



2025 Urban Water Management Plan

FINAL DRAFT / May 2026



in collaboration with





2025 Urban Water Management Plan

May 2026 / FINAL DRAFT

Prepared By:

Carollo Engineers, Inc.
707 Wilshire Boulevard, Suite 3920
Los Angeles, California 90017
Phone: 213.489.1587
<https://www.carollo.com>

Prepared For:

City of Newport Beach
949 W. 16th Street
Newport Beach, California 92663
Phone: 949.644.3011
<https://www.newportbeachca.gov>

In collaboration with:



MADDAUS WATER MANAGEMENT
Making a Difference in the World of Water™

Contents

EXECUTIVE SUMMARY

ES.1	Introduction and UWMP Overview	ES-1
ES.2	UWMP Preparation	ES-1
ES.3	System Description	ES-1
ES.4	Water Use Characterization	ES-2
ES.4.1	Water Use in the Last Five Years	ES-2
ES.4.2	Projected Water Use	ES-2
ES.5	Conservation Target Compliance	ES-2
ES.6	Water Supply Characterization	ES-2
ES.7	Water Service Reliability and Drought Risk Assessment	ES-3
ES.8	Water Shortage Contingency Planning	ES-3
ES.9	Demand Management Measures	ES-3
ES.10	Plan Adoption, Submittal, and Implementation	ES-4

CHAPTER 1 INTRODUCTION AND UWMP OVERVIEW

1.1	Overview of UWMP Requirements	1-1
1.2	UWMP Organization	1-1

CHAPTER 2 UWMP PREPARATION

2.1	Individual Planning and Compliance	2-1
2.2	Coordination and Outreach	2-2
2.2.1	Integration with Other Planning Efforts	2-2
2.2.2	Wholesale and Retail Coordination	2-4
2.2.3	Public Participation	2-5

CHAPTER 3 SYSTEM DESCRIPTION

3.1	Agency Overview	3-1
3.1.1	Formation and Purpose	3-1
3.1.2	City Council	3-2
3.1.3	Relationship to MWDOC	3-2
3.2	Water Service Area and Facilities	3-4
3.2.1	Water Service Area	3-4
3.2.2	Water Facilities	3-4
3.3	Climate	3-5
3.4	Population, Demographics, and Socioeconomics	3-6
3.4.1	Service Area Population	3-6
3.4.2	Demographics and Socioeconomics	3-6
3.4.3	Demographic Projection Methodology	3-7

3.5	Land Uses	3-8
3.5.1	Current Land Uses	3-8
3.5.2	Projected Land Uses	3-8

CHAPTER 4 WATER USE CHARACTERIZATION

4.1	Water Use in the Last Five Years	4-4
4.1.1	Potable Municipal and Industrial Use	4-5
4.1.2	Non-Potable Municipal and Industrial Use	4-5
4.2	Projected Water Use	4-5
4.2.1	Water Use Projections for 2026-2030	4-5
4.2.2	Water Use Projections for 2030-2050	4-6
4.3	Water Demand Projection Methodology	4-8
4.3.1	Econometric Approach, Data Acquisition, and Model Development	4-8
4.3.2	Forecasted Demands	4-10
4.4	Water Loss	4-12

CHAPTER 5 CONSERVATION TARGET COMPLIANCE

5.1	Reporting Requirements	5-1
-----	------------------------	-----

CHAPTER 6 WATER SUPPLY CHARACTERIZATION

6.1	Water Supply Overview	6-1
6.2	Imported Water	6-5
6.2.1	Metropolitan Water District of Southern California	6-5
6.2.2	Colorado River Aqueduct	6-8
6.2.3	State Water Project	6-11
6.2.4	Storage, Transfers, and Conveyance Programs	6-14
6.2.5	Potential Future Water Projects	6-16
6.2.6	Supply Reliability Within Metropolitan Water District of Southern California	6-17
6.3	Local Groundwater	6-23
6.3.1	Orange County Groundwater Basin	6-23
6.3.2	Planned Future Groundwater Sources	6-31
6.4	Surface Water	6-32
6.4.1	Existing Surface Water Sources	6-32
6.4.2	Planned Future Surface Water Sources	6-32
6.5	Stormwater	6-32
6.5.1	Existing Stormwater Sources	6-32
6.5.2	Planned Future Stormwater Sources	6-32
6.6	Wastewater and Recycled Water	6-32
6.6.1	Agency Coordination	6-33
6.6.2	Wastewater	6-34
6.6.3	Current Recycled Water Uses	6-35
6.6.4	Projected Recycled Water Uses	6-35
6.6.5	Potential Recycled Water Uses	6-36

6.6.6	Optimization Plan	6-36
6.7	Desalination Opportunities	6-37
6.7.1	Ocean Water Desalination	6-37
6.7.2	Groundwater Desalination	6-37
6.8	Water Exchanges and Transfers	6-37
6.8.1	Existing Exchanges and Transfers	6-37
6.8.2	Planned and Potential Exchanges and Transfers	6-38
6.9	Future Water Projects	6-38
6.10	Energy Intensity	6-39
6.10.1	Water Supply Energy Intensity	6-39
6.10.2	Wastewater and Recycled Water Energy Intensity	6-41
6.10.3	Key Findings and Next Steps	6-43

CHAPTER 7 WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

7.1	Water Service Reliability Overview	7-1
7.2	Factors Affecting Water Supply Reliability	7-2
7.2.1	Climate Change and the Environment	7-2
7.2.2	Regulatory and Legal	7-3
7.2.3	Water Quality	7-4
7.2.4	Locally Applicable Criteria	7-7
7.3	Water Service Reliability Assessment	7-7
7.3.1	Normal Year Reliability	7-8
7.3.2	Single Dry Year Reliability	7-9
7.3.3	Multiple Dry Years Reliability	7-9
7.4	Management Tools and Options	7-11
7.5	Drought Risk Assessment	7-12
7.5.1	Methodology	7-12
7.5.2	Total Water Supply and Use Comparison	7-13
7.5.3	Water Source Reliability	7-14

CHAPTER 8 WATER SHORTAGE CONTINGENCY PLANNING

8.1	Background	8-1
8.2	Overview of the Water Shortage Contingency Plan	8-1
8.3	Summary of Water Shortage Response Strategy and Required DWR Tables	8-2

CHAPTER 9 DEMAND MANAGEMENT MEASURES

9.1	City of Newport Beach Demand Management Measures	9-2
9.1.1	Operations Practices	9-3
9.1.2	Public Education and Outreach	9-7
9.1.3	Residential Indoor Rebate Programs	9-8
9.1.4	Commercial, Industrial, Institutional Programs	9-9
9.1.5	Landscape Programs	9-10

9.2	City of Newport Beach Demand Management Measures Implementation (2020-2025)	9-11
9.3	MWDOC Demand Management Implementation Assistance Programs	9-11
9.3.1	State Water Conservation Compliance Assistance	9-12
9.3.2	Regional Rebate Programs and Local Program Assistance	9-13
9.3.3	Research and Evaluation	9-13
9.4	Urban Water Use Objective and Commercial, Industrial, Institutional Performance Measure Compliance	9-14
9.4.1	Urban Water Use Objective Components	9-14
9.4.2	Commercial, Industrial, Institutional Performance Measures	9-16

CHAPTER 10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

10.1	Overview	10-1
10.2	Agency Coordination	10-2
10.3	Public Participation	10-2
10.4	UWMP Submittal	10-3
10.5	Amending the Adopted UWMP or WSCP	10-3

CHAPTER 11 REFERENCES

Appendices

APPENDIX A	UWMP WATER CODE CHECKLIST
APPENDIX B	DEPARTMENT OF WATER RESOURCES (DWR) STANDARDIZED TABLES
APPENDIX C	REDUCED DELTA RELIANCE
APPENDIX D	AWWA WATER LOSS AUDITS
APPENDIX E	2022 BASIN 8-1 ALTERNATIVE UPDATE
APPENDIX F	WATER SHORTAGE CONTINGENCY PLAN
APPENDIX G	WATER USE EFFICIENCY IMPLEMENTATION REPORT
APPENDIX H	2025 ORANGE COUNTY WATER DEMAND MODEL TECHNICAL MEMORANDUM
APPENDIX I	NOTIFICATION OF PUBLIC AND SERVICE AREA PROVIDERS
APPENDIX J	ADOPTED UWMP RESOLUTIONS

Tables

Table 2.1	Submittal Table 2-1 Retail: Public Water Systems	2-1
Table 2.2	Submittal Table 2-2: Plan Identification	2-2
Table 2.3	Submittal Table 2-3: Supplier Identification	2-2
Table 2.4	Submittal Table 2-4 Retail: Water Supplier Information Exchange	2-5
Table 3.1	Submittal 3-1 Retail: Population - Current and Projected	3-6
Table 3.2	City of Newport Beach Service Area Dwelling Units by Type	3-7
Table 3.3	Planned Developments within the City of Newport Beach	3-8
Table 4.1	Submittal Table 4-1 Retail: 2025 Actual Total Uses for Potable and Non-Potable Water	4-4

Table 4.2	City of Newport Beach's Service Area Total Potable and Non-Potable Demand for 2026-2030	4-5
Table 4.3	Submittal Table 4-2 Retail: Total Uses of Potable, and Non-Potable Water - Projected	4-6
Table 4.4	Submittal Table 4-3 Retail: Inclusion in Water Use Projections	4-7
Table 4.5	Optional Submittal Table 4-4 Retail: Passive Water Savings Projections	4-7
Table 4.6	Summary of Demand Sectors	4-9
Table 4.7	Summary of Historical Data Collected for Model Development	4-9
Table 4.8	Future Model Parameters	4-11
Table 4.9	Submittal Table 4-5 Retail: Water Loss Audit Reporting	4-12
Table 4.10	Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard	4-13
Table 5.1	Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress	5-2
Table 6.1	Submittal Table 6-8 Retail: Water Supplies - 2025 Actual	6-2
Table 6.2	Submittal Table 6-9 Retail: Water Supplies - Projected	6-4
Table 6.3	MET SWP Program Capabilities	6-12
Table 6.4	MET's Projected Supply Capability and Demands Through 2050 for a Normal Year	6-19
Table 6.5	MET's Projected Supply Capability and Demands Through 2050 for a Single Dry Year	6-20
Table 6.6	MET's Projected Supply Capability and Demands Through 2050 for a Drought (5 Consecutive Water Years)	6-21
Table 6.7	MET's Water Use, Supply, and Drought Risk Assessment for 2026-2030	6-22
Table 6.8	Submittal Table 6-1 Retail: Groundwater Pumped in the Past 5 Years Within the City's Service Area (AF)	6-23
Table 6.9	Management Actions Based on Changes in Groundwater Storage	6-28
Table 6.10	Submittal Table 6-2 Retail: Wastewater Collected within the City's Service Area in 2025	6-35
Table 6.11	Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area	6-35
Table 6.12	Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual	6-36
Table 6.13	Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs	6-39
Table 6.14	Optional Submittal Table O-1A: Energy Efficiency Reporting	6-40
Table 6.15	Optional Submittal Table O-2: Energy Efficiency - Wastewater and Recycled Water	6-42
Table 7.1	Optional Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)	7-2
Table 7.2	Retail: Normal Year Supply and Use Comparison	7-8
Table 7.3	Optional Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison-Potable	7-8
Table 7.4	Optional Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison-Non-Potable	7-9
Table 7.5	Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison	7-9

Table 7.6	Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison	7-10
Table 7.7	Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment	7-14
Table 8.1	Cross-Reference for Standard vs Supplier Shortage Levels	8-3
Table 8.2	Supply Augmentation and Other Actions	8-4
Table 8.3	Demand Reduction Actions	8-5
Table 9.1	DMM Implementation Responsibility and Regional Programs in Orange County	9-2
Table 9.2	City of Newport Beach Water Rates	9-4
Table 9.3	City of Newport Beach Water Use Efficiency Program Participation	9-11
Table 9.4	MWDOC Programs to Help OC Retail Agencies Meet their Urban Water Use Objectives	9-14
Table 9.5	City of Newport Beach CII BMP and Water Efficiency Programs and Incentives	9-16
Table 10.1	External Coordination and Outreach	10-1
Table 10.2	Submittal Table 10-1 Retail: Notification to Cities and Counties	10-2

Figures

Figure 3.1	Regional Location of City of Newport Beach and Other MWDOC Member Agencies	3-3
Figure 3.2	City of Newport Beach Water Service Area	3-4
Figure 4.1	Historical Water Use and Population in Orange County	4-2
Figure 4.2	Projected Water Use Across All Orange County Water Agencies	4-3
Figure 4.3	Econometric Demand Forecast Development Process	4-10
Figure 6.1	City's Projected Water Supply	6-3
Figure 6.2	Major Aqueducts that Supply Imported Water to Southern California (MET, 2025)	6-6
Figure 6.3	MET Feeders and Transmission Mains that Serve Orange County	6-7
Figure 6.4	Map of the OC Basin (OCWD, 2022)	6-25
Figure 6.5	Basin 8-1 Management Areas (OCWD, 2023)	6-26
Figure 6.6	MWDOC Imported Water Sales for Groundwater Replenishment	6-31
Figure 8.1	Purpose and Relationships of the UWMP, WSCP, and Water Shortage Response Ordinance	8-1

Abbreviations

AB	Assembly Bill (California)
ACS	American Community Survey
ACWA	Association of California Water Agencies
ADU	accessory dwelling unit
AF	acre-feet
AFY	acre-feet per year
AMI	Advanced Metering Infrastructure
AMP	Allen McColloch Pipeline (MET)
AVEK	Antelope Valley–East Kern Water Agency
AWWA	American Water Works Association
BEA	Basin Equity Assessment
BiOps	Biological Opinions
BMP	best management practice
BPP	Basin Production Percentage
BSA	Boy Scouts of America
CAMP4W	Climate Adaptation Master Plan for Water
CCF	hundred cubic feet
CDR	Center for Demographic Research
CEE	Consortium for Energy Efficiency
CFS	cubic feet per second
CII	Commercial, Industrial, Institutional
CIP	capital improvement program
City	City of Newport Beach
CPTP	Coastal Pumping Transfer Program
CRA	Colorado River Aqueduct
CRSS	Colorado River Simulation System
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
DCP	Delta Conveyance Project
DDW	Division of Drinking Water (SWRCB)
DIM	dedicated irrigation meter
DMM	Demand Management Measures
DOF	Department of Finance
DRA	Drought Risk Assessment
DVL	Diamond Valley Lake
DWR	Department of Water Resources
EIR	environmental impact report

EO B-29-15	Executive Order mandating 25% reduction
EOCF #2	East Orange County Feeder No. 2
EOCWD	East Orange County Water District
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ETo	Reference Evapotranspiration
FIRO	Forecast-Informed Reservoir Operations
FY	Fiscal Year
GAC	granular activated carbon
GAP	Green Acres Project
GDP	gross domestic product
GIS	geographic information system
gpcd	gallons per capita per day
gpf	gallons per flush
gpm	gallons per minute
GRP	Groundwater Resilience Plan
GSP	Groundwater Sustainability Plan
GSWC	Golden State Water Company
GWRS	Groundwater Replenishment System
HDI	Hot-Dry Index
HECW	High-Efficiency Clothes Washer
HET	High-Efficiency Toilet
HRL	Healthy Rivers and Landscapes (Voluntary Agreements)
ICS	Intentionally Created Surplus
IPR	Indirect Potable Reuse
IRP	Integrated Resources Plan
IRWD	Irvine Ranch Water District
ITP	Incidental Take Permit
IWCM	Interim Water Control Manual
JADU	Junior Accessory Dwelling Unit
KWh	Kilowatt-hours
LAM	Landscape Area Measurement
LRP	Local Resources Program
LTFP	Long-Term Facilities Plan
LVL	Leo J. Vander Lans AWTF
M&I	Municipal and Industrial
MAF	million acre-feet
MCL	Maximum Contaminant Level
MET	Metropolitan Water District of Southern California

MF	microfiltration
MG	million gallons
MG/L	milligrams per liter
mgd	million gallons per day
MUM	Mixed-Use CII Meter
MWDOC	Municipal Water District of Orange County
ng/L	nanograms per liter
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
OC Basin	Orange County Groundwater Basin
OC San	Orange County Sanitation District
OCLAFCO	Orange County LAFCO
OCWD	Orange County Water District
OWWD #8	Orange County Waterworks District No. 8
PFAS	per- and polyfluoroalkyl substances
PPCP	pharmaceuticals and personal care products
ppt	parts per trillion
PRISM	Parameter-elevation Regressions on Independent Slopes Model
PRS	Pressure Reducing Station
QSA	Quantification Settlement Agreement
QWEL	Qualified Water Efficient Landscaper
RA	Replenishment Assessment
R-GPCD	Residential-gallons per capita per day
RHNA	Regional Housing Needs Assessment
RO	reverse osmosis
RZ/WZ	Retail Zone / Wholesale Zone
SARCCUP	Santa Ana River Conservation and Conjunctive Use Program
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SDCWA	San Diego County Water Authority
SFR	single family residential
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAP	Technical Assistance Program
TAZ	Traffic Analysis Zone
TDS	total dissolved solids

TM	Technical Memorandum
USACE	US Army Corps of Engineers
USBR	US Bureau of Reclamation
USGS	US Geological Survey
UV	ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
UWUO	Urban Water Use Objective
WEEA	Water Energy Education Alliance
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSIP	Water Savings Incentive Program
WUE / WUEdata	Water Use Efficiency / State submittal portal

EXECUTIVE SUMMARY

ES.1 Introduction and UWMP Overview

The City of Newport Beach (City) prepared this 2025 Urban Water Management Plan (UWMP) to submit to the California Department of Water Resources (DWR) to satisfy the UWMP Act of 1983 (UWMP Act or Act) and subsequent California Water Code (Water Code) requirements. UWMPs are comprehensive documents that present an evaluation of a water supplier's reliability over a long-term (20-25 year) horizon. This 2025 UWMP provides an assessment of the present and future water supply sources and demands within the City's service area. It presents an update to the 2020 UWMP on the City's water resource needs, water use efficiency programs, water reliability assessment, and strategies to mitigate water shortage conditions. It also presents the City's updated 2025 Water Shortage Contingency Plan (WSCP), designed to prepare for and respond to water shortages. This 2025 UWMP contains all elements required by the UWMP Act.

ES.2 UWMP Preparation

The City coordinated the preparation of this 2025 UWMP with other key entities, the Municipal Water District of Orange County (MWDOC), the regional wholesaler of imported water for Orange County, and the Orange County Water District (OCWD), Orange County Groundwater Basin (OC Basin) manager and provider of recycled water in north Orange County. The City also coordinated with other entities that provided valuable, regionally consistent data for the analyses prepared in this UWMP, including population projections from the Center for Demographic Research (CDR) at California State University, Fullerton, and the Orange County Water Demand Projection Model Technical Memorandum (TM).

ES.3 System Description

The City was incorporated on September 1, 1906 and the current City Charter was adopted in 1954. The City is known for its fine residential areas, modern shopping facilities, strong business community, and quality school system. It surrounds Newport Bay, where approximately 4,300 boats of all types are docked within the 21-square-mile harbor area. The bay area and the City's eight miles of ocean beach offer outstanding fishing, swimming, surfing, and aquatic sports activities.

The City Utilities Department is responsible for the operation and maintenance of the City's water, wastewater, and storm drain systems, as well as other municipal utilities within the City. The City's Public Works Department is responsible for engineering services, including capital project delivery, bay water quality and environmental services, and transportation and development services. The two departments work collaboratively to plan for the City's water supply and distribution system improvements through master planning and capital improvement program (CIP) efforts.

ES.4 Water Use Characterization

ES.4.1 Water Use in the Last Five Years

Total water use within the City's service area has fluctuated over the past five years (fiscal year [FY] 2021-25), with an annual average of approximately 14,187 AF. FY 2020-21 through FY 2021-22 saw the highest water use over the last five years due to region-wide drought conditions. FY 2022-23 proved to be one of the wettest years on record in the State and the City saw a general decrease in water demand following this wet year, as precipitation offsets landscape irrigation demands. These year-to-year fluctuations in precipitation will continue to influence the City's annual demands. In general, the City saw a decrease in demand of 7.3 percent over the 5-year reporting period.

ES.4.2 Projected Water Use

The water use projection for this UWMP is based on the 2025 Orange County Water Demand Projection Model Technical Memorandum (TM). This demand projection represents the City's total water demand and considers factors such as weather, water price, regional economic conditions, and housing density through a regression, or econometric, model.

Over the next 25 years, the City's total water demands are projected to decrease by about 14.2 percent from 14,418 acre-feet (AF) in 2025 to approximately 12,378 AF by 2050. The Orange County Groundwater Basin is expected to continue meeting a notable share of total water demand between 2025 and 2050 (with a Basin Pumping Percentage [BPP] of 85 percent forecasted through 2050).

ES.5 Conservation Target Compliance

The City participated in the Orange County 20x2020 Regional Alliance along with all other Orange County water agencies. The alliance was created by MWDOC in collaboration with all its retail member agencies as well as the Cities of Anaheim, Fullerton, and Santa Ana, to assist Orange County retail agencies in complying with the requirements of the Water Conservation Act of 2009, also known as SBx7-7 (Senate Bill 7 as part of the Seventh Extraordinary Session). Signed into law on February 3, 2010, it required the State of California to reduce urban water use by 20 percent by 2020.

Retail water suppliers are required to comply with SBx7-7 individually or as a region in collaboration with other retail water suppliers, to be eligible for water-related state grants and loans. Orange County, as a region, achieved its 2020 target water use of 159 gallons per capita per day (GPCD) prior to 2020, indicative of the collective efforts in reducing water use in the region. All Orange County water retailers, achieved individual compliance prior to 2020. By 2020, the City achieved a per capita per day water use of 160 GPCD (compared to its 207 GPCD target) and continues to implement water use efficiency measures.

ES.6 Water Supply Characterization

The City's main source of water supply is groundwater from the OC Basin. Imported water makes up the rest of the City's water supply portfolio. In FY 2024-25, the City relied on approximately 79 percent local groundwater, 18 percent imported water, and 3 percent recycled water. This supply portfolio is projected to remain stable for the next 25 years.

ES.7 Water Service Reliability and Drought Risk Assessment

Every urban water supplier is required to assess the reliability of their water service to its customers under a normal year, a single dry year, and multiple dry years. The water service reliability assessment compares projected supply to projected demand for three long-term hydrological conditions. The City's water sources are local groundwater from the OC Basin and imported water purchased from MWD/OC/MET.

The OC Basin manager, OCWD, has developed programs and projects to improve groundwater recharge and augment groundwater through recycled water, conjunctive use, and water transfers. OCWD assesses groundwater conditions and sets its BPP, which determines how much water will be pumped from the basin year, and the Basin Equity Assessment (BEA), which is a surcharge for exceeding the BPP. The BPP is set at 85 percent and is forecasted to remain so through 2050.

MET, the Southern California regional wholesaler of imported water, has also invested in numerous programs and projects to augment its direct deliveries of imported water, such as water transfers, groundwater banking, and use of its reservoir storage. MET's 2025 UWMP demonstrates that MET will be able to meet its projected water demands for its entire service area for the next 25 years under normal, dry, and five consecutive dry year conditions.

Overall, the City's service area is projected to meet full-service demands from 2026 through 2050 under normal years, single dry year, and five consecutive dry year conditions.

ES.8 Water Shortage Contingency Planning

The Water Shortage Contingency Plan (WSCP) is a standalone document adopted by the City serving as the guidance document used to prepare for and respond to water shortages and service disruptions of the City's water supplies through proactive mitigation measures. A water shortage, when water supply available is insufficient to meet the normally expected customer water use at a given point in time, may occur due to a number of reasons, such as water supply quality changes, climate change, drought, and catastrophic events (e.g., earthquake). The City's WSCP provides a water supply availability assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation will help maintain reliable supplies and reduce the impacts of supply interruptions.

The WSCP contains the processes and procedures that will be deployed when shortage conditions arise so that the City's governing body and its staff can easily identify and efficiently implement pre-determined steps to mitigate a water shortage to the level appropriate to the degree of water shortfall anticipated.

ES.9 Demand Management Measures

The City has demonstrated its commitment to water use efficiency through multi-faceted and holistic water use efficiency programs. The City's water use efficiency implementation can be described broadly under five categories: *Operations Practices* (e.g., conservation pricing, water waste prevention, water loss control, and metering with commodity rates), *Education and Outreach* (e.g., public outreach programs, K-12 school programs, Water Awareness Poster Contest, Qualified Water Efficiency Landscaper Training Program), *Residential Indoor Program* (e.g. various rebates), *Commercial, Industrial, and Institutional Program* (e.g., rebates, Water Savings Incentive Program, On-site Retrofit Program), and *Landscape Programs* (e.g., turf replacement, spray-to-drip irrigation rebate, residential landscape design assistance).

ES.10 Plan Adoption, Submittal, and Implementation

The Water Code requires both the UWMP and the WSCP to be adopted by the Supplier's governing body. Before the adoption of the UWMP, the City notified the public and the cities and counties within its service area that MWDOD was in the process of preparing an UWMP and WSCP per the Water Code. The City circulated the final draft of the UWMP and WSCP to facilitate public review and held a public hearing to receive input from the public on the UWMP and WSCP. Upon completion of the public hearing, the City moved to adopt both the UWMP and WSCP. Post adoption, the City submitted the UWMP to DWR and other key agencies and made the document available for public review within 30 days after filing with DWR.

The UWMP serves as a legal and technical water management foundation for the City and can be referenced as needed, until its next required update cycle in 2030. With approval from DWR, the City shall implement this plan into its public resources, providing City staff, the public, and elected officials with an understanding of past, current, and future water conditions and management. Furthermore, the WSCP serves as a strategic planning document designed to prepare for and respond to water shortages and service disruptions of the City's water supplies.

CHAPTER 1 INTRODUCTION AND UWMP OVERVIEW

The City of Newport Beach (City) prepared this 2025 UWMP to submit to the California Department of Water Resources (DWR) to satisfy the UWMP Act of 1983 (UWMP Act or Act) and subsequent California Water Code (Water Code) requirements.

The City is a retail water supplier that provides water to its residents and other customers using the imported potable water supply obtained from its regional wholesaler, Municipal Water District of Orange County (MWDOC), local groundwater from the Orange County Groundwater Basin (OC Basin), which is managed by the Orange County Water District (OCWD), and recycled water from OCWD. The City, as one of MWDOC's 27 member agencies, prepared this 2025 UWMP in collaboration with MWDOC, Metropolitan Water District of Southern California (MET), OCWD, and other key agencies.

UWMPs are comprehensive documents that present an evaluation of a water supplier's reliability over a long-term (20-25 year) horizon. In response to the changing climatic conditions since the 2020 UWMP, MWDOC has been assisting its member agencies and surrounding communities to manage both their water supplies and demands. The water loss audit program, water conservation measures, public outreach and education on conservation, and efforts for increased self-reliance to reduce dependency on imported water from the Sacramento-San Joaquin Delta (the "Delta") are some of the water management actions that the City has taken to maintain the reliability of water supply for its service area. In addition, the City has been proactive in managing local water supplies through the installation of new wells.

This UWMP provides an assessment of the present and future water supply sources and demands within the City's service area. It presents an update to the 2020 UWMP on the City's water resource needs, water use efficiency programs, water reliability assessment, and strategies to mitigate water shortage conditions. It also includes the City's updated 2025 Water Shortage Contingency Plan (WSCP) designed to prepare for and respond to water shortages. This 2025 UWMP contains all elements required by the Act.

1.1 Overview of UWMP Requirements

The UWMP Act, enacted by the California legislature, requires every urban water supplier (Supplier) providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare, adopt, and file a UWMP with the DWR every five years in the years ending in six and one.

For this 2025 UWMP cycle, DWR continues to place emphasis on achieving improvements for long-term reliability and resilience to drought and climate change in California. Despite there being no new statutory requirements, Suppliers must now report progress on meeting their 2028 Water Loss Standards and continue to state their compliance with Senate Bill (SB) X7-7 2020 Targets. Additional guidance on stored water accounting and recommendations on identifying the need for future or proposed water supply projects are provided by DWR as well.

1.2 UWMP Organization

This UWMP is organized into 10 chapters aligned with the DWR Guidebook recommendations. The sections within each chapter are customized to include the City's water supply reliability and future

projections, as well as plans to overcome any water shortages over a planning horizon of the next 25 years. The chapters for this UWMP are listed below:

Chapter 1 Introduction and UWMP Overview gives an overview of the UWMP fundamentals and requirements for the 2025 UWMP.

Chapter 2 UWMP Preparation identifies this UWMP as an individual planning effort of the City, lists the type of year and units of measure used, and introduces the coordination and outreach activities conducted by the City to develop this UWMP.

Chapter 3 System Description gives a background on the City's water system and its climate characteristics, population projections, demographics, socioeconomics, and predominant current and projected land uses of its service area.

Chapter 4 Water Use Characterization provides historical, current, and projected water use by customer category for the next 25 years for the City and the projection methodology used by the City to develop the 25-year projections.

Chapter 5 Conservation Target Compliance restates that the City's 2020 per capita water use in gallons per capita per day (gpcd) met the compliance target defined by SB X7-7.

Chapter 6 Water Supply Characterization describes the current water supply portfolio of the City as well as the planned and potential water supply projects and water exchange and transfer opportunities.

Chapter 7 Water Service Reliability and Drought Risk Assessment (DRA) describes the assessment of the reliability of the City's water supply service to its customers for a normal year, single dry year, and five consecutive dry years scenarios. This section also includes a Drought Risk Assessment (DRA) of all the supply sources for a consecutive five-year drought period beginning in 2026.

Chapter 8 Water Shortage Contingency Planning is a brief summary of the standalone WSCP document which provides a structured guide for the City to deal with water shortages, incorporating prescriptive information and standardized action levels, lists the appropriate actions and water use efficiency measures to be taken to ensure water supply reliability in times of water shortage conditions, along with implementation actions in the event of a catastrophic supply interruption.

Chapter 9 Demand Management Measures provides a description of the City's current and planned measures and programs to help the retail customers in its service area be water efficient and comply with the City's urban water use reduction targets.

Chapter 10 Plan Adoption, Submittal, and Implementation provides a record of the process the City followed to adopt and implement its UWMP.

CHAPTER 2 UWMP PREPARATION

The City of Newport Beach's (City) 2025 UWMP is prepared to meet the California Water Code (Water Code) compliance as a retail water supplier to its customers. The development of this UWMP involved close coordination with its wholesale supplier, the Municipal Water District of Orange County (MWDOC), along with other key entities within the region.

2.1 Individual Planning and Compliance

As described in Chapter 1, every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually must prepare, adopt, and file an UWMP with the California Department of Water Resources (DWR) every five years to meet the compliance requirements of the UWMP Act. As shown in Table 2.1, the City meets this requirement as it has 26,361 municipal connections and supplied 14,418 AF in Fiscal Year 2025.

Table 2.1 Submittal Table 2-1 Retail: Public Water Systems

Submittal Table 2-1 Retail: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025 (AF)
Add additional rows as needed			
CA3010023	City of Newport Beach	26,361	14,418
Total		26,361	14,418
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Table 2-3.			
NOTES:			

The City opted to prepare its own UWMP (Table 2.2) and comply with the Water Code individually, while closely coordinating with MWDOC and various key entities as discussed in Chapter 2.2 to streamline regional integration. The UWMP Checklist was completed to confirm the compliance of this UWMP with the Water Code (Appendix A). All DWR standardized tables are provided in Appendix B. The City has selected to report demands and supplies using the fiscal year as the basis (Table 2.3).

Table 2.2 Submittal Table 2-2: Plan Identification

Submittal Table 2-2: Plan Identification		
Select One or Both	Type of Plan	Name of Regional Alliance or RUWMP (Drop Down List)
☒	Individual UWMP	
	If Water Supplier is also a member of a SB X7-7 Regional Alliance, select name from the drop-down.	Orange County 20x2020 Regional Alliance
☐	Regional Urban Water Management Plan (RUWMP)	
	If Supplier selected RUWMP, select name from the drop-down.	

Table 2.3 Submittal Table 2-3: Supplier Identification

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesale supplier
☒	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
☐	UWMP Tables are in calendar years
☒	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
7/1	
Units of measure used in UWMP (select from drop down)	
Unit	AF
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.	

2.2 Coordination and Outreach

2.2.1 Integration with Other Planning Efforts

The City, as the retail supplier to its customers, coordinated the preparation of this UWMP with its water supplier wholesaler, MWDOC, Orange County Water District (OCWD) as the manager of the Orange County Groundwater Basin, and its regional wastewater management agency, Orange County Sanitation District (OC San). The City also developed this Plan in conjunction with other regionally consistent efforts, such as population projections from the Center for Demographic Research at California State University, Fullerton (CDR) and the Orange County Water Deland Projection Model Technical Memorandum.

Key planning and reporting documents that were used to develop this UWMP are:

- **Metropolitan Water District of Southern California's (MET's) 2025 UWMP** uses assumptions that fall within the plausible futures contemplated in MET's Integrated Water Resources Plan (IRP) to evaluate MET's future imported water supply reliability.
- **MET's 2020 Integrated Water Resources Plan (IRP) Regional Needs Assessment** is a long-term, scenario-based planning document that guides MET's programs and investments to ensure reliable water supplies in Southern California and provides a basis for water supply reliability in Orange County.
- **MET's Climate Adaptation Master Plan for Water (CAMP4W)** is an ongoing planning and decision-making tool that accounts for the complexities and uncertainties of climate change. Part of the second phase of MET's long-term IRP planning process, CAMP4W incorporates the results and findings of MET's 2020 IRP Regional Needs Assessment into a collaborative process to identify and evaluate integrated regional solutions.
- **MET's 2025 WSCP** provides a water supply availability assessment and guide for MET's intended actions during water shortage conditions.
- **MWDOC's 2025 WSCP** provides a water supply availability assessment and structured steps designed to respond to actual conditions that will help maintain reliable supplies and reduce the impacts of supply interruptions.
- **MWDOC's 2023 Orange County Water Reliability Study** is a planning document to help guide planning for future water supply reliability for water providers in Orange County and provide input on regional water supply issues for MET.
- **2025 Orange County Water Demand Projection Model Technical Memorandum** is a collaborative effort amongst MWDOC, OCWD, and all retail water suppliers in Orange County that developed water demand projections to produce regionally consistent forecasts across all Orange County water agencies.
- **Orange County Water & Wastewater Multi-Jurisdictional Hazard Mitigation Plan (2024)** provides the basis for the seismic and other natural and natural disaster risk analyses of the water system facilities.
- **OCWD's 2025 Groundwater Resilience Plan (GRP)** was completed in February 2025. The GRP is an adaptive strategies management plan outlining strategic projects to secure reliable future water supplies in the Orange County Groundwater Basin (OC Basin).
- **OCWD's 2024-25 Engineer's Report** provides information on the groundwater conditions, water supply, and basin utilization of the OC Basin.
- **2022 Basin 8-1 Alternative** is an alternative to the Groundwater Sustainability Plan (GSP) for the OC Basin, and provides significant information related to sustainable management of the basin in the past and hydrogeology of the basin, including groundwater quality and basin characteristics, and addresses DWR's recommendations to ensure long-term basin sustainability.
- **Newport Beach Capital Improvement Program** of the City's service area provides information on water infrastructure planning projects and plans to address any required water system improvements.

2.2.1.1 Statewide Water Planning

In addition to regional coordination with the various agencies described above, the City, as a MWDOC member agency, is currently a part of MET's statewide planning effort to reduce reliance on the water imported from the Sacramento-San Joaquin Delta (Delta).

It is the policy of the State of California to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, technology innovation, partner collaborations, and water use efficiency measures. This policy is codified through the Delta Stewardship Council's Delta Plan Policy WR P1 (Cal. Code Regs., tit. 23, §5003) and requires state and local water suppliers to reduce reliance on the Sacramento-San Joaquin Delta by improving regional water self-reliance. It mandates that water exported from, transferred through, or used in the Delta must demonstrate efforts in water conservation, recycling, and supply diversification.

Progress towards achieving the goal of WR P1 is measured through Supplier reporting in each Urban Water Management Planning cycle. WR P1 is relevant to water suppliers that plan to participate in multi-year water transfers, conveyance facilities, or new diversions in the Delta. Additionally, with the recent amendments to the Bay Delta Plan, tributary flow objectives to the Delta are being updated to account for quality and habitat improvements for local environmental resources. This results in reduced reliance on Delta water supplies. Since 2022, the Bay-Delta Plan Amendment update has been in development. This effort considers additional tributaries from the southern San Joaquin Valley, triggering a re-evaluation of Delta flow requirements and conservation objectives, which ultimately may impact available supply to the State Water Project (SWP).

Through significant local investment, collaboration at both a local and regional scale, and integration with MWDOC's water use efficiency strategies and conservation programs, the City has demonstrated a reduction in Delta reliance. For member agencies of MWDOC that receive imported water from MET, these agencies have passively demonstrated a reduction in Delta reliance and a subsequent improvement in regional self-reliance by participating in MWDOC led regional strategies. A detailed description and documentation of the City's consistency with Delta Plan Policy WR P1 is included in Chapter 7.4 and Appendix C.

2.2.2 Wholesale and Retail Coordination

The City developed its UWMP in conjunction with MWDOC's 2025 UWMP. As a retail water supplier, the City provided its historical water use and water use projections data to MWDOC (Table 2.4).

The City also has been taking part in multiple regional programs administered by MWDOC to assist retail agencies in meeting various State compliance, such as the OC Regional Alliance for SBx7-7 compliance, regional water loss program or SB555 compliance, and regional water use efficiency programs. Chapters 5 and 9 provide detailed information on these programs.

Table 2.4 Submittal Table 2-4 Retail: Water Supplier Information Exchange

Submittal Table 2-4 Retail: Water Supplier Information Exchange Water Code Section 10631(h)	
The retail Supplier has informed the following wholesale supplier(s) of projected water use.	
Wholesale Water Supplier Name	
Add additional rows as needed	
Metropolitan Water District of Southern California	
Orange County Water District	
NOTES:	

2.2.3 Public Participation

For further coordination with other key agencies, and to encourage public participation in the review and update of this Plan, the City held a public hearing on May 26, 2026 and notified key entities and the public per the Water Code requirements.

CHAPTER 3 SYSTEM DESCRIPTION

The City of Newport Beach (City) was incorporated on September 1, 1906 and is governed by a seven-member City Council which operates under a Council-Manager format of government. The City Utilities Department and the Public Works Department work collaboratively to provide water to its customers.

The City's water service area covers about 11 square miles located along the Orange County coast of Southern California, bounded to the West by the Pacific Ocean, to the North by the cities of Huntington Beach and Costa Mesa, to the South by Laguna Beach, and to the East by Irvine. The water service area covers most of the City's boundaries, with the remaining areas served by Irvine Ranch Water District (IRWD) and Mesa Water District (Mesa Water). The City operates a wellfield with a total capacity of 10,900 gallons per minute (gpm), 15 recycled water connections, 6 inter-agency emergency interconnections, and manages an approximate 300-mile water main system with 26,361 service connections.

The City's climate is characterized by Southern California's "Mediterranean" climate with mild winters, warm summers, and moderate rainfall. In terms of land use, the City is almost built out with predominantly single- and multi-family residential units. Moving forward, the City will continue planning for its Regional Housing Needs Assessment (RHNA) allocation and future planned developments beyond 2020 will mainly include addition of residential, commercial, and mixed use new development and redevelopment projects. The current population (2025) of 61,893 is projected to decrease by 3.2 percent over the next 25 years to 59,915. This equates to an annual decline rate of 0.13 percent.

3.1 Agency Overview

This section provides information on the formation and history of the City, its organizational structure, roles, and relationship to the Municipal Water District of Orange County (MWDOC).

3.1.1 Formation and Purpose

The City was incorporated on September 1, 1906 and the current City Charter was adopted in 1954. The City is known for its fine residential areas, modern shopping facilities, strong business community, and quality school system. It surrounds Newport Bay, where approximately 4,300 boats of all types are docked within the 21-square-mile harbor area. The bay area and the City's eight miles of ocean beach offer outstanding fishing, swimming, surfing, and aquatic sports activities.

The City Utilities Department is responsible for the operation and maintenance of the City's water, wastewater, and storm drain systems, as well as other municipal utilities within the City. The City's Public Works Department is responsible for engineering services, including capital project delivery, bay water quality and environmental services, and transportation and development services. The two departments work collaboratively to plan for the City's water supply and distribution system improvements through master planning and capital improvement program (CIP) efforts.

3.1.2 City Council

The City Council operates under a Council-Manager format of government. Its seven City Council Members are elected by district, but the population as a whole votes for them. The current City Council members are:

- Joe Stapleton, District 1 Councilmember, 2025 Mayor.
- Michelle Marto, District 2 Councilmember.
- Erik Weigand, District 3 Councilmember.
- Robyn Grant, District 4 Councilmember.
- Noah Blom, District 5 Mayor Pro Tem, 2023 Mayor.
- Lauren Kleiman, District 6 Mayor.
- Sara J. Weber, District 7 Councilmember.

3.1.3 Relationship to MWD OC

The City is one of MWD OC's 27 member agencies purchasing imported water from MWD OC, Orange County's wholesale water supplier, and a member agency of the Metropolitan Water District of Southern California (MET). The City's location within MWD OC's service area is shown on Figure 3.1.

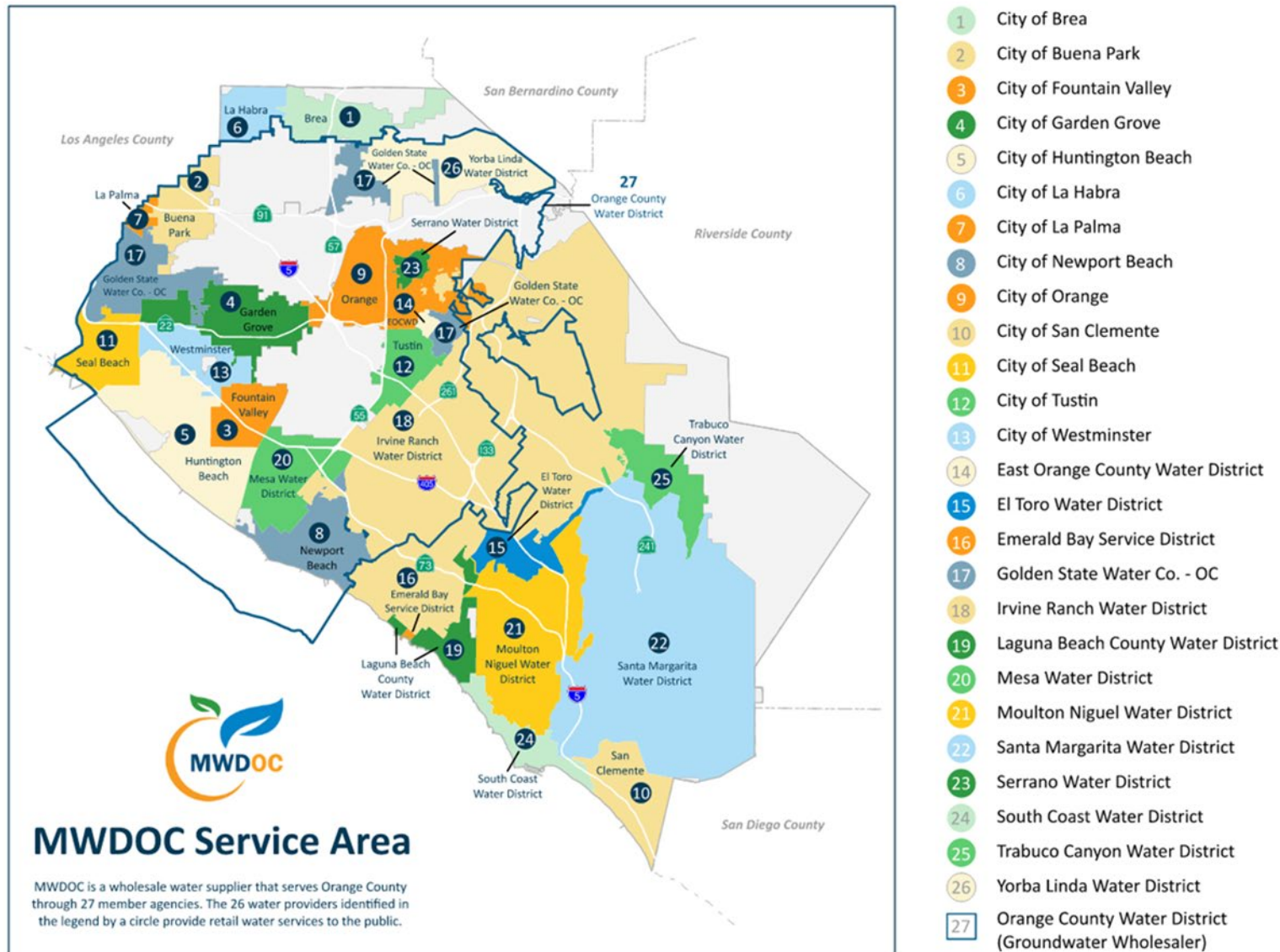


Figure 3.1 Regional Location of City of Newport Beach and Other MWD OC Member Agencies

3.2 Water Service Area and Facilities

3.2.1 Water Service Area

The City provides water to approximately 11 square miles of land area located along the Orange County coast of Southern California. The City is bounded to the West by the Pacific Ocean, to the North by the cities of Huntington Beach and Costa Mesa, to the South by Laguna Beach, and to the East by Irvine. The water service area covers most of the City's boundaries, with the remaining areas served by IRWD and Mesa Water, as shown on Figure 3.2.

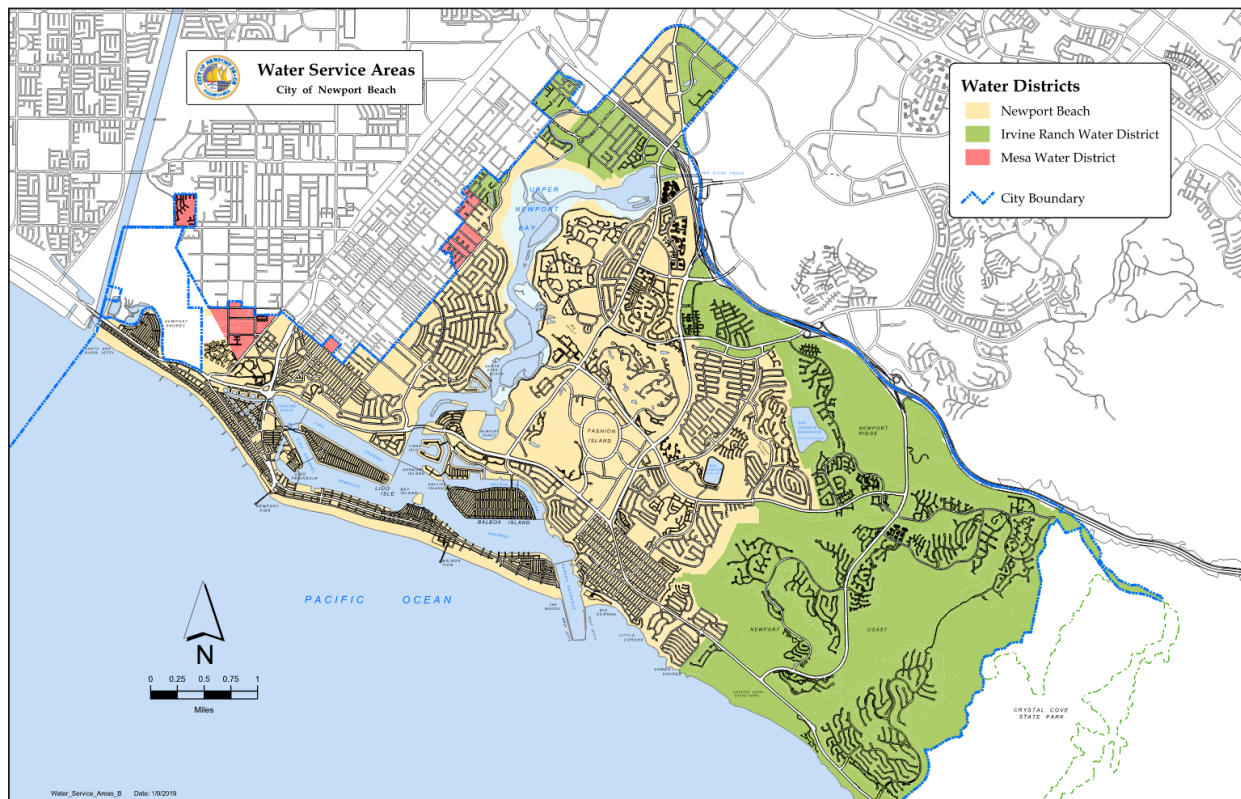


Figure 3.2 City of Newport Beach Water Service Area

3.2.2 Water Facilities

3.2.2.1 Groundwater Facilities

The City receives a large percentage of its supply from groundwater. The City's wellfield with a total capacity of 10,900 gpm (15.7 mgd) is located within the city limits of Fountain Valley, approximately 5 miles north of the City. Groundwater is conveyed from the wellfield to the City via a 30-inch to 36-inch pipeline that discharges into the 16th Street Reservoir. From the reservoir, the water is pumped into the City's distribution system and into a 600-acre-foot (AF), which equates to 195.5 million gallons (MG), storage facility across town called Big Canyon Reservoir.

3.2.2.2 Reservoirs

The City has three reservoirs. These are Big Canyon Reservoir with a capacity of 600 AF (195.5 MG), 16th Street Reservoir with a storage capacity of up to 3 AF (1 MG), and Spyglass Reservoir with a capacity of 1.5 AF (0.5 MG).

3.2.2.3 Imported Water Supply Facilities

The City supplements its local groundwater with imported water purchased from MET through MWDOC as a wholesaler. All of the water supplied by the City is sold to its retail customers (residential and commercial). The City maintains its own retail distribution system. The City delivers potable water through its water system, which consists of approximately 300 miles of pipelines ranging in size from 1 inch to 48 inches in diameter. The City has an extensive distribution system, which includes five pressure zones and six connections along the Orange County Feeder and the East Orange County Feeder No. 2. Maximum turnout capacity equals 67 mgd. The City has five booster pump stations that deliver water to the upper pressure zones, and backup generation facilities ensure that the City can still deliver water to all zones during a rolling blackout.

3.2.2.4 Recycled Water Facilities

The City owns and operates recycled water pump stations for Big Canyon Country Club and the Newport Beach Country Club. Including these two sites, there are currently 15 recycled water connections that supply five different customers. Recycled water is purchased from OCWD and sold to the City's customers.

3.2.2.5 Water Transmission System

Water is delivered to the City's customers from the Groundwater Transmission Main, and from diversions off the Orange County Feeder and the East Orange County Feeder No. 2. The transmission system consists of pipelines, booster pump stations, and storage reservoirs and tanks.

3.2.2.6 Emergency Interconnections

For emergency water shortage or outage conditions, the City has a total of 13 inter-agency emergency interconnections, including six with IRWD and seven with Mesa Water District.

3.3 Climate

The City's service area is located within the South Coast Air Basin (SCAB) that encompasses all of Orange County, and the urban areas of Los Angeles, San Bernardino, and Riverside counties. The climate in the SCAB area is characterized by Southern California's "Mediterranean" climate: a semi-arid environment with mild winters, warm summers, and moderate rainfall.

Local rainfall has limited impacts on reducing water demand in the City, except for the case of landscape irrigation demand. For example, in August 2023, Orange County as a region experienced the lowest seasonal water demand due to significant summer precipitation events from Tropical Storm Hilary. The increase in precipitation allowed landscape irrigation systems to be turned off; however, other municipal and industrial uses (e.g., consumption, processing, and washing) remained the same.

Water that infiltrates into the soil may enter groundwater supplies depending on the local geography. However, due to the large extent of impervious cover in Southern California, rainfall runoff quickly flows to a system of concrete storm drains and channels that lead directly to the ocean. OCWD has successfully captured stormwater along the Santa Ana River and in recharge basins for years and used it as an additional source of supply for groundwater recharge. Based on the 2022 Basin 8-1 Alternative Plan Update, OCWD captured an average annual stormwater volume of approximately 54,000 AF over the period of five years, from Water Year 2016-17 to 2020-21.

MET's water supplies come from the State Water Project (SWP) and the Colorado River Aqueduct (CRA) are influenced by climate conditions in northern California and the Colorado River Basin, respectively. Both regions have variable hydrologic conditions that can significantly affect MET's supplies from year to year. This past decade has seen dramatic swings in annual precipitation, especially in the form of snowpack, which directly affect SWP supply allocations. Similarly, the Colorado River Basin also experienced year-to-year swings in hydrology ,and due to the prolonged drought conditions since 2000, storage within the Colorado River system has declined to less than half of its reservoir capacity and has been fluctuating at that level (MET, 2025).

3.4 Population, Demographics, and Socioeconomics

3.4.1 Service Area Population

The City serves a 2025 population of 61,893 according to the Center for Demographic Research (CDR) at California State University, Fullerton. Overall, the population is projected to decrease by 3.2 percent by 2050. Table 3.1 shows the population projections in five-year increments out to the year 2050 within the City's service area.

Table 3.1 Submittal 3-1 Retail: Population - Current and Projected

Submittal Table 3-1 Retail: Population - Current and Projected Water Code Section 10631(a)						
Population Served	2025	2030	2035	2040	2045	2050 (opt)
	61,893	61,927	62,104	61,889	61,039	59,915
NOTES: Source: Center for Demographic Research at California State University, Fullerton, 2025						

3.4.2 Demographics and Socioeconomics

As shown below in Table 3.2, the total number of dwelling units in the City service area is expected to increase by 4.4 percent in the next 25 years, from 35,294 in 2025 to 36,861 in 2050.

Table 3.2 City of Newport Beach Service Area Dwelling Units by Type

Dwelling Units	2025	2030	2035	2040	2045	2050
Single-Family	14,986	14,986	14,986	14,986	14,986	14,986
All Other ⁽¹⁾	20,308	21,110	21,643	21,764	21,793	21,875
Total	35,294	36,096	36,629	36,750	36,779	36,861

Notes:

Source: Center for Demographic Research at California State University, Fullerton, 2025.

(1) Includes duplex, triplex, apartment, condo, townhouse, mobile home, etc. Yachts, houseboats, recreational vehicles, vans, etc. are included if is primary place of residence. Does not include group quartered units, cars, railroad box cars, etc.

In addition to the types and proportions of dwelling units, various socio-economic factors such as age distribution, education levels, general health status, income, and poverty levels affect the City's water management and planning. Based on the US Census Bureau's [2023 American Community Survey](#), the City has about 27 percent of population aged 65 years and over, 59 percent between the ages of 18 and 64 years, and 14 percent under the age of 18 years. Of the City's population over 25 years of age, 98.2 percent is at minimum a high school graduate, with 69.6 percent of this age group having at least a bachelor's degree.

3.4.3 Demographic Projection Methodology

CDR is a collaborative research center established in 1996 to provide accurate and timely demographic data on population, housing, and employment in Orange County. CDR serves as Orange County's authoritative source for demographic information. The City obtains its service area population and dwelling unit data from MWDOC via CDR. MWDOC contracts with CDR to update the 2010 population estimates through the current year and to provide an annual estimate of population served by each of its retail water suppliers within its service area. CDR uses geographic information system (GIS) mapping and data from the 2000, 2010, and 2020 U.S. Decennial Censuses, State Department of Finance (DOF) population estimates, and the CDR annual population estimates. These annual estimates incorporate annual revisions to the DOF annual population estimates and Housing Inventory System (HIS), often for every year back to the most recent Decennial Census. As a result, all previous estimates are set aside and replaced with the most current set of annual estimates. Annexations and boundary changes for water suppliers are incorporated into these annual estimates.

Demographic projections used for this UWMP reflect the most recently available set of projections developed by CDR based on its 2022 Orange County Projections. Demographic projections for Orange County are updated every 4 years, with the next set of projections expected in the late fall of 2026. The 2022 Orange County Projections accounted for Draft RHNA rezone sites with jurisdictions including the number of dwelling units that are most likely to occur/get built by the end of 2050 under assumptions and trends existing at the time of the forecasting effort, including a parcel-level inventory of additional housing capacity from sites that were to be rezoned to accommodate the 6th RHNA cycle. In the summer of 2025, projections by water supplier for population and dwelling units by type were estimated using the 2022 Orange County Projections dataset. Growth for each of the five-year increments was allocated using GIS and a review of the traffic analysis zones (TAZ) data with a 2023 aerial photo. The growth was added to the 2025 estimates for each respective water supplier.

3.5 Land Uses

3.5.1 Current Land Uses

The City's service area can best be described as a predominantly residential single- and multi-family community located along the coast in central Orange County, close to scenic beaches and natural preserves. Based on the zoning designation collected and aggregated by the Southern California Association of Governments (SCAG) around 2018, the current land use within the City's service area can be categorized as follows:

- Single-family residential: 36.4 percent.
- Multi-family residential: 12.3 percent.
- Commercial: 11.6 percent.
- Industrial: 0.9 percent.
- Institutional/Governmental: 6.2 percent.
- Open space and parks: 21.2 percent.
- Other: 7.5 percent (e.g., Undevelopable or Protected Land, Water, and Vacant)
- No land use designations: 3.9 percent.

3.5.2 Projected Land Uses

Table 3.3 lists the major development projects that the City has identified that will change the City's total water demand in the future. It is possible that not every proposed project will get built in the next decade.

Table 3.3 Planned Developments within the City of Newport Beach

Future Development/ Redevelopment	Anticipated Development Type and Size	Future Land Use Category (Existing)	Size (Acres)	Anticipated Development Period
1500 Quail Street	100 Townhomes	Residential (Office)	4.77	2025-2030
1300 Bristol	193 apartments	Residential (office)	1.97	2025-2030
1400 Bristol	230-unit podium building	Residential(Mixed-Use)	2.38	2025-2030
4400 Von Karman ⁽¹⁾	312 apartments	Residential (office/parking lot)	13	2025-2030
1401 Quail	78-unit condominiums	Residential(Mixed-Use)	1.71	2025-2030
1701 Corinthian	350 apartment units, 7,500 sf commercial	Mixed Use (office)	5.08	2025-2030
4665 MacArthur Court	700 apartments and 10,000 sf retail	Mixed Use (office)	18	2025-2030
4647 MacArthur & 4540 - 4630 Campus	444 apartments	Residential (commercial/office)	6	2025-2030
3100 Irvine Avenue Surf Farm	5 acres of surf lagoon, 20 hotel units (9,500 sf), 5,000 sf clubhouse, 18,000 sf accessory buildings	Recreational/Office (Recreational)	15.38	2025-2030
1650 Ford Road	27 Condominium Units	(Vacant Lot)	1	2025-2030

Future Development/ Redevelopment	Anticipated Development Type and Size	Future Land Use Category (Existing)	Size (Acres)	Anticipated Development Period
Newport Village- Mariner's Mile	17 condominium units, 198 apartments, approx. 60,000 sf commercial	Residential and Commercial (Commercial and Office)	9.4	2025-2030
800 San Clemente	200 apartments	Residential (Parking Garage)	2.23	2025-2030
1300 Dove Street	132 units of townhomes/condos	Residential (Mixed-Use)	6.5	2025-2030
601 Dover	33 townhomes	Residential (Commercial/Office)	1.61	2025-2030
1 Clubhouse Drive	199 apartments	Residential (golf course)	TBD	2025-2030
300 Newport Center Drive	150 condominiums in two 270-foot 22-story buildings. Approx. 2,500 sf retail/café space	Residential/Commercial (Movie theater)	4.17	2025-2030
3233 Pacific View Drive	88 apartments	Residential/Mixed-use (Institutional)	3.6	2025-2030
868 & 870 Santa Barbara	152 dwelling units (TBD product type)	Residential (public facilities)	3.99	2030-2035
1201 Dove Street	179 dwelling units (TBD product type)	Residential (office)	3.59	2030-2035
1580 Monrovia ⁽¹⁾	89 townhomes	Residential (office/industrial)	4.34	2025-2030
1600 Dove Street	282 apartments	Residential (office)	2.49	2030-2035
1526 Placentia ⁽¹⁾	11 apartments	Residential (commercial)	0.35	2025-2030
Newport Center (location TBD)	1,300 apartments	Residential (mixed use)	TBD	2025-2030
Balboa Fun Zone	Redevelopment of existing Fun Zone	Commercial (Commercial)	0.77	2025-2030
1500 Quail Street	100 Townhomes	Residential (Office)	4.77	2025-2030

Note:

sf - square feet; TBD - to be determined

(1) Developments within City limits but outside of water service area.

It should be noted that the 2025 Orange County Water Demand Projection Model discussed in Chapter 4 was based on CDR's 2022 Orange County projections. The developments listed above may have been added or modified since. As a result, the future demands associated with these developments may increase the City's water demand beyond what is presented in this UWMP.

In addition to the above developments, the City will continue planning for the RHNA allocation imposed by the State. Additionally, new developments may potentially include ADUs, while it is also anticipated that policy changes will make it easier for homeowners to add ADUs to existing residential properties.

The following requirements and changes in laws will impact the City's future land use moving forward:

- **Regional Housing Needs Assessment (RHNA):** State law requires jurisdictions to provide their share of the RHNA allocation. SCAG determines the housing growth needs by income for local jurisdictions

through RHNA. The City's RHNA allocation for 2021-2029 is 4,845 dwelling units. This includes 1,456 units for very low-income households, 930 units for low-income households, 1,050 units for moderate-income households, and 1,409 units for above moderate-income households. The City's 6th Cycle Housing Element for the 2021-2029 RHNA cycle provides an 8-year strategy to ensure the availability of adequate residential sites to accommodate these units.

- **Accessory Dwelling Units (ADUs):** ADUs are separate small dwellings embedded within residential properties. There has been an increase in the construction of ADUs in California in response to the rise in interest to providing an affordable housing supply. Since 2020, several landmark laws were passed by State Legislature, updating ADU law to simplify the construction, rental, and sale of ADUs in California. The most significant laws that have recently come into effect include:
 - » [AB-1033 Accessory dwelling units: local ordinances: separate sale or conveyance](#) which authorizes local governments to adopt ordinances permitting the sale of ADUs separately from the primary residence as condominiums.
 - » [AB-976 Accessory dwelling units: owner-occupancy requirements](#) which prohibits a local agency from requiring owner-occupancy for property owners to build and rent an ADU.
 - » [AB-1154 Junior accessory dwelling units](#) which no longer requires owner-occupancy for Junior ADUs (JADUs) as long as they have their own bathroom.
 - » [AB-1332 Accessory dwelling units: preapproved plans](#) which requires local agencies to develop a program for pre-approved ADU plans, with projects using these plans having to be approved or denied within 30 days.
 - » [SB-543 Accessory dwelling units and junior accessory dwelling units](#) which requires local agencies to determine if an ADU/JADU application is complete within 15 business days of submittal, revises ADU size to now be measured by "interior livable space", and now redefine a JADU to be no more than 500 square feet of interior livable space. sustenance
 - » [SB-1211 Land use: accessory dwelling units: ministerial approval](#) which authorizes multi-family property owners to build up to eight detached ADUs on a single lot, provided that the number of ADUs does not exceed the number of existing primary units.
 - » [AB-2533 Accessory dwelling units: junior accessory dwelling units: unpermitted developments](#) which prohibits local agencies from denying permits for unpermitted ADUs/JADUs constructed before January 1, 2020 based on code violations unless the structure is a health or safety hazard.

In 2024, a total of 6,162 new residential units were permitted in Orange County, including those for ADUs (CDR, 2025). CDR projects that by 2050, approximately 13,000 more ADUs will be built in Orange County, with 170 ADUs expected within the City's service area. The increase in ADUs is likely to result in an increase in number of people per lot of land. Depending on whether the addition of ADUs results in a net replacement of irrigated area (or other high water use features such as swimming pools), ADUs could increase or decrease water demands.

CHAPTER 4 WATER USE CHARACTERIZATION

One of the main objectives of an Urban Water Management Plan (UWMP) is to provide insight into the projected future water demands and supplies. This chapter describes the City of Newport Beach's (City) current and future water demands for their service area, factors that influence demands, and the methodology used to forecast future water demands over the next 25 years. For this 2025 UWMP, water demand projections will span from planning year 2025 through planning year 2050.

Known for its suburban coastal communities and densely populated inland areas, Orange County has evolved greatly from its beginnings as an agricultural region. As some of the earliest cities in Orange County, from 1928 to 1931 the Cities of Anaheim, Fullerton, and Santa Ana all joined with 10 other Southern California cities to form the Metropolitan Water District of Southern California (MET), with the ambitious dream to bring Colorado River water across the Mojave Desert. The Municipal Water District of Orange County (MWDOC) later joined MET as a member agency in 1951, and with the merger with Coastal Municipal Water District in 2001, now represents the remainder of Orange County to provide and manage the imported water supplies within its service area. Orange County is now mostly comprised of residential, mixed-use, and commercial developments, with less industry in the region. Agriculture in the region has also declined significantly as Orange County has grown more suburban. Thus, modern-day water use within Orange County can be largely summarized by the following four demand sectors:

- Single-family Residential.
- Multi-family Residential.
- Commercial, Industrial, and Institutional (CII).
- Dedicated Irrigation (potable, recycled, and raw water).

Figure 4.1 shows Orange County's overall historical water usage compared to population since 1990, when local water conservation programs were first established. As shown, from the early 1990s through the mid-2000s, Orange County's water usage increased as the population increased. Population figures slowed significantly in 2018 and began to decrease during the COVID-19 Pandemic in 2020-2021. Since 2007, retail, municipal, and industrial water use in Orange County has declined due to multiple contributing factors. Decades of sustained investments in water-use efficiency and public education have led to significant adoption of water-efficient appliances and fixtures, and increased public awareness of the need to use water wisely. Furthermore, in response to recurring droughts, growing urban demand, and increasingly limited water supplies, multiple regulatory requirements to promote water conservation have evolved and been implemented over the last two decades throughout California and Orange County.

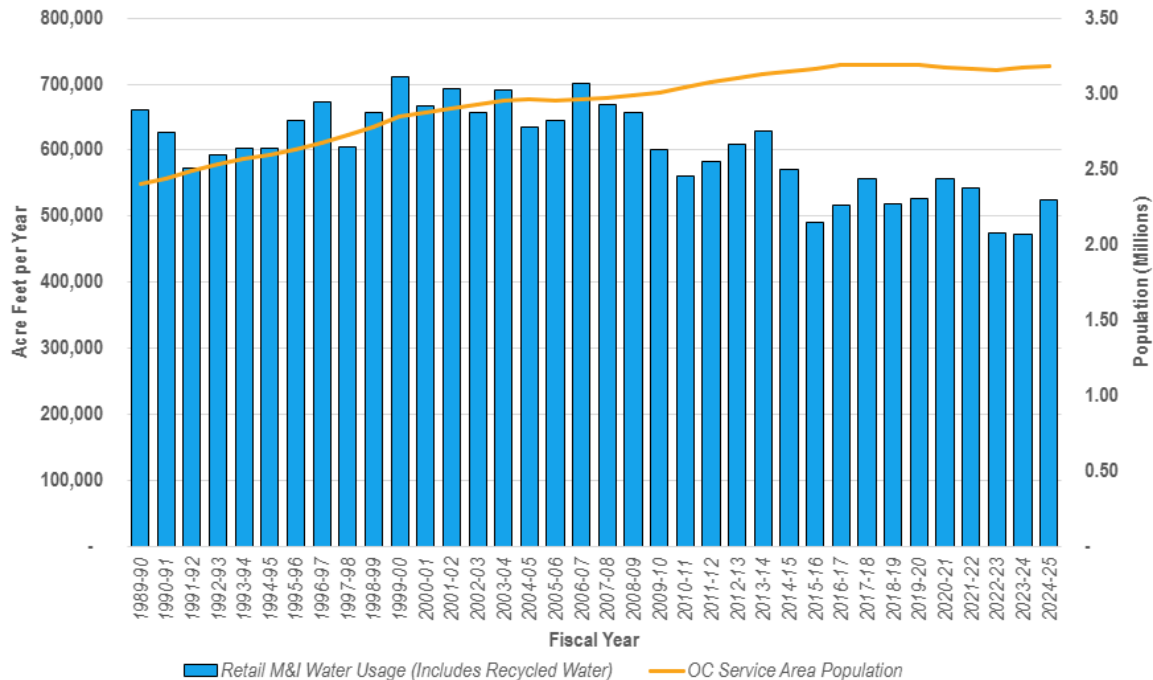


Figure 4.1 Historical Water Use and Population in Orange County

Orange County's trending decline in water usage can most notably be attributed to Orange County water agencies' past efforts to achieve regional and individual compliance with Senate Bill (SB) X7-7, the Water Conservation Act of 2009, through the Orange County 20x2020 Regional Alliance and compliance with Executive Order (EO) B-29-15. EO B-29-15 mandated 25 percent reduction in potable water use in response to the 2013-2014 drought. Furthermore, Orange County water agencies' ongoing progress towards achieving SB 606 and Assembly Bill (AB) 1668, the *"Making Conservation a California Way of Life"* legislation, water use objectives continue to exemplify Orange County water agencies' commitment to water conservation, water use efficiency, and overall reduction in potable water usage in recent decades.

In 2025, MWDOC and Orange County Water District (OCWD), in collaboration with MWDOC's member agencies and the Cities of Anaheim, Fullerton, and Santa Ana, led the effort to develop the 2025 Orange County Water Demand Projection Model. The Orange County Water Demand Projection Model (MWDOC, 2025) was used to project long-term water demand under three hydrologic conditions (normal year, single dry year, and five consecutive dry years), over a 25-year horizon in 5-year increments, consistent with the 2025 UWMP requirements.

Although Orange County demands are forecast to be relatively flat into the future, with water use efficiency efforts counterbalancing new growth, Figure 4.2 shows that annual variations in weather could cause high fluctuations. Some examples of this are described below:

- Single-family consumption is highly seasonal, and the model correlates well with seasonality and temperature by capturing fluctuations in single-family outdoor irrigation.
- Multi-family use is generally less responsive to weather than single-family demands, as much of multi-family outdoor irrigation has been shifted into the irrigation-specific water use sector (dedicated irrigation meters), and generally newer multi-family dwellings in Orange County have comparatively less landscaped area than generally older single-family dwellings due to Model Water

Efficient Landscape Ordinances (MWEL0) mandated since 1993. Seasonal price elasticity varies the least between months for the multi-family sector.

- Commercial, Industrial and Institutional use is positively correlated to each job proportion as well as gross domestic product throughout Orange County, which means a higher amount of CII jobs and production value trend in an increase in water demands.
- Irrigation is the most responsive to temperature and precipitation compared to the other sectors.

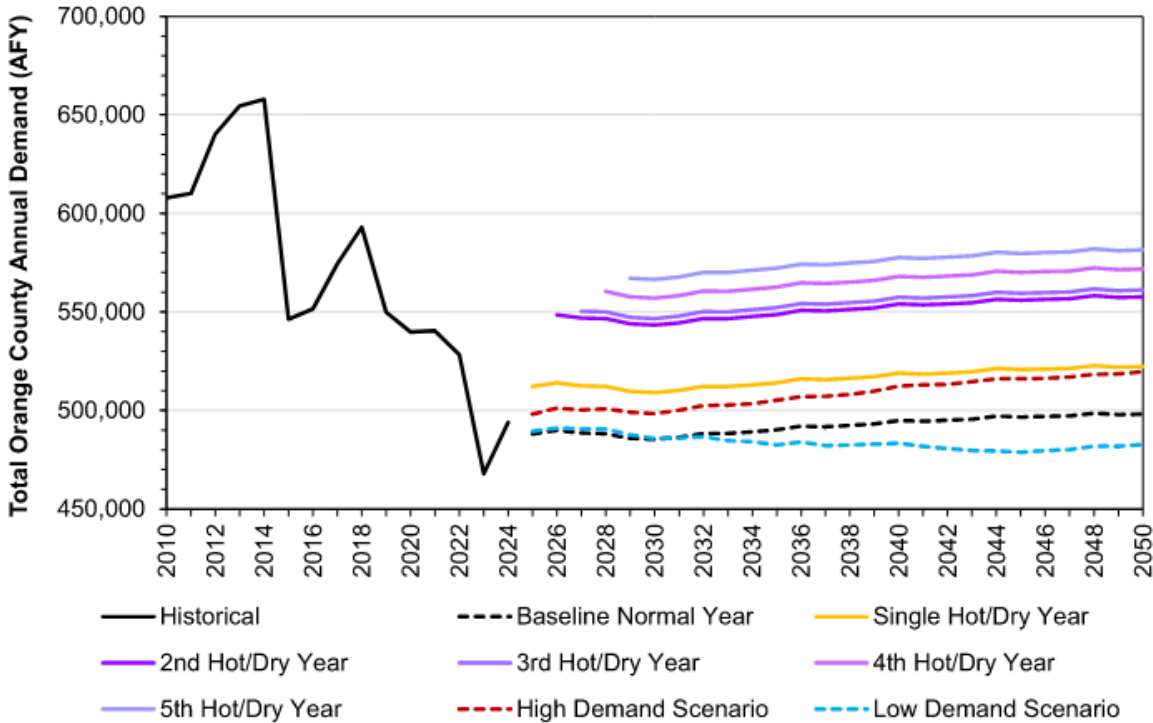


Figure 4.2 Projected Water Use Across All Orange County Water Agencies

In terms of future development, north Orange County is substantially built out, with a majority of residential land uses, with some mixed-use areas dedicated to commercial, institutional, and governmental uses. Future developments planned in north Orange County are mainly redevelopment and infill projects. As for the City's service area specifically, future developments include a number of new projects and redevelopments, housing to meet the City's Regional Housing Needs Assessment (RHNA) allocation, and accessory dwelling units (ADUs), which will all shape the City's future water use trends.

Water use within the City's service area has been relatively constant in the past five years (FY 2020-21 through FY 2024-25), with an annual average total water use of approximately 14,188 acre-feet (AF). Following one of the worst droughts in California history between 2017 and 2022, the significant wet year in 2023 saw a decrease in overall water use from FY 2021-22 to FY 2022-23 in the City's entire service area.

Water use in FY 2024-25 included 13,916 AF of potable water and 502 AF of non-potable water for landscape irrigation. The City's water use is primarily residential. The projected water use in 2050 is 11,895 for potable water and 483 AF for non-potable water.

4.1 Water Use in the Last Five Years

The five-year average water use within the City's service area is approximately 14,187 acre-feet per year (AFY) provided by potable and non-potable sources. Demand trends have regionally remained flat due to water-use efficiency efforts and increased precipitation in recent wet years, such as FY 2023. As mentioned in Chapter 3, the City is mostly built out and population projections are expected to slightly decrease. Total demands have remained relatively stable due to ongoing water conservation programs and improved water use efficiency efforts.

FY 2020-21 through FY 2021-22 saw the highest water use over the last five years due to region-wide drought conditions. FY 2022-23 proved to be one of the wettest years on record in the State, and the City saw a general decrease in water demand following this wet year, as precipitation offsets landscape irrigation demands. These year-to-year fluctuations in precipitation will continue to influence the City's annual demands. In general, the City saw a decrease in demand of 7.3 percent over the 5-year reporting period.

Table 4.1 presents the City's service area existing water use by source for direct uses. There are no indirect uses within the City's service area. The City's service area total water usage in FY 2024-25 was 14,418 AF (Table 4.1). The total usage was met through a combination of potable and non-potable sources, including groundwater, imported water, and recycled water. In FY 2024-25, the total potable demand was 13,916 AFY, while 502 AFY, or about 3.4 percent of the total demand, was served with non-potable supplies for landscape irrigation

Table 4.1 Submittal Table 4-1 Retail: 2025 Actual Total Uses for Potable and Non-Potable Water

Submittal Table 4-1 Retail: 2025 Actual Total Uses for Potable and Non-Potable Water Water Code Section 10631(d)(1)			
Use Type	Additional Description (as needed)	2025 Actual Water Use	
Drop down list May select each use multiple times These are the only use types that will be recognized by the WUE data online submittal tool		Level of Treatment When Delivered (OPTIONAL) Drop down list	Volume
			(AF)
Add additional rows as needed			
Single Family		Potable	5,941
Multi-Family		Potable	1,630
Commercial		Potable	2,534
Institutional/Governmental		Potable	230
Landscape		Potable	2,354
Landscape		Non-Potable	502
Other (optional)	Hydrant meters	Potable	3
Distribution System Water Loss		Potable	1,225
Subtotal Potable			13,916
Subtotal Non-Potable			502
Total			14,418
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.			
NOTES: Distribution System Water Loss is calculated as the difference between potable supplies and demand for FY 2025.			

4.1.1 Potable Municipal and Industrial Use

Table 4.1 summarizes the City's potable water demand for FY 2024-25. As shown, a total of 13,916 AF of potable water was used. The City has a mix of single- and multi-family residential water use which account for 54.4 percent of their total potable water demand. Commercial and institutional/governmental use accounts for a combined 19.9 percent of total potable demand while landscape irrigation accounts for 16.9 percent of total potable demand. The total distribution system water loss to match supply and demand was calculated to be 1,225 AFY in FY 2024-25, or 8.8 percent of total potable water demand. It should be noted that this differs from the City's 685.7 AFY of water loss reported in the American Water Works Association (AWWA) Water Loss Audit for FY 2025.

Because the City is essentially built out with declining population projections, demands are expected to slightly decrease in the long term.

4.1.2 Non-Potable Municipal and Industrial Use

Table 4.1 summarizes the City's non-potable, or outdoor irrigation, water demand for FY 2024-25. As shown, a total of 502 AF was used. Landscape irrigation use accounts for all of the City's non-potable water use, with 500 AF being billed to customers in FY 2024-25. The City's non-potable water demands are expected to decrease in the future.

4.2 Projected Water Use

The water use projection for this UWMP is separated into a near-term period covering the next five years (2026-2030) and a long-term period extending from 2030 through 2050.

The water use projection is based on the 2025 Orange County Water Demand Projection Model Technical Memorandum (TM), which is included in Appendix H of this UWMP. The methodology used in this demand forecast links water use statistically to a set of explanatory variables through a regression, or econometric, model. Section 4.3 offers a description of the methodology used to calculate the City's demand projections.

4.2.1 Water Use Projections for 2026-2030

Total demands (direct) are met through imported water (treated), groundwater, and recycled water. The City utilizes the projected total demands to incorporate the best available planning information when projecting the imported water demands of its service area. The City's total water demand projection for the next five years is shown in Table 4.2. As shown, the City's total service area water demands are expected to remain relatively flat, with a minor decrease over the next five years (2026 to 2030) due to a projected decline in the service area's municipal and industrial (M&I) demands.

Table 4.2 City of Newport Beach's Service Area Total Potable and Non-Potable Demand for 2026-2030

Fiscal Year Ending	2026	2027	2028	2029	2030
Total Water Demand (AF)	12,478	12,460	12,463	12,414	12,412

4.2.2 Water Use Projections for 2030-2050

The City's service area's total water demands (by use type) for the next 25 years are shown in Table 4.3. By 2050, total water demand is projected to be 12,378 AF, a 14.2 percent decrease from the 2025 demand of 14,418 AFY. Table 4.4 indicates additional information for both future conservation efforts and -low income water demands included in the projections, while Table 4.5 presents the passive water savings included in Table 4.3 projections for 2030-2050.

Table 4.3 Submittal Table 4-2 Retail: Total Uses of Potable, and Non-Potable Water - Projected

Submittal Table 4-2 Retail: Total Uses of Potable, and Non-Potable Water - Projected Water Code Section 10631(d)(1)							
Use Type	Additional Description (as needed)	Projected Water Use (Report To the Extent that Records are Available)					
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUE data online submittal tool		Level of Treatment When Delivered (OPTIONAL) Drop down list	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (opt) (AF)
Single Family		Potable	5,455	5,493	5,498	5,461	5,426
Multi-Family		Potable	1,423	1,435	1,436	1,422	1,408
Commercial	Includes Institutional and Industrial uses	Potable	2,825	2,832	2,843	2,838	2,837
Landscape	Includes Agriculture use	Non-Potable	483	483	484	483	483
Distribution System Water Loss	Includes Other uses	Potable	915	919	921	916	912
Single Family		Potable	5,455	5,493	5,498	5,461	5,426
Subtotal Potable			11,929	11,991	12,010	11,949	11,895
Subtotal Non-Potable			483	483	484	483	483
Total			12,412	12,474	12,494	12,432	12,378
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.							
NOTES: Source – 2025 Orange County Water Demand Projection Model Forecast for the City of Newport Beach							

Table 4.4 Submittal Table 4-3 Retail: Inclusion in Water Use Projections

Submittal Table 4-3 Retail: Inclusion in Water Use Projections Water Code Section 10631 (a), 10631 (d)(4)(A), and 10631 (d)(4)(B)	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) Drop down list (y/n)	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. OPTIONAL Suppliers may complete Optional Submittal Table 4-4 R to quantify the expected savings.	Chapter 4.3
Are Lower Income Residential Demands Included In Projections? (Refer to Appendix K of UWMP Guidebook) Drop down list (y/n)	Yes
OPTIONAL If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found. (An example is included in Appendix K.)	Chapter 4.3
NOTES: Future water savings include passive conservation (defined as water savings that occur without incentives). Active conservation (defined as water savings that occur with incentives) is not included in the projections. The demand projection methodology accounted for the entire population of the service area (i.e., all income levels).	

Table 4.5 Optional Submittal Table 4-4 Retail: Passive Water Savings Projections

OPTIONAL Submittal Table 4-4 Retail: Passive Water Savings Projections Water Code Section 10631(d)(4)(A)					
Description (Codes, Standards, Ordinances, or Plans)	Passive savings				
	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (opt) (AF)
Passive Water Savings	131	132	132	131	130
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3. This table identifies the unit of measure selected in Submittal Table 2-3.					
NOTES: Passive conservation here is defined as water savings that occur without incentives. Based on the 2025 Orange County Water Demand Projection Model, passive conservation is assumed to equal a 1.9% decrease in residential demand due to conservation by 2030 (linearly extrapolated), then remains constant in subsequent years.					

4.2.2.1 Direct Municipal and Industrial Use

Potable Municipal and Industrial Use

As shown in Table 4.3, the Total potable water demands are projected to be 11,895 AF by the year 2050, a decrease of about 0.3 percent between 2030 and 2050. It is projected that combined single- and multi-family residential water use will account for 57.5 percent of total potable water demand, combined CII water use is expected to account for 23.9 percent, and landscape irrigation water use will account for 11 percent of total potable water use in the City by 2050. Distribution system water loss and other uses are expected to account for 7.7 percent of total potable water use by 2050.

Non-Potable Municipal and Industrial Use

As shown in Table 4.3, the total non-potable, or outdoor irrigation, water demands are projected to remain relatively constant at 483 AF between 2030 and 2050. It is projected that outdoor irrigation water use will account for 100 percent of total non-potable water use in the City by 2050.

4.3 Water Demand Projection Methodology

In 2025, MWDOC and OCWD, in collaboration with MWDOC's member agencies and the Cities of Anaheim, Fullerton, and Santa Ana, led the effort to develop the 2025 Orange County Water Demand Projection Model (MWDOC, 2025). This effort developed a demand model by regressing historical water consumption data provided by each Orange County water agency against several explanatory variables known to influence water demand (including weather, water price, regional economic conditions, and housing density). The water demand projections were for the Orange County region as a whole and provided retail agency-specific demands, spanning the years of 2025-2050. The full TM can be found in Appendix H.

The demand projections created four econometric, or regression, demand models representing the following four water billing sectors for each Orange County retail agency:

- Single-family Residential.
- Multi-family Residential.
- Commercial, Industrial, and Institutional (CII).
- Dedicated Irrigation (potable, recycled, and raw water).

Prior to developing the forecasts, model calibration and fine-tuning for each of the four demand sectors occurred at the individual retail agency level. The demand across all four models, plus other uses for each agency, is summed to a total forecast for each agency, the MWDOC service area, the OCWD service area, and total Orange County.

The demand projection methodology accounted for the entire population of each individual retail agency's service area (i.e., all income levels), thus accounting for the water demand projections for lower income households within the City's service area.

4.3.1 Econometric Approach, Data Acquisition, and Model Development

A regression, or econometric, approach to demand forecasting statistically links retail level water use to weather, economic, and socioeconomic factors (explanatory variables). The model relies on a comprehensive dataset of historical water-use data for almost 40 different billing sectors collected from Orange County retail agencies. MWDOC obtained explanatory variables from reputable sources, including weather databases and Census-based reports. The explanatory variables used in the regression were based on industry experience regarding what factors affect water use nationwide and in Southern California.

By statistically linking water use to explanatory variables, the econometric models provide a robust foundation for understanding variability and projecting future consumption patterns. Modeled water use is the product of the driver count (e.g., number of accounts), and the rate of water use per driver:

$$\text{Water Use} = \text{Driver Count} \times \text{Rate of Use per Driver}$$

Each of the four demand sectors modeled (single-family, multi-family, CII, and irrigation) has a separate equation. Driver units change into the future based on housing, employment, and population projections. The rate of water use per driver is based on the historical response of the use rate to explanatory variables (measured by coefficients) and the future values of those same explanatory variables.

Linear regression produces the coefficients for each explanatory variable to closely reproduce the historical rate of use per driver unit. The coefficients explain how (both in terms of magnitude and sign) water use responds to changes to explanatory variables.

MWDOC identified driver units based on data provided by agencies and the California State University, Fullerton Center for Demographics Research (CDR) that can be easily projected into the future. The rate of water use per driver is based on agency provided billing sector uses from 2010 through 2024. Table 4.6 shows the driver units and rate of use for each of the four models.

Table 4.6 Summary of Demand Sectors

Sector	Driver Units	Rate of Use Definition
Single-family Residential	Accounts	Gallons/account/day
Multifamily Residential	Accounts	Gallons/account/day
Commercial, Institutional, Industrial (CII)	Jobs	Gallons/job/day
Dedicated Irrigation (potable, recycled, and raw water)	Accounts	Gallons/account/day

The rates of water use for each sector model are based on the historical responses to explanatory variables, and the future values of those explanatory variables. Addressing multiple influences on demand improves the accuracy and precision of all estimated parameters, and the modeling team identified a large range of explanatory variables based on past experience with demand modeling and available data. Table 4.7 displays the explanatory variables.

Table 4.7 Summary of Historical Data Collected for Model Development

Dataset	Data Source(s)
Observed weather (monthly precipitation, monthly maximum temperature)	Parameter-elevation Regressions on Independent Slopes Model (PRISM)
Water Price	Retail agency provided (2010 – 2024)
Drought Restrictions	State Water Resources Control Board
Gross Domestic Product (GDP)	Federal Reserve Bank of St. Louis Real Gross Domestic Product: All Industries in Orange County, CA
Median Income	US Census American Community Survey (ACS)
Housing Density	US Census American Community Survey (ACS), California State University Fullerton Center for Demographics Research (CDR), Southern California Association of Governments (SCAG) land use data
Persons Per Household	
Relative Sectoral Economic Activity	US Census LODES, CDR
Passive Efficiency Estimates	Analysis of trend indicators and MWDOC/FLUME insight
COVID Binary Indicator	Assumed active from March 2020 – May 2023

The MWDOC Water Use Efficiency Group provided annual water savings achieved by various active conservation measures. To avoid potential errors in the classification of historical conservation data, total historical conservation was modeled in each sectoral regression model using a linear trend to capture

steady change over time. While historical conservation is captured in a linear trend, projected passive conservation is based on best available data from the 2021 Orange County Residential Water Efficiency Potential and Opportunities Study and assumes a 1.9 percent decrease in annual residential demand from 2025 to 2030, at which point passive conservation is projected to remain constant. Future active conservation is not accounted for in the baseline demand forecast, as water savings from active programs (programs that require customers to change behavior) are highly specific to retail agencies and to the formulation and timing of their implementation.

The process of identifying the explanatory variables to include in the regression equation and developing coefficients that accurately measure the response of water use to changes in these variables is the most time-intensive part of the demand forecasting process.

Prior to developing the forecasts, model calibration and fine-tuning for each of the four demand sectors occurred at the individual retail agency level. The modeling team worked with each retail agency to calibrate sectoral model equations and quantify other uses (those not included in the single-family, multifamily, irrigation, or CII demand sectors).

Figure 4.3 presents the iterative process undergone to develop the econometric demand forecasts.

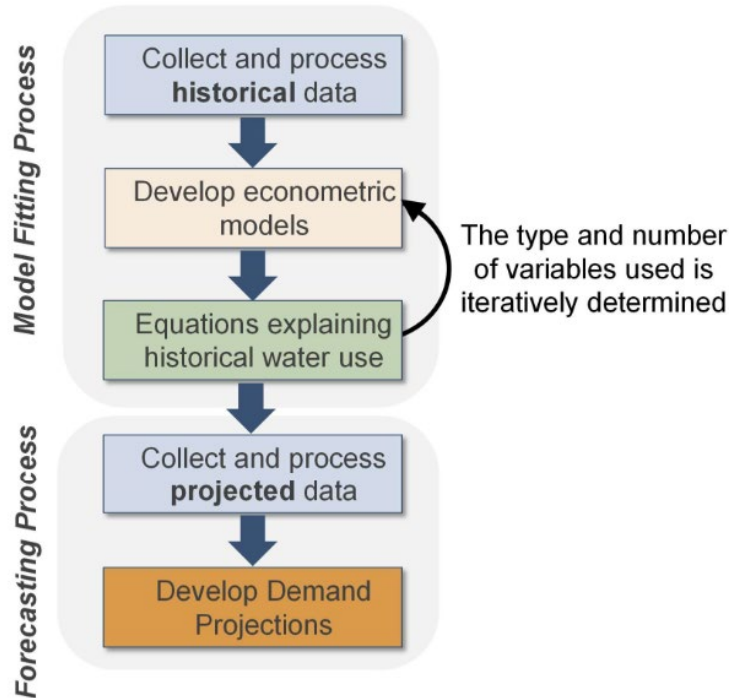


Figure 4.3 Econometric Demand Forecast Development Process

4.3.2 Forecasted Demands

Forecasted demand is a function of both the change in driver units into the future as well as the change in explanatory variables. Table 4.8 summarizes the future drivers, variables, and assumptions for the baseline forecast. It should be noted that the CDR demographic forecast accounts for both the RHNA allocations and projected increase in accessory dwelling units (ADUs). The 2022 Orange County Projections

accounted for Draft RHNA rezone sites¹ with jurisdictions including the number of dwelling units that are most likely to occur/get built by the end of 2050 under assumptions and trends existing at the time of the forecasting effort.

Table 4.8 Future Model Parameters

Data Category	Variable	Source	Assumptions
Driver Units	Single-family and multifamily accounts	CDR	Historical households per account; averages are multiplied by households projected by CDR
	Irrigation accounts	Agency Billing Data	Accounts are assumed to be constant into the future
	Sectoral Employment	CDR	Proportion of jobs within CII sectors projected by CDR
Explanatory Variables	Monthly Maximum Temperature and Total Precipitation	PRISM	30-year historical normal weather
	Water Price	Retail Agencies	Prices increase by 3% per year above inflation for 2025-2030 and keep pace with inflation thereafter (zero difference from inflation trend)
	Water Use Restrictions	State and Local Restrictions	None
	Seasonality		Sine/cosine functions to capture monthly pattern
	Median Income	US Census	Constant income at 2022 value (real dollars)
	Housing Density	CDR	Derived from CDR housing unit projections, assuming residential area remains at 2024 levels
	Persons Per Household	CDR	CDR projected demographics
	Gross Domestic Product	Federal Reserve	Long-term GDP trend
	Relative Sectoral Employment	CDR	Calculated based on CDR projections
	Passive Efficiency Estimates	Flume Insight	Assumes a 2% decrease in residential demand due to conservation by 2030 (linearly extrapolated), then no change
	COVID Binary Indicator		None (occurred between March 2020 and May 2023)

The normal year scenario was provided by the baseline forecast. In this model, the single dry year scenario used a hot-dry index (HDI) to identify the year with the most weather-sensitive demand, with 2014

¹ For the 2022 Orange County Projections, CDR collected initial draft input from local jurisdictions in September 2021 on their anticipated jurisdiction-level housing growth for each projection year. In December 2021-February 2022, CDR reviewed and extracted data from jurisdictions' draft housing elements to create a parcel-level inventory of additional housing capacity from sites that were to be rezoned to accommodate the 6th RHNA cycle. These were reviewed by jurisdictions in spring 2022. Jurisdictions completed the rezoning of the final sites after their housing elements were certified by the State Housing and Community Development Department starting in 2022. The final adopted rezone sites will feed into CDR's 2026 Orange County Projections.

selected for most agencies. The multiple dry year was developed to describe the potential impact of consecutive dry years.

The forecasts for individual agencies, including the City's, were then summed to the regional level, providing regionally consistent forecasts for all of Orange County.

4.4 Water Loss

The City has conducted annual water loss audits since 2015 per the AWWA methodology per SB 555 to understand the relationship between water loss, operating costs, and revenue losses. Non-revenue water for FY 2020-2024 consists of three components: real losses (e.g., leakage in mains and service lines, and storage tank overflows), apparent losses (unauthorized consumption, customer metering inaccuracies, and systematic data handling errors), and unbilled water (e.g., hydrant flushing, firefighting, and blow-off water from well start-ups). Table 4.9 summarizes the status of the last five years of water loss audit reporting for the water system. Reports can be found online at [WUEdata - Water Audit Plans](#).

Understanding and controlling water loss from a distribution system is an effective way for the City to achieve regulatory standards and manage their existing resources.

Table 4.9 Submittal Table 4-5 Retail: Water Loss Audit Reporting

Submittal Table 4-5 Retail: Water Loss Audit Reporting Water Code Section 10631(d)(3)(A)		
Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
Report submittal status for all five years for each Public Water System as available. Add rows as needed		
CA3010023	2020	Yes
	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
DWR NOTES: Suppliers will provide a link to the WUE data submittals of their Water Loss Audit Reports.		
NOTES: Water Loss Audits reported in Fiscal Years (FY).		

Signed in 2018 and adopted in 2024, the *"Making Conservation a California Way of Life"* legislation (SB 606 and Assembly Bill 1668) establishes a new framework for long-term improvements in urban water use efficiency and drought planning as California adapts to climate change impacts. Under the regulation, Suppliers must annually calculate Urban Water Use Objectives based on standards applied at the service -area scale, including the Water Loss Performance Standard developed by the State Water Resources Control Board to minimize water waste through system leaks. The Water Loss Performance Standard requires that Suppliers must meet the real water loss standard and apparent water loss standard by 2028.

Table 4.10 presents the City's progress towards compliance with the 2028 Water Loss Standard, as of the time of writing this UWMP. The most recent AWWA Water Loss Audit for FY 2025 was utilized for the calculations presented.

Table 4.10 Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard

Submittal Table 4-6 Retail: Progress Towards 2028 Water Loss Standard Water Code Section 10631(d)(3)(C)											
Public Water System ID # Reported in Submittal Table 2-1 R	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (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		Real Water Loss Per Unit per Day	State Water Board Standard		Most Recent AWWA Water Loss Audit		Apparent Water Loss Per Unit per Day
		2028 Real Water Loss Standard per Unit per day	Units for Real Water Loss Drop down list	Number of Units (Connections or Miles corresponding with units selected)	Volume of Total Real Loss (from AWWA Water Loss Audit)		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)	
					(AF)					(AF)	
Add additional rows as needed.											
CA3010023	Yes	19.1	Gallons per Service Connection per Day (GPSCD)	26,769	432.85	14.4	6.9	Gallons per Service Connection per Day (GPSCD)	26,769	252.81	8.4
Water Board's Calculated Water Loss Standards											
DWR NOTES: Units of measure (AF, CCF, MG) for Water Loss MUST remain consistent with units reported in Submittal Table 2-3. The units reported in Submittal Table 2-3 are used in this table's calculations.											
NOTES: Uses the Water Board's calculated water loss standards updated as of 01/30/2026 and AWWA Water Loss Audit for CY 2024. Connection count may differ from what is reported in Table 2-1 R for FY 2025.											

CHAPTER 5 CONSERVATION TARGET COMPLIANCE

The Water Conservation Act of 2009, also known as Senate Bill (SB) X7-7, mandated a 20 percent reduction in urban per-capita water use across California by 2020. To achieve this goal, the Act required each retail water supplier to establish an urban water-use target, contributing to the State's collective efforts. The Legislature stated that the combined reductions from all retail suppliers would fulfill the statewide legislative mandate.

The goal of this chapter is to allow the retail water supplier to report on their progress toward meeting their urban water-use targets in their Urban Water Management Plan (UWMP), pursuant to Water Code Section 10608.40. Suppliers that did not meet their 2020 target in 2020 are required to compare their 2025 water use to the 2020 target.

Retail water suppliers are required to comply with SB X7-7 individually or as a region in collaboration with other retail water suppliers or demonstrate they have a plan or have secured funding to be in compliance, in order to be eligible for water related state grants and loans.

When determining water use in an UWMP, two terms are often used interchangeably:

- **Daily Per-Capita Water Use.** The amount of water used per person per day. In the UWMP calculations, this is total water use within a service area, divided by population, and it is measured in gallons.
- **Gallons Per Capita Per Day (GPCD).** This is the "daily per-capita water use" measured in gallons. Therefore, the term commonly used when referring to "daily per-capita water use" is "gallons per capita per day" or GPCD.¹

5.1 Reporting Requirements

Municipal Water District of Orange County's (MWDOC's) Water Use Efficiency (WUE) programs helped Orange County meet the state's 20x2020 mandate by coordinating conservation efforts across its member agencies, funding and implementing regionally cost-effective efficiency programs, and enabling compliance through the Orange County 20x2020 Regional Alliance. By aligning its WUE portfolio directly with SB X7-7 requirements, supporting high-impact measures (especially outdoor water savings), documenting eligible indirect potable reuse credits, and centrally handling regional target calculations and reporting, MWDOC allowed participating retailers to comply collectively rather than individually resulting in regional per-capita water use well below the required 2020 target.

¹ It is important to distinguish GPCD (as used in UWMPs) from the Residential Gallons Per Capita Per Day (R-GPCD) that is used in some reporting to the California State Water Resources Control Board (SWRCB). GPCD is the total water use from all sectors within a service area (residential, commercial, institutional, and any others) minus allowable exclusions (as defined in SB X7-7), then divided by the population. This is used in UWMPs. R-GPCD is only a part of the GPCD; it is the estimated residential water use in a service area divided by population.

As a result of MWDOC's WUE program, all Orange County water retailers, including all MWDOC's member agencies and the participating cities of Anaheim, Fullerton, and Santa Ana, achieved compliance prior to 2020. The following table with information taken from the 2020 UWMP verifies that City of Newport Beach met their SB X7-7 requirement. A discussion of programs implemented to support the achievement of the agency's per capita water reduction goals is covered in Section 9 - Demand Management Measures of this UWMP.

Table 5.1 Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress

Submittal Table 5-1 Retail: SB X7-7 2020 Target Progress Water Code Section 10608.40						
☐ Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.						
Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target? Drop down list	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?	Only for suppliers that did not meet the Target in 2020 See DWR NOTES below.	
					Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	207	160	Yes		NA
DWR NOTES: Suppliers calculating a 2025 GPCD will need to complete and submit SB X 7-7 Compliance Tables to verify the use of SB X7-7 Methodologies. Suppliers that were part of a merger or consolidation since 2020 see Chapter 5 and Appendix P for guidance. NA=Not Applicable						
NOTES: Supplier met the 2020 target, actual 2025 GPCD not required.						

CHAPTER 6 WATER SUPPLY CHARACTERIZATION

Orange County has a water supply portfolio made up from a variety of local and imported sources. Groundwater is produced from the Orange County Basin, which is managed by the Orange County Water District (OCWD). To enhance the reliability of groundwater, OCWD has implemented projects and programs over the years that include (1) the Groundwater Replenishment System (GWRS), which is the world's largest water purification system for indirect potable reuse; (2) increased stormwater capture for groundwater recharge; and (3) participation in the Santa Ana River Conservation and Conjunctive Use Program (SARCCUP), a collaborative, watershed-scale approach for groundwater basin management, replenishment, and water transfers.

Imported water is provided by the Metropolitan Water District of Southern California (MET), the wholesale water provider to 26 member agencies in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. MET's imported water sources are delivered through its own Colorado River Aqueduct (CRA) and the California Aqueduct, under contract with the State Water Project (SWP). To enhance its reliability of its imported water, MET has implemented many programs such as canal lining and transfers of agricultural water, land fallowing programs with irrigation districts, water banking programs, and use of its storage reservoirs.

Local and imported water sources in Orange County are managed in such a way that they complement each other. For example, during wet and normal years additional MET water is purchased for groundwater replenishment in the Orange County Basin. During dry and drought years, when imported water is more limited, more groundwater can be produced to meet Orange County water demands. This coordinated management of water supplies has resulted in reliable water service even during multi-year droughts. Based on the water supply assessment described in this chapter and in Chapter 7, the Orange County region will continue to receive a reliable water supply through the next 25 years.

Specifically, this chapter includes (1) descriptions of each water supply source and their management; (2) quantification of water supply sources through 2050 under normal, dry, and multi-dry weather conditions; (3) opportunities for exchanges and transfers; and (4) discussion regarding any planned or potential future water supply projects. This chapter also includes the energy intensity of the water service.

6.1 Water Supply Overview

The City meets all of its demands with a combination of imported water and local groundwater to meet its water needs. The City works together with the Municipal Water District of Orange County (MWDOC) and OCWD to deliver a safe and reliable water supply that will continue to serve the community in periods of average, dry and drought hydrologic conditions. MWDOC is the Orange County wholesaler of imported water and one of MET's 26 member agencies. MET's imported water is delivered from the California SWP and MET's CRA to Southern California. The City purchases imported water through MWDOC to supplement its local supplies.

Local sources presently account for 82 percent of the City's water supplies, whereby groundwater is the major source of local supply. The primary source of groundwater originates from the Orange County Groundwater Basin (OC Basin), which is located in the middle portion of MWDOC's service area and is

managed by OCWD. The GWRS is a joint project between OCWD and the Orange County Sanitation District (OC San). Using advanced treatment, recycled wastewater is transformed into a high-quality water supply for groundwater replenishment.

The City's main source of water supply is groundwater from the OC Basin. Imported water makes up the rest of the City's water supply portfolio. In FY 2024-25, the City relied on approximately 79 percent groundwater, 3 percent recycled water, and 18 percent imported water (Table 6.1).

Table 6.1 Submittal Table 6-8 Retail: Water Supplies - 2025 Actual

Submittal Table 6-8 Retail: Water Supplies — 2025 Actual Water Code Section 10631(b)			
Water Supply	Additional Description	2025	
		Water Type (after treatment if treated)	Actual Volume (AF)
Groundwater (not desalinated)	Orange County Groundwater Basin (OCWD)	Potable	11,326
Purchased or Imported Water	MWDOC	Potable	2,590
Recycled Water	OCWD	Non-Potable	502
Subtotal Potable			13,916
Subtotal Non-Potable			502
Total			14,418
NOTES: Source - MWDOC, 2025 for groundwater and purchased water data, City of Newport Beach for recycled water data.			

In 2025, MWDOC developed a water demand forecast model for its participating water agencies that statistically correlates municipal and industrial (M&I) water use with demographic, socioeconomic, conservation and weather variables—as reported in the 2025 Orange County Water Demand Projection Model TM (MWDOC, 2025). Because the model isolates weather, future water demand projects can be estimated under single and multiple-year droughts and under future climate change scenarios.

It is projected that by 2050, the City's water portfolio will change to approximately 82 percent groundwater, 4 percent recycled water, and 14 percent imported water (Figure 6.1 and Table 6.2). It should be noted that these representations of supply match the projected demand. However, the City can purchase more MET imported water through MWDOC, should the need arise. Note that the GWRS supplies are included as part of groundwater pumping numbers.

The following subsections provide a detailed discussion of the City's water sources as well as the future water supply portfolio for the next 25 years.

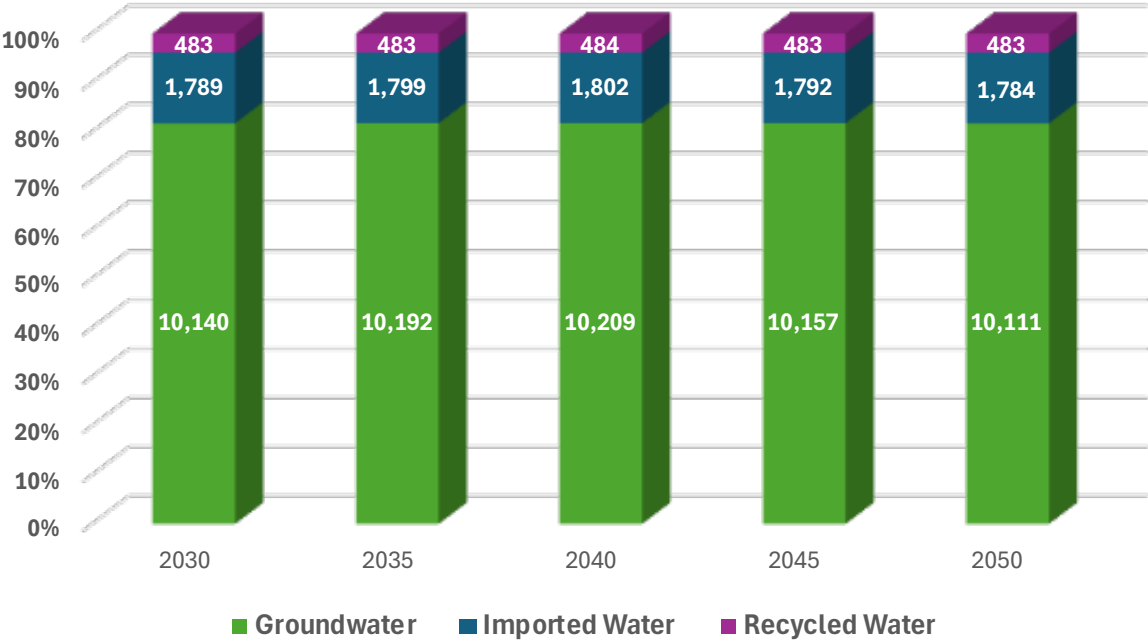


Figure 6.1 City's Projected Water Supply

Table 6.2 Submittal Table 6-9 Retail: Water Supplies - Projected

Submittal Table 6-9 Retail: Water Supplies — Projected Water Code Section 10631 (b)							
Water Supply	Additional Detail on Water Supply	Water Type (after treatment if treated)	Projected Water Supply (Report to the Extent Practicable)				
			2030	2035	2040	2045	2050 (opt)
			Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
			(AF)	(AF)	(AF)	(AF)	(AF)
Purchased or Imported Water	MWDOC	Potable	1,789	1,799	1,802	1,792	1,784
Groundwater (not desalinated)	OC Groundwater Basin (OCWD)	Potable	10,140	10,192	10,209	10,157	10,111
Recycled Water	OCWD	Non-Potable	483	483	484	483	483
Subtotal Potable			11,929	11,991	12,011	11,949	11,895
Subtotal Non-Potable			483	483	484	483	483
Total			12,412	12,474	12,495	12,432	12,378
NOTES: Source - MWDOC, 2025. The basin production percentage (BPP) is only applied to the City's potable water supply. Volumes of groundwater and imported water may vary depending on OCWD's actual BPP projections, which are established annually. This table only considers direct use of recycled water - this does not include indirect potable recharge.							

6.2 Imported Water

The City supplements its water supply with imported water purchased from MET through MWDOC. In FY 2024-25, the City relied on approximately 2,590 AFY—approximately 18 percent of the City's water supply portfolio for FY 2024-25—of imported water from MET/MWDOC to meet its demands.

MET's principal sources of water are the Colorado River via the CRA and the Lake Oroville watershed in Northern California through the SWP. For Orange County, the water obtained from these sources is treated at the Robert B. Diemer Filtration Plant located in the City of Yorba Linda. Typically, the Diemer Filtration Plant receives a blend of Colorado River water from Lake Mathews through the MET Lower Feeder and SWP water through the Yorba Linda Feeder. The City currently maintains six connections to the MET system along the Orange County Feeder and the East Orange County Feeder No. 2 with a total available capacity of 104 cubic feet per second (cfs), or 67 million gallons per day (mgd).

6.2.1 Metropolitan Water District of Southern California

MET is the largest water wholesaler in California, serving approximately 19 million customers in a 5,200-square mile service area. MET wholesales imported water supplies to 26 member agencies located in the six southern California counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura.

MET is governed by a Board of Directors comprised of 38 appointed individuals with a minimum of one representative from each of MET's 26 member agencies. The allocation of directors and voting rights is determined by each agency's assessed valuation. Each member of the Board is entitled to cast one vote for each ten million dollars of assessed valuation of property taxable for district purposes, in accordance with Section 55 of the Metropolitan Water District Act. Directors may be appointed by the chief executive officer of the member agency or by a majority vote of the agency's governing board. Directors are not compensated by MET for their service (The Metropolitan Water District Act, 1969).

MET is responsible for importing water into the region through its operation of the CRA, which brings Colorado River supply to its service area, and its SWP contract, which brings water from northern California via the California Aqueduct. MET supplements its direct deliveries of imported supplies with its storage reservoirs, water transfers, agricultural irrigation water conservation, and water banking programs. Major imported water aqueducts bringing water to Southern California are shown in Figure 6.2. It should be noted that the Los Angeles Aqueduct is owned and operated by the Los Angeles Department of Water and Power and is not part of MET's imported water supplies. Member agencies receive water from MET through various delivery points and pay for service through a rate structure comprising volumetric rates, capacity charges, and readiness-to-serve charges. Member agencies provide MET with estimates of imported water demand in April each year, indicating the amount of water they anticipate they will need to meet their demands over the next five years.

In Orange County, MWDOC and the cities of Anaheim, Fullerton, and Santa Ana are MET member agencies that purchase imported water directly from MET. MWDOC purchases both treated potable and untreated water from MET to supplement its retail agencies' local water supplies and for groundwater replenishment. Figure 6.3 illustrates the MET feeders and major transmission pipelines that deliver water within Orange County.

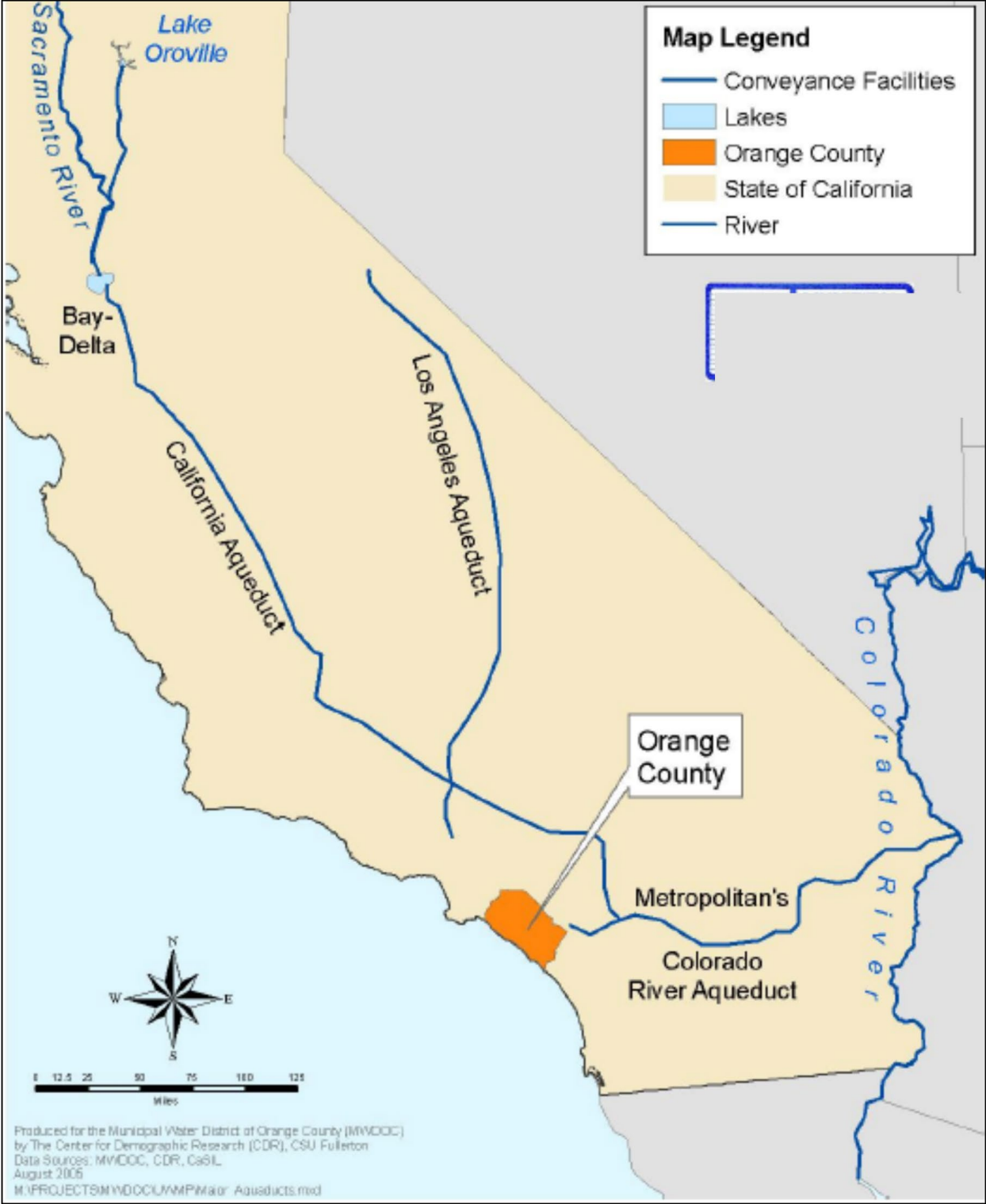


Figure 6.2 Major Aqueducts that Supply Imported Water to Southern California (MET, 2025)



 OC Water Retailers and Transmission Mains

Figure 6.3 MET Feeders and Transmission Mains that Serve Orange County

6.2.2 Colorado River Aqueduct

6.2.2.1 Background

The Colorado River was MET's original source of water after MET's establishment in 1928. The original founding members created MET with the goal to build the CRA to bring water to Southern California. The CRA, which is owned and operated by MET, transports water from the Colorado River to its terminus Lake Mathews, in Riverside County. The actual amount of water per year that may be conveyed through the CRA to MET's member agencies is subject to the availability of Colorado River water. Approximately 40 million people rely on the Colorado River and its tributaries for potable water with 5.5 million acres of land using Colorado River water for irrigation. The CRA includes supplies from the implementation of the Quantification Settlement Agreement (QSA) and its related agreements to transfer water from agricultural agencies to urban uses. The 2003 QSA enabled California to implement major Colorado River water conservation and transfer programs to stabilize water supplies and reduce the state's demand on the river to its 4.4 million acre-feet (MAF) entitlement. Colorado River transactions are potentially available to supply additional water up to the CRA capacity of 1.25 MAF on an as-needed basis. Water from the Colorado River or its tributaries is available to users in California, Arizona, Colorado, Nevada, New Mexico, Utah, Wyoming, and Mexico. California is apportioned the use of 4.4 MAF of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California, and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to, but not used by, Arizona or Nevada. MET has fourth-priority rights, with a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY when the following conditions exist (MET, 2025):

- Water is unused by the California holders of priorities 1 through 3.
- Water is saved by the Palo Verde land management, crop rotation, and water supply program.
- When the US Secretary of the Interior makes available either one or both of the following:
 - » Surplus water.
 - » Colorado River water that is apportioned to but unused by Arizona and/or Nevada.

6.2.2.2 Current Conditions and Supply

The Colorado River supply faces current and future imbalances between water supply and demand in the Colorado River Basin due to reductions in snowpack, long-term drought conditions, and climate change. The last 25-year period has been called a megadrought, with Lake Mead's elevation dropping from a high of 1,215 feet in 2000 to its lowest level of 1,040 feet in July 2022. While extreme wet conditions resulted in lake levels exceeding 1,077 feet in February 2024, levels have been persistently hovering around 1,057 feet since May of 2025. The United States Bureau of Reclamation (USBR) projects that there is a 53 percent likelihood that Lake Mead elevation could fall below 1,035 feet, which would trigger water shortages for MET under the current operating guidelines. As of August 2025, Lake Mead storage was approximately 31 percent of capacity per USBR's 24-Month Study, which also projected continued Lower Basin shortage conditions in 2026 (MET, 2025).

The current operating guidelines for the Colorado River expire at the end of 2026, and a new, long-term operating plan must be in place by November 2026 to manage the river's water supply. The ongoing Colorado River allocation negotiations are focused on creating a post-2026 operating plan, with states

and the federal government aiming for consensus on how to manage the river's declining water supply due to the severe, prolonged drought in the Colorado River Basin. The drought on the Colorado River began around 2000 and has continued, in various degrees of severity, for over two decades, making it a historic megadrought that has significantly reduced water flow into the river and lowered water levels in reservoirs like Lake Powell and Lake Mead. Although some periods, like the wet winter of 2023, brought temporary relief with increased snowfall, they were not enough to fully replenish the system or overcome the prolonged lack of water and effects of climate change, such as aridification and increased evaporation according to the US Geological Survey (USGS, 2024). Under the 2007 Interim Guidelines, together with the Lower Basin Drought Contingency Plan (2019), the Intentionally Created Surplus (ICS) program has allowed MET to store conserved water in Lake Mead for subsequent recovery; these frameworks sunset with the Guidelines at the end of 2026 and are expected to be addressed in the post-2026 rules (MET, 2025).

The USBR, which is part of the US Department of the Interior, is the federal agency leading the negotiations and responsible for managing the river system. The ongoing Colorado River negotiations aim to find a fair and sustainable way to allocate the available water, which is significantly less than in the past. Talks are centering on a "natural flow" proposal that divides water based on current river conditions, rather than historical allocations. However, states remain at odds over how much water to allocate to the Upper and Lower Basins, with the federal government planning to impose its own plan if an agreement is not reached by the November 2026 deadline. Some key challenges that remain to be resolved are the different interests of the Upper Basin states (Colorado, Utah, Wyoming, New Mexico) and the Lower Basin states (California, Arizona, Nevada) to reach consensus on how much water the Upper Basin should send downstream. In addition, Tribal nations are also seeking recognition of their rights and a role in the future management of the river. Given MET's junior priority status within California's Colorado River priority system, reductions to MET's supplies are a possibility under future operating criteria; MET's planning reflects this risk (MET, 2025).

Consistent with MET's 2025 UWMP, supply capability planning uses USBR's August 2023 Colorado River Simulation System (CRSS) assumptions, including a climate-adjusted flow reduction factor of approximately 9.3 percent per 1 degree Celsius of warming over the planning horizon (2025-2050). MET continues to utilize supply, storage, transfer, and conservation programs, including ICS participation under the current Guidelines, to manage risk and buffer shortages. In addition, conserved QSA-related transfer water delivered at Lake Havasu (including Imperial Irrigation District and canal-lining exchanges) is categorized in MET's 2025 UWMP as Colorado River imported supply (previously treated as local supply), aligning accounting with current practice (MET, 2025).

6.2.2.3 MET Colorado River Current Programs

Over the years, MET has helped fund and implement various programs to improve Colorado River supply reliability and help resolve the imbalance between supply and demand. Implementation of such programs has contributed to achievements such as a record-low diversion of the Colorado River in 2019, a level not seen since the 1950s. Colorado River water management programs include:

- **Lower Colorado Water Supply Projects** – Authorized in 1980s, this project provides up to 10,000 AFY of water to certain entities that do not have or have insufficient rights to use Colorado River water. A contract executed in 2007 allowed MET to receive project water left unused by the

project contractors along the River – nearly 10,000 acre-feet (AF) were received in recent years when unused supplies were available.

- **Imperial Irrigation District / MET Conservation Program** – Under agreements executed in 1988 and 1989, this program allows MET to fund water efficiency improvements within Imperial Irrigation District’s service area in return for the right to divert the water conserved by those investments. An average of 105,000 AFY of water has been conserved since the program’s implementation.
- **Management of MET-Owned Land in Palo Verde** – Since 2001, MET has acquired approximately 21,000 acres of irrigable farmland that are leased to growers, with incentives to grow low water-using crops and experiment with low water-consumption practices. MET continues to evaluate opportunities to formally account for verified long-term water savings associated with these lands as part of its Colorado River supply reliability strategy.
- **Palo Verde Land Management, Crop Rotation, and Water Supply Program** – Authorized in 2004, this 35-year program allows MET to pay participating farmers to reduce their water use, and for MET to receive the saved water. Over the life of the program, an average of 84,500 AFY has been saved and made available to MET.
- **Southern Nevada Water Authority (SNWA) and MET Storage and Interstate Release Agreement** – Entered in 2004, this agreement allows SNWA to store its unused, conserved water with MET, in exchange for MET to receive additional Colorado River water supply. MET has relied on the additional water during dry years, especially during the 2011-2016 California drought, and SNWA is not expected to call upon MET to return water until after 2026.
- **Lake Mead Storage Program** – Executed in 2006 and subsequently integrated with Lower Basin Drought Contingency Plan (DCP) operations, MET may intentionally leave conserved water in Lake Mead for exclusive future use. MET has significantly expanded its use of intentionally created surplus (ICS) storage in recent years, including record storage creation (450,000 AF) in 2023 under DCP-related conservation programs.
- **Quagga Mussel Control Program** – Developed in 2007, this program introduced surveillance activities and control measures to combat quagga mussels, an invasive species that impact the Colorado River’s water quality.
- **Bard Seasonal Fallowing Program** – Authorized in 2019, and subsequently expanded, this program allows MET to pay participating farmers in Bard to reduce their water use between the late spring and summer months of selected year. Under expanded program authorizations through 2026 (Quechan Seasonal Fallowing Program), this program can provide up to approximately 12,000 AFY in certain years.
- **Lower Basin Drought Contingency Plan** – Signed in 2019, this agreement incentivizes storage in Lake Mead through 2026 and overall, it increases MET’s flexibility to fill the CRA as needed (MET, 2025).
- **Lower Basin Conservation and System Efficiency Programs** – In recent years, MET has participated in new, multi-agency conservation and system efficiency programs implemented between 2023 and 2026. These programs incentivize agricultural conservation, system efficiency improvements, urban conservation, and groundwater storage in the Lower Colorado River Basin, with the goal of reducing

system demands and increasing storage in Lake Mead during critically dry conditions. This includes programs such as the Quechan Diversion Forbearance program.

- **Exchange Programs** – MET is involved in separate exchange programs with the USBR, which takes place at the Colorado River Intake and with San Diego County Water Authority (SDCWA), which exchanges conserved Colorado River water.

The Colorado River faces long-term challenges of water demands exceeding available supply with additional uncertainties due to climate change. Climate change impacts expected in the Colorado River Basin include the following:

- More frequent, more intense, and longer lasting droughts, which will result in water deficits.
- Continued dryness in the Colorado River Basin, which will increase the likelihood of triggering a first-ever shortage in the Lower Basin.
- Increased temperatures, which will affect the percentage of precipitation that falls as rain or snow, as well as the amount and timing of mountain snowpack (MET, 2025).

Given these uncertainties, MET plans to continue implementing and expanding Colorado River conservation, storage, exchange, and transfer programs, while also supporting increased water recycling and system efficiency improvements within the Colorado River Basin. MET continues to evaluate additional transfer and conservation opportunities to further enhance regional supply reliability through the 2025 UWMP planning horizon.

6.2.3 State Water Project

6.2.3.1 Background

The SWP consists of a series of pump stations, reservoirs, aqueducts, tunnels, and power plants operated by California Department of Water Resources (DWR) and is an integral part of the effort to ensure that business and industry, urban and suburban residents, and farmers throughout much of California have sufficient water. Water from the SWP originates at Lake Oroville, which is located on the Feather River in Northern California. Much of the SWP water supply passes through the Sacramento-San Joaquin Delta ("Delta"). The SWP is the largest state-built, multipurpose, user-financed water project in the United States. Nearly two-thirds of residents in California receive at least part of their water from the SWP, with approximately 70 percent of SWP's contracted water supply going to urban users and 30 percent to agricultural users. The primary purpose of the SWP is to divert and store water during wet periods in Northern and Central California and distribute it to areas of need in Northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California (MET, 2025).

The Delta is key to the SWP's ability to deliver water to its agricultural and urban contractors. All but five of the 29 SWP contractors receive water deliveries below the Delta (pumped via the Harvey O. Banks or Barker Slough pumping plants). However, the Delta faces many challenges concerning its long-term sustainability such as climate change posing a threat of increased variability in floods and droughts. Sea level rise complicates efforts in managing salinity levels and preserving water quality in the Delta to ensure a suitable water supply for urban and agricultural use. Furthermore, other challenges include continued subsidence of Delta islands, many of which are already below sea level, and the related threat of catastrophic levee failure as water pressure increases or following a major seismic event.

In May 2019, DWR withdrew its permit for the two-tunnel WaterFix project in favor of a smaller one-tunnel project alternative. In July 2022, the draft Environmental Impact Report (EIR) for the recommended Delta Conveyance Project alternative was issued, with the project potentially operational by 2045 (Delta Conveyance Design and Construction Authority, 2024), though its implementation faces strong opposition by environmental organizations and other interests in the Delta. The maximum value of the Delta Conveyance Project, when coupled with 250,000 AF of new regional storage, is estimated to be 367,000 AFY for MET, with 63,000 AFY of that amount for Orange County. The Delta Conveyance Project also reduces the probability that any shortage occurs by about 10 percent, meaning a doubling of the time between shortage conditions from once every 5 years to once every decade (MWDOC OC Water Reliability Study, 2023).

6.2.3.2 Current Conditions and Supply

Just like the Colorado River, the amount of water that can be delivered from the SWP to its 29 contractors varies annually based on hydrology and reservoir storage along the SWP. The DWR publishes the maximum entitlement of SWP water for each water contracting agency in "Table A." DWR sets these allocations to balance the needs for human health and safety, agricultural, and municipal water, considering factors like reservoir storage, runoff forecasts, and Endangered Species Act (ESA) requirements. The primary drivers that influence allocations are hydrologic conditions (precipitation and snowmelt) along with storage levels, especially in Lake Oroville. Actual deliveries typically average less than 50 percent of Table A due to hydrologic and regulatory constraints (MET, 2025). MET's actual annual allocations based on springtime Table A values for the past UWMP cycles are summarized in Table 6.3.

Table 6.3 MET SWP Program Capabilities

Year	Average Annual Table A Spring Allocation (MAF)
2015	0.38
2020	0.38
2025	0.96
Percent Change ⁽¹⁾	+252.6%

Notes:

(1) Percent change is between the years 2020 and 2025. Source: SWP Allocations 1996-2026.

SWP contractors may additionally receive Article 21 water on a short-term basis in addition to Table A water if requested. Article 21 of SWP contracts allows contractors to receive additional water deliveries only under specific conditions, generally during wet months of the year (December through March). Because a SWP contractor must have an immediate use for Article 21 supply or a place to store it outside of the SWP, there are few contractors like MET that can access such supplies (MET, 2025).

Carryover water is SWP water allocated to an SWP contractor and approved for delivery to the contractor in a given year but not used by the end of the year. The unused water is stored in the SWP's share of San Luis Reservoir, when space is available, for the contractor to use in the following year (MET, 2025).

Turnback pool water is Table A water that has been allocated to SWP contractors who have exceeded their demands. This water can then be purchased by another contractor depending on its availability (MET, 2025).

The following factors affect the ability to estimate existing and future water delivery reliability:

- **Water availability at the source:** Availability can be highly variable and depends on the amount and timing of rain and snow that fall in any given year. Generally, during a single dry year or two, surface and groundwater storage can supply most water deliveries, but multiple dry years can result in critically low water reserves. Fisheries issues can also restrict the operations of the export pumps even when water supplies are available.
- **Water rights with priority over the SWP:** Water users with prior water rights are assigned higher priority in DWR's modeling of the SWP's water delivery reliability, even ahead of SWP Table A water.
- **Climate change:** Mean temperatures are predicted to vary more significantly than previously expected. This change in climate is anticipated to bring warmer winter storms that result in less snowfall at lower elevations, reducing total snowpack. From historical data, DWR projects that by 2050, the Sierra snowpack will be reduced from its historical average by 25 to 40 percent. Increased precipitation as rain could result in a larger number of "rain-on-snow" events, causing snow to melt earlier in the year and over fewer days than historically, affecting the availability of water for pumping by the SWP during summer. Furthermore, water quality may be adversely affected due to the anticipated increase in wildfires. Rising sea levels may result in potential pumping cutbacks on the SWP and CVP. DWR's recent planning documents and the Draft 2025 DCR describe climate-adjusted "existing conditions" baselines and future scenarios used by agencies for UWMPs.
- **Regulatory restrictions on SWP Delta exports:** The federal Biological Opinions (BiOps) protect special-status species such as delta smelt and spring- and winter-run Chinook salmon and imposed substantial constraints on Delta water supply operations through requirements for Delta inflow and outflow and export pumping restrictions. Restrictions on SWP operations imposed by state and federal agencies contribute substantially to the challenge of accurately determining the SWP's water delivery reliability in any given year (DWR, 2020b).
- **Ongoing environmental and policy planning efforts:** Following the 2019 withdrawal of WaterFix, DWR certified the Delta Conveyance Project Final EIR and approved the Bethany alignment in December 2023, a key modernization initiative for the SWP. EcoRestore and related habitat efforts continue to advance.
- **Delta levee failure:** The levees are vulnerable to failure because most original levees were simply built with soils dredged from nearby channels and were not engineered. A breach of one or more levees and island flooding could affect Delta water quality and SWP operations for several months. When islands are flooded, DWR may need to drastically decrease or even cease SWP Delta exports to evaluate damage caused by salinity in the Delta.

It can be concluded that the federal regulatory framework affecting the Bay-Delta's ecosystem, species, and water supply are constantly evolving by adapting to new scientific information, changing climate conditions, and legal challenges. This dynamic and complex regulatory landscape, along with hydrologic and storage conditions along the SWP, continues to result in water supply uncertainties that impact all SWP contractors, including MET, MWDOC, and its member agencies (MET, 2025).

6.2.3.3 SWP Programs/Plans

In the past five years, MET has updated and implemented planning, regulatory, infrastructure, and operational programs to improve the reliability of the SWP supplies while addressing environmental,

seismic, and climate-related risks in the Sacramento-San Joaquin Delta and along the California Aqueduct. Key SWP programs and planning efforts include:

- **SWP BiOps and California Incidental Take Permit** - Updated BiOps and a California ITP issued in 2024 provide a new operating framework intended to improve flexibility and species protection. The 2025 MET UWMP characterizes the net reliability benefit at approximately +60,000 AFY relative to prior permits, subject to hydrologic and regulatory conditions.
- **Healthy Rivers and Landscapes (HRL) Voluntary Agreements** - MET supports the State's proposed Healthy Rivers and Landscapes program, which establishes a voluntary framework for improving Delta ecosystem conditions through coordinated flow contributions and habitat restoration projects. The HRL approach is intended to provide regulatory stability while supporting environmental objectives consistent with SWP operations.

6.2.4 Storage, Transfers, and Conveyance Programs

Storage is a major component of MET's dry year resource management strategy. MET's likelihood of having adequate supply capability to meet projected demands, without implementing its Water Supply Allocation Plan (WSAP) depends on its storage resources. Following a significant drawdown during the 2020-2022 drought, MET rebuilt storage as hydrologic conditions improved. By the end of 2023, MET had approximately 3.4 MAF of regional dry-year storage. Storage increased to 3.8 MAF by the end of 2024, with levels projected to reach approximately 3.9 MAF by the end of 2025. MET also maintains approximately 750 TAF of emergency storage dedicated to catastrophic supply interruption conditions, including a major seismic failure of the Delta levees.

In its 2025 UWMP, MET evaluates storage based on median starting storage at the beginning of each five-year increment, representing a 50 percent probability that actual storage will be higher or lower. This approach differs from earlier UWMPs, which relied on average storage assumptions, and provides a more conservative and realistic representation of storage availability. All storage capability values incorporate conveyance and recovery constraints associated with SWP terminal reservoirs, the CRA, and MET's in-region and out-of-region groundwater banking programs.

Lake Oroville continues to serve as the SWP's largest storage facility with a capacity of approximately 3.5 MAF. Water released from Oroville moves to the Feather River and then to the Sacramento River before being pumped south at the Harvey O. Banks pumping plant into the California Aqueduct. MET's storage portfolio includes surface reservoirs such as Diamond Valley Lake, Lake Mathews, and Lake Skinner; SWP terminal storage in San Luis Reservoir; groundwater banking programs including Semitropic, Arvin-Edison, the High Desert Water Bank, Kern Delta, and Mojave; and ICS storage in Lake Mead. These storage assets provide operational flexibility during dry years and help maintain supplies during extended droughts or emergency events.

MET endeavors to increase the reliability of water supplies through the development of flexible storage and transfer programs including groundwater storage (MET, 2025). These include:

- **Antelope Valley-East Kern (AVEK) Water Agency Exchange and Storage Program:** Under the exchange program, for every 2 AF MET receives, MET returns 1 AF back to AVEK, and MET will also be able to store up to 30,000 AF in the AVEK's groundwater basin, with a dry-year return capability of 10,000 AF.

- **Arvin-Edison Storage Program:** The storage program is estimated to deliver 75,000 AF, and the specific amount of water MET can expect to store in and subsequently receive from the program depends on hydrologic conditions and any regulatory requirements restricting MET's ability to export water for storage. During wet years, MET has the discretion to use the program to store portions of its SWP supplies which are in excess, and during dry years, the Arvin-Edison Water Storage District returns MET's previously stored water to MET by direct groundwater pump-in or by exchange of surface water supplies.
- **Diamond Valley Lake to Rialto Pipeline** – Planned for completion in 2028, this project creates new conveyance that improves the ability to move non-SWP supplies (120 cubic feet per second (cfs), including CRA and banked water) into areas historically dependent on SWP deliveries, increasing drought and seismic resilience.
- **High Desert Water Bank Program:** Developed in partnership with AVEK, this regional groundwater banking program allows MET to store up to 280,000 AF of SWP Table A or other available supplies in the Antelope Valley groundwater basin. The program provides a put-and-take capability of up to approximately 70,000 AFY, with infrastructure including monitoring and production wells, California Aqueduct turnouts, pipelines, recharge basins, and pump facilities. Phase 1 became operational in 2023, with full build-out expected by approximately 2030.
- **Kern-Delta Water District Storage Program:** This groundwater storage program has 250,000 AF of storage capacity, and water for storage can either be directly recharged into the groundwater basin or delivered to Kern-Delta Water District farmers in lieu of pumping groundwater. During dry years, the Kern-Delta Water District returns MET's previously stored water to MET by direct groundwater pump-in return or by exchange of surface water supplies.
- **Mojave Storage Program:** MET entered into a groundwater banking and exchange transfer agreement with Mojave Water Agency that allows for the cumulative storage of up to 390,000 AF. The agreement allows for MET to store water in an exchange account for later return.
- **Richvale & Western Canal Water Transfers** – These multi-year transfer options will provide supplemental dry-year supplies when available, with volumes up to approximately 54,000 AF (2025-2027).
- **San Bernardino Valley MWD Surplus SWP Program** – Programmatic access to surplus SWP supplies (approximately 13 TAF) will be available from SBVMWD under certain hydrologic and operational conditions.
- **Semitropic Storage Program:** The maximum storage capacity of the program is 350,000 AF, and the minimum and maximum annual yields available to MET are 34,700 AF and 236,200 AF, respectively. The specific amount of water MET can expect to store in and subsequently receive from the program depends on hydrologic conditions, any regulatory requirements restricting MET's ability to export water for storage and demands placed by other program participants. During wet years, MET has the discretion to use the program to store portions of its SWP supplies which are in excess, and during dry years, the Semitropic Water Storage District returns MET's previously stored water to MET by direct groundwater pump-in or by exchange of surface water supplies.

- **Sepulveda Feeder Pump Stations (Stage 1)** – This program includes pumping improvements that expand westward movement of CRA/SWP/banked supplies across service areas to address localized system constraints. Pumping capacity is expected to be 30 cfs upon completion of Stage 1 in 2027.
- **Yuba Accord Extension** – This project is a continuation of an established dry-year transfer program from the Yuba watershed that can be accessed subject to hydrologic and regulatory conditions. As of 2025, the extension is under negotiation for approximately 250,000 AFY in supply.

6.2.5 Potential Future Water Projects

6.2.5.1 Climate Adaptation Master Plan for Water

In February 2023, the MET's Board directed its staff to integrate water resources planning, climate resilience planning, and financial planning into a *Climate Adaptation Master Plan for Water* (CAMP4W). Then a Joint Task Force of Board Members and Member Agency Managers was convened to facilitate the development of CAMP4W in a timely and transparent process. The main elements of CAMP4W include:

1. Identify climate and growth scenarios, building from analyses conducted for MET's *Integrated Resources Plan* (IRP).
2. Develop time-bound targets for new regional water supplies and system improvements.
3. Establish a framework for decision-making and annual reporting.
4. Form policies, initiatives, and partnerships.
5. Evaluate business models and funding strategies.

Because investments required for regional supply reliability and system resilience are significant, it is important that decisions are made through an adaptive management process to avoid the risks associated with over-investment or under-performance. Tracking signposts and progress towards time-bound targets is therefore critical for CAMP4W's annual reporting. Currently, regional projects being explored by MET include Pure Water Southern California, new reservoir storage in Southern California of up to 155,000 AFY, regional seawater desalination, and participation in California's Delta Conveyance Project. These projects will be scored against the following CAMP4W criteria: (1) reliability; (2) resilience; (3) financial; (4) adaptability/flexibility; (5) equity; and (6) environmental co-benefits.

Pure Water Southern California – The potential Pure Water Southern California program, a partnership with the Sanitation Districts of Los Angeles County, would purify wastewater treatment effluent that currently flows to the ocean to produce high quality recycled water. The purified water would be delivered to Metropolitan's member agencies to meet their groundwater replenishment and storage requirements. It should be noted that the 2025 MET UWMP does not include Pure Water yield in projected supplies (MET, 2025).

Sites Reservoir – This potential project includes a water storage reservoir of 1.5 MAF and would require the construction of two large dams up to 310 feet high and nine smaller saddle dams. The water stored in the reservoir, located north of Sacramento, would be diverted from the Sacramento River during high flow events and returned to the Sacramento River during dry and critical years, thereby providing additional dry-year water for environmental flows and project partners including SWP agencies south of the Delta. The current operations model estimates the annual water yield of the Sites Reservoir Project at approximately 270,000 AFY by 2032, when the Sites Reservoir Project is scheduled to be operational (MET,

2025). It should be noted that the 2025 MET UWMP does not include Sites Reservoir in projected supplies (MET, 2025).

Delta Conveyance Project – Following DWR’s withdrawal and subsequent termination of the California WaterFix project, the State advanced a new single-tunnel Delta Conveyance Project to address seismic risk, sea-level rise, extreme weather, and regulatory uncertainty while improving long-term SWP delivery reliability. The environmental review was completed in 2023 and DWR has approved the project. Potential yield used in planning analyses is on the order of approximately 400,000 AFY. It should be noted that the 2025 MET UWMP does not include Delta Conveyance Project yield in projected supplies pending future milestones and contracting decisions (MET, 2025).

6.2.6 Supply Reliability Within Metropolitan Water District of Southern California

MET’s 2025 UWMP reports on its water reliability and identifies projected supplies to meet the long-term demand within its service area. The MET 2025 UWMP discusses the current water supply conditions and long-term plans for supply implementation and continued development of a diversified resource mix. It describes the programs being implemented, such as the CRA, SWP, Central Valley storage/transfer programs, water use efficiency programs, local resource projects, and in-region storage that will enable the region to meet its water supply needs. MET’s 2025 UWMP also presents MET’s supply capacities from 2025 through 2050 for average year, single dry year, five consecutive dry years, and more frequent and severe droughts, as specified in the UWMP Act.

Information concerning MET’s UWMP, including the background, associated challenges, and long-term development of programs for each of MET’s supply sources and capacities have been summarized and included in the following subsections. Additional information on MET can be found directly in MET’s 2025 UWMP.

6.2.6.1 MET’s Water Service Reliability Assessment Results

In MET’s 2025 UWMP, MET evaluated supply reliability by projecting supply and demand under a normal year, single-dry year, and five-year consecutive dry years, based on conditions affecting the SWP (MET’s largest and most variable supply). For this supply source, the average of 100 historical years 1922-2021 most closely represents water supply conditions in a normal water year, the single driest year was 1977 and the five-year dry period was 1988-1992. The analyses also include Colorado River supplies under the same hydrological variations.

MET also incorporated the SWP and Colorado River’s reliability factors, such as water quality objectives set by the SWRCB, BiOps, and amendments to the Coordinated Operations Agreement for the SWP and Quantification Settlement Agreements for the Colorado River into their assessment.

MET has concluded that the region can provide reliable water supplies under normal, single-dry, and five-year consecutive dry conditions as presented in Table 6.4, Table 6.5, and Table 6.6, respectively.

In each of the following tables, "Current Programs" supplies include:

- In-Region Supplies and Programs:
 - » Metropolitan Surface Storage (Diamond Valley Lake, Lake Mathews, Lake Skinner).
 - » Flexible Storage in Castaic Lake and Perris Lake.
 - » Groundwater Storage for Conjunctive Use.
- California Aqueduct (SWP), including Central Valley transfers and storage program supplies conveyed by the aqueduct.
- Colorado River Aqueduct, including deliveries, programs, and exchanges with SDCWA.

These supplies are impacted—typically reduced—by the single dry year and multiple dry year scenarios. Though demands increase in these drought conditions, MET projects reliable supply, even surplus, through 2050. MWDOC is a MET member agency, and MET's projections take into account the imported demands from Orange County. As so, MET's water reliability assessments are used to determine that demands within MWDOC can be met for all three hydrological conditions.

Table 6.4 MET's Projected Supply Capability and Demands Through 2050 for a Normal Year

Normal Year
Supply Capability¹ and Projected Demands
Average of 1922-2021 Hydrologies
(acre-feet per year)

Forecast Year	2030	2035	2040	2045	2050
Current Programs					
In-Region Supplies and Programs	789,000	776,000	746,000	733,000	827,000
California Aqueduct ²	1,723,000	1,694,000	1,668,000	1,641,000	1,641,000
Colorado River Aqueduct					
Total Supply Available ³	1,334,700	1,358,200	1,336,000	1,323,500	1,345,500
Aqueduct Capacity Limit ⁴	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Colorado River Aqueduct Capability	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Capability of Current Programs	3,762,000	3,720,000	3,664,000	3,624,000	3,718,000
Demands					
Total Demands on Metropolitan	1,225,000	1,238,000	1,266,000	1,285,000	1,303,000
Exchange with SDCWA	278,000	278,000	278,000	278,000	278,000
Total Metropolitan Deliveries⁵	1,503,000	1,516,000	1,544,000	1,563,000	1,581,000
Surplus	2,259,000	2,204,000	2,120,000	2,061,000	2,137,000
Programs Under Development					
In-Region Supplies and Programs	0	0	0	0	0
California Aqueduct	0	0	0	0	0
Colorado River Aqueduct					
Total Supply Available ³	0	0	0	0	0
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	0	0	0	0	0
Potential Surplus	2,259,000	2,204,000	2,120,000	2,061,000	2,137,000

Notes:

1. Represents Supply Capability for resource programs under listed year type.
2. California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.
3. Colorado River Aqueduct includes programs and Exchange with SDCWA conveyed by the aqueduct.
4. Maximum CRA deliveries limited to 1.25 MAF including Exchange with SDCWA.
5. Total demands are adjusted to include Exchange with SDCWA.

Table 6.5 MET's Projected Supply Capability and Demands Through 2050 for a Single Dry Year

Single Dry Year
Supply Capability¹ and Projected Demands
Repeat of 1977 Hydrology
(acre-feet per year)

Forecast Year	2030	2035	2040	2045	2050
Current Programs					
In-Region Supplies and Programs	789,000	776,000	746,000	733,000	827,000
California Aqueduct ²	662,000	649,000	635,000	622,000	622,000
Colorado River Aqueduct					
Total Supply Available ³	1,334,700	1,358,200	1,336,000	1,411,000	1,433,000
Aqueduct Capacity Limit ⁴	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Colorado River Aqueduct Capability	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Capability of Current Programs	2,701,000	2,675,000	2,631,000	2,605,000	2,699,000
Demands					
Total Demands on Metropolitan	1,356,000	1,375,000	1,401,000	1,419,000	1,436,000
Exchange with SDCWA	278,000	278,000	278,000	278,000	278,000
Total Metropolitan Deliveries⁵	1,634,000	1,653,000	1,679,000	1,697,000	1,714,000
Surplus	1,067,000	1,022,000	952,000	908,000	985,000
Programs Under Development					
In-Region Supplies and Programs	0	0	0	0	0
California Aqueduct	0	0	0	0	0
Colorado River Aqueduct					
Total Supply Available ³	0	0	0	0	0
Aqueduct Capacity Limit ⁴	0	0	0	0	0
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	0	0	0	0	0
Potential Surplus	1,067,000	1,022,000	952,000	908,000	985,000

Notes:

1. Represents Supply Capability for resource programs under listed year type.
2. California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.
3. Colorado River Aqueduct includes programs and Exchange with SDCWA conveyed by the aqueduct.
4. Maximum CRA deliveries limited to 1.25 MAF including Exchange with SDCWA.
5. Total demands are adjusted to include Exchange with SDCWA.

Table 6.6 MET's Projected Supply Capability and Demands Through 2050 for a Drought (5 Consecutive Water Years)

**Drought Lasting Five Consecutive Years
Supply Capability¹ and Projected Demands
Repeat of 1988-1992 Hydrology
(acre-feet per year)**

Forecast Year	2030	2035	2040	2045	2050
Current Programs					
In-Region Supplies and Programs	160,000	156,000	149,000	146,000	165,000
California Aqueduct ²	733,200	720,400	690,400	660,400	579,400
Colorado River Aqueduct					
Total Supply Available ³	1,189,200	1,241,700	1,204,500	1,197,000	1,245,500
Aqueduct Capacity Limit ⁴	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Colorado River Aqueduct Capability	1,189,200	1,241,700	1,204,500	1,197,000	1,245,500
Capability of Current Programs	2,082,400	2,118,100	2,043,900	2,003,400	1,989,900
Demands					
Total Demands on Metropolitan	1,324,000	1,390,000	1,411,000	1,434,000	1,453,000
Exchange with SDCWA	278,000	278,000	278,000	278,000	278,000
Total Metropolitan Deliveries⁵	1,602,000	1,668,000	1,689,000	1,712,000	1,731,000
Surplus	480,400	450,100	354,900	291,400	258,900
Programs Under Development					
In-Region Supplies and Programs	0	0	0	0	0
California Aqueduct	0	0	0	0	0
Colorado River Aqueduct					
Total Supply Available ³	0	0	0	0	0
Aqueduct Capacity Limit ⁴	60,800	8,300	45,500	53,000	4,500
Colorado River Aqueduct Capability	0	0	0	0	0
Capability of Proposed Programs	0	0	0	0	0
Potential Surplus	480,400	450,100	354,900	291,400	258,900

Notes:

1. Represents Supply Capability for resource programs under listed year type.
2. California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.
3. Colorado River Aqueduct includes programs and Exchange with SDCWA conveyed by the aqueduct.
4. Maximum CRA deliveries limited to 1.25 MAF including Exchange with SDCWA.
5. Total demands are adjusted to include Exchange with SDCWA.

6.2.6.2 MET's Drought Risk Assessment Results

For its Drought Risk Assessment (DRA), MET assessed the reliability of each individual water supply source over the five-consecutive-year drought through a modeling method using the same historical hydrologic conditions as the water service reliability assessment: 1922 to 2021. MET used the five consecutive years of 1988 to 1992 to complete its DRA, because this represents the driest five-consecutive year historical sequence for MET's supply. The results, shown in Table 6.7, indicate that MET's SWP and CRA supplies alone cannot meet demands during this five-year drought period without additional actions. MET's 2025 UWMP therefore identifies Water Shortage Contingency Plan (WSCP) actions as necessary tools to close the deficit and maintain service through the modeled drought sequence. Supply augmentation is

anticipated to provide the additional water needed to meet projected demands without requiring demand reduction actions. Supply augmentation actions are comprised of MET's portfolio of water storage reserves and flexible supply sources that are available on an as-needed basis, such as water from its storage facilities and from transfer and exchange programs. Therefore, MET's water supply from the SWP and CRA combined with supply augmentation strategies can reliably meet the demands of a five-year drought from FY 2025-26 through FY 2029-30 (Table 6.7).

Table 6.7 MET's Water Use, Supply, and Drought Risk Assessment for 2026-2030

Metropolitan's Drought Risk Assessment Water Use, Supply, and Risk Assessment for 2026 – 2030 (also included as Appendix 11 DWR Submittal Table 7-5)			
Submittal Table 7-5 Wholesale: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)			
2026			Total
Total Water Use	(AF)		1,511,000
Total Supplies	(AF)		973,000
Surplus/Shortfall w/o WSCP Action			(538,000)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)			
WSCP - supply augmentation benefit	(AF)		538,000
WSCP - use reduction savings benefit	(AF)		0
Revised Surplus/(shortfall)			0
2027			Total
Total Water Use	(AF)		1,633,000
Total Supplies	(AF)		2,267,000
Surplus/Shortfall w/o WSCP Action			634,000
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)			
WSCP - supply augmentation benefit	(AF)		0
WSCP - use reduction savings benefit	(AF)		0
Revised Surplus/(shortfall)			634,000
2028			Total
Total Water Use	(AF)		1,714,000
Total Supplies	(AF)		1,169,000
Surplus/Shortfall w/o WSCP Action			(545,000)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)			
WSCP - supply augmentation benefit	(AF)		545,000
WSCP - use reduction savings benefit	(AF)		0
Revised Surplus/(shortfall)			0
2029			Total
Total Water Use	(AF)		1,561,000
Total Supplies	(AF)		1,197,000
Surplus/Shortfall w/o WSCP Action			(364,000)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)			
WSCP - supply augmentation benefit	(AF)		364,000
WSCP - use reduction savings benefit	(AF)		0
Revised Surplus/(shortfall)			0
2030			Total
Total Water Use	(AF)		1,588,000
Total Supplies	(AF)		1,301,000
Surplus/Shortfall w/o WSCP Action			(287,000)
OPTIONAL Planned WSCP Actions (use reduction and supply augmentation)			
WSCP - supply augmentation benefit	(AF)		287,000
WSCP - use reduction savings benefit	(AF)		0
Revised Surplus/(shortfall)			0
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the			
NOTES: Totals may not foot due to rounding. See 2025 UWMP discussion in Chapter			
2.4 Drought Risk Assessment regarding the supply augmentation actions that may be			
exercised to meet demands through 2030.			

6.3 Local Groundwater

Among all local supplies available to the City's service area, groundwater supplies make up the majority, with the primary supply from the OC Basin. The water supply resources within the City's service area are enhanced by the existence of groundwater basins, which provide a reliable local source and, additionally, are used as reservoirs to store water during wet years and draw from storage during dry years. Table 6.8 shows a breakdown of historical groundwater production by the City.

This section describes the groundwater basin(s) used by the City and provides a 25-year projection of the service area's groundwater supply.

Table 6.8 Submittal Table 6-1 Retail: Groundwater Pumped in the Past 5 Years Within the City's Service Area (AF)

Submittal Table 6-1 Retail: Groundwater Volume Pumped Water Code Section 10631(4) and 10631(4)(c)						
Groundwater Type	Location or Basin Name	2021	2022	2023	2024	2025
		(AF)	(AF)	(AF)	(AF)	(AF)
Alluvial Basin	Orange County Groundwater Basin	14,311	10,396	10,596	9,829	11,326
Total		14,311	10,396	10,596	9,829	11,326
NOTES: Source - MWDOC, 2025						

6.3.1 Orange County Groundwater Basin

This section describes the OC Basin and the management measures taken by OCWD, the basin manager and member agency of MWDOC, to optimize local supply and minimize overdraft.

The OCWD was formed in 1933 by a special legislative act of the California State Legislature to protect and manage the County's vast, natural, groundwater supply using the best available technology and defend its water rights to the OC Basin. This legislation is found in the State of California Statutes, Water - Uncodified Acts, Act 5683, as amended. The OC Basin is managed by OCWD under the Act, which functions as a statutorily-imposed physical solution. The OCWD Management Area includes approximately 89 percent of the land area of the OC Basin, and 98 percent of all groundwater production occurs within the area. Approximately 2.5 million residents live within OCWD's boundaries and rely upon the basin for their primary water supply. OCWD manages water resource monitoring programs, land use elements related to basin management, groundwater elevation, groundwater quality, and coastal area monitoring through a number of monitoring programs. OCWD monitors the basin by collecting groundwater elevation and quality data from approximately 400 District-owned wells and manages an electronic database that stores water elevation, water quality, production, recharge, and other data on over 2,000 wells and facilities within and outside OCWD boundaries (OCWD, 2023). For detailed monitoring programs and management information, refer to the 2022 Basin 8-1 Alternative Plan (Appendix E).

Groundwater levels are managed within a safe basin operating range to protect the long-term sustainability of the OC Basin and to protect against land subsidence. OCWD, a member of agency of MWDOC, purchases untreated water from MET for basin recharge, as needed. In addition, OCWD regulates groundwater levels in the OC Basin by regulating the annual amount of pumping and setting the Basin Production Percentage (BPP) for the water year. As defined in the District Act, the BPP is the ratio of water produced from groundwater supplies within the OCWD service area to all water produced

within the area from both supplemental sources and groundwater within the OCWD (OCWD, 2020a). More information regarding the BPP is discussed in Section 6.3.1.3.

6.3.1.1 Basin Characteristics

The OC Basin underlies the northern half of Orange County beneath broad lowlands. The OC Basin, managed by OCWD, covers an area of approximately 350 square miles, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, and the Pacific Ocean to the southwest. The OC Basin boundary extends to the Orange County-Los Angeles Line to the northwest, where groundwater flows across the county line into the Central Groundwater Basin of Los Angeles County. A map of the OC Basin is shown on Figure 6.4. The total thickness of sedimentary rocks in the OC Basin is over 20,000 feet, with only the upper 2,000 to 4,000 feet containing fresh water. The OC Basin's estimated full storage volume is approximately 66 MAF.

There are three major aquifer systems that have been subdivided by OCWD, the Shallow Aquifer System, the Principal Aquifer System, and the Deep Aquifer System. These three aquifer systems are hydraulically connected as groundwater can flow between each other through intervening aquitards or discontinuities in the aquitards. The Shallow Aquifer system occurs from the surface to approximately 250 feet below ground surface. Most of the groundwater from this aquifer system is pumped by small water systems for industrial and agricultural use. The Principal Aquifer system occurs at depths between 200 and 1,300 feet below ground surface. Over 90 percent of groundwater production is from wells that are screened within the Principal Aquifer system. Only a minor amount of groundwater is pumped from the Deep Aquifer system, which underlies the Principal Aquifer system and is up to 2,000 feet deep in the center of the OC Basin.

Figure 6.4 Map of the OC Basin (OCWD, 2022)

6.3.1.2 Sustainable Groundwater Management Act

In 2014, the State of California adopted the Sustainable Groundwater Management Act (SGMA) to promote sustainable groundwater management and limit “undesirable results”, including significant groundwater-level declines, land subsidence, and water quality degradation. SGMA requires all high- and medium-priority basins, as designated by DWR, to be sustainably managed. DWR designated the Coastal Plain of Orange County Groundwater Basin (Basin 8-1) as a medium-priority basin, primarily due to heavy reliance on groundwater as a water supply source.

Compliance with SGMA can be achieved in one of the following two ways (OCWD, 2023):

1. Formation of a Groundwater Sustainability Agency (GSA) and adoption of a Groundwater Sustainability Plan (GSP).
2. Preparation and submittal of an Alternative to a GSP by eligible agencies, including special act districts such as OCWD.

Agencies within Basin 8-1, including OCWD, the City of La Habra, and the Irvine Ranch Water District (IRWD), collaborated to submit the original Alternative to a GSP in 2017, titled the “Basin 8-1 Alternative” to demonstrate compliance with SGMA. Under SGMA, alternatives and GSPs must be updated and submitted every 5-years. OCWD prepared its first periodic update in 2022.

For the remainder of this report, when the term “OC Basin” is used, it refers to the portion of Basin 8-1 that is within OCWD’s service area (see Figure 6.5).

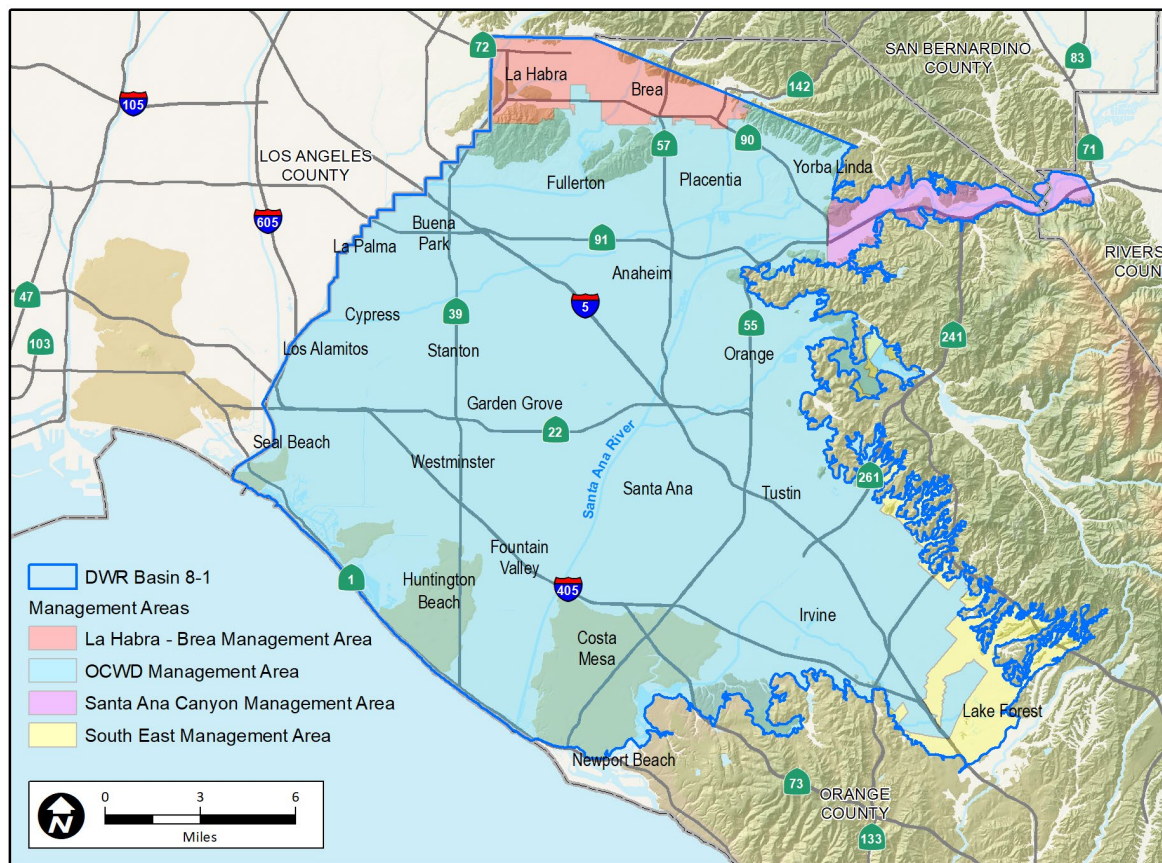


Figure 6.5 Basin 8-1 Management Areas (OCWD, 2023)

6.3.1.3 Basin Production Percentage

Background

The OC Basin is not adjudicated; therefore, groundwater production is managed through a framework that uses financial incentives to encourage sustainable pumping. The framework is based on the BPP, which represents the percentage of each Producer's total water supply that comes from groundwater pumped from the OC Basin. Groundwater production at or below the BPP is assessed by the Replenishment Assessment (RA). While there is no legal limit as to how much an agency pumps from the OC Basin, there is a financial impact to pump above the BPP. The BPP is set uniformly for all Producers by OCWD on an annual basis. Agencies that pump above the BPP are charged the RA plus the Basin Equity Assessment (BEA). The BEA is calculated so that the cost of groundwater production above the BPP is equivalent to the cost of importing potable water supplies. This approach ensures there is no financial advantage for production above the BPP. The BEA can be increased to discourage production above the BPP if necessary.

The BPP is set annually by OCWD based on groundwater conditions, availability of imported water supplies, and OC Basin management objectives. The supplies available for recharge must be estimated for a given year. The estimated supplies of recharge water include: 1) stormflow from the Santa Ana River and Santiago Creek; 2) natural incidental recharge; 3) Santa Ana River baseflow; 4) GWRS supplies; and 5) other supplies such as imported water and recycled water purchased for the Alamitos Barrier.

The BPP is a major factor in determining the cost of groundwater production from the OC Basin. For the 2026-27 water year, OCWD maintained a BPP of 85 percent. Under normal hydrologic conditions, groundwater production could reach approximately 315,000 AFY. However, actual production in 2026-27 is expected to be approximately 299,000 AFY due to PFAS-related impacts that continue to limit groundwater availability among several producers.

BPP Adjustments for Basin Management

OCWD has established management guidelines that are used to establish future BPPs, as seen in Table 6.9. Raising or lowering the BPP allows OCWD to manage the amount of pumping from the basin. OCWD has a policy to manage the groundwater basin within a sustainable range to avoid adverse impacts to the basin. OCWD seeks to maintain some available storage space in the basin to maximize surface water recharge when such supplies are available, especially in relatively wet years. By keeping the basin relatively full during wet years, and for as long as possible in years with near-normal recharge, the maximum amount of groundwater could be maintained in storage to support pumping in future drought conditions. During dry hydrologic years, when less water is available for recharge, the BPP could be lowered to maintain groundwater storage levels. A component of OCWD's BPP policy is to manage the groundwater basin so that the BPP will not fluctuate more than 5 percent from year to year.

The OCWD's GWRS came online in 2008 with a capacity of approximately 70 mgd and was expanded to 100 mgd in 2015. In 2023, it was expanded again to a final capacity of 130 mgd. The GWRS provides a resilient local water supply that recharges the OC Basin with advanced treated wastewater. The additional yield supported OCWD's move to raise the BPP from the long-standing approximately 77 percent level prior to 2023 to 85 percent beginning in February 2023. Monthly water-resources reports show agencies achieving 86 to 88 percent pumping shares after the final expansion in late-2024 to early-2025, which

reflects increased reliance on local groundwater supplied enabled by GWRS production along with the reduced water demands of approximately 400,000 AFY.

Modeling and forecasts generate estimates based on historical averages. Consequently, forecasts use average hydrologic conditions, which smooth the dynamic and unpredictable local hydrology. Variations in local hydrology are the most significant impact to supplies of water available to recharge the groundwater basin. The current BPP of 85 percent is based on modeling of average annual rainfall weather patterns and estimated groundwater recharge volumes. If OCWD were to experience a relatively dry period, the BPP could be reduced to maintain water storage levels along with other management actions shown in Table 6.9.

Table 6.9 Management Actions Based on Changes in Groundwater Storage

Available Storage Space ⁽¹⁾ Space (amount below full basin condition, AF)	Basin Management Action to Consider
Less than 100,000 AF	Raise BPP
100,000 to 300,000 AF	Maintain and/or raise BPP towards 85% goal
300,000 to 350,000 AF	Seek additional supplies to refill basin and / or lower the BPP
Greater than 350,000 AF	Seek additional supplies to refill basin and lower the BPP

Notes:

(1) Amount below full basin condition.

Basin Equity Assessment Exemptions

In some cases, OCWD encourages treating and pumping groundwater that does not meet drinking water standards to protect water quality. This is achieved by using a financial incentive called the BEA Exemption. A BEA Exemption is used to promote beneficial uses of poor-quality groundwater and reduce or prevent the spread of poor-quality groundwater into non-degraded aquifer zones. OCWD uses a partial or total exemption of the BEA to compensate a qualified participating agency or Producer for the costs of treating poor quality groundwater, which typically include capital, interest and operations and maintenance costs for treatment facilities (City of La Habra et al., 2017). Similarly, for proactive water quality management, OCWD occasionally exempts a portion of the BEA for their Coastal Pumping Transfer Program (CPTP). The CPTP encourages inland groundwater producers to increase pumping and coastal producers to decrease pumping to reduce the groundwater basin drawdown at the coast and protect against seawater intrusion. Inland pumpers can pump above the BPP without having to pay the full BEA for the amount pumped above the BPP (OCWD, 2015). Coastal pumpers receive BEA revenue from OCWD to assist in offsetting their additional water supply cost from taking less groundwater.

OCWD Resilience Plan

To address evolving conditions within OCWD's service area, it is important to anticipate potential challenges and proactively plan for strategies that sustain and enhance water supply reliability, water quality, and overall system resilience. The OCWD Resilience Plan is an adaptive management plan that evaluates future water demands and available supplies, while also identifying potential projects and response strategies to address risks to key District assets, including the groundwater basin, Santa Ana River, groundwater replenishment facilities, and natural resources.

The plan builds on OCWD's historical planning efforts and provides a flexible, project-based framework to maintain sustainable basin conditions and strengthen the long-term resilience of the District's water resources over a 5- to 25-year planning horizon.

The Resilience Plan also supports evaluation of future water supply projects, recharge strategies, and operational improvements to guide management of the OC Basin under changing hydrologic, regulatory, and demand conditions.

The Basin 8-1 Alternative submitted to DWR in 2017 showed that Basin 8-1 had been sustainably managed for the prior 10 years, which was a SGMA requirement. Based on avoiding undesirable results as defined in SGMA, the OC Basin has been sustainably managed since the construction of the Talbert Seawater Intrusion Barrier in the mid-1970s. Required annual reports and periodic updates submitted to DWR show that Basin 8-1 continues to be sustainably managed.

Current water demand projections show a relatively slow increase over the 25-year planning horizon, which is generally of similar magnitude as the additional production from the GWRS since its final expansion in early 2023 to 130 mgd. This locally controlled, drought proof supply of water reduces the region's dependence on imported water.

Historically, the Santa Ana River has served as the primary source of water to recharge the OC Basin. To determine the availability of future Santa Ana River flows, OCWD utilized surface water flow modeling of the upper watershed. Modeling was developed to predict the impacts future stormwater capture and wastewater recycling projects in the upper watershed would have on future Santa Ana River flow rates at Prado Dam. Santa Ana River base flows are expected to decrease as more water recycling projects are built in the upper watershed. OCWD continues to work closely with the US Army Corps of Engineers (USACE) to temporarily impound and slowly release up to approximately 20,000 AF of stormwater in the Prado Dam Conservation Pool. The amount of water that can be temporarily impounded in the conservation pool has grown over time and in 2025, it was increased to over 25,000 AF. To some extent, the losses in baseflow are partially offset through the capture of additional stormwater held in the Prado Dam Conservation Pool. When available, OCWD will continue to augment groundwater recharge through the purchase of imported water through MET. OCWD will diligently monitor and evaluate future water supply projects to sustainably manage and protect the OC Basin for future generations.

OCWD Engineer's Report

The OCWD Engineer's Report documents groundwater conditions and evaluates water supply and Basin utilization within OCWD's service area. The most recent report is the 2024-25 Engineer's Report filed in March 2026. As reported, the BPP for the 2024-25 water year was maintained at 85 percent by the OCWD Board of Directors. The overall BPP achieved within OCWD for non-irrigation use was 83.8 percent, with the reduced achievement attributed primarily to PFAS-related well shutdowns. Groundwater stored in the Basin decreased by 50,000 AF for the 2024-25 water year, and the annual overdraft was 165,300 AF, which reflects the amount by which natural replenishment was exceeded. The decrease in storage was reflected by a relatively dry year and the total groundwater recharge was 252,214 AF, which included contributions from supplemental water recharged by the GWRS.

For the 2026-27 water year, OCWD is proposing to maintain a BPP of 85 percent. Under normal hydrologic conditions, groundwater production could reach approximately 315,000 AF; however, OCWD

anticipates groundwater production during 2026-27 will be approximately 299,000 AF due to PFAS-related impacts that continue to limit groundwater availability across several producers.

It is estimated that approximately 13,500 AF of additional production above the BPP will be undertaken by the City of Tustin, City of Huntington Beach, Mesa Water District, and Irvine Ranch Water District to support groundwater quality improvement projects. As in prior years, groundwater produced above the BPP for these water-quality projects will be partially or fully exempt from the BEA due to the Basin-wide benefit of pumping and treating poor-quality groundwater.

During the 2024-25 water year and current 2025-26 water year, MET untreated full-service water supplies were available for groundwater replenishment; however, OCWD did not purchase replenishment water due to favorable Basin storage conditions. OCWD likewise does not plan to purchase untreated full-service water for replenishment in 2026-27.

6.3.1.4 Recharge Management

Recharging water into the OC Basin through natural and artificial means is essential to support pumping from the OC Basin. Active recharge of groundwater began in 1936, in response to increasing drawdown of the OC Basin and, consequently, the threat of seawater intrusion. The OC Basin's primary source of recharge is supplied from the Santa Ana River, which is diverted into recharge basins and its main Orange County tributary, Santiago Creek. Other sources of recharge water include natural infiltration, recycled water, and imported water. Natural recharge consists of subsurface inflow from local hills and mountains, infiltration of precipitation and irrigation water, recharge in small flood control channels, and groundwater underflow to and from Los Angeles County and the ocean.

Recycled water for OC Basin recharge is from two sources. The main source is the GWRS, which completed its final expansion in 2023 and now produces up to 130 mgd of advanced-purified water for recharge at the Talbert Seawater Barrier and in the Kraemer, Miller, Miraloma, and La Palma basins. The second source is recycled water purified at the Water Replenishment District of Southern California's (WRD) Leo J. Vander Lans Advanced Water Treatment Facility (LVL), which provides up to 8 mgd for injection at the Alamitos Seawater Barrier (owned and operated by the Los Angeles County Department of Public Works). In recent years, WRD's upgrades and operations have increased the use of recycled water at the Alamitos Barrier and reduced reliance on imported supplies. Injection of recycled water into these barriers is an ongoing effort by OCWD (in coordination with WRD and Los Angeles County) to control seawater intrusion into the OC Basin; operation of the injection wells forms a hydraulic barrier to seawater intrusion.

OCWD also purchases imported water for recharge through MWDOC. Untreated imported water can be used to recharge the OC Basin through the surface recharge system at multiple locations, such as Anaheim Lake, the Santa Ana River, Irvine Lake, and San Antonio Creek, while treated imported water may be used for in-lieu recharge when appropriate. For current planning context and detailed recharge management strategies, refer to OCWD's most recent planning documents, including the 2024 OCWD Resilience Plan, in addition to prior foundational documents (Appendix E).

6.3.1.5 MET Imported Water for Groundwater Replenishment

In the past, OCWD, MWDOC, and MET have coordinated water management to increase storage in the OC Basin when imported supplies are available for this purpose. MET's groundwater replenishment program was discontinued on January 1, 2013, and currently MET via MWDOC sells replenishment water

to OCWD at the full-service untreated MET rate. Figure 6.6 shows MWDOC's imported water sales to OCWD since FY 1990-91, which averages approximately 27,888 AF per year. In three of the past five water years, OCWD did not need to purchase more imported water to replenish groundwater.

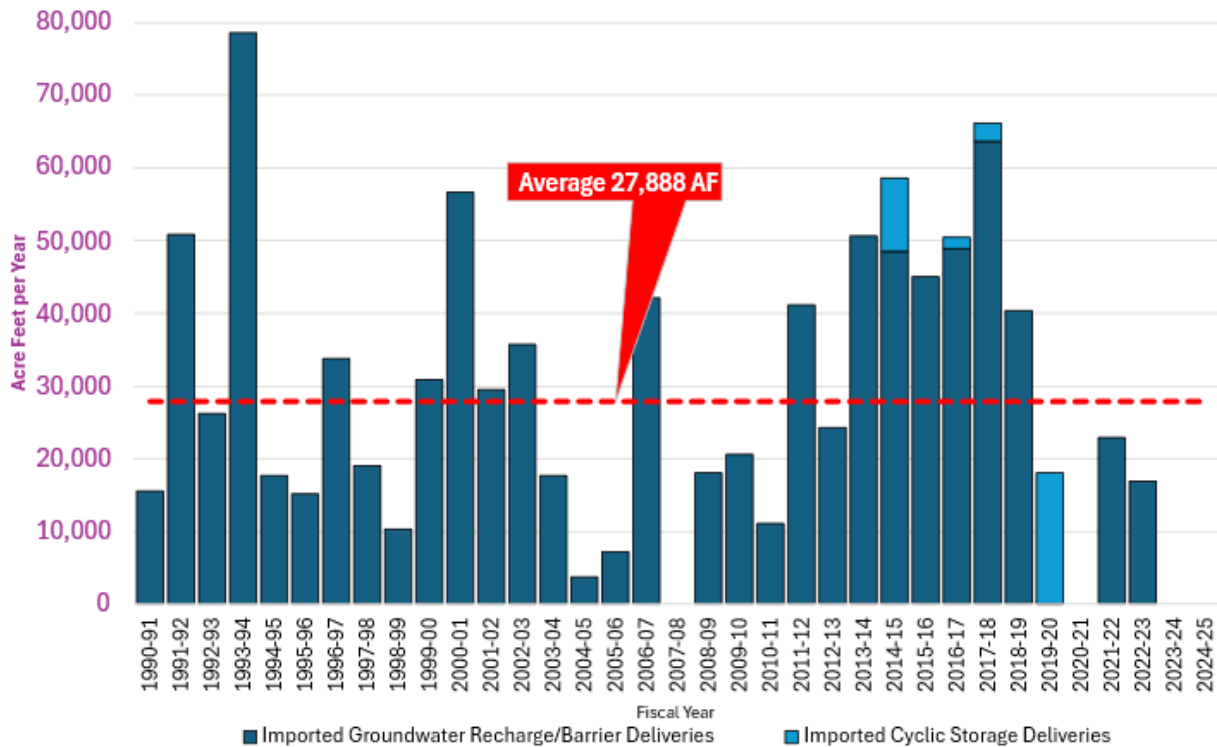


Figure 6.6 MWDOC Imported Water Sales for Groundwater Replenishment

6.3.2 Planned Future Groundwater Sources

The City plans to construct two new wells in Fountain Valley, including a pipeline transmission to the existing well transmission main to provide additional groundwater to the City. This project is further described in Section 6.9.

On a regional scale, OCWD regularly evaluates potential projects and conducts studies to review the feasibility of new projects or sources. On a regional scale, OCWD regularly evaluates potential projects and conducts studies to improve the existing facilities and build new facilities to include in their Long-Term Facilities Plans (LTFP). OCWD's 2014 LTFP evaluated 65 potential projects for water supply, basin management, recharge facilities, operational improvements, and operational efficiency. Some of OCWD's planned water projects that would increase supply are listed below. For a more detailed list of projects, refer to the 2014 LTFP (OCWD). Groundwater basin-related projects that are planned or in progress are described below:

Forecast Informed Reservoir Operations (FIRO) at Prado Dam - Stormwater represents a significant source of water used by OCWD to recharge the OC Basin. Much of this recharge is made possible by the capture of Santa Ana River stormflows behind Prado Dam in the Conservation Pool. FIRO represents the next generation of operating water reservoirs using the best available technology. Advances in weather and stormwater runoff forecasting hold promise to allow USACE to safely impound more stormwater

while maintaining equivalent flood risk management capability behind Prado Dam. Analyses indicate that FIRO would increase average annual recharge by approximately 4,000-6,000 AFY, and up to 23,000 AF in very wet years, consistent with earlier preliminary analyses. Federal and local partners have indicated FIRO at Prado Dam is moving from technical assessment toward implementation via Water Control Manual (WCM) updates.

6.4 Surface Water

6.4.1 Existing Surface Water Sources

There are, currently, no direct surface water uses in the City's Service area.

6.4.2 Planned Future Surface Water Sources

As of 2025, there are no planned surface water uses in the City's service area.

6.5 Stormwater

6.5.1 Existing Stormwater Sources

The City has over 3,200 catch basins and over 95 miles of storm drain infrastructure. There are three active storm drain structures that divert stormwater to the wastewater system (City of Newport Beach, 2021). Stormwater from these three structures and wastewater are treated at OCWD's Green Acres Project (GAP) to produce recycled water for irrigation purposes, or at GWRS to produce potable water for barrier protection or to help replenish the OC basin, as further described in Section 6.6.

6.5.2 Planned Future Stormwater Sources

As of 2025, there are no planned stormwater uses in the City's service area.

6.6 Wastewater and Recycled Water

The City is directly involved in wastewater services through its ownership and operation of the wastewater collection system in its service area. However, the City does not own or operate wastewater treatment facilities. The City's sewer system includes over 200 miles of sewer lines, and 21 wastewater lift stations and serves a population of approximately 66,000 residents.

Recycled water is wastewater that is treated through primary, secondary, and tertiary processes and is acceptable for most non-potable water purposes such as irrigation, and commercial and industrial process water per Title 22 requirements. Recycled water opportunities have continued to grow in Southern California as public acceptance and the need to expand local water resources continues to be a priority. Recycled water also provides a degree of flexibility and added reliability during drought conditions when imported water supplies are restricted. The City is indirectly involved in recycled water production, through its supply of wastewater IPR. The following sections expand on the existing agency collaboration involved in these efforts as well as the City's projected recycled water use over the next 25 years.

6.6.1 Agency Coordination

The City does not own or operate wastewater treatment facilities and sends all collected wastewater to OC San for treatment and disposal. OC San provides treated water to OCWD, the manager of the Orange County Groundwater Basin. OCWD strives to maintain and increase the reliability of the Orange County Groundwater Basin through replenishment with imported water, stormwater, and advanced treated wastewater. A full description of the Orange County Groundwater Basin is available in Section 6.3.1. OCWD and OC San have jointly constructed and expanded two water recycling projects to meet this goal that include (1) OCWD Green Acres Project (GAP) and (2) OCWD GWRS.

6.6.1.1 Orange County Sanitation District

OC San collects wastewater from residential, commercial, and industrial customers in 20 cities, four special districts, and portions of unincorporated Orange County, totaling 479 square miles that serves more than 2.6 million residents in northwest and central Orange County (OC San, 2025). These flows include dry weather urban runoff collected from 15 diversion points and discharged into the sewer system for treatment and Santa Ana River Interceptor flows from the upper Santa Ana watershed (OC San, 2017).

OC San operates and maintains two treatment plants: Reclamation Plant No. 1, located in Fountain Valley with a capacity of 320 MGD, and Reclamation Plant No. 2 located in Huntington Beach with a capacity of 312 mgd. OC San also operates 572 miles of collection system pipelines along with 15 offsite pump stations. Approximately 150 MGD of secondary effluent undergoes advanced treatment at the GWRS facility operated by the OCWD and 7 MGD undergoes tertiary treatment at OCWD's GAP facility. Treated wastewater is discharged to the Pacific Ocean via an ocean outfall in compliance with state and federal requirements as set forth in OC San's National Pollutant Discharge Elimination System (NPDES) permit. OC San's ocean outfall is 120-inch diameter and extends four miles off the coast of Huntington Beach. A 78-inch diameter emergency outfall also exists that extends 1.3 miles off the coast (OC San, 2017).

OC San Reclamation Plant No. 1 - Reclamation Plant No. 1 treats raw wastewater and has a maximum treatment capacity of 320 mgd. The plant provides primary and secondary treatment and supplies secondary effluent to OCWD for further tertiary treatment at their GAP facility and advanced treatment at their GWRS. Reclamation Plant No. 1 is the only plant that provides water to OCWD for additional treatment and recycling. An interplant pipeline allows flows to be conveyed to Treatment Plant No. 2.

OC San Treatment Plant No. 2 - Treatment Plant No. 2 provides primary and secondary treatment to raw wastewater and has a maximum treatment capacity of 312 mgd. All secondary effluent from their plant is discharged to the ocean through the ocean outfall.

6.6.1.2 Orange County Water District

OCWD is the manager of the OC Basin and provides water to 19 municipal water agencies and special districts. A full description of the OC Basin is available in Section 6.3.1. OCWD and OC San have jointly constructed and expanded two water recycling projects that include (1) OCWD GAP and (2) OCWD GWRS.

OCWD GAP

OCWD owns and operates the GAP, a water recycling system that treats up to 7.5 mgd and provides 8,400 AFY of recycled water for irrigation and industrial uses. GAP provides an alternate source of water

that is mainly delivered to parks, golf courses, greenbelts, cemeteries, and nurseries in the cities of Costa Mesa, Fountain Valley, Newport Beach, and Santa Ana. Approximately 100 customer sites use GAP water, current recycled water users include Mile Square Park and Golf Courses in Fountain Valley, Costa Mesa Country Club, Chroma Systems carpet dyeing, Kaiser Permanente, and Caltrans.

OCWD GWRS

OCWD's GWRS allows southern California to decrease its dependency on imported water and creates a local and reliable source of water. OCWD's GWRS purifies secondary treated wastewater from OC San to levels that meet and exceed all state and federal drinking water standards. The GWRS Phase 1 plant has been operational since January 2008 and uses a three-step advanced treatment process consisting of MF, reverse osmosis (RO), and ultraviolet (UV) light with hydrogen peroxide. A portion of the treated water is injected into the seawater barrier to prevent seawater intrusion into the groundwater basin. The other portion of the water is pumped to ponds where the water percolates into deep aquifers and becomes part of Orange County's water supply. The treatment process is described on OCWD's website. (OCWD, GWRS, 2020).

The GWRS first began operating in 2008 producing 70 mgd and in 2015, it underwent a 30 mgd expansion. Approximately 39,200 AFY of the highly purified water is pumped into the injection wells and 72,900 AFY is pumped to the percolation ponds in the City of Anaheim where the water is naturally filtered through sand and gravel to deep aquifers of the groundwater basin. The OC Basin provides approximately 77 percent of the potable water supply for north and central Orange County. The design and construction of the first phase (78,500 AFY) of the GWRS project was jointly funded by OCWD and OC San; Phase 2 expansion (33,600 AFY) was funded solely by OCWD.

The Final Expansion of the GWRS is the third and final phase of the project and was completed in 2023. The plant now produces 130 mgd and requires additional treated wastewater from OC San. This additional water comes from OC San's Treatment Plant 2, which is in the City of Huntington Beach approximately 3.5 miles south of the GWRS. The Final Expansion project included expanding the existing GWRS treatment facilities, constructing new conveyance facilities at OC San Plant 2, and rehabilitating an existing pipeline between OC San Plant 2 and the GWRS. Following completion, the GWRS plant now recycles 100 percent of OC San's reclaimable sources and produces enough water to meet the needs of over one million people.

6.6.2 Wastewater

The City operates and maintains the local sewer collection pipes that feed into the OC San's trunk sewer system to convey wastewater to OC San's treatment plants. The City's sewer system includes 202.4 miles of sewer lines and 21 wastewater lift stations. The wastewater collected in the City's system is conveyed to OC San's extensive system of gravity flow sewers, pump stations, and pressurized sewers. Ultimately, the wastewater is treated at OC San treatment plants in Fountain Valley (Plant No. 1) and Huntington Beach (Plant No. 2). The 120-inch diameter ocean outfall extends 4 miles off the coast of Huntington Beach. A 78-inch diameter emergency outfall also extends 1.3 miles off the coast. Table 6.10 summarizes the wastewater collected by the City and transported to OC San's system in 2025.

Table 6.10 Submittal Table 6-2 Retail: Wastewater Collected within the City's Service Area in 2025

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2025 Water Code Section 10633(a)				
Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2025	Name of Wastewater Treatment Plant (WWTP) and Place ID Number	Is WWTP Located Within UWMP Area?
		(AF)		
City of Newport Beach	Estimated	9,372	OCSD Plant 1, Place ID 758392	No
			OCSD Plant 2, Place ID 259158	No
Total Wastewater Received from UWMP Service Area in 2025:		9,372		
NOTES: Used a 65% return rate (City of Newport Beach, 2015)				

6.6.3 Current Recycled Water Uses

The City currently uses recycled water from OCWD's GAP and IRWD for direct non-potable reuse such as landscape irrigation. The sites served with recycled water for irrigation include the Newport Beach County Club, the Big Canyon Country Club, median strips, a City-owned park, and the Eastbluff Village. In FY 2025, approximately 125 AFY of recycled water was used in the City's service area for landscape irrigation and 377 AFY for golf course irrigation, about 4 percent of the City's annual water demand.

For indirect use, the City also benefits from OCWD's GWRS system that provides IPR through replenishment of OC Basin with water that meets state and federal drinking water standards.

Future recycled water use projections are summarized in Table 6.11.

Table 6.11 Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area Water Code Section 10633 (c)(e)							
Use Type	Additional Information	2025	2030	2035	2040	2045	2050
		(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Landscape irrigation (exc golf courses)	Parks, country clubs, medians	125	121	121	121	121	121
Golf course irrigation	Golf course	377	362	362	362	362	362
Total		502	483	483	483	483	483
NOTES: Table does not include groundwater recharge (IPR) numbers as they are not separate from OCWD's supply.							

6.6.4 Projected Recycled Water Uses

As of April 2019, the State of California amended its recycled water policy to expand its numeric goal of recycled water use to 2.5 million AFY by 2030 and added annual required reporting requirements for

wastewater and recycled water. The City does not currently have the potential for additional non-potable reuse. The City will continue to supply wastewater to support the region's IPR via GWRS. The projected 2025 recycled water use from the City's 2020 UWMP are compared to the 2025 actual use in Table 6.12.

Table 6.12 Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual

Submittal Table 6-5 Retail: 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual Water Code Section 10633 (e)		
Use Type	2020 Projection for 2025	2025 Actual Use
	(AF)	(AF)
Landscape irrigation (exc golf courses)	92	125
Golf course irrigation	450	377
Total	542	502
NOTES: Groundwater recharge (IPR) estimated based on OCWD Groundwater Basin Production and Percent of Total Basin Production for FY 2019-20 (33.3%)		

6.6.5 Potential Recycled Water Uses

While the City recognizes the potential for beneficial reuse in their service area, there is no source of recycled water supply in proximity to the City. The City's wastewater is conveyed to OC San's regional treatment facilities where the wastewater is treated, recycled, or discharged to the ocean. Recycled water analyses performed over the years have shown that local treatment and reuse facilities are not feasible. The City will continue to receive recycled water from GAP and supply it to the various landscape irrigation sites mentioned in Section 6.6.3. The City will continue to supply wastewater to support the region's IPR via GWRS. The City supports the continued development of recycled water and potential uses throughout the region with OCWD's GWRS.

6.6.6 Optimization Plan

Studies of water recycling opportunities within Southern California provide a context for promoting the development of water recycling plans. It is recognized that broad public acceptance of recycled water requires continued education and public involvement. Currently, most of the recycled water available being directed toward replenishment of the groundwater basin and improvements in groundwater quality. As a user of groundwater, the City supports the efforts of OCWD and OC San to use recycled water as a primary resource for groundwater recharge in Orange County.

6.6.6.1 Public Education

The City participates in the MWDOC public education and school education programs, which include information on water recycling. MWDOC's water use efficiency public information programs are a partnership with agencies throughout the county. Through a variety of public information programs, MWDOC reaches the public, including those in the City, with information regarding present and future water supplies, the demands for a suitable quantity and quality of water, including recycled water, and the importance of implementing water efficiency techniques and behaviors. Through MWDOC, water education programs have reached thousands of students in the City with grade-specific programs that include information on recycled water.

6.6.6.2 Financial Incentives

The implementation of recycled water projects involves a substantial upfront capital investment for planning studies, Environmental Impact Reports (EIRs), engineering design, and construction before recycled water is available to the market. The establishment of new supplemental funding sources through federal, state, and regional programs now provides significant financial incentives for water agencies to develop and make use of recycled water locally. Potential sources of funding include federal, state, and local funding opportunities. These funding sources include USBR, California Proposition 13 Water Bond, Proposition 84 and MET Local Resources Program (LRP). These funding opportunities may be sought by the City or possibly more appropriately by regional agencies. The City will continue to support seeking funding for regional water recycling projects and programs.

6.6.6.3 Optimization Plan

In Orange County, recycled water is used for irrigating golf courses, parks, schools, businesses, and communal landscapes, as well as for groundwater recharge. Recycled water users in the City receive their water from OCWD's GAP. Future recycled water use can be increased by requiring dual piping in new developments, retrofitting existing landscaped areas and constructing recycled water pump stations and transmission pipelines to reach areas that are further from treatment plants. Gains in implementing some of these projects have been made throughout the county; however, the additional costs, large energy requirements, and facilities make such projects very expensive to pursue. The City will continue to conduct feasibility studies for recycled water and seek out creative solutions such as funding, regulatory requirements, institutional arrangement, and public acceptance for recycled water use with OCWD, MET, and other cooperative agencies.

6.7 Desalination Opportunities

6.7.1 Ocean Water Desalination

There are currently no ocean water desalination opportunities within the City's service area.

6.7.2 Groundwater Desalination

There are currently no brackish groundwater opportunities within the City's service area.

6.8 Water Exchanges and Transfers

6.8.1 Existing Exchanges and Transfers

Interconnections with other agencies result in the ability to share water supplies during short term emergency situations or planned shutdowns of major imported water systems. Transfers of water can help with short-term outages but can also be involved with longer term water exchanges to deal with droughts or long-term emergency situations. MWDOC helps its retail agencies develop both local and regional transfer and exchange opportunities that promote reliability within their systems.

The City has multiple inter-agency emergency interconnections with IRWD and Mesa Water. The City does not routinely use these interconnections; however, the interconnections are included as fixed-grade reservoirs for future use if needed.

6.8.2 Planned and Potential Exchanges and Transfers

MWDOC supports its retail agencies, such as the City, in developing both local and regional transfer and exchange opportunities that promote reliability within their systems. Examples of these future projects include:

Santa Ana River Conservation and Conjunctive Use Project - SARCCUP is a joint project established by five regional water agencies within the Santa Ana River Watershed (Eastern Municipal Water District, Inland Empire Utilities Agency, Western Municipal Water District, OCWD, and San Bernardino Valley Municipal Water District). In September 2021, the participating agencies, in coordination with MET, executed a regional agreement framework establishing SARCCUP as a watershed-scale groundwater banking program to improve drought reliability across Orange, Riverside, and San Bernardino counties.

In 2016, SARCCUP received \$55 million in Proposition 84 funding from DWR; however, implementation has since advanced with the 2021 agreements and subsequent program updates. The overall SARCCUP program consists of three main elements: (1) Watershed-Scale Cooperative Water Banking Program; (2) Water Use Efficiency—landscape design/irrigation improvements and water budget assistance; and (3) Habitat creation and Arundo donax removal within the Santa Ana River.

The Watershed-Scale Cooperative Water Banking Program is the largest component of SARCCUP. Under MET's arrangement with San Bernardino Valley Municipal Water District (Valley), when Valley declares surplus SWP water and offers it to MET, MET offers at least 50 percent of an equivalent amount to SARCCUP member agencies for storage and later use in the Santa Ana River watershed, consistent with MET policy. This structure formalizes the purchase and storage pathway that had been under development and aligns with MET's extraordinary supply policy during allocations.

Program capacity planning identifies up to approximately 37,000 AF of storage across six basins, including up to 36,000 acre-feet in the Orange County Groundwater Basin for use in dry years. Stored SARCCUP supplies may be designated "extraordinary supplies" during a MET allocation if managed consistent with MET's Water Supply Allocation Plan, thereby enhancing participating agencies' drought reliability.

Within Orange County, extraordinary supply assignment agreements among MET, MWDOC/OCWD, and certain retail agencies (e.g., Anaheim, Fullerton, Santa Ana) document how SARCCUP extraordinary supply is assigned and delivered locally. Program implementation and participation details continue to be refined among OCWD, retail agencies, and MWDOC.

6.9 Future Water Projects

The City has identified the following future water supply projects, which are further summarized in Table 6.13:

- **New Wells** - Construction of two new wells in Fountain Valley, including a pipeline connection to the existing well transmission main, would provide redundancy for the wells providing water to the City.

Table 6.13 Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs Water Code Section 10631 (f)							
Name of Future Projects or Programs	Joint Project with other suppliers?		Additional Description (as needed)	Water Type (after treatment if treated)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
	(yes/no)	If Yes, Supplier Name					
New Groundwater Wells	Yes	Laguna Beach County Water District	1-Deep Well, and 1-Shallow Well	Potable	2027	All Year Types	3,000-5,000 gpm
NOTES: The city recently purchased a property in Fountain Valley to drill 1-2 additional groundwater wells. The location is close to the City's two other well sites. Once completed in app. 2027 the new site will produce an additional 3,000-5,000 gpm. There are no new recycled water projects expected.							

6.10 Energy Intensity

The City owns and operates a water distribution system and a wastewater collection system. This section reports the energy intensity for each system using data from FY 2025. Water and energy resources are inextricably connected. Known as the "water-energy nexus", the California Energy Commission estimates the transport and treatment of water, treatment and disposal of wastewater, and the energy used to heat and consume water account for nearly 20 percent of the total electricity and 30 percent of non-power plant related natural gas consumed in California. In 2015, California issued new rules requiring 50 percent of its power to come from renewables, along with a reduction in greenhouse gas (GHG) emissions to 40 percent below 1990 levels by 2030. Consistent with energy and water conservation, renewable energy production, and GHG mitigation initiatives, the City reports the energy intensity of its water and wastewater operations.

The methodology for calculating water energy intensity outlined in Appendix O of the UWMP Guidebook was adapted from the California Institute for Energy Efficiency exploratory research study titled "Methodology for Analysis of the Energy Intensity of California's Water Systems" (Wilkinson 2000).

The study defines water energy intensity as the total amount of energy, calculated on a whole-system basis, required for the use of a given amount of water in a specific location. UWMP reporting is limited to available energy intensity information associated with water processes occurring within an urban water supplier's direct operational control. Operational control is defined as authority over normal business operations at the operational level. Any energy embedded in water supplies imparted by an upstream water supplier (e.g., water wholesaler) or consequently by a downstream water purveyor (e.g., retail water provider) is not included in the UWMP energy intensity tables. The City's calculations conform to methodologies outlined in the UWMP Guidebook and Wilkinson study.

6.10.1 Water Supply Energy Intensity

In FY 2025, the City consumed 1,413.5 kilowatt-hour (kWh) per million gallons (MG) for water extraction and delivery (Table 6.14). The basis for calculations is provided in more detail in the following subsections.

Table 6.14 Optional Submittal Table O-1A: Energy Efficiency Reporting

Optional Submittal Table O-1A: Recommended Energy Reporting - SINGLE DELIVERY PRODUCT - WATER SUPPLY PROCESS APPROACH									
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	Water Management Process						Non-Consequential Hydropower	
End Date of Reporting Period	6/30/2025								
Is upstream embedded energy included in the values reported?	No								
	Units for Water Volume	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process	AF	11,318				12,497	12,497		12,497
Energy Consumed (kWh)	N/A	5,213,209				5,462,703	10,675,912		10,675,912
Energy Intensity (kWh/vol. converted to MG)	N/A	1,413.5	0.0	0.0	0.0	1,341	2,622	0.0	2,622
Quantity of Self-Generated Renewable Energy									
0 kWh									
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)									
<i>Combination of Estimates and Metered Data</i>									
Data Quality Narrative:									
All energy information comes from Southern California Edison energy bills. Volume of water extracted and diverted and distributed water is based on MWDOC records for groundwater withdrawals and MET deliveries.									
Narrative:									
Newport Beach relies on imported water, local groundwater, and recycled water to meet their customers' water needs. Operational control is limited to groundwater wells and potable water booster stations and two recycled water pump stations.									
NOTES: Energy intensity results are an estimate. Energy data is for FY 2025 (7/1/24-6/30/25), while water volume data is for calendar year 2024.									

6.10.1.1 Operational Control and Reporting Period

As described throughout the report, the City is a retail agency that relies on groundwater and imported water. Water supply energy intensity was calculated for the 2024 calendar year. This is a standard for energy and GHG reporting to the Climate Registry, California Air Resources Board, and the EPA. Calendar year reporting provides consistency when assessing direct and indirect energy consumption within a larger geographical context, as fiscal year starting dates can vary between utilities and organizations.

6.10.1.2 Volume of Water Entering Processes

The City extracted 11,318 AF of groundwater from the OC Basin and distributed 12,497 AF of both groundwater and imported water. The Extracted volume is based on the "Volume from Own Sources" data point while water deliveries are based on "Authorized Consumption." This calculation excludes water losses so that the final energy intensity is based on the water that is actually delivered to customers.

6.10.1.3 Energy Consumption and Generation

According to Southern California Edison Electricity Bills, groundwater wells consumed 5,213,209 kWh of electricity and pump stations along the distribution system consumed 5,462,703 kWh of electricity. Currently, the City does not generate renewable energy. Energy consumption is based on metered data.

6.10.2 Wastewater and Recycled Water Energy Intensity

In FY 2025, the City consumed 29.8 kWh per AF for wastewater services (Table 6.15). The basis for calculations is provided in more detail in the following subsections.

6.10.2.1 Operational Control and Reporting Period

The City's existing sewer system is made up of a network of gravity sewers and twenty booster stations. As explained in Section 6.6, the City owns and operates wastewater lift stations but no treatment facilities. Similar to the water supply energy intensity, wastewater energy intensity was calculated for the 2025 financial year.

Table 6.15 Optional Submittal Table O-2: Energy Efficiency - Wastewater and Recycled Water

Optional Submittal Table O-2: Recommended Energy Reporting - WASTEWATER AND RECYCLED WATER					
Start Date of Reporting Period	7/1/2024	Only for Water Delivery Products Under the Urban Water Supplier's Operational Control			
End Date of Reporting Period	6/30/2025				
Is upstream embedded energy in the values reported?	No	Water Management Process			
Units of Measure for Water	(AF)	Collection / Conveyance	Treatment	Discharge / Distribution	Total
Volume of Wastewater Entering Process (volume units selected above)		9,372			9,372
Wastewater Energy Consumed (kWh)		279,491			279,491
Wastewater Energy Intensity (kWh/volume)		30	0.0	0.0	30
Volume of Recycled Water Entering Process (volume units selected above)				502	0
Recycled Water Energy Consumed (kWh)				0	0
Recycled Water Energy Intensity (kWh/volume converted to MG)		0.0	0.0	0.0	0.0
Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations					
0	kWh				
Data Quality					
Combination of Estimates and Metered Data					
Data Quality Narrative:					
Volume of Water Entering Process: Estimated based potable water consumption in the service area. Wastewater Energy Consumed: Based on metered data. The City does not consume any energy to convey recycled water to its customers as it is essentially a wholesaler.					
Narrative:					
Newport Beach operates the local wastewater and recycled water collection system but does not operate treatment facilities. Operational control is limited to wastewater and recycled water lift stations in the local collection system.					

6.10.2.2 Volume of Wastewater Entering Processes

In FY 2025, the City collected and conveyed 9,372 AF of wastewater to OC San. Water volumes are based on estimates as a portion of the total potable water delivered in the service area. 502 AF of recycled water was purchased through OC San's GAP for use in irrigation.

6.10.2.3 Energy Consumption and Generation

According to Southern California Edison Electricity Bills, the City's 20 wastewater lift stations consumed 279,491 kWh of electricity. There are no other wastewater facilities that are owned and operated by the City. The city does not consume any energy to convey recycled water to its customers. Currently, the City does not generate renewable energy. Energy consumption data was based on metered data from SCE.

6.10.3 Key Findings and Next Steps

Calculating and disclosing direct operationally controlled energy intensities is another step towards understanding the water-energy nexus. However, much work is still needed to better understand upstream and downstream (indirect) water-energy impacts. When assessing water supply energy intensities or comparing intensities between providers, it is important to consider reporting boundaries as they do not convey the upstream embedded energy or impacts energy intensity has on downstream users. Engaging one's upstream and downstream supply chain can guide more informed decisions that holistically benefit the environment and are mutually beneficial to engaged parties. Suggestions for further study include:

- Supply-chain engagement - The City relies on a variety of water sources for their customers. While some studies have used life cycle assessment tools to estimate energy intensities, there is a need to confirm this data. The 2025 UWMP requirement for all agencies to calculate energy intensity will help the City and neighboring agencies make more informed decisions that would benefit the region as a whole regarding the energy and water nexus. A similar analysis could be performed with upstream supply chain energy, for example, with State Project Water.
- Internal benchmarking and goal setting - With a focus on energy conservation and a projected increase in water demand despite energy conservation efforts, the City's energy intensities will likely decrease with time. Conceivably, in a case where water demand decreases, energy intensities may rise as the energy required to pump or treat is not always proportional to water delivered. In the course of exploring the water-energy nexus and pursuing renewable energy goals, there is a need to assess whether energy intensity is a meaningful indicator or if it makes sense to use a different indicator to reflect the City's commitment to energy and water conservation. Current efforts could be expanded with the addition of a wastewater energy intensity evaluation.
- Regional sustainability - Water and energy efficiency are two components of a sustainable future. Efforts to conserve water and energy, however, may impact the social, environmental, and economic livelihood of the region. In addition to the relationship between water and energy, over time, it may also be important to consider and assess the connection these resources have on other aspects of a sustainable future.

CHAPTER 7 WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

This chapter of the Urban Water Management Plan (UWMP) describes the City of Newport Beach's (City) water service reliability assessment for three long-term hydrological conditions: a normal year, a single dry year, and a drought period lasting five consecutive years. The Drought Risk Assessment (DRA) assesses water supply reliability during a severe drought lasting the next five consecutive years, from 2026 to 2030. Factors affecting reliability, such as water quality, regulations and climate change, are also summarized in this assessment of reliability.

7.1 Water Service Reliability Overview

As part of the UWMP, every urban water supplier is required to assess the reliability of their water service to its customers under a normal year, a single dry year, and multiple dry years. The City's water sources are from local groundwater, recycled water, and imported water purchased from the Municipal Water District of Orange County (MWDOC). MWDOC is one of 26 member agencies of the Metropolitan Water District of Southern California (MET), which imports water from the Colorado River through its own Colorado River Aqueduct (CRA) and from Northern California through the California Aqueduct managed by the State Water Project (SWP).

MET has also invested in numerous programs and projects to augment its direct deliveries of imported water such as water transfers, groundwater banking, and use of its reservoir storage as summarized in Chapter 6.

Local groundwater in the Orange County Groundwater Basin (OC Basin) is managed by the Orange County Water District (OCWD). As summarized in Chapter 6, OCWD has developed programs and projects to improve groundwater recharge and augment groundwater through recycled water, conjunctive use, and water transfers. OCWD assesses groundwater conditions and sets its Basin Production Percentage (BPP), which determines how much water will be pumped from the basin year, and the Basin Equity Assessment (BEA), which is a surcharge for exceeding the BPP. Currently, the BPP is set at 85 percent. Likewise MET has also invested in numerous programs and projects to augment its direct deliveries of imported water such as water transfers, groundwater banking, and use of its reservoir storage as summarized in Chapter 6. MET's draft 2025 UWMP demonstrates that MET will be able to meet its projected water demands for the next 25 years under normal, dry, and multiple dry year conditions (MET, 2025).

In 2025, all water agencies in Orange County, in collaboration with their wholesalers, MWDOC and OCWD, developed a water demand forecast model for their service areas that estimated water demand at the individual retail water agency level. The demand model statistically correlates municipal and industrial (M&I) water use with demographic, socioeconomic, conservation, and weather variables as reported in the 2025 Orange County Water Demand Projection Model TM (MWDOC, 2025). Because the model isolates weather, future water demand can be estimated under single and multiple-year droughts and under future climate change scenarios. The model used a 33-year dataset (1991-2024) to estimate demand under average (normal), single-dry year, and five consecutive dry years hydrologic conditions. Correlation

coefficients between demand, temperature, and precipitation were applied to the hottest and driest historical sequences to calculate high-demand scenarios, which were expressed as scaling factors relative to the 33-year average demand.

Table 7.1 Optional Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

OPTIONAL Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	Base Year using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2024-2025, use 2025	Available Supplies if Year Type Repeats	
		☐	Check the box if quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: [insert location from UWMP]
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	% of Average Supply
Average Year	1991-2024		100%
Single-Dry Year	2014		107%
Consecutive Dry Years 1st Year	1991-2024		107%
Consecutive Dry Years 2nd Year	1991-2024		112%
Consecutive Dry Years 3rd Year	1991-2024		113%
Consecutive Dry Years 4th Year	1991-2024		115%
Consecutive Dry Years 5th Year	1991-2024		117%

7.2 Factors Affecting Water Supply Reliability

To prepare realistic water supply reliability assessments, various factors affecting reliability were considered. These include climate change and environmental requirements, regulatory changes, water quality impacts, and locally applicable criteria. In May 2025, DWR published a technical addendum to the 2023 State Water Project Delivery Capability Report (DCR) describing the impact of subsidence to future SWP deliveries. The study showed that SWP deliveries could be reduced by future subsidence. DWR recommends using the 2025 DCR to support long-term planning efforts because DWR has planned near-term fixes and is committed to restore the conveyance capacity of the California Aqueduct. MET will continue to stay informed and incorporate any suitable subsidence modeling in the future.

7.2.1 Climate Change and the Environment

Changing climate patterns are expected to shift precipitation patterns and affect water supply availability. Unpredictable weather patterns will make water supply planning more challenging. Although climate change impacts are associated with exact timing, magnitude, and regional impacts of these temperature and precipitation changes, researchers have identified several areas of concern for California water planners (CAMP4W, 2025). These areas include:

- A reduction in Sierra Nevada Mountain snowpack.
- Extreme heat threatens both infrastructure and the health and safety of human lives.

- Prolonged drought periods.
- Water quality issues associated with increase in wildfires.
- Rising sea levels resulting in:
 - » Impacts to coastal groundwater basins due to seawater intrusion.
 - » Increased risk of damage from storms, high-tide events, and the erosion of levees.
 - » Potential pumping cutbacks to the SWP and Central Valley Project (CVP).

Other important issues of concern due to global climate change include:

- Effects on local supplies such as groundwater.
- Changes in urban and agricultural demand levels and patterns.
- Alterations to power generation and pumping regime.
- Increases in ocean algal blooms affected seawater desalination supplies.

Without additional surface storage, earlier and heavier runoff will flow to the ocean instead of being held as mountain snowpack, causing California to lose more water. California therefore needs to place a strong emphasis on expanding storage.

As described in Chapter 6, the Colorado River Basin supplies have been inconsistent since about the year 2000, with precipitation near normal while runoff has been less than average in two out of every three years. Climate models are predicting a continuation of this pattern whereby hotter and drier weather conditions will result in continuing lower runoff, pushing the system toward a drying trend that is often characterized as long-term drought.

Dramatic swings in annual hydrologic conditions have affected water supplies available from the SWP over the last decade. The declining ecosystem in the Delta has also led to a reduction in water supply deliveries, and operational constraints will likely continue until a long-term solution to these problems is identified and implemented (MET, 2025).

Climate change is also projected to impact future water demands. The 2025 Orange County Water Demand Model TM developed a sensitivity for the water demand forecast based on using future climate variables from a subset of 15 downscaled global climate models (GCMs) from the World Climate Research Program (WCRP) Coupled Model Intercomparison Project (CMIP6). Future weather variables under two climate scenarios were substituted for baseline historical average weather, with the results indicating that projected water demands under one to five consecutive dry years could be 5 percent to 17 percent greater than baseline demands (MWD0C, 2025).

7.2.2 Regulatory and Legal

Ongoing regulatory restrictions, such as those imposed by the Biological Opinions (BiOps) on the effects of SWP and the federal CVP operations on certain marine life, also contribute to the challenge of determining water delivery reliability. Endangered species protection and conveyance needs in the Delta have resulted in operational constraints that are particularly important because pumping restrictions impact many water resources programs—SWP supplies and additional voluntary transfers, Central Valley storage and transfers, and in-region groundwater and surface water storage. BiOps protect special-status species listed as threatened or endangered under the Endangered Species Act (ESA) and imposed

substantial constraints on Delta water supply operations through requirements for Delta inflow and outflow and export pumping restrictions.

In addition, the State Water Resources Control Board (SWRCB) has set water quality objectives that must be met by the SWP including minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity level. SWRCB has implemented the new Lower San Joaquin River flow objectives from the Phase 1 Delta Plan amendments through adjudicatory (water rights) and regulatory (water quality) processes. The Lower San Joaquin River flow objectives are estimated to reduce water available for municipal water use. New litigation, listings of additional species under the ESA, or regulatory requirements imposed by the SWRCB could further adversely affect SWP operations in the future by requiring additional export reductions, releases of additional water from storage, or other operational changes impacting water supply operations.

The Colorado River 2007 Interim Guidelines governing the Lower Basin water supply shortages and the operations of Lakes Mead and Powell are set to expire in 2026, and new operating guidelines will need to be developed for 2027 and beyond. At the time of this 2025 UWMP, negotiations over the successor post-2026 guidelines are ongoing and the outcome is highly uncertain. It is anticipated that California will likely be required to reduce its supplies from the Colorado River, on average, under the new guidelines, and that as the junior priority, MET is at risk. A final EIS with a Selected Alternative is expected in the summer of 2026 with a record of decision to follow.

The difficulty and implications of environmental review, documentation, and permitting pose challenges for multi-year transfer agreements, recycled water projects, and seawater desalination plants. The timeline and roadmap for getting a permit for recycled water projects are challenging and inconsistently implemented in different regions of the state. Indirect Potable Reuse (IPR) projects face regulatory restraints such as treatment, blend water, retention time, and Basin Plan Objectives, which may limit how much recycled water can feasibly be recharged into the groundwater basins. New regulations and permitting uncertainty are also barriers to seawater desalination supplies, including updated Ocean Plan Regulations, Marine Life Protected Areas, and Once-Through Cooling Regulations (MET, 2025).

7.2.3 Water Quality

The following sub-section describes the water quality of the region's water supplies and the measures being taken to continue to deliver high-quality drinking water that meets federal and state regulations.

7.2.3.1 Imported Water

MET is responsible for providing high quality potable water throughout its service area. Over 250,000 water quality tests are performed per year on MET's water to test for regulated contaminants and additional contaminants of concern to monitor the safety of its waters (MET, 2025). MET's supplies originate primarily from the CRA and from the SWP. A blend of these two sources, proportional to each year's availability of the source, is then delivered throughout MET's service area.

Although the CRA and SWP have different water quality characteristics, MET has implemented effective treatment and management strategies to maintain high-quality water. The CRA water source contains higher total dissolved solids (TDS) and the SWP contains higher levels of naturally-occurring organic matter, lending to the formation of disinfection byproducts. To remediate the CRA's high level of salinity and the SWP's high level of organic matter, MET blends CRA and SWP supplies and has upgraded all its

treatment facilities to include ozone treatment processes. In addition, MET has been engaged in efforts to protect its Colorado River supplies from threats of uranium, perchlorate, and chromium VI while also investigating the potential water quality impact of the following emerging contaminants:

N-nitrosodimethylamine (NDMA), pharmaceuticals and personal care products (PPCP), microplastics, per- and polyfluoroalkyl substances (PFAS), and 1,4-dioxane (MET, 2025).

PFAS is a group of widely used man-made “forever chemicals” that include both PFOA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonate). MET has voluntarily monitored PFAS in its source and treated waters since 2017. Most samples have shown non-detect (ND) for all tested PFAS, including PFOA and PFOS. A limited number of other PFAS—such as PFHxA, PFBA, PFPeA, PFDoA, PFTA, and PFBS, have been detected only at trace levels below their method detection limits. PFOA and PFOS have not been detected in Metropolitan's imported or treated water supplies. Some member agencies, however, have detected these compounds in local groundwater wells, which may require treatment or source management to comply with emerging Division of Drinking Water (DDW) regulations. As DDW and EPA establish enforceable Maximum Contaminant Levels (MCLs) for PFOA and PFOS, some agencies may supplement their local supplies with increased purchases of Metropolitan water (MET, 2025).

The EPA finalized the first national drinking water standards for six PFAS compounds in April 2024. These standards include enforceable MCLs for PFOA and PFOS set at 4 parts per trillion (ppt). In May 2025, the EPA announced that it would extend the compliance deadline for PFOA and PFOS from 2029 to 2031 to provide additional time for testing, planning, and installation of treatment technologies. While MET and its member agencies continue to monitor and test PFAS in imported and local sources, the delay in the federal compliance date allows additional time to evaluate treatment options, coordinate funding, and plan system upgrades necessary to meet forthcoming federal PFAS standards.

The presence of quagga mussels in water sources is a water quality concern. Quagga mussels are an invasive species that was first discovered in 2007 at Lake Mead, on the Colorado River. This species of mussels forms massive colonies in short periods of time, disrupting ecosystems and blocking water intakes. They can cause significant disruption and damage to water distribution systems. MET has had success in controlling the spread and impacts of the quagga mussels within the CRA; however, the future could require more extensive maintenance and reduced operational flexibility than current operations allow. It also resulted in MET eliminating deliveries of CRA water into Diamond Valley Lake (DVL) to keep the reservoir free from quagga mussels (MET, 2025).

In addition, Golden Mussels, another invasive species capable of disrupting pipelines and altering ecosystems, were detected in the Sacramento–San Joaquin Delta in October 2024 and are now spreading through the SWP. These mussels pose similar concerns due to their ability to obstruct raw water conveyance facilities and negatively affect aquatic environments. Although their presence does not typically result in violations of drinking water standards, unmanaged infestations can degrade habitats, clog infrastructure, and reduce the aesthetic and recreational value of lakes and reservoirs. State and regional agencies continue to monitor golden mussel movement and evaluate appropriate response strategies to limit their spread (MET, 2025).

7.2.3.2 Groundwater

Groundwater is a reliable component of the water supply for Orange County, and the OCWD manages the basin to provide long-term quality and sustainability. The basin supports a significant portion of the

region's water demands and is monitored through an extensive network of production, monitoring, and recharge wells that provide data on water levels and water quality conditions across the aquifer system.

Orange County Groundwater Basin

OCWD is responsible for managing the OC Basin. To maintain groundwater quality, OCWD conducts an extensive monitoring program that serves to manage the OC Basin's groundwater production, control groundwater contamination, and comply with all required laws and regulations. A network of nearly 700 groundwater wells provides OCWD a source for samples, which are tested for a variety of purposes. OCWD collects samples each month to monitor Basin water quality. The total number of water samples analyzed varies year-to-year due to regulatory requirements, conditions in the basin, and applied research and/or special study demands. These samples are collected and tested according to approved federal and state procedures as well as industry-recognized quality assurance and control protocols (City of La Habra et al., 2017). OCWD routinely tests for hundreds of regulated constituents, but the parameters discussed, PFAS, TDS, and nitrate, are of focus because they represent the most relevant regional and regulatory considerations that influence groundwater management and long-term supply planning. These issues do not indicate that the groundwater basin is unsafe; rather, they are discussed because they are key focus areas for state agencies and water suppliers throughout Southern California.

PFAS are of particular concern for groundwater quality, and since the summer of 2019, the DDW requires testing for PFAS compounds in some groundwater production wells in the OCWD area. According to the U.S. Environmental Protection Agency, the established federal Maximum Contaminant Levels (MCLs) for certain PFAS compounds in drinking water, including 4 nanograms per liter (ng/L), or parts per trillion (ppt), for PFOA and PFOS. In addition, the California State Water Resources Control Board has established health-based Notification Levels (NLs) and Response Levels (RLs) for several PFAS compounds. The current NLs are 4 ng/L for PFOA and 4 ng/L for PFOS, while the RLs are 10 ng/L for PFOA and 40 ng/L for PFOS. If PFAS concentrations exceed the NL, water systems must notify their governing body; if concentrations exceed the RL, water systems are expected to take corrective actions such as removing the source from service or implementing treatment.

PFAS have been detected in the OC Basin in very tiny amounts (parts per trillion), entering primarily via the Santa Ana River whose flows infiltrate into the basin. Despite playing no role in releasing PFAS into the environment, OCWD is working with its cities and retail water districts to remove it from local water supplies in order to comply with new state and federal regulations. More than 100 wells have been impacted due to various state and federal regulations. Fifteen impacted agencies will have to temporarily purchase more costly imported water to replace PFAS contaminated supplies. As of 2025, 53 impacted wells are back online due to close to a billion dollars being spent on state-of-the-art testing, research and piloting of different treatment systems, and design and construction of treatment plants that are now operational.

By 2025 OCWD had restored 49 wells to service with operational treatment systems, with an additional 57 wells in planning, design, or construction stages (ACWA, 2025). These systems continue to rely primarily on granular activated carbon and ion-exchange media operated in lead-lag configuration to achieve non-detect PFAS levels consistent with evolving state and federal regulatory standards (Santa Ana Regional Water Quality Control Board and OCWD, 2023.)

Groundwater production in FY 2023–24 totaled 280,420 AF, with slight increases projected over the next two years as additional treatment systems come online, showing continued reductions associated with

PFAS-impacted wells that remain offline across several agencies. Salinity is a significant water quality problem in many parts of southern California, including Orange County. Salinity is a measure of the dissolved minerals in water including both TDS and nitrates. OCWD continuously monitors the levels of TDS in wells throughout the OC Basin. TDS currently has a California Secondary MCL of 500 mg/L. The portions of the OC Basin with the highest levels are generally located in the cities of Irvine, Tustin, Yorba Linda, Anaheim, and Fullerton. There is also a broad area in the central portion of the OC Basin where TDS ranges from 500 to 700 mg/L. Sources of TDS include the water supplies used to recharge the OC Basin and from onsite wastewater treatment systems, also known as septic systems. The TDS concentration in the OC Basin increased on average from 415 mg/L in 2022-23 to 432 mg/L in 2023-24 (OCWD, 2025).

Nitrates are one of the most common and widespread contaminants in groundwater supplies, originating from fertilizer use, animal feedlots, wastewater disposal systems, and other sources. The MCL for nitrate in drinking water is set at 10 mg/L. OCWD regularly monitors nitrate levels in groundwater and works with producers to treat wells that have exceeded safe levels of nitrate concentrations. OCWD manages the nitrate concentration of water recharged by its facilities to reduce nitrate concentrations in groundwater. This includes the operation of the Prado Wetlands, which was designed to remove nitrogen and other pollutants from the Santa Ana River before the water is diverted to be percolated into OCWD's surface water recharge system. Although water from the deep aquifer system is of very high quality, it is amber-colored and contains a sulfuric odor due to buried natural organic material, requiring treatment before use as drinking water. The principal aquifer, which supplies most basin pumping, occurs at depths of roughly 300–1,200 feet below ground surface (OCWD, 2025). The total volume of amber-colored groundwater in the deep system is estimated at approximately 1 million acre-feet (MAF).

7.2.4 Locally Applicable Criteria

Within Orange County, there are no significant local applicable criteria that directly affect reliability. Over the years, the water agencies in Orange County have made tremendous efforts to integrate their systems to provide flexibility for interchanging with different sources of supply. There are emergency agreements in place to provide adequate supply of water in all parts of the County. In the northern part of the County, agencies can meet most of their demands from groundwater with very little limitation, except for the OCWD BPP. For the agencies in south Orange County, most of their demands are met with imported water, and their limitations are based on the capacity of their systems, which are very robust. However, if a major earthquake on the San Andreas Fault occurs, it can potentially be damaging to key water aqueducts and disrupt imported supplies to the entire Southern California for up to six months. The MET region would likely require a water-use reduction of 10 to 25% until the system is repaired. However, MET has taken proactive steps to handle such disruption, such as constructing DVL, which mitigates potential impacts. DVL, along with other local reservoirs, can store a six to twelve-month supply of emergency water (MET, 2025).

7.3 Water Service Reliability Assessment

This section assesses the reliability of Newport Beach's water service to its customers. This is completed by comparing the projected long-term water demand (Chapter 4), to the projected water supply sources available to Newport Beach (Chapter 6), in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years.

7.3.1 Normal Year Reliability

In 2025, MWDOC and OCWD in collaboration with Orange County retail agencies, developed water demand forecast models for individual retail water agencies in Orange County, as described in detail in Chapter 4. This 25-year demand forecast uses statistical models to account for demographic, socioeconomic, conservation, and weather variables (MWDOC, 2025). For normal year reliability, the demand forecast represents average weather conditions.

Newport Beach is 100 percent reliable for normal year demands from 2025 through 2050. Newport Beach receives imported water from MWDOC via connection to MET's regional distribution system. Although pipeline and connection capacity rights do not guarantee the availability of water, they do guarantee the ability to convey water into the local system when it is available to the MET distribution system

A comparison between the supply and demand for projected years between 2025 and 2050 is shown in Table 7.2, while a breakdown of potable and non-potable supplies is presented in Tables 7.3 and 7.4, respectively. The table demonstrates that projected supplies and demands are equal in every planning year, except 2040, where there is a surplus of 1 AF. As stated above, the available supply will meet projected demands due to a diversified supply and conservation measures limiting and reducing imported demands in the later years. Newport Beach's supplies are provided by MWDOC and Orange County Groundwater Basin. In MWDOC's 2025 Urban Water Management Plan, they identify their wholesale supplies as 100 percent reliable under normal-year conditions (Submittal Table 7-2; MWDOC, 2025).

Table 7.2 Retail: Normal Year Supply and Use Comparison

Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison Water Code Section 10635 (a)					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals (autofill from Submittal Table 6-9 R)	12,412	12,474	12,495	12,432	12,378
Use totals (autofill from Submittal Table 4-2 R)	12,412	12,474	12,495	12,432	12,378
Surplus/(shortfall)	0	0	0	0	0
NOTES: This table compares the projected demand and supply volumes determined in Sections 4.3.2 and 6.1, respectively.					

Table 7.3 Optional Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison-Potable

OPTIONAL Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison - POTABLE					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals (autofill from Submittal Table 6-9 R)	11,929	11,991	12,010	11,949	11,895
Use totals (autofill from Submittal Table 4-2 R)	11,929	11,991	12,010	11,949	11,895
Surplus/(shortfall)	0	0	0	0	0
NOTES: This table compares the projected demand and supply volumes determined in Sections 4.3.2 and 6.1, respectively.					

Table 7.4 Optional Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison-Non-Potable

OPTIONAL Submittal Table 7-2 Retail: Normal Year Supply and Use Comparison - NON-POTABLE					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals (autofill from Submittal Table 6-9 R)	483	483	484	483	483
Use totals (autofill from Submittal Table 4-2 R)	483	483	484	483	483
Surplus/(shortfall)	0	0	0	0	0
NOTES: This table compares the projected demand and supply volumes determined in Sections 4.3.2 and 6.1, respectively.					

7.3.2 Single Dry Year Reliability

A single dry year is defined as a single year of minimal to no rainfall within a period where average precipitation is expected to occur. Orange County's water demand projection model (described in Chapter 4), isolated the impacts that weather and future climate can have on water demand through the use of a statistical model. The impacts of hot/dry weather conditions are reflected as a percentage increase in water demands from the normal year condition. For a single dry year condition (FY 2013-14), the model projects a 7 percent increase in demand for Newport Beach's service area (MWD0C, 2025). Detailed information of the model is included in Appendix E.

Newport Beach's has documented that it is 100 percent reliable for single dry year demands from 2025 through 2050. As shown in Table 7.5, projected single dry year supplies and demands are equal from 2030 to 2050, resulting in no anticipated shortages. This assessment incorporates a 7 percent increase in demand above normal-year levels and shows the significant reserves and conservation measures available within MET.

Table 7.5 Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison

Submittal Table 7-3 Retail: Single Dry Year Supply and Use Comparison Water Code Section 10635(a)					
	2030	2035	2040	2045	2050 (Opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply totals	13,306	13,373	13,394	13,328	13,270
Use totals	13,306	13,373	13,394	13,328	13,270
Surplus/(shortfall)	0	0	0	0	0
NOTES: The single dry year projections estimate a 7% increase on imported M&I demand.					

7.3.3 Multiple Dry Years Reliability

Multiple dry years are defined as five or more consecutive dry years with minimal rainfall within a period of average precipitation. Orange County's water demand projection model (described in Section 4.3.1) isolated the impacts that weather and future climate can have on water demand through the use of a statistical model. The impacts of hot/dry weather conditions are reflected as a percentage increase in water demands from the normal year condition. During multiple dry years, the UWMP applies dry-year

adjustment factors to reflect future climate conditions and retail level water demand. These increase 7 percent in single-dry and first multiple-dry year, going up to 12, 13, 15, and 17 percent in subsequent drought years, relative to average-year demand (see Table 7.1) (MWDOC, 2025). Rather than repeating the single-dry-year factor for all five years, the five-year multi-dry-year scenario applies the year-specific dry-year adjustment factors for each consecutive year, reflecting the increasing impacts of extended drought.

Newport Beach has demonstrated that its water supplies remain fully reliable throughout a five-consecutive-year dry period from 2025 through 2050. Even assuming a conservative demand increase of 7 to 17 percent per year over five consecutive years, Newport Beach is capable of meeting all customers' demands from 2025 through 2050 (Table 7.6), with significant reserves held by MET and conservation.

The table includes treated water from MET for M&I and non-M&I demands. The multiple dry-year projections estimate a seven to 17 percent increase on imported M&I demand. The 2030 column assesses supply and demand for FY 2025-26 through FY 2029-30; the 2035 column assesses FY 2030-31 through FY 2034-35 and so forth, to end the water service reliability assessment in FY 2045-50.

Table 7.6 Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Use Comparison Water Code Section 10635(a)						
		2030	2035	2040	2045	2050 (Opt)
		(AF)	(AF)	(AF)	(AF)	(AF)
First year	Supply totals	13,306	13,373	13,395	13,328	13,270
	Use totals	13,306	13,373	13,395	13,328	13,270
	Surplus/(shortfall)	0	0	0	0	0
Second year	Supply totals	13,895	13,965	13,988	13,918	13,857
	Use totals	13,895	13,965	13,988	13,918	13,857
	Surplus/(shortfall)	0	0	0	0	0
Third year	Supply totals	13,982	14,052	14,075	14,004	13,943
	Use totals	13,982	14,052	14,075	14,004	13,943
	Surplus/(shortfall)	0	0	0	0	0
Fourth year	Supply totals	14,246	14,317	14,342	14,269	14,207
	Use totals	14,246	14,317	14,342	14,269	14,207
	Surplus/(shortfall)	0	0	0	0	0
Fifth year	Supply totals	14,488	14,561	14,585	14,512	14,449
	Use totals	14,488	14,561	14,585	14,512	14,449
	Surplus/(shortfall)	0	0	0	0	0
NOTES: The 2030 column assesses supply and demand for FY 2025-26 through FY 2029-30; the 2035 column assesses FY 2030-31 through FY 2034-35 and so forth, in order to end the water service reliability assessment in FY 2049-50.						

7.4 Management Tools and Options

Existing and planned water management tools and options that seek to maximize local resources and results in minimizing the need to import water are described below.

- **Reduced Delta Reliance:** Both MWDOC and MET have demonstrated consistency with Reduced Reliance on the Delta Through Improved Regional Water Self-Reliance (Delta Plan policy WR P1) by reporting the expected outcomes for measurable reductions in supplies from the Delta. MET has improved its self-reliance through methods including water use efficiency, water recycling, stormwater capture and reuse, advanced water technologies, conjunctive use projects, local and regional water supply and storage programs, and other programs and projects. Similarly, Orange County water agencies have further invested in water use efficiency, local water supply projects, and advanced water technologies to increase regional self-reliance. In the near term (2030), regional self-reliance during a normal water year for the entire MET service area is projected to increase by approximately 601 TAF compared to the 2010 baseline, an improvement equal to nearly 20 percent of projected 2030 retail demands. Looking ahead to 2050, normal year regional self-reliance is expected to grow by more than 1.0 MAF above the 2010 baseline, representing an increase of roughly 20 percent of projected 2050 retail demands (MET, 2025).
- **The continued and planned use of groundwater:** The water supply resources within Newport Beach's service area are enhanced by the existence of groundwater basins that account for the majority of local supplies available. As described in Chapter 4, the OC Basin is also used as reservoirs to store water during wet years and draw from storage during dry years, subsequently minimizing MWDOC service area's reliance on imported water. Groundwater basins are managed within a safe basin operating range so that groundwater wells are only pumped as needed to meet water use. Although Newport Beach does not manage any of the service area's groundwater basins, as a groundwater producer, Newport Beach supports the efforts to maintain the health of the local basins through local groundwater recharge efforts such as OCWD's GWRS Groundwater Replenishment System (GWRS) program.
- **Groundwater storage and transfer programs:** OCWD's involvement in Santa Ana River Conservation and Conjunctive Use Program (SARCCUP) includes participation in a conjunctive use program that improves water supply resiliency and increases available dry-year yield from local groundwater basins. The groundwater bank has 137,000 AF of storage (Inland Empire Utilities Agency, 2021). MET has numerous groundwater storage and transfer programs in which MET endeavors to increase the reliability of water supplies, including the Antelope Valley-East Kern Water Agency (AVEK) Water Agency Exchange and Storage Program and the High Desert Water Bank Program. In addition, MET has encouraged storage through its cyclic and conjunctive use programs that allow MET to deliver water into a groundwater basin in advance of agency demands, such as the Cyclic Storage Agreements under the Main San Gabriel Basin Judgement.
- **MWDOC Water Loss Program:** The water loss audit program reduces Newport Beach's dependency on imported water from the Delta by implementing water loss control technologies after assessing audit data and leak detection.
- **Increased use of recycled water:** OCWD's Groundwater Replenishment System (GWRS) and Green Acres Project (GAP) help southern California reduce its reliance on imported water by providing a local, reliable water supply that meets or exceeds all federal and state drinking water standards.

OCWD completed the final expansion of the GWRS in 2023 to increase production to 130 mgd, further strengthening regional water self-sufficiency.

- **Implementation of demand management measures during dry periods:** During dry periods, water reduction methods to be applied to the public through the retail agencies will in turn reduce Newport Beach's overall demands on local and imported water. Newport Beach met its conservation target of 20 percent by 2020 as part of the Orange County Regional Alliance as well as individually.

7.5 Drought Risk Assessment

California Water Code (CWC) Section 10635(b) requires every urban water supplier to include a DRA for its water service as part of information considered in developing its demand management measures and water supply projects and programs. The DRA is a specific planning action that assumes Newport Beach is experiencing a drought over the next five years and addresses water supply reliability in the context of presumed drought conditions. Together, the water service reliability assessment, DRA, and water shortage contingency planning (WSCP) allow Newport Beach to have a comprehensive picture of its short-term and long-term water service reliability and to identify the tools to address any perceived or actual shortage conditions.

CWC Section 10612 requires the DRA to be based on the driest five-year historical sequence for Newport Beach's water supply. However, CWC Section 10635 also requires that the analysis consider plausible changes on projected supplies and demands due to climate change, anticipated regulatory changes, and other locally applicable criteria.

The following sections describe the methodology and results from Newport Beach's DRA.

7.5.1 Methodology

As described in more detail in Chapter 4, the water demand forecasting model prepared for Newport Beach isolated the impacts that weather and future climate can have on water demand through the use of an econometric model. In addition to weather related factors, the model incorporates explanatory variables that influence both historical and projected water use, including water price, gross domestic product (GDP), median household income, housing density, persons per household, households per account, sectoral employment mix (for CII demand), seasonal patterns, historical conservation trends, drought restrictions, and COVID19 behavioral effects. These variables allow the model to separately quantify how economic conditions, demographic shifts, land use characteristics, and institutional constraints affect demand across residential, commercial, industrial, institutional, and irrigation sectors (MWDOC, 2025).

The impacts of hot/dry weather condition are reflected as a percentage increase in water demands from the average condition. For a single dry year condition (FY 2013-14), the model projects a seven percent increase in demand for Newport Beach's service area (MWDOC, 2025). The model used a 33-year dataset (1991-2024) to estimate demand under average (normal), single-dry year, and five consecutive dry years hydrologic conditions. Correlation coefficients between demand, temperature, and precipitation were applied to the hottest and driest historical sequences to calculate high-demand scenarios, which were expressed as scaling factors relative to the 33-year average demand.

For Newport Beach, the five consecutive dry year demand scenario is based on the demand model's multiple dry year methodology. In accordance with the econometric demand model approach used to develop UWMP demand projections, a single hot/dry year was first identified based on weather

conditions that produced the greatest demand response. Consecutive dry years were then represented by applying incremental scaling factors to this single hot/dry year demand to account for the compounding effects of persistent warm and dry conditions over time. These scaling factors show long-term relationships between regional water use and multi-year temperature and precipitation deficits and are applied sequentially to simulate second through fifth consecutive dry years. This approach is consistent with the demand modeling framework summarized in Tables 7.1 and 7.6.

7.5.1.1 Water Demand Characterization

Newport Beach's water supplies consist of groundwater from the Orange County Groundwater Basin, recycled water from OCWD, and purchased water from MWDOC, regardless of hydrologic conditions. As described in Chapter 6, MET's supplies are from the Colorado River, SWP, and in-region storage. In MET's 2025 UWMP, the Drought Risk Assessment (DRA) concluded that even without activating WSCP actions. Beyond this, MET's DRA indicated a surplus of supplies that would be available to all of its member agencies, including MWDOC, should the need arise. Therefore, any increase in demand that is experienced in MWDOC's service area is assumed to be met by MET's water supplies.

Based on the water demand projection model discussed in more detail in Chapter 4, in a single dry year, demand is expected to increase by seven percent above a normal year (see Table 7.1). Newport Beach's DRA conservatively assumes that a drought from FY 2025-26 through FY 2029-30 is based on the FY 2025 normal year supply with the five-year consecutive dry year hydrology (from Table 7.1). (MWDOC, 2025).

7.5.1.2 Water Supply Characterization

Newport Beach's assumptions for its supply capabilities are discussed and presented in 5-year increments under its water reliability assessment in Section 7.3. For Newport Beach's DRA, these supply capabilities are further refined and presented annually for the years 2026 to 2030, which the Orange County Demand Model (2025) applied a historical dry-year sequence from within 1991-2024 dataset as an analog for five consecutive dry years. Groundwater is sustainably managed through the BPP and robust management measures (Section 6.3.4 and Appendix G), direct and indirect recycled water uses provide additional local supply (Section 6.6), and based on MET's and MWDOC's UWMP, imported water is available to close any local water supply gap (Section 7.5.1). For its DRA, the model assessed the reliability of supplies available to Orange County through MET using historical supply availability under dry-year conditions.

MET's supply sources under the CR, SWP, and in-region supply categories are individually listed and discussed in detail in MET's UWMP. Future supply capabilities for each of these supply sources are also individually tabulated in Appendix 3 of MET's UWMP, with consideration for plausible changes on projected supplies under climate change conditions, anticipated regulatory changes, and other factors. In addition, Newport Beach may benefit from MET-implemented supply augmentation actions during regional shortages. These actions are planned and exercised by MET based on regional conditions and in accordance with the Water Supply Contingency Plan (WSCP) and are not assumed as baseline or guaranteed supplies for Newport Beach. Such actions may include the use of supplies and storage programs within the Colorado River, SWP, and in-region storage portfolios.

7.5.2 Total Water Supply and Use Comparison

Newport Beach's anticipated total water use and supply under a five-year drought from FY 2025-26 through FY 2029-30, are compared in Table 7.7. Newport Beach's assessment reveals that its supply capabilities are expected to balance with its projected water use for the next five years, from 2026 to 2030.

Table 7.7 Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment

Submittal Table 7-5 Retail: Five-Year Drought Risk Assessment Water Code Section 10635(b)(3)			
2026			Total
Total Water Use	(AF)		15,457
Total Supplies	(AF)		15,457
Surplus/Shortfall w/o WSCP Action			0
2027			Total
Total Water Use	(AF)		16,141
Total Supplies	(AF)		16,141
Surplus/Shortfall w/o WSCP Action			0
2028			Total
Total Water Use	(AF)		16,241
Total Supplies	(AF)		16,241
Surplus/Shortfall w/o WSCP Action			0
2029			Total
Total Water Use	(AF)		16,549
Total Supplies	(AF)		16,549
Surplus/Shortfall w/o WSCP Action			0
2030			Total
Total Water Use	(AF)		16,830
Total Supplies	(AF)		16,830
Surplus/Shortfall w/o WSCP Action			0

7.5.3 Water Source Reliability

Newport Beach's water supply portfolio is predominantly supported by the Orange County Groundwater Basin, which provides roughly 85 percent of the City's water under the FY 2025–26 BPP and is expected to remain a reliable source through FY 2029–30. OCWD's active basin management, such as adjusting the BPP and securing supplemental recharge supplies, helps maintain long-term groundwater reliability. Local supply is further strengthened by Newport Beach's use of indirect potable reuse water from OCWD's Groundwater Replenishment System, which enhances drought resilience. While emergency interconnections with neighboring agencies are not part of the normal supply mix, they offer additional backup capacity if ever needed. Newport Beach's DRA concludes that available supplies meet projected demands during a modeled five-year drought, with the ability to increase MET purchases if necessary.

As detailed in Chapter 8, Newport Beach has in place a robust WSCP and comprehensive shortage response planning efforts that include demand reduction measures and supply augmentation actions. However, since Newport Beach's DRA shows a balance, no water service reliability concern is anticipated, and no shortfall mitigation measures are expected to be exercised over the next five years. Newport Beach and its wholesale, MWDOC, will periodically revisit its representation of the supply sources and of the gross water use estimated for each year, and will revise the DRA if needed.

CHAPTER 8 WATER SHORTAGE CONTINGENCY PLANNING

8.1 Background

Water shortage contingency planning is a strategic planning process that the City of Newport Beach (City) engages to prepare for and respond to water shortages. A water shortage is defined when water supply available is insufficient to meet the customer demand at a given point in time. This may occur due to water supply availability changes, water quality changes, and/or catastrophic events (e.g., earthquake). The Water Shortage Contingency Plan (WSCP), included in Appendix F and summarized in this chapter, provides a water supply availability assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation is intended to help maintain reliable supplies and reduce the impacts of supply interruptions.

The Water Code Section 10632 requires that every urban water supplier that serves more than 3,000 acre-feet per year (AFY) or has more than 3,000 connections prepare and adopt a standalone WSCP as part of its UWMP. The WSCP is required to plan for a greater than 50% supply shortage. The WSCP may require updating based on new DWR requirements every five years and will be adopted as a current update for submission to DWR by July 1, 2026.

8.2 Overview of the Water Shortage Contingency Plan

The WSCP serves as the operating manual that the City will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages. The WSCP defines the processes and procedures that would be deployed when shortage conditions arise so that the City’s governing body, its staff, and the public can easily identify and efficiently implement pre-determined steps to mitigate a water shortage to the level appropriate for the degree of water shortfall anticipated. The relationship between the three procedural documents related to planning for and responding to water shortages is graphically depicted in Figure 8-1.



Figure 8.1 Purpose and Relationships of the UWMP, WSCP, and Water Shortage Response Ordinance

A complete version of the City's WSCP is provided in Appendix F and includes the steps to assess if a water shortage is occurring, and what level of demand reduction actions to trigger the most appropriate response to the water shortage conditions. The WSCP has prescriptive elements, including an analysis of water supply reliability; the drought shortage actions that align with water shortage levels that correspond to water shortage percentages ranging from 10% to greater than 50%; an estimate of potential to close supply gap for each measure; protocols and procedures to communicate identified actions for any current or predicted water shortage conditions; procedures for an annual water supply and demand assessment; monitoring and reporting requirements to determine customer compliance; and reevaluation and improvement procedures for evaluating the WSCP.

8.3 Summary of Water Shortage Response Strategy and Required DWR Tables

The WSCP is organized into the following three main sections with Section 3 aligned with the California Water Code Section 16032 requirements.

- **Section 1 Introduction and WSCP Overview** gives a summary of the WSCP fundamentals.
- **Section 2 Background Information** provides a background on the City's water service area.
- **Section 3 Water Shortage Contingency Preparedness and Response Planning.**
 - » **Section 3.1 Water Supply Reliability Analysis** provides a summary of the water supply analysis and water reliability findings from the 2025 UWMP.
 - » **Section 3.2 Annual Water Supply and Demand Assessment Procedures** provides a description of procedures to conduct and approve the Annual Assessment.
 - » **Section 3.3 Six Standard Water Shortage Stages** explains the WSCP's six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, 50, and more than 50 percent shortages.
 - » **Section 3.4 Shortage Response Actions** describes the WSCP's shortage response actions that align with the defined shortage levels.
 - » **Section 3.5 Communication Protocols** addresses communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding any current or predicted shortages and any resulting shortage response actions.
 - » **Section 3.6 Compliance and Enforcement** describes customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions.
 - » **Section 3.7 Legal Authorities** describes the legal authorities that enable the City to implement and enforce its shortage response actions.
 - » **Section 3.8 Financial Consequences of the WSCP** provides a description of the financial consequences of and responses for drought conditions.
 - » **Section 3.9 Monitoring and Reporting** describes 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.
 - » **Section 3.10 WSCP Refinement Procedures** addresses reevaluation and improvement procedures for monitoring and evaluating the functionality of the WSCP.

- » **Section 3.11 Special Water Feature Distinction** provides a required definition for inclusion in a WSCP per the Water Code.
- » **Section 3.12 Plan Adoption, Submittal, and Availability** describes the process the City followed to adopt its WSCP.

The WSCP is based on adequate details of demand reduction and supply augmentation measures that are structured to match varying degrees of shortage will aim to make the relevant stakeholders understand what to expect during a water shortage situation. The City adopted water shortage levels consistent with the requirements identified in Water Code Section 10632 (a)(3)(A) (Table 8.1).

The four shortage levels the City uses in their water shortage planning and documented in their WSCP are compared to DWR's six standard shortage levels in terms of percentage shortage range for each of the six levels in Table 8.1. The water supply augmentation measures that align with each shortage level are described in Table 8.2. This table also estimates the extent to which that action will augment supplies to reduce the gap between supplies and demands. The demand reduction action measures that align with each shortage level and how each measure will reduce the shortage gap between expected supplies and the shortage level is summarized in Table 8.3. The purpose of Table 8.2 and 8.3 is to demonstrate the results the City can expect once shortage level actions are implemented to deliver the expected outcomes necessary to meet the requirements of a given shortage level.

Table 8.1 [Cross-Reference for Standard vs Supplier Shortage Levels](#)

Submittal Table 8-1: Cross-reference for Standard vs Supplier Shortage Levels Water Code Section 10632(a)(3)(B)			
☐		Check the box if the Supplier uses the Standard six levels of water shortage. Proceed to the next table.	
Standard Shortage Levels	Percent Shortage Range	Suppliers Shortage Levels	Percent Shortage Range
1	Up to 10%	1	>10%
2	Up to 20%	2	10-25%
3	Up to 30%	2	10-25%
4	Up to 40%	3	25-40%
5	Up to 50%	4	>40%
6	>50%	4	>40%
NOTES:			

Table 8.2 Supply Augmentation and Other Actions

Submittal Table 8-2 Retail: Supply Augmentation and Other Actions Water Code Section 10632(a)(4)(A),(C) and (E)				
No	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range) (AF)	
Add additional rows as needed				
1 through 6	Other Purchases	Percentage	0 - 100%	Additional imported water purchase through MWDOC
1 through 6	Other Purchases	Percentage	0 - 100%	Additional groundwater pumping in the Orange County Groundwater Basin
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.				
NOTES: Additional imported water purchases and groundwater pumping to meet the supply gap may have financial ramifications, per the MWDOC Water Supply Allocation Plan and OCWD, respectively.				

Table 8.3 Demand Reduction Actions

Submittal Table 8-3 Retail: Demand Reduction Actions Water Code Section 10632(a)(4)(B) and (E)					
No	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range)		
			(AF)		
Add additional rows as needed					
0	Landscape - Prohibit certain types of landscape irrigation		Statewide Prohibition is Required	Watering or irrigation of nonfunctional turf on publicly owned landscapes, commercial, industrial and institutional owned landscapes, or homeowners' associations common area landscapes is prohibited.	Yes
0	Water Features - Restrict water use for decorative water features, such as fountains		Statewide Prohibition is Required	All decorative water features must re-circulate water system	No
0	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Statewide Prohibition is Required	No customer shall use water to clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device.	Yes
0	Other - Prohibit use of potable water for washing hard surfaces		Statewide Prohibition is Required	No person shall use water to wash down hard or paved surfaces, including, but not limited to, sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, or a low volume, high-pressure cleaning machine (e.g., "water broom") equipped to recycle any water used.	Yes
0	Landscape - Restrict or prohibit runoff from landscape irrigation		Statewide Prohibition is Required	Watering vegetated areas in a manner that causes excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter, or ditch is prohibited.	Yes
0	Landscape - Other landscape restriction or prohibition		Statewide Prohibition is Required	Irrigating ornamental turf on public street medians is prohibited.	No
0	Landscape - Other landscape restriction or prohibition		Statewide Prohibition is Required	No landscape watering shall occur within 48 hours after measurable precipitation.	Yes
0	Landscape - Other landscape restriction or prohibition		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	Watering or irrigation with a device that is not continuously attended to is limited to fifteen (15) minutes per day per valve. Low flow drip type systems, water efficient stream rotor systems, and sensor/weather-controlled systems are exempt.	Yes
0	Landscape - Prohibit certain types of landscape irrigation		Statewide Prohibition is Required	Any new planting and irrigation design should be performed in accordance with the Maximum Applied Water Allowance using drought tolerant plants, as listed in Metropolitan's list of California friendly plants and Design Standards For Implementation of the Water Efficient Landscape Ordinance	Yes
0	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	No person shall permit excessive use, loss or escape of water through breaks, leaks or other malfunctions in the irrigation or distribution system for any period of time after notification and corrected no more than seven days after receiving notice of the condition from the City.	Yes
0	CII - Restaurants may only serve water upon request		Statewide Prohibition is Required	CII - Customers operating eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drinks are sold, served, or offered for sale, shall not provide drinking water to any person unless expressly requested by the person.	Yes
0	CII - Lodging establishment must offer opt out of linen service		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	CII - Customers operating hotel, motel, and other commercial lodging establishments shall provide persons the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option.	Yes
0	CII - Other CII restriction or prohibition		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	No customer shall install a new single pass cooling system in a building or premises requesting new water service.	Yes

Submittal Table 8-3 Retail: Demand Reduction Actions Water Code Section 10632(a)(4)(B) and (E)					
No	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range)		
			(AF)		
Add additional rows as needed					
0	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	All commercial conveyor car wash systems in commercial car washing facilities shall be operational recirculating water systems, or the customer must have secured an exemption from this requirement.	Yes
0	CII - Commercial kitchens required to use pre-rinse spray valves		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	Food preparation establishments must use water efficient kitchen spray valves.	Yes
0	Landscape - Prohibit certain types of landscape irrigation		Statewide Prohibition is Required	New and existing residential automated irrigation systems must be equipped with rain sensors that shut off the system when it rains, or smart controllers or evapo-transpiration sensors that use weather-based data to set efficient watering schedules.	Yes
0	Other		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	No customer shall use water from any fire hydrant for any purpose other than fire suppression or emergency aid without first: (1) requesting and posting the appropriate fees at the City, and (2) obtaining a hydrant meter to record all water consumption for a specified project.	Yes
0	Other - Prohibit use of potable water for construction and dust control		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	No person shall use potable water for soil compaction or dust control in a construction site where there is an available and feasible source of recycled water or non-potable water approved by the Department of Public Health and appropriate for such use.	Yes
0	CII - Commercial kitchens required to use pre-rinse spray valves		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	No customer may operate a commercial kitchen without Water-Conserving Pre-Rinse Kitchen Spray Valves. New or remodeled commercial kitchens shall be equipped with water-conserving kitchen spray valves.	Yes
0	Improve Customer Billing		On-going Long Term-Conservation Savings Measure. Not applicable to Water Shortage Contingency Plan quantifiable savings.	AMI Customer Leak Reports with Detection and Repair Assistance	No
1	Expand Public Information Campaign	Percentage	3%	Community Outreach and Messaging (Expand Public Information Campaign)	No
1	Provide Rebates on Plumbing Fixtures and Devices	Percentage	1%	Increase awareness to rebate incentives, mailers, web, email, social media and PSAs	No
1	Reduce System Water Loss	Percentage	2%	More Aggressive Leak Detection and Repair	No
1	Increase Water Waste Patrols	Percentage	3%	Increase Water Waste Patrols	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	1%	Fix leaks or faulty sprinklers promptly/within 72 hrs.	Yes
1	Landscape - Limit landscape irrigation to specific days	Percentage	5%	Irrigation shall be limited to 4 days per week for turf watering when using potable water in summer and 2 days in winter. Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering.	Yes
1	Other water feature or swimming pool restriction	Percentage	1%	No customer may use more than one foot of potable water per week to fill or refill a residential swimming pool or outdoor spa.	Yes
1	Landscape - Limit landscape irrigation to specific days	Percentage	5%	No customer shall use potable water to irrigate any lawn, landscape or other vegetated area except on the scheduled irrigation days established	Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	1%	No customer may use potable water to fill or refill an ornamental lake, pond, or fountain, more than once per week, except to the extent needed to sustain aquatic life	Yes

Submittal Table 8-3 Retail: Demand Reduction Actions Water Code Section 10632(a)(4)(B) and (E)					
No	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range)		
			(AF)		
Add additional rows as needed					
1	Improve Customer Billing	Percentage	5-10%	Enhance customer billing reports to include more details on water use: No customer shall use more water during any billing period than the percentage of the base amount established in the resolution declaring the Level One water supply shortage, which percentage shall be in the range from one hundred (100) percent to ninety (90) percent of the base amount.	No
2	Landscape - Limit landscape irrigation to specific times	Percentage	3%	Watering or irrigation of vegetated areas is prohibited between 9 am and 5 pm except by use of a handheld device, hose equipped with an automatic shutoff device, or for adjusting or repairing an irrigation system for short periods of time.	Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	1%	Fix leaks or faulty sprinklers within 48 hours	Yes
2	Landscape - Limit landscape irrigation to specific days	Percentage	5-10%	Irrigation shall be limited to 3 days per week turf watering when using potable water. Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering.	Yes
2	Increase Water Waste Patrols	Percentage	1%	Increase Water Waste Patrols	Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	1%	No customer may use potable water to fill or refill an ornamental lake, pond, or fountain more than once every other week, except to the extent needed to sustain aquatic life	Yes
2	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	Percentage	1%	Customers may use no more than six inches of potable water per week to fill or refill a residential swimming pool or outdoor spa.	No
2	Improve Customer Billing	Percentage	5-10%	Enhance customer billing reports to include more details on water use: No customer shall use more water during any billing period than the percentage of the base amount established in the resolution declaring the Level Two water supply shortage, which percentage shall be in the range from ninety (90) percent to seventy-five (75) percent of the base amount.	No
2	Other	Percentage	0-1%	The City may reduce non-potable water allocations in all categories to meet the available water supply.	Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	1%	Fix leaks or faulty sprinklers within 24 hours	Yes
3	Landscape - Limit landscape irrigation to specific days	Percentage	10-20%	Irrigation shall be limited to 2 days per week turf watering when using potable water. Plant containers, trees, shrubs and vegetable gardens may be watered additional days using only drip irrigation or hand watering.	Yes
3	Increase Water Waste Patrols	Percentage	1%	Increase Water Waste Patrols	Yes
3	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	1%	No customer may use potable water to fill or refill an ornamental lake, pond, or fountain more than once every other week, except to the extent needed to sustain aquatic life	Yes
3	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	Percentage	0-1%	Customers may use no more than three inches of potable water per week to fill or refill a residential swimming pool or outdoor spa.	No
3	Improve Customer Billing	Percentage	5-10%	Enhance customer billing reports to include more details on water use: No customer shall use more water during any billing period than the percentage of the base amount established in the resolution declaring the Level Three water shortage, which percentage shall be in the range from seventy-five (75) percent to sixty (60) percent of the base amount.	No

Submittal Table 8-3 Retail: Demand Reduction Actions Water Code Section 10632(a)(4)(B) and (E)					
No	Is the Supplier completing this table using the standard six levels? (yes/no)				
Shortage Level	Demand Reduction Actions Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement? For Retail Suppliers Only Drop Down List
		Volume or Percentage Drop down	Shortage Gap Reduction Value (May be a range)		
			(AF)		
Add additional rows as needed					
4	Landscape - Prohibit certain types of landscape irrigation	Percentage	10-20%	No customer shall use potable water to irrigate any lawn, landscape or other vegetated area.	Yes
4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Percentage	1%	Fix leaks or faulty sprinklers within 24 hours	Yes
4	Increase Water Waste Patrols	Percentage	1%	Increase Water Waste Patrols	Yes
4	Water Features - Restrict water use for decorative water features, such as fountains	Percentage	1%	No customer may use potable water to fill or refill an ornamental lake, pond, or fountain, except to the extent needed to sustain aquatic life	Yes
4	Moratorium or Net Zero Demand Increase on New Connections	Percentage	0-1%	The City will not (1) provide new potable water service, new temporary meters, or new permanent meters or (2) issue statements of immediate ability to serve or to provide potable water service,	No
4	Other	Percentage	1%	No customer may use potable water to fill or refill a residential swimming pool or outdoor spa.	Yes
4	Improve Customer Billing	Percentage	5-10%	Enhance customer billing reports to include more details on water use: No customer shall use more water during any billing period than the percentage of the base amount established in the resolution declaring the Level Four water shortage, which percentage shall be less than sixty (60) percent of the base amount.	No
4	Other	Percentage	0-70%	Water use for public health and safety purposes only. Customer rationing may be implemented.	No
DWR NOTES: Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Submittal Table 2-3.					
NOTES:					

CHAPTER 9 DEMAND MANAGEMENT MEASURES

Over the past several decades, water use efficiency and conservation have evolved from voluntary best practices into core regulatory requirements shaping urban water management throughout California and Orange County. In response to recurring droughts, growing urban demand, and increasing competition for limited water supplies, the California Urban Water Conservation Council (CUWCC) was formed in 1991 to promote statewide cooperation on urban water conservation. Through the development and implementation of the CUWCC Best Management Practices, water agencies established a consistent, voluntary framework for improving efficiency through locally tailored programs. This early foundation was later strengthened by legislative actions, most notably Senate Bill (SB) X7-7, the Water Conservation Act of 2009, which set enforceable urban water use reduction targets to cut per capita use by 20 percent by 2020 and required retail water suppliers to actively manage demand as part of long-term water planning. All Orange County water agencies came together to create the Orange County 20x2020 Regional Alliance and met compliance as a region. The City of Newport Beach (City) also met compliance individually. These efforts reflected a growing recognition that efficient water use is essential to ensuring reliability amid population growth, limited supplies, and increasing climate variability.

Recurring drought conditions have further accelerated the pace and scale of conservation efforts in the last decade. The 2013–2014 drought prompted a statewide emergency response, culminating in an executive order mandating a 25 percent reduction in urban water use across California. All Orange County Water Agencies, including the City, met this reduction target as reported in Chapter 5 of this 2025 Urban Water Management Plan (UWMP). More recently, the 2021–2022 drought reinforced the need for sustained efficiency gains and durable demand management strategies beyond temporary emergency actions. These regulatory and hydrologic drivers ultimately led to the passing and adoption of SB 606 and Assembly Bill (AB) 1668, the “Making Conservation a California Way of Life” legislation (passed in 2018 and adopted in 2024). The legislation establishes long-term water use objectives for individual water suppliers and reinforces conservation as a permanent element of water management. Together, these milestones underscore the necessity for the Municipal Water District of Orange County (MWDOC) and the City to implement comprehensive demand management measures and meet established urban water use reduction targets to ensure regional water supply resilience.

The goal of the Demand Management Measures (DMM) chapter is to provide a comprehensive description of the water use efficiency programs that the City has implemented in the most recent five years, is currently implementing, and plans to implement to meet its urban water use reduction targets. Per the “Making California a Conservation Way of Life” Framework (Conservation Framework), each Urban Water Supplier is required to calculate and report their Urban Water Use Objective (UWUO) and to stay within their calculated annual water budget. The UWUO is an aggregate efficient water use of:

- Indoor Residential Use (population x gallons per capita per day (GPCD) standard).
- Outdoor Residential Use (measurements of irrigated/irrigable area, local weather data, and a landscape efficiency factor).
- Outdoor Use with Dedicated Irrigation Meters (measurements of irrigated area, local weather data, and a landscape efficiency factor).
- Distribution System Water Losses.

- Approved Variances.
- Potable Reuse Bonus.

Additionally, the Conservation Framework includes commercial, industrial, and institutional (CII) non-volumetric Performance Measures, including CII customer account classifications, thresholds for converting mixed-use CII meters (MUMs) irrigating over half an acre of landscape to dedicated irrigation meters (DIMs) or in lieu technologies, CII best management practices (BMPs), and identification of and information sharing with disclosable buildings.

One of the City's top priorities since the adoption of the "Making California a Conservation Way of Life" Framework has been to make progress toward compliance with the Conservation Framework. This chapter will describe the City's DMM activities, including those administered by its wholesaler and supplemental programs administered locally at the retail-level.

9.1 City of Newport Beach Demand Management Measures

This section describes the specific DMMs performed by the City, including DMMs offered in partnership with MWDOC, its wholesale supplier, to encourage water conservation within their service area. Table 9.1 summarizes DMM implementation by the City as well as responsibilities of MWDOC.

Table 9.1 DMM Implementation Responsibility and Regional Programs in Orange County

Efficiency Measure	Responsibility of:		MWDOC Regional Program and Activities
	Retailer	MWDOC as a Wholesaler	
Operations Practices			
Wholesale Agency Assistance Programs	-	✓	✓
Conservation Pricing	✓	✓	✓
Conservation Coordinator	✓	✓	✓
Water Waste Prevention	✓	-	✓
Water Loss Control (System Water Audits, Leak Detection and Repair)	✓	(1)	✓
Metering with Commodity Rates	✓	(1)	(1)
Education and Outreach			
Public Outreach Programs	✓	✓	✓
K-20 Water Education Initiatives and K-12 School Programs	✓	✓	✓
OC Scouts Boy Scouts of America (BSA) and OC Girl Scouts Programs	✓	✓	✓
Water Awareness Poster Contest	✓	✓	✓
Water Energy Education Alliance	✓	✓	✓
Qualified Water Efficient Landscaper (QWEL) Training Program	✓	✓	✓
Residential Indoor Implementation			
Residential Indoor Rebates	✓	-	✓
Flow Monitor Device Rebates	✓	-	✓

Efficiency Measure	Responsibility of:		MWDOC Regional Program and Activities
	Retailer	MWDOC as a Wholesaler	
Commercial, Industrial, and Institutional Implementation			
Water Savings Incentive Program	✓	-	✓
On-site Retrofit Program	✓	-	✓
CII Indoor Rebates (High Efficiency Toilets and Urinals, Plumbing Flow Control Valves, Connectionless Food Steamers, Air-cooled Ice Machines, Food Defrosters, Cooling Tower Conductivity Controllers and pH Controllers, Dry Vacuum Pumps, Laminar Flow Restrictors)	✓	-	✓
Landscape Programs			
Turf Replacement Program (including Tree Rebate)	✓	-	✓
Spray-to-Drip Irrigation Rebate Program	✓	-	✓
Landscape Rebates (Smart Timers, High Efficiency Sprinkler Nozzles, Large Rotary Nozzles, In-stem Flow Regulators)	✓	-	✓
Residential Landscape Design Assistance Program	✓	-	✓

Notes:

- (1) MWDOC does not own or operate a distribution system; water wholesaled by MWDOC is delivered through MET distribution system and meters.

9.1.1 Operations Practices

9.1.1.1 Wholesale Agency Assistance Programs

MWDOC's Assistance Programs are described in Section 9.3.

9.1.1.2 Conservation Pricing

The City has a uniform commodity pricing for all of its customer sectors plus a combined fixed charge based on meter size. The current commodity charges for single family, multi-family, and CII customers, as of January 1, 2025, are \$4.26 per HCF. The monthly fixed charges are based on the customer meter size as shown below (Table 9.2).

Table 9.2 City of Newport Beach Water Rates

Table 1: Water Services		Effective	Effective	Effective	Effective	Effective
Meter Size (Inch)		JAN 1, 2024	JAN 1, 2025	JAN 1, 2026	JAN 1, 2027	JAN 1, 2028
5/8 th		\$27.09	\$31.59	\$36.59	\$41.59	\$46.59
3/4 th		\$27.09	\$31.59	\$36.59	\$41.59	\$46.59
1		\$41.99	\$50.07	\$58.30	\$66.53	\$74.75
1 ½		\$79.15	\$96.29	\$112.59	\$128.88	\$145.16
2		\$123.76	\$151.74	\$177.74	\$203.71	\$229.65
3		\$328.23	\$405.92	\$476.32	\$546.65	\$616.89
4		\$562.45	\$697.06	\$818.33	\$939.47	\$1,060.46
6		\$1,194.45	\$1,482.68	\$1,741.22	\$1,999.48	\$2,257.39
8		\$2,086.69	\$2,591.80	\$3,044.12	\$3,495.95	\$3,947.18
Effective Dates		JAN 1, 2024	JAN 1, 2025	JAN 1, 2026	JAN 1, 2027	JAN 1, 2028
Usage Charges per HCF Potable Water		\$4.16	\$4.26	\$4.36	\$4.46	\$4.56

The commodity rate is in place to recover operational costs, while the fixed fee is in place to fund capital projects identified in the City's Water Master Plan. The City's current and proposed billing systems do not support allocation-based rate structures; however, allocation-based rate structures may be considered in the future.

9.1.1.3 Conservation Coordinator

The City has designated a Water Conservation Coordinator since November 2007 whose responsibilities include the following tasks:

- Manage, oversee, and coordinate the City's water conservation program, and implement specific projects to improve overall water conservation.
- Perform professional level duties in the City's residential, commercial and large landscape water conservation programs; develop programs to promote water conservation, conduct field audits and provide consultation on residential and landscape water conservation methods.
- Establish an effective City-wide water conservation program; develop applicable procedures, standards, and guidelines.
- Respond to customer inquiries or complaints; make site visits, gather and analyze data, and make written reports to site owners and managers with recommendations for improving water use, irrigation efficiency and runoff reduction; contact property owners and other members of the public to explain code requirements and to answer questions related to code compliance.
- Advise and assist the Water Division of the Utilities Department regarding rate structures and water conservation initiatives.

- Develop and chair a water conservation committee to ensure the City is effectively managing water conservation efforts across departments and citywide.
- Develop and submit applications for grant funding related to water conservation; administer and maintain grant contract requirements.
- Manage a variety of projects related to water conservation.
- Assist, train, and advise Code and Water Quality Enforcement staff and other City personnel in the enforcement of water conservation rules, regulations, and ordinances.
- Serve as liaison and educator to the community, including residents, visitors, and businesses; attend meetings and collaborate with stakeholders; provide public information and outreach on water conservation initiatives; develop public education materials on water conservation; conduct public presentations and classroom visits.
- Provide technical expertise and advice on water conservation practices to managerial staff, the public, and other interested parties.
- Issue Notices of Violation, Administrative Citations and letters to property owners/tenants and businesses whose properties are not in compliance with current water conservation regulations.
- Conduct follow-up investigations and develop correspondence.

An annual budget of \$420,000 is provided for conservation support and initiatives. This budget does not include the Advanced Metering Infrastructure (AMI) Program but does support the leak detection program and staffing.

9.1.1.4 Water Waste Prevention Ordinances

Ordinance No. 2016-14 adopted in 2015 amended the City's Municipal Code (NBMC 14.16) pertaining to Water Conservation and Supply Level Regulations. The ordinance established permanent mandatory water conservation requirements as follows:

- No customer shall use potable water to irrigate any lawn and/or ornamental landscape area using a landscape irrigation system or a watering device that is not continuously attended unless such irrigation is limited to no more than 15 minutes watering per day per station.
- No person shall use water to irrigate any lawn and/or ornamental landscape area in a manner that causes or allows excessive flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter or ditch.
- No person shall use water to wash down hard or paved surfaces.
- No person shall permit excessive use, loss or escape of water through breaks, leaks or other malfunctions in the person's plumbing.
- No customer shall use potable water to irrigate lawns, groundcover, shrubbery or other ornamental landscape material during and within 48 hours after measurable rainfall event.
- All landscape irrigation systems connected to dedicated landscape meters shall include rain sensors that automatically shut off.
- No customer shall operate a water fountain or other decorative water feature that does not use a recirculating water system.
- Commercial conveyor car wash systems shall be operational recirculating water systems.

- Restaurants shall not provide drinking water to any person unless expressly requested by the person.
- Commercial lodging establishments shall provide people with the option of not having towels and linen laundered daily.
- Washing machines installed in commercial and/or coin-operated laundries shall be ENERGY STAR® and Consortium for Energy Efficiency (CEE) Tier III qualified.
- No customer shall use water from any fire hydrant for any purpose other than fire suppression or emergency aid with exceptions.
- No person shall water with potable water the landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission.
- Construction Site Requirements.
- Commercial Kitchen Requirements.

The ordinance also establishes four levels of mandatory water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies. The provisions and water conservation measures to be implemented in response to each shortage level are described in the City's Water Shortage Contingency Plan (WSCP).

9.1.1.5 Water Loss Control

The City records daily production and demand data and reads all meters on a bi-monthly basis in order to assess and manage distribution system real loss. All metered sales and other verifiable uses such as backwash, flush water, and operation and maintenance, are recorded.

In 2020, the City completed a leak detection program with MWDOC to detect and repair distribution system leaks. The City is evaluating the possibility of developing a formal leak detection program in the next 2 to 5 years with MWDOC to audit the entire system. Leak detection on the customer-side will be supported through the AMI Program. Much of the City's steel and ductile iron pipe is protected from early deterioration with a cathodic protection system. This system draws the negative current away from the pipe to a sacrificial anode that erodes instead of the piping. This prevents leakage on the piping and reduces water loss.

SB 555 signed into law in 2015 requires urban water suppliers to submit annual validated water loss audit reports to the Department of Water Resources (DWR). Water auditing is the basis for effective water loss control. DWR's UWMP Guidebook includes a water audit manual intended to help water utilities complete the AWWA Water Audit on an annual basis. Audits must be validated by a certified water auditor to ensure accuracy. A Water Loss Audit was completed for the City which identified areas for improvement and quantified total loss. Based on the data presented, the three priority areas identified were: volume from own sources, billed metered, and customer metering inaccuracies. Multiple criteria are a part of each validity score, and a system wide approach will need to be implemented for the City's improvement.

9.1.1.6 Metering

The City's water connections are fully metered for all customer sectors, including separate meters for single-family and multi-family residential, CII, dedicated landscape, and City-owned meters. In

multi-family dwellings with one property owner, a master-meter is often used. However, for multi-family dwellings with more than one owner, separate water meters are installed.

In 2024, the City completed its AMI meter replacement project. This project replaced all direct read meters 2 inches and smaller with new meters outfitted with AMI technology. All meters 3 inches and above were retrofitted with AMI readers and transmitters.

9.1.2 Public Education and Outreach

The City implements several public education and outreach measures, including the programs administered by MWDOC, its wholesale supplier. The City develops, coordinates, and delivers a substantial amount of public information, education, and outreach programs aimed at elevating water agency and consumer awareness and understanding of current water issues as well as efficient water use and water-saving practices, sound policy, and water reliability investments that are in the best interest of the region. These efforts encourage good water stewardship that benefits all of the City's residents, businesses, and industries across all demographics. An outline of the City's public education initiatives is below.

9.1.2.1 K-20 Water Education Initiatives and K-12 School Programs

Over the past several years, MWDOC's investment in K-20 water education has significantly grown, evolving to include programs and activities that support environmental literacy for all Orange County students. The effort has expanded beyond K-12 water education programs to include career and workforce development initiatives in higher education through the Water Energy Education Alliance (WEEA) described in more detail in Section 9.1.2.4.

MWDOC's K-12 Water Education School Programs bring standards-aligned, engaging water lessons directly into classrooms and connect water to every part of students' lives. All elementary, middle, and high school programs meet California State Standards and Next Generation Science Standards, providing students with high-quality, relevant learning experiences that build both academic and real-world understanding. This includes a Grab-and-Go Water Activities program, developed in partnership with the Orange County Department of Education, that provides free, self-guided water activities for K-12 teachers, parents and students.

9.1.2.2 OC Scouts Boy Scouts of America (BSA) and OC Girl Scouts Programs

MWDOC hosts multiple water education workshops each year to help Scouts BSA earn the *Soil & Water Conservation Merit Badge* and Girl Scouts earn the *MWDOC Water Resources & Conservation Patch*. These hands-on science, technology, engineering, and mathematics (STEM) clinics teach children of all ages where their water comes from, how to use water more efficiently, and how all life depends on the health and security of our natural resources, fostering water awareness and responsibility through fun, activity-based learning.

9.1.2.3 Water Awareness Poster Contest

The City participates in MWDOC's annual Water Awareness Poster Contest, offered for students in grades K-12. The Poster Contest presents children with an opportunity to use their artistic talents to express the

importance and value of water through artwork. Each year, hundreds of entries are collected from students and classrooms across the county, and from these entries, 40 winners are selected.

9.1.2.4 Water Energy Education Alliance (WEEA)

The Water Energy Education Alliance (WEEA) unites over 260 water, energy, and education leaders across the state to build and strengthen career pathways for all California students. Administered and led by the MWDOC, WEEA is comprised of a powerful statewide coalition of education leaders, workforce advocates, and industry experts to raise student awareness, forge strong partnerships, and cultivate a diverse, highly skilled talent pipeline. By connecting students with high-impact opportunities, WEEA is shaping a workforce that fuels industry success, enhances worker well-being, and ensures a resilient, thriving California.

9.1.2.5 Qualified Water Efficient Landscaper (QWEL) Training Program

Since 2018, MWDOC has offered free Qualified Water Efficient Landscaper (QWEL) certification classes designed for landscape professionals. Classes are open to any city staff, professional landscaper, water district employee, or maintenance personnel that would like to become a Qualified Water Efficient Landscaper. The QWEL certification program provides 20 hours of instruction on water efficient areas of expertise such as local water supply, sustainable landscaping, soil types, irrigation systems and maintenance, as well as irrigation controller scheduling and programming. QWEL has received recognition from EPA WaterSense for continued promotion of water use efficiency. To earn the QWEL certification, class participants must demonstrate their ability to perform an irrigation audit as well as pass the QWEL exam. Successful graduates will be listed as a Certified Professional on the WaterSense website as well as on MWDOC's landscape resources page, to encourage Turf Removal participants or those making any landscape improvements to hire a QWEL certified professional.

Started in December 2020, a hybrid version of QWEL is available in conjunction with the California Landscape Contractors Association's Water Management Certification Program. This joint effort allows landscape industry an opportunity to obtain two nationally recognized EPA WaterSense Professional Certifications with one course and one written test. This option is offered through MET.

9.1.3 Residential Indoor Rebate Programs

The City partners with MWDOC to implement residential measures that target indoor water use efficiency for single family and multifamily residential customers.

9.1.3.1 High Efficiency Clothes Washer and Toilet Rebate Programs

The High Efficiency Clothes Washer (HECW) Rebate Program provides residential customers with rebates starting at \$85 for purchasing and installing HECWs that use 35 to 50 percent less water than standard washer models. Devices must meet or exceed the Consortium for Energy Efficiency (CEE) Tier 1 Standard, and a listing of qualified products can be found at ocwatersmart.com. There is a maximum of one rebate per home.

The Premium High Efficiency Toilet (HET) Rebate Program offers residential customers rebates starting at \$40 for replacing their toilets using 1.6 gallons per flush (gpf) with Premium HETs. Premium HETs use just 1.1 gallons of water or less per flush, which is 20 percent less water than WaterSense standard toilets.

9.1.3.2 Flow Monitor Device Pilot

This pilot program provides rebates starting at \$100, or more in select areas, per flow monitor device installed. These devices monitor a home's water use and can help detect leaks, making them a proactive tool for preventing expensive water bills and water damage due to unforeseen leaks. A list of residential rebate-eligible flow monitoring devices is provided.

9.1.4 Commercial, Industrial, Institutional Programs

The City provides a variety of financial incentives, in partnership with MWDOC, to help businesses, restaurants, institutions, hotels, hospitals, industrial facilities, and public sector sites achieve their efficiency goals. Water users in these sectors have options to choose from a standardized list of water efficient equipment/devices or may complete customized projects through a pay-for-performance where the incentive is proportional to the amount of water saved. Such projects include high efficiency commercial equipment installation and manufacturing process improvements.

9.1.4.1 Water Savings Incentive Program

The Water Savings Incentive Program (WSIP) is designed for non-residential customers to improve their water efficiency through upgraded equipment or services that do not qualify for standard rebates. WSIP is unique because it provides an incentive based on the actual amount of water saved by the customers. This "pay-for-performance" design lets customers implement custom projects for their sites. The City partners with MWDOC and MET to offer this program.

Projects must save at least 10 MG of water to qualify for the Program and incentives are paid by MET based on the amount of water saved. Payment amount is up to \$0.60 per 1,000 gallons saved per year over the project life, up to a maximum of 10 years. Payments are limited to 50 percent of the eligible project costs while funding is available. Additional funding may be available through MWDOC, but it is limited. Examples of successful projects include but are not limited to: changing industrial process system water to capture and reuse process wastewater, capturing condensation and using it to supplement cooling tower water supply, and replacing water-using equipment with more efficient products.

9.1.4.2 Recycled Water On-site Retrofit Program

Through the Recycled Water On-site Retrofit Program, the City in partnership with MWDOC and MET, offers incentives for CII properties to convert potable water irrigation or industrial systems to recycled water. Financial incentives of up to \$1,950 per acre-foot (AF) of potable water saved are available for the customer-side on the meter retrofits. Projects may also be eligible for up to an additional \$325 per AF of annual water savings from MWDOC. Recycled water conversion projects can help to ensure a more reliable water future for Orange County.

9.1.4.3 Commercial, Industrial, Institutional Rebates

The City offers additional financial incentives under the SoCal Water\$mart Rebate Program which offers rebates for various water efficient devices to CII customers. Core funding is provided by MET and supplemental funding is sourced from MWDOC via grant funds and/or retail water agencies. Devices include: High Efficiency Toilets and Urinals, Plumbing Flow Control Valves, Connectionless Food

Steamers, Air-cooled Ice Machines, Food Defrosters, Cooling Tower Conductivity Controllers and pH Controllers, Dry Vacuum Pumps, and Laminar Flow Restrictors.

9.1.5 Landscape Programs

Some of the most active and effective water use efficiency programs the City provides are those that target the reduction of outdoor water use. With a large proportion of water consumed outdoors via landscape demands, this sector has been and will continue to be a focus for MWDOC and the City.

9.1.5.1 Turf Replacement Program

The Orange County Turf Replacement Program offers incentives to replace existing turf grass with California-native, drought-tolerant plants and landscaping. Residential, commercial, and public properties in the City's service area are all eligible for this program. The goals of this program are to increase water use efficiency through sustainable landscaping practices that result in multi-benefit projects across Orange County. Participants are encouraged to utilize smart irrigation timers and furthermore, projects are required to include a stormwater capture feature, such as a rain garden or dry stream bed, and have a minimum of three plants per 100 square feet to increase plant density and promote healthy soils. These projects save water and reduce dry and wet weather runoff, increase urban biomass, and sequester more carbon than turf landscapes.

Additionally, MWDOC is piloting a tree program that allows eligible trees to qualify as a sustainability feature in Turf Replacement projects. Beginning March 4, 2024, Turf Replacement Program participants became eligible for an additional incentive for planting trees as part of their Turf Replacement project. Participants can receive up to \$100 per tree, for up to 5 trees (\$500), in addition to the Turf Replacement rebate. The pilot goals include increasing the presence of trees in Turf Replacement projects and breaking down barriers to participation. It is anticipated that the pilot will be evaluated in 2026.

9.1.5.2 Spray-to-Drip Rebate Program

The Spray to Drip Rebate Program offers residential, commercial, and public agency customers rebates for converting areas irrigated by traditional high-precipitation rate spray heads to low-precipitation rate drip irrigation. Drip irrigation systems are extremely water efficient. Rather than spraying wide areas subject to wind drift, overspray and runoff, drip systems use point emitters to deliver water to specific locations at or near plant root zones. Water drips slowly from the emitters either onto the soil surface or below ground. As a result, less water is lost to wind, evaporation, and overspray, saving water, and reducing irrigation runoff and non-point source pollution. The City partners with MWDOC to provide \$1 per square foot of conversion area when replaced with eligible drip irrigation products.

9.1.5.3 SoCal Water\$mart Rebate Program for Landscape

The City also offers financial incentives under the SoCal Water\$mart Rebate Program for a variety of water efficient landscape devices, such as Smart Irrigation Timers and Central Computer Irrigation Controllers, large rotary nozzles and rotating sprinkler nozzles, soil moisture sensors, irrigation master valves, and in-stem flow regulators.

9.1.5.4 Landscape Design Assistance Rebate

This program is offered for residential customers who are participating in the turf replacement program and are seeking professional design services. Participants must hire a landscape design professional to provide a design that meets the rebate eligible design requirements. Participants will receive up to \$1,000 upon completion of their turf replacement project if they have used a professional designer.

9.2 City of Newport Beach Demand Management Measures Implementation (2020-2025)

During the past five years, FY 2020-21 to 2024-25, the City, with the assistance of MWDOC, has continued water use efficiency programs for its residential, CII, and landscape customers with the participation shown below (Table 9.3). The City will continue to implement all applicable programs in the next five years.

Table 9.3 City of Newport Beach Water Use Efficiency Program Participation

Program	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25
High Efficiency Clothes Washer (HECW)	35	22	27	27	18
High Efficiency Toilets (HETs)	3	3	0	1	0
Flow Monitoring Devices (FMD)	--	0	0	1	1
Commercial Plumbing Fixtures (CII)	0	0	0	0	3
Water Savings Incentives Projects (WSIP)	0	0	0	0	1
Turf Replacement (Res.)	756	823	6,247	7,118	3,461
Turf Replacement (Comm.)	8,070	99,613	24,470	37,101	13,099
Landscape Design Rebate Program (LDAP)	1	3	6	0	1
Landscape Design Rebate Program (LMAP)	1	0	2	2	0
Spray-to-Drip (Res.)	301	457	6,573	6,890	3,247
Spray-to-Drip (Comm.)	0	49,456	5,845	21,725	0
Rotating Nozzles (Small Res.)	0	0	0	0	0
Rotating Nozzles (Small Comm.)	0	0	0	0	0
Rotating Nozzles (Large Comm.)	0	0	0	0	0
Smart Timers (Res.)	16	16	9	14	13
Smart Timers (Comm.)	12	21	15	16	0
Rain Barrels	2	0	2	1	0
Recycled Water Onsite Retrofits	0	0	0	0	0

9.3 MWDOC Demand Management Implementation Assistance Programs

To help facilitate implementation of DMMs throughout Orange County, MWDOC's wholesale efforts focus on the following three areas: (1) State Water Conservation Compliance Assistance (e.g., Conservation Framework and Non-Functional Turf); (2) Regional Rebate Programs and Local Program Assistance; and

(3) Research and Evaluation. This both complies with and goes beyond the Foundational BMPs of Utility Operations Programs requirements.

9.3.1 State Water Conservation Compliance Assistance

To support Orange County retailers with compliance of SB 606 and AB 1668, MWDOC is providing multi-level support to assist agencies in meeting the primary goals of the legislation, including to use water more wisely and to eliminate water waste. Beginning in 2023, urban water suppliers were required to calculate and report their annual UWUO, submit validated water audits annually, and implement and report BMP CII performance measures.

MWDOC offers Orange County water suppliers a "Conservation Framework Technical Assistance Program (TAP)" and "Meter Area Measurements Program" to assist them with compliance with the Conservation Framework.

9.3.1.1 Conservation Framework Technical Assistance Program (TAP)

This program provides Orange County water suppliers with support on tasks that are required as part of the Conservation Framework. An agency may opt in to receive support with any of the following:

- Readiness Assessment - perform a retailer-specific readiness assessment, including task recommendations and pricing to help retail agencies understand what areas need to be addressed.
- Conservation Framework Compliance Plan - create a customized Framework Compliance Plan that outlines (1) what the retailer needs to do to prepare for compliance; and (2) what needs to be implemented to achieve the water savings necessary to comply with the Urban Water Use Objective.
- Annual Report Compilation and Data Management - support the retailer with Annual Report preparation and assistance; and organize and manage data needed to comply with the reporting requirements of the Regulation.
- CII Account Classification - classify CII customer accounts according to the Regulation requirements and create a guidance plan to keep classifications at 95 percent (or higher).
- CII Best Management Practices (BMPs) and In-Lieu Technologies Implementation Plan - create a customized implementation plan mapping compliance with the Conservation Framework regulation, including the CII BMP requirements of §974, the in-lieu technologies and accompanying BMP requirements in §973, and disclosable buildings requirements in §974a.
- Miscellaneous Framework Technical Assistance - various activities such as:
 - » Development of metrics and annual targets to demonstrate progress.
 - » Additional training or technical support.
 - » Workshop or webinar facilitation to spur cross-team collaborations.
 - » Develop outreach and engagement plans and implement meetings to support engagement of internal and external collaborators.

9.3.1.2 Meter Area Measurements Program

The Program assists Orange County water supplier in providing (1) landscape area measurements (LAM) associated with dedicated irrigation meters (DIMs), which may include the creation of water efficiency budgets for dedicated landscape meter customers; (2) identification of mixed-use CII meters (MUMs)

irrigating landscapes greater than half acre and subject to the regulation; and (3) reconciliation of DIM and residential LAMs where areas may overlap.

9.3.2 Regional Rebate Programs and Local Program Assistance

MWDOC develops, obtains funding for, and implements regional water savings rebate programs on behalf of all retail water agencies in Orange County, such as the Turf Replacement Program. This approach minimizes confusion for consumers by providing the same programs with the same participation guidelines, maintains a consistent message to the public to use water efficiently, and provides support to retail water agencies by acting as program administrators for the region. As a leader of water efficiency in Orange County, MWDOC provides a holistic suite of programs that are accessible to all consumer groups in the region. When requested, MWDOC also assists retail agencies in developing and implementing local programs within their service areas. This assistance includes collaboration with each retail agency to design a program that fits that agency's local needs, including providing staffing, targeting customer classes, acquiring grant funding from a variety of sources, and implementing, marketing, reporting, and evaluating the program.

On behalf of its member agencies, MWDOC also organizes and provides the following:

- Monthly coordinator meetings.
- Marketing materials.
- Public speaking.
- Community events.

9.3.3 Research and Evaluation

An essential part of MWDOC's regional water use efficiency program is the ongoing research and evaluation of both existing and potential initiatives. Research allows an agency to measure the water savings benefits of a specific program and compare those benefits to the costs of implementing the program. This allows the agency to evaluate the economic feasibility of the program when compared to other efficiency projects or existing or potential sources of supply, before investing in new initiatives or continuing to implement existing programs. MWDOC routinely conducts statistical water savings (impact) evaluations and process evaluations to guide strategic investment and ensure the effective management of its regional water use efficiency programs.

From 2021 to 2025, MWDOC conducted several research initiatives to support informed decision-making. In partnership with Flume Data Labs, MWDOC completed its Residential End Use Study in 2021, with subsequent updates in 2022 and 2024. This study provided detailed insights into disaggregated residential indoor and outdoor water use, significantly enhancing the understanding of water use patterns across Orange County. In 2023, MWDOC released its Potential and Opportunities study, which quantified the remaining water savings potential in the Orange County residential market, identified the most promising and cost-effective methods for reducing residential demand, and made recommendations on how best to direct financial and technical assistance to Retail Agencies and consumers for implementing residential water efficiency upgrades.

To assess the economic impact of the Conservation Framework, MWDOC worked with M.Cubed and in 2023 published the Draft Water Use Efficiency Standards Economic Analysis: Impact Assessment of

State-Mandated Urban Water Use Objectives. MWDOC continues to evaluate the impact of the regulation and Orange County retailer compliance.

Additionally, MWDOC is piloting a tree program that allows eligible trees to qualify as a sustainability feature in Turf Replacement projects. Pilot goals include increasing the presence of trees in Turf Replacement projects and breaking down barriers to participation. It is anticipated that the pilot will be evaluated in 2026. A pilot research program investigating water savings associated with the replacement of broken pressure regulating valves at residential homes wrapped up in 2025. The results of this study are expected in 2027.

9.4 Urban Water Use Objective and Commercial, Industrial, Institutional Performance Measure Compliance

A large focus for the City is to implement DMMs that will help them to meet the requirements of the Conservation Framework. DMMs described in this chapter may help to support member agencies with meeting their required UWUO and achieving CII Performance Measure Compliance. In addition, MWDOC provides support to agencies to assist with the calculation of UWUOs and compliance with CII Performance measures via the Meter Area Measurement and TAP Programs, as described in section 9.3.

9.4.1 Urban Water Use Objective Components

Table 9.4 describes MWDOC's programs that will assist agencies in meeting their UWUO, through both direct measures (programs/activities that result in directly quantifiable water savings) and indirect measures (programs that provide resources promoting water efficiencies to the public that are impactful but not directly measurable). Additionally, MWDOC provides technical assistance to support water suppliers with compliance.

Table 9.4 MWDOC Programs to Help OC Retail Agencies Meet their Urban Water Use Objectives

UWUO Component	Calculation	Program	Impact
Indoor Residential	Population and GPCD standard	<u>Direct Impact:</u> High efficiency indoor fixtures and appliance rebates.	<u>Direct Impact:</u> Increased indoor residential efficiencies and reductions of GPCD use.
Outdoor Residential	Irrigated/irrigable area measurement and a landscape efficiency factor of local ETo and effective precipitation	<u>Direct Impact:</u> - Turf Replacement. - High efficiency irrigation rebates. <u>Indirect Impact:</u> - Online resources such as OC Friendly Gardens Webpage. - Educational classes.	<u>Direct Impact:</u> - Increase outdoor residential efficiencies and reductions of gallons per square foot of irrigated/irrigable area used. <u>Indirect Impact:</u> - Provide information, resources, and education to promote efficiencies in the landscape.

UWUO Component	Calculation	Program	Impact
Outdoor Dedicated Irrigation Meters	Irrigated area measurement and a landscape efficiency factor of local ETo and effective precipitation	<u>Technical Assistance:</u> - DIM landscape classification and measurement. <u>Direct Impact:</u> - Turf Replacement. - High efficiency irrigation rebates. <u>Indirect Impact:</u> - OC Friendly Gardens Webpage. - Educational training and resources.	<u>Technical Assistance:</u> - Classification and measurement of landscapes associated with DIMs are required to complete the calculation. <u>Direct Impact:</u> - Increase outdoor residential efficiencies and reductions of gallons per square foot of irrigated/ irrigable area used. <u>Indirect Impact:</u> - Provide information, resources, and education to promote landscape efficiencies.
Water Loss	Agency-specific loss factor and number of connections	<u>Technical Assistance:</u> - Water Balance Validation. - Customer Meter Accuracy Testing. - Distribution System Pressure Surveys. <u>Direct Impact:</u> - Distribution System Leak Detection.	<u>Technical Assistance:</u> - The accuracy of the water loss audit is validated for submission to the State. <u>Direct Impact:</u> - Identify areas of the distribution system that need repair, replacement, or other actions to limit water loss.
Bonus Incentives	Volume of indirect potable reuse water applied to residential and DIM irrigation uses; not to exceed 15% of UWUO	<u>Direct Impact:</u> - Groundwater replenishment system (GWRS). - CII Customer Account Classification.	<u>Direct Impact:</u> The GWRS (run by OCWD) recharges the groundwater basin with purified, highly treated wastewater, allowing OCWD-member agencies to access indirect potable reuse.

9.4.2 Commercial, Industrial, Institutional Performance Measures

Urban water supplies are required to report BMPs for CII customers. The City, in partnership with MWDOC, offers a broad variety of programs and incentives to help CII customers implement BMPs and increase their water efficiencies (Table 9.5).

Table 9.5 City of Newport Beach CII BMP and Water Efficiency Programs and Incentives

Component	Requirement	Program Offered	Impact
CII Customer Account Classifications	Classify each CII water user, based on the end-use of water for the water user, in accordance with Energy Star Portfolio Manager's 18 broad categories, in addition to 4 other categories.	<u>Technical Assistance:</u> CII Customer Account Classification.	<u>Technical Assistance:</u> Classify customer accounts according to the specified categories to comply with the regulation.
Large Landscape Identification	Identify all CII water users associated with large landscapes - landscapes irrigated with a mixed-use meter greater than half an acre	<u>Technical Assistance:</u> Large Landscape identification.	<u>Technical Assistance:</u> Identify and map landscapes associated with MUM landscapes that are greater than half an acre to comply with the regulation.
Best Management Practices (BMPs)	Offer CII BMPs for customers that exceed the recommended size, volume of water use, or another threshold	<u>Technical Assistance:</u> BMP Implementation Plan.	<u>Technical Assistance:</u> Provide a BMP Implementation Plan to guide water suppliers with a roadmap to compliance with the regulation.
Disclosable Buildings	Identify disclosable buildings in service area according to the list provided by the California Energy Commission	<u>Technical Assistance:</u> Disclosable buildings list.	<u>Technical Assistance:</u> Provide the California Energy Commission list of disclosable buildings by water supplier to comply with the regulation.

CHAPTER 10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

The California Water Code (Water Code) requires the Urban Water Management Plan (UWMP) to be adopted by the City of Newport Beach’s (City) governing body. Before the adoption, the City must hold a public hearing allowing members of the public to provide input on the UWMP. Prior to the public hearing, the City must notify the public and surrounding cities, counties, and water agencies within its service area of the scheduled public hearing. Upon completion of the public hearing, the City’s governing body shall vote to adopt the UWMP. Post adoption, the City submits the UWMP to the Department of Water Resources (DWR) while also making it available for public access. This section provides a record of the process the City followed to adopt and implement its UWMP.

10.1 Overview

Recognizing that close coordination among other relevant public agencies is key to the success of its UWMP, the City worked closely with many other entities to develop and update this planning document. The City also encouraged public involvement through its public review and hearing process, which provided residents with an opportunity to learn and ask questions about their water supply management and reliability. Through the public hearing, the public has an opportunity to comment and put forward any suggestions for revisions of the Plan.

Table 10.1 summarizes external coordination and outreach activities carried out by the City and their corresponding dates. The UWMP checklist to confirm compliance with the Water Code is provided in Appendix A.

Table 10.1 External Coordination and Outreach

External Coordination and Outreach	Date	Reference
Notified city or county within supplier’s service area that water supplier is preparing an updated UWMP (at least 60 days prior to public hearing)	2/17/2026	Appendix I
Public Hearing Notice	05/26/2026 & 06/1/2026	
Held Public Hearing	06/9/2026	Appendix I
Adopted UWMP and WSCP	06/9/2026	Appendix J
Submitted UWMP to DWR (no later than 30 days after adoption)	06/25/2026	-
Submitted UWMP to the California State Library (no later than 30 days after adoption)	06/25/2026	-
Submitted UWMP to the cities and county within the supplier’s service area (no later than 30 days after adoption)	06/25/2026	-

Notes:

WSCP - Water Shortage Contingency Plan

This UWMP was adopted by the City Council on June 9, 2026. A copy of the adopted resolution is provided in Appendix J.

10.2 Agency Coordination

The Water Code requires the Suppliers preparing UWMPs to notify any city or county within their service area at least 60 days prior to the public hearing. As shown in Table 10.2, the City sent a Letter of Notification to the County of Orange and the cities within its service area on February 17, 2026, to state that it was in the process of preparing an updated UWMP. This notice of preparation is included in Appendix I.

Table 10.2 Submittal Table 10-1 Retail: Notification to Cities and Counties

Submittal Table 10-1 Retail: Notification to Cities and Counties Water Code Section 10621(b) and 10642		
County Name Drop Down List	60 Day Notice Drop Down (yes/no)	Notice of Public Hearing Drop Down (yes/no)
Orange County	Yes	Yes
Notes:		

The City's water supply planning relates to the policies, rules, and regulations of its regional and local water providers. The City is dependent on imported water from Metropolitan Water District of Southern California (MET) through the Municipal Water District of Orange County (MWDOC), its regional wholesaler. The City is also dependent on groundwater from Orange County Water District (OCWD), the agency that manages the Orange County Basin and recycled water from OCWD. As such, the City involved the relevant agencies in this 2025 UWMP at various levels of contribution as described below.

The City's 2025 UWMP leveraged data and regionally consistent analyses supplied by MWDOC, such as population projections from the California State University, Fullerton Center for Demographic Research (CDR), and the information quantifying water availability to meet the City's projected demands for the next 25 years, in five-year increments. This 2025 UWMP was developed in collaboration with MWDOC's 2025 UWMP to ensure consistency between the two documents.

As a groundwater producer who relies on supplies from the OCWD-managed Orange County Basin, the City coordinated the preparation of this 2025 UWMP with OCWD. Several OCWD documents, such as the Groundwater Reliability Plan, Engineer's Report, and Basin 8-1 Alternative were used to retrieve the required relevant information, including the projections of the amount of groundwater the City is allowed to extract in the 25-year planning horizon.

The various planning documents of the key agencies that were used to develop this UWMP are listed in Chapter 2.

10.3 Public Participation

The City encouraged community and public interest involvement in the Plan update through a public hearing and inspection of the draft document on June 9, 2026. As part of the public hearing, the City discussed adoption of the UWMP, key components of the UWMP and the conclusions that served as the basis of the UWMP. Copies of the draft 2025 UWMP were placed for public review at the City Clerk's and Utilities Department offices.

Public hearing notifications were sent to retail agencies and other interested parties. A copy of the Notice of Public Hearing is included in Appendix I.

The hearing was conducted during a regularly scheduled meeting of the City Council.

10.4 UWMP Submittal

The City Council reviewed and approved the 2025 UWMP at its June 9, 2026 meeting after the public hearing. See Appendix J for the resolution approving the Plan.

By June 25 2026, the City's adopted 2025 UWMP was filed with DWR and sent directly to California State Library, the County of Orange, and the cities within its service area. The submission to DWR was done electronically through the online submittal tool – WUE Data Portal. The City will make the Plan available for public review on its website no later than 30 days after filing with DWR.

10.5 Amending the Adopted UWMP or WSCP

Based on DWR's review of the UWMP, the City will make any amendments in its adopted UWMP, as required and directed by DWR and will follow each of the steps for notification, public hearing, adoption, and submittal for the amending the adopted UWMP.

If the City revises its WSCP after the UWMP is approved by DWR, then an electronic copy of the revised WSCP will be submitted to DWR within 30 days of its adoption.

CHAPTER 11 REFERENCES

- California Department of Water Resources (DWR). (2026, January). *Final Urban Water Management Plan Guidebook 2025*. <https://cwc.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans/Final-2025-UWMP-Guidebook/Final-2025-UWMP-Guidebook-Accessible.pdf>
- Center for Demographic Research (CDR). (2025, July). *Orange County Progress Report 2025 Volume 54*.
- City of Newport Beach (2021, June). 2020 Urban Water Management Plan. <https://www.newportbeachca.gov/home/showpublisheddocument/75001/638579289862370000>
- City of Newport Beach. (2006, July). *City General Plan*. <https://www.newportbeachca.gov/government/departments/community-development/planning-division/general-plan-codes-and-regulations/general-plan/general-plan-amendments>
- Metropolitan Water District of Southern California (MET). (2025, December). *2025 Urban Water Management Plan Draft*. <https://www-admin.mwdh2o.com/media/5ralzxit/public-review-draft-february-2026-uwmp.pdf>.
- Metropolitan Water District of Southern California (MET). (2020, April). *2020 Integrated Water Resources Plan – Regional Needs Assessment*. https://d1q0afiq12ywwq.cloudfront.net/media/sgvlkith/2020_irp_needs_assessment.pdf
- Metropolitan Water District of Southern California (MET). (2025, April). *CAMP4W Climate Adaptation Master Plan for Water*. <https://cawaterlibrary.net/wp-content/uploads/2025/03/CAMP4W-Climate-Adaptation-Management-Plan-for-Water.pdf>
- Municipal Water District of Orange County (MWDOC). (2023, July). *Orange County Water Reliability Study*. https://www.mwdoc.com/wp-content/uploads/2025/06/MWDOC_2023-OC-Water-Reliability-Study-Final.pdf
- Municipal Water District of Orange County (MWDOC), Orange County Water District (OCWD), Hazen & Sawyer. (2025, December). *2025 Orange County Water Demand Projection Model Technical Memorandum*. <https://www.mwdoc.com/your-water/water-reliability-planning/>
- Orange County Water District (OCWD). (2025, February). *OCWD Resilience Plan – Adaptive Strategies for Securing Abundant and Reliable Water Supplies*. <https://www.ocwd.com/wp-content/uploads/OCWD-Resilience-Plan.pdf>
- Orange County Water District (OCWD). (2025, February). *Engineer’s Report on Groundwater Conditions, Water Supply and Basin Utilization in The Orange County Water District*. https://www.ocwd.com/wp-content/uploads/2023-24-Engineers-Report_Final.pdf

Orange County Water District (OCWD), City of La Habra, Irvine Ranch Water District. (2022, February). *Basin 8-1 Alternative 2022 Update*. <https://www.ocwd.com/wp-content/uploads/05cbasin-8-1-alternative-2022-update.pdf>

Southern California Association of Governments (SCAG). (2024, April). *Connect SoCal 2024*. <https://scag.ca.gov/sites/default/files/2024-05/23-2987-connect-socal-2024-final-complete-040424.pdf>