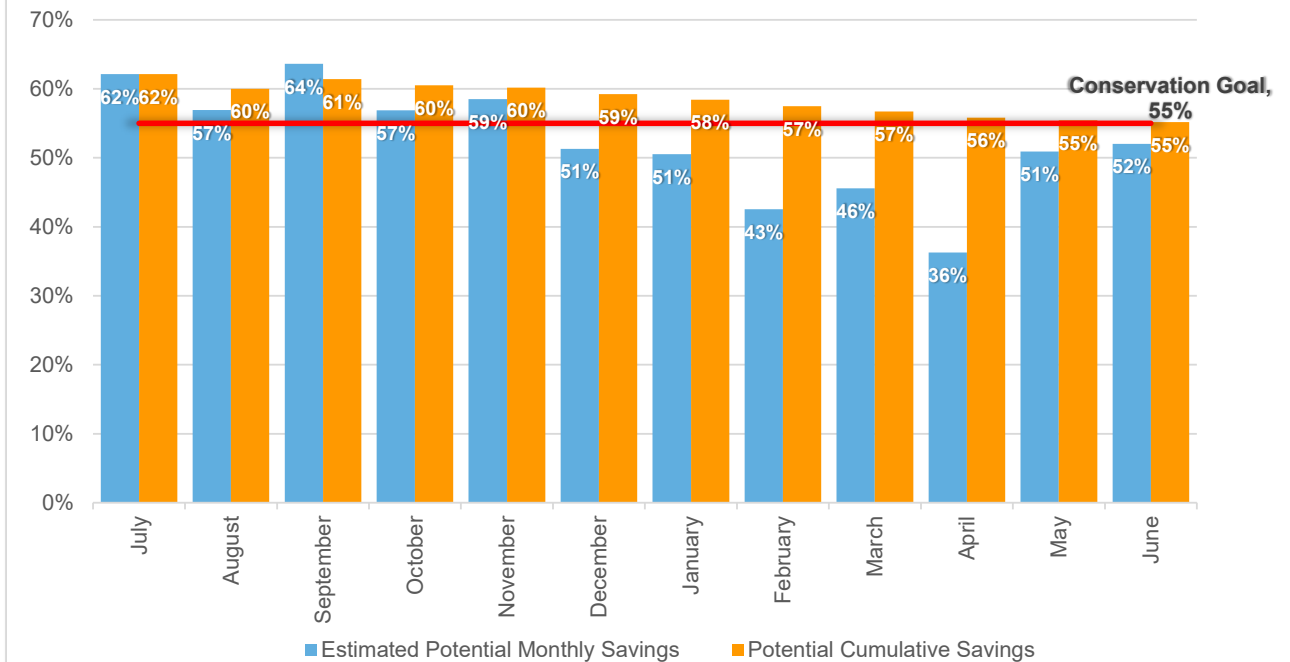
5 - Estimated Water Savings - Stage 6 North Marin Water District

Estimated Monthly Water Use and Savings Summary						
Units: <input type="text" value="(af)"/>						
<i>This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.</i>						
Month	Baseline Year (2019) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
July	1,084	411	62%	62%	55%	
August	762	328	57%	60%	55%	
September	1,213	441	64%	61%	55%	
October	789	340	57%	60%	55%	
November	780	324	59%	60%	55%	
December	551	268	51%	59%	55%	
January	535	265	51%	58%	55%	
February	348	200	43%	57%	55%	
March	431	234	46%	57%	55%	
April	298	190	36%	56%	55%	
May	561	275	51%	55%	55%	
June	565	271	52%	55%	55%	

Baseline Year(s) Production vs. Estimated Production



Estimated Potential Monthly Water Savings



ATTACHMENT 3

WATER SHORTAGE CONTINGENCY PLAN RESOLUTION

PLACEHOLDER

Appendix G: Resolution to Adopt UWMP and WSCP

PLACEHOLDER