APPENDICES

Glendale Water & Power

2020 URBAN WATER MANAGEMENT PLAN

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Appendices

APPENDIX A:

SB X7-7 2020 Compliance Forms

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*

Figure 1: SB X7-7 Table 0

SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☑	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review

Figure 2: SB X7-7 Table 2

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	202,831
NOTES: Based on DOF estimate.	

Figure 3: SB X7-7 Table 3

SB X7-7 Table 4: 2020 Gross Water Use							
Compliance Year 2020	**2020 Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**2020 Deductions**					**2020 Gross Water Use**
		Exported Water *	**Change in Dist. System Storage*** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use***	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
	23,737			-	-	-	**23,737**
*** Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.							
NOTES: Did not utilize any deductions.							

Figure 4: SB X7-7 Table 4

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment Complete one table for each source.			
Name of Source	San Fernando Basin Wells		
This water source is *(check one)*:			
☑	The supplier's own water source		
☐	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional* (+/-)	Corrected Volume Entering Distribution System
	7,486	-	7,486
*[1] **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* *[2] **Meter Error Adjustment** - See guidance in Methodology 1, Step 3 of Methodologies Document*			

Figure 5: SB X7-7 Table 4-A

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s) Meter Error Adjustment Complete one table for each source.			
Name of Source	Verdugo Basin Wells		
This water source is *(check one)*:			
☑	The supplier's own water source		
☐	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	775		775

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

Figure 6: Sb X7-7 Table 4-A

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment Complete one table for each source.			
Name of Source	MWD		
This water source is *(check one)*:			
☐	The supplier's own water source		
☑	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional (+/-)*	Corrected Volume Entering Distribution System
	15,476		15,476

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

Figure 7: SB X7-7 Table 4-A

SB X7-7 Table 4-B: 2020 Indirect Recycled Water Use Deduction *(For use only by agencies that are deducting indirect recycled water)*

2020 Compliance Year	2020 Surface Reservoir Augmentation					2020 Groundwater Recharge			Total Deductible Volume of Indirect Recycled Water Entering the Distribution System
	Volume Discharged from Reservoir for Distribution System Delivery[1]	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/ Treatment Loss[1]	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility[1,2]	Transmission/ Treatment Losses[1]	Recycled Volume Entering Distribution System from Groundwater Recharge	
	-		-	-	-	-	-	-	-

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] *Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pumped by Utility". The volume reported in this cell must be less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.*

Did not have indirect recycled water deduction.

Figure 8: SB X7-7 Table 4-B

SB X7-7 Table 4-C: 2020 Process Water Deduction Eligibility (For use only by agencies that are deducting process water) Choose Only One	
☐	**Criteria 1**- Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
☐	**Criteria 2** - Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
☐	**Criteria 3** - Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
☐	**Criteria 4** - Disadvantaged Community. Complete SB x7-7 Table 4-C.4
NOTES: Did not have process water deduction.	

Figure 9: SB X7-7 Table 4-C

SB X7-7 Table 4-C.1: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 1)*				
Criteria 1 Industrial water use is equal to or greater than 12% of gross water use				
2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction	2020 Industrial Water Use	Percent Industrial Water	**Eligible for Exclusion Y/N**
	23,737	minor		NO

Figure 10: SB X7-7 Table 4-C.1

SB X7-7 Table 4-C.4: 2020 Process Water Deduction Eligibility ***(For use only by agencies that are deducting process water using Criteria 4)***

Criteria 4
Disadvantaged Community. A "Disadvantaged Community" (DAC) is a community with a median household income less than 80 percent of the statewide average.

SELECT ONE
"Disadvantaged Community" status was determined using one of the methods listed below:

1. IRWM DAC Mapping tool https://gis.water.ca.gov/app/dacs/

☐ If using the IRWM DAC Mapping Tool, include a screen shot from the tool showing that the service area is considered a DAC.

2. 2020 Median Income

	California Median Household Income*		Service Area Median Household Income	Percentage of Statewide Average	**Eligible for Exclusion? Y/N**
	2020	**$75,235**	$62,531	83%	NO

*California median household income 2015 -2019 as reported in US Census Bureau QuickFacts.

☐

NOTES N/A - did not utilize.

Figure 13: SB X7-7 Table 4-C.4

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)

2020 Gross Water ***Fm SB X7-7 Table 4***	**2020 Population** ***Fm SB X7-7 Table 3***	**2020 GPCD**
23,737	202,831	**104**

Figure 14: SB X7-7 Table 5

SB X7-7 Table 4-C.2: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 2)*				
Criteria 2 Industrial water use is equal to or greater than 15 GPCD				
2020 Compliance Year	2020 Industrial Water Use	2020 Population	2020 Industrial GPCD	**Eligible for Exclusion Y/N**
	minor	202,831		NO

Figure 11: SB X7-7 Table 4-C.2

SB X7-7 Table 4-C.3: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 3)*						
Criteria 3 Non-industrial use is equal to or less than 120 GPCD						
2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction *Fm SB X7-7 Table 4*	2020 Industrial Water Use	2020 Non-industrial Water Use	2020 Population *Fm SB X7-7 Table 3*	Non-Industrial GPCD	**Eligible for Exclusion Y/N**
	23,737		23,737	202,831	104	YES
NOTES: N/A						

Figure 12: SB X7-7 Table 4-C.3

SB X7-7 Table 9: 2020 Compliance							
Actual 2020 GPCD [1]	Optional Adjustments to 2020 GPCD Enter "0" if Adjustment Not Used			TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
	Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]				
104	-	-	-	-	104	137	**YES**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

NOTES: Did not utilize optional adjustments.

Figure 15: SB X7-7 Table 9

APPENDIX B:

City of Glendale Hazard Mitigation Plan

The complete *City of Glendale Hazard Mitigation Plan* may be accessed here:

https://www.glendaleca.gov/Home/ShowDocument?id=48978

APPENDIX C:

Court Judgement on Groundwater Rights in the San Fernando and Verdugo Basins

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES, Plaintiff, vs. CITY OF SAN FERNANDO, et al., Defendants.	)	NO. 650079

JUDGMENT

January 26, 1979

ORIGINAL FILED

JAN 26 19[illegible]

JOHN A. CORCORAN County Clerk

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES, Plaintiff, vs. CITY OF SAN FERNANDO, et al., Defendants.	No. 650079 JUDGMENT

There follows by consecutive paging a Table of Contents (pages i. to vi.), Recitals (page 1), Definitions and List of Attachments (pages 1 to 6), Designation of Parties (page 6), Declaration re Geology and Hydrology (pages 6 to 12), Declaration of Rights (pages 12 to 21), Injunctions (pages 21 to 23), Continuing Jurisdiction (page 23), Watermaster (pages 23 to 29), Physical Solution (pages 29 to 34), and Miscellaneous Provisions (pages 34 to 35), and Attachments (pages 36 to 46). Each and all of said several parts constitute a single integrated Judgment herein.

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1. RECITALS

This matter was originally tried before the Honorable Edmund M. Moor, without jury, commencing on March 1, 1966, and concluding with entry of Findings, Conclusions and Judgment on March 14, 1968, after more than 181 trial days. Los Angeles appealed from said judgment and the California Supreme Court, by unanimous opinion, (14 Cal. 3d 199) reversed and remanded the case; after trial of some remaining issues on remand, and consistent with the opinion of the Supreme Court, and pursuant to stipulations, the Court signed and filed Findings of Fact and Conclusions of Law. Good cause thereby appearing,

IT IS ORDERED, ADJUDGED AND DECREED:

2. DEFINITIONS AND ATTACHMENTS

2.1 Definitions of Terms. As used in this Judgment, the following terms shall have the meanings herein set forth:

[1] Basin or Ground Water Basin -- A subsurface geologic formation with defined boundary conditions, containing a ground water reservoir, which is capable of yielding a significant quantity of ground water.

[2] Burbank -- Defendant City of Burbank.

[3] Crescenta Valley -- Defendant Crescenta Valley County Water District.

[4] Colorado Aqueduct -- The aqueduct facilities and system owned and operated by MWD for the importation of water from the Colorado River to its service area.

[5] Deep Rock -- Defendant Evelyn M. Pendleton, dba Deep Rock Artesian Water Company.

[6] Delivered Water -- Water utilized in a water supply distribution system, including reclaimed water.

[7] Eagle Rock Basin -- The separate ground water basin underlying the area shown as such on Attachment "A".

[8] Extract or Extraction -- To produce ground water, or its production, by pumping or any other means.

[9] Fiscal Year -- July 1 through June 30 of the following calendar year.

[10] Foremost -- Defendant Foremost Foods Company, successor to defendant Sparkletts Drinking Water Corp.

[11] Forest Lawn -- Collectively, defendants Forest Lawn Cemetery Association, Forest Lawn Company, Forest Lawn Memorial-Park Association, and American Security and Fidelity Corporation.

[12] Gage F-57 -- The surface stream gaging station operated by Los Angeles County Flood Control District and situated in Los Angeles Narrows immediately upstream from the intersection of the Los Angeles River and Arroyo Seco, at which point the surface outflow from ULARA is measured.

[13] Glendale -- Defendant City of Glendale.

[14] Ground Water -- Water beneath the surface of the ground and within the zone of saturation.

[15] Hersch & Plumb -- Defendants David and Eleanor A. Hersch and Gerald B. and Lucille Plumb, successors to Wellesley and Duckworth defendants.

[16] Import Return Water -- Ground water derived from percolation attributable to delivered imported water.

[17] Imported Water -- Water used within ULARA, which

is derived from sources outside said watershed. Said term does not include inter-basin transfers wholly within ULARA.

[18] In Lieu Storage -- The act of accumulating ground water in a basin by intentional reduction of extractions of ground water which a party has a right to extract.

[19] Lockheed -- Defendant Lockheed Aircraft Corporation.

[20] Los Angeles -- Plaintiff City of Los Angeles, acting by and through its Department of Water and Power.

[21] Los Angeles Narrows -- The physiographic area northerly of Gage F-57 bounded on the east by the San Rafael and Repetto Hills and on the west by the Elysian Hills, through which all natural outflow of the San Fernando Basin and the Los Angeles River flow en route to the Pacific Ocean.

[22] MWD -- The Metropolitan Water District of Southern California, a public agency of the State of California.

[23] Native Safe Yield -- That portion of the safe yield of a basin derived from native waters.

[24] Native Waters -- Surface and ground waters derived from precipitation within ULARA.

[25] Overdraft -- A condition which exists when the total annual extractions of ground water from a basin exceed its safe yield, and when any temporary surplus has been removed.

[26] Owens-Mono Aqueduct -- The aqueduct facilities owned and operated by Los Angeles for importation to ULARA water from the Owens River and Mono Basin watersheds easterly of the Sierra-Nevada in Central California.

[27] Private Defendants -- Collectively, all of those

defendants who are parties, other than Glendale, Burbank, San Fernando and Crescenta Valley.

[28] Reclaimed Water -- Water which, as a result of processing of waste water, is made suitable for and used for a controlled beneficial use.

[29] Regulatory Storage Capacity -- The volume of storage capacity of San Fernando Basin which is required to regulate the safe yield of the basin, without significant loss, during any long-term base period of water supply.

[30] Rising Water -- The effluent from a ground water basin which appears as surface flow.

[31] Rising Water Outflow -- The quantity of rising water which occurs within a ground water basin and does not rejoin the ground water body or is not captured prior to flowing past a point of discharge from the basin.

[32] Safe Yield -- The maximum quantity of water which can be extracted annually from a ground water basin under a given set of cultural conditions and extraction patterns, based on the long-term supply, without causing a continuing reduction of water in storage.

[33] San Fernando -- Defendant City of San Fernando.

[34] San Fernando Basin -- The separate ground water basin underlying the area shown as such on Attachment "A".

[35] Sportsman's Lodge -- Defendant Sportsman's Lodge Banquet Association.

[36] Stored Water -- Ground water in a basin consisting of either (1) imported or reclaimed water which is intentionally spread, or (2) safe yield water which is allowed to

accumulate by In Lieu Storage. Said ground waters are distinguished and separately accounted for in a ground water basin, notwithstanding that the same may be physically commingled with other waters in the basin.

[37] Sylmar Basin -- The separate ground water basin underlying the area indicated as such on Attachment "A".

[38] Temporary Surplus -- The amount of ground water which would be required to be removed from a basin in order to avoid waste under safe yield operation.

[39] Toluca Lake -- Defendant Toluca Lake Property Owners Association.

[40] ULARA or Upper Los Angeles River Area -- The Upper Los Angeles River watershed, being the surface drainage area of the Los Angeles River tributary to Gage F-57.

[41] Underlying Pueblo Waters -- Native ground waters in the San Fernando Basin which underlie safe yield and stored waters.

[42] Valhalla -- Collectively, Valhalla Properties, Valhalla Memorial Park, Valhalla Mausoleum Park.

[43] Van de Kamp -- Defendant Van de Kamp's Holland Dutch Bakers, Inc.

[44] Verdugo Basin -- The separate ground water basin underlying the area shown as such on Attachment "A".

[45] Water Year -- October 1 through September 30 of the following calendar year.

Geographic Names, not herein specifically defined, are used to refer to the places and locations thereof as shown on Attachment "A".

2.2 List of Attachments. There are attached hereto the

following documents, which are by this reference incorporated in this Judgment and specifically referred to in the text hereof:

"A" -- Map entitled "Upper Los Angeles River Area", showing Separate Basins therein.

"B" -- List of "Dismissed Parties."

"C" -- List of "Defaulted Parties."

"D" -- List of "Disclaiming Parties."

"E" -- List of "Prior Stipulated Judgments."

"F" -- List of "Stipulated Non-Consumptive or Minimal-Consumptive Use Practices."

"G" -- Map entitled "Place of Use and Service Area of Private Defendants."

"H" -- Map entitled "Public Agency Water Service Areas."

3. PARTIES

3.1 Defaulting and Disclaiming Defendants. Each of the defendants listed on Attachment "C" and Attachment "D" is without any right, title or interest in, or to any claim to extract ground water from ULARA or any of the separate ground water basins therein.

3.2 No Rights Other Than as Herein Declared. No party to this action has any rights in or to the waters of ULARA except to the extent declared herein.

4. DECLARATION RE GEOLOGY AND HYDROLOGY

4.1 Geology.

4.1.1 ULARA. ULARA (or Upper Los Angeles River Area), is the watershed or surface drainage area tributary to the Los Angeles River at Gage F-57. Said watershed contains a

total of 329,000 acres, consisting of approximately 123,000 acres of valley fill area and 206,000 acres of hill and mountain area, located primarily in the County of Los Angeles, with a small portion in the County of Ventura. Its boundaries are shown on Attachment "A". The San Gabriel Mountains form the northerly portion of the watershed, and from them two major washes--the Pacoima and the Tujunga--discharge southerly Tujunga Wash traverses the valley fill in a southerly direction and joins the Los Angeles River, which follows an easterly course along the base of the Santa Monica Mountains before it turns south through the Los Angeles Narrows. The waters of Pacoima Wash as and when they flow out of Sylmar Basin are tributary to San Fernando Basin. Lesser tributary washes run from the Simi Hills and the Santa Susana Mountains in the westerly portion of the watershed. Other minor washes, including Verdugo Wash, drain the easterly portion of the watershed which consists of the Verdugo Mountains, the Elysian, San Rafael and Repetto Hills. Each of said washes is a non-perennial stream whose flood flows and rising waters are naturally tributary to the Los Angeles River. The Los Angeles River within ULARA and most of said tributary natural washes have been replaced, and in some instances relocated, by concrete-lined flood control channels. There are 85.3 miles of such channels within ULARA, 62% of which have lined concrete bottoms.

4.1.2 San Fernando Basin. San Fernando Basin is the major ground water basin in ULARA. It underlies 112,047 acres and is located in the area shown as such on Attachment "A".

Boundary conditions of the San Fernando Basin consist on the east and northeast of alluvial contacts with non-waterbearing series along the San Rafael Hills and Verdugo Mountains and the Santa Susana Mountains and Simi Hills on the northwest and west and the Santa Monica Mountains on the south. Water-bearing material in said basin extends to at least 1000 feet below the surface. Rising water outflow from the San Fernando Basin passes its downstream and southerly boundary in the vicinity of Gage F-57, which is located in Los Angeles Narrows about 300 feet upstream from the Figueroa Street (Dayton Street) Bridge. The San Fernando Basin is separated from the Sylmar Basin on the north by the eroded south limb of the Little Tujunga Syncline which causes a break in the ground water surface of about 40 to 50 feet.

4.1.3 Sylmar Basin. Sylmar Basin underlies 5,565 acres and is located in the area shown as such on Attachment "A". Water-bearing material in said basin extends to depths in excess of 12,000 feet below the surface. Boundary conditions of Sylmar Basin consist of the San Gabriel Mountains on the north, a topographic divide in the valley fill between the Mission Hills and San Gabriel Mountains on the west, the Mission Hills on the southwest, Upper Lopez Canyon Saugus Formation on the east, along the east bank of Pacoima Wash, and the eroded south limb of the Little Tujunga Syncline on the south.

4.1.4 Verdugo Basin. Verdugo Basin underlies 4,400 acres and is located in the area shown as such on Attachment "A". Boundary conditions of Verdugo Basin consist of the San Gabriel Mountains on the north, the Verdugo Mountains on the

south and southwest, the San Rafael Hills on the southeast and the topographic divide on the east between the drainage area that is tributary to the Tujunga Wash to the west and Verdugo Wash to the east, the ground water divide on the west between Monk Hill-Raymond Basin and the Verdugo Basin on the east and a submerged dam constructed at the mouth of Verdugo Canyon on the south.

4.1.5 Eagle Rock Basin. Eagle Rock Basin underlies 807 acres and is located in the area shown as such on Attachment "A". Boundary conditions of Eagle Rock Basin consist of the San Rafael Hills on the north and west and the Repetto Hills on the east and south with a small alluvial area to the southeast consisting of a topographic divide.

4.2 Hydrology.

4.2.1 Water Supply. The water supply of ULARA consists of native waters, derived from precipitation on the valley floor and runoff from the hill and mountain areas, and of imported water from outside the watershed. The major source of imported water has been from the Owens-Mono Aqueduct, but additional supplies have been and are now being imported through MWD from its Colorado Aqueduct and the State Aqueduct.

4.2.2 Ground Water Movement. The major water-bearing formation in ULARA is the valley fill material bounded by hills and mountains which surround it. Topographically, the valley-fill area has a generally uniform grade in a southerly and easterly direction with the slope gradually decreasing from the base of the hills and mountains to the surface drainage outlet at Gage F-57. The valley fill material is a

heterogeneous mixture of clays, silts, sand and gravel laid down as alluvium. The valley fill is of greatest permeability along and easterly of Pacoima and Tujunga Washes and generally throughout the eastern portion of the valley fill area, except in the vicinity of Glendale where it is of lesser permeability. Ground water occurs mainly within the valley fill, with only negligible amounts occurring in hill and mountain areas. There is no significant ground water movement from the hill and mountain formations into the valley fill. Available geologic data do not indicate that there are any sources of native ground water other than those derived from precipitation. Ground water movement in the valley fill generally follows the surface topography and drainage except where geologic or man-made impediments occur or where the natural flow has been modified by extensive pumping.

4.2.3 Separate Ground Water Basins. The physical and geologic characteristics of each of the ground water basins, Eagle Rock, Sylmar, Verdugo and San Fernando, cause impediments to inter-basin ground water flow whereby there is created separate underground reservoirs. Each of said basins contains a common source of water supply to parties extracting ground water from each of said basins. The amount of underflow from Sylmar Basin, Verdugo Basin and Eagle Rock Basin to San Fernando Basin is relatively small, and on the average has been approximately 540 acre feet per year from the Sylmar Basin; 80 acre feet per year from Verdugo Basin; and 50 acre feet per year from Eagle Rock Basin. Each has physiographic, geologic and hydrologic differences, one from the other, and

each meets the hydrologic definition of "basin." The extractions of water in the respective basins affect the other water users within that basin but do not significantly or materially affect the ground water levels in any of the other basins. The underground reservoirs of Eagle Rock, Verdugo and Sylmar Basins are independent of one another and of the San Fernando Basin.

4.2.4 Safe Yield and Native Safe Yield. The safe yield and native safe yield, stated in acre feet, of the three largest basins for the year 1964-65 was as follows:

Basin	Safe Yield	Native Safe Yield
San Fernando	90,680	43,660
Sylmar	6,210	3,850
Verdugo	7,150	3,590

The safe yield of Eagle Rock Basin is derived from imported water delivered by Los Angeles. There is no measurable native safe yield.

4.2.5 Separate Basins -- Separate Rights. The rights of the parties to extract ground water within ULARA are separate and distinct as within each of the several ground water basins within said watershed.

4.2.6 Hydrologic Condition of Basins. The several basins within ULARA are in varying hydrologic conditions, which result in different legal consequences.

4.2.6.1 San Fernando Basin. The first full year of overdraft in San Fernando Basin was 1954-55. It remained in overdraft continuously until 1968, when an injunction herein became effective. Thereafter, the

basin was placed on safe yield operation. There is no surplus ground water available for appropriation or overlying use from San Fernando Basin.

4.2.6.2 Sylmar Basin. Sylmar Basin is not in overdraft. There remains safe yield over and above the present reasonable beneficial overlying uses, from which safe yield the appropriative rights of Los Angeles and San Fernando may be and have been exercised.

4.2.6.3 Verdugo Basin. Verdugo Basin was in overdraft for more than five consecutive years prior to 1968. Said basin is not currently in overdraft, due to decreased extractions by Glendale and Crescenta Valley on account of poor water quality. However, the combined appropriative and prescriptive rights of Glendale and Crescenta Valley are equivalent to the safe yield of the Basin. No private overlying or appropriative rights exist in Verdugo Basin.

4.2.6.4 Eagle Rock Basin. The only measurable water supply to Eagle Rock Basin is import return water by reason of importations by Los Angeles. Extractions by Foremost and Deep Rock under the prior stipulated judgments have utilized the safe yield of Eagle Rock Basin, and have maintained hydrologic equilibrium therein.

5. DECLARATION OF RIGHTS

5.1 Right to Native Waters.

5.1.1 Los Angeles River and San Fernando Basin.

5.1.1.1 Los Angeles' Pueblo Right. Los Angeles, as the successor to all rights, claims and powers of the Spanish Pueblo de Los Angeles in regard to water rights, is the owner of a prior and paramount pueblo right to the surface waters of the Los Angeles River and the native ground waters of San Fernando Basin to meet its reasonable beneficial needs and for its inhabitants.

5.1.1.2 Extent of Pueblo Right. Pursuant to said pueblo right, Los Angeles is entitled to satisfy its needs and those of its inhabitants within its boundaries as from time to time modified. Water which is in fact used for pueblo right purposes is and shall be deemed needed for such purposes.

5.1.1.3 Pueblo Right -- Nature and Priority of Exercise. The pueblo right of Los Angeles is a prior and paramount right to all of the surface waters of the Los Angeles River, and native ground water in San Fernando Basin, to the extent of the reasonable needs and uses of Los Angeles and its inhabitants throughout the corporate area of Los Angeles, as its boundaries may exist from time to time. To the extent that the Basin contains native waters and imported waters, it is presumed that the first water extracted by Los Angeles in any water year is pursuant to its pueblo right, up to the amount of the native safe yield. The next extractions by Los Angeles in any year are deemed to be from import return water, followed by stored water, to the full extent of Los Angeles' right to such import return water and stored

water. In the event of need to meet water requirements of its inhabitants, Los Angeles has the additional right, pursuant to its pueblo right, withdraw temporarily from storage Underlying Pueblo Waters, subject to an obligation to replace such water as soon as practical.

5.1.1.4 Rights of Other Parties. No other party to this action has any right in or to the surface waters of the Los Angeles River or the native safe yield of the San Fernando Basin.

5.1.2 Sylmar Basin Rights.

5.1.2.1 No Pueblo Rights. The pueblo right of Los Angeles does not extend to or include ground waters in Sylmar Basin.

5.1.2.2 Overlying Rights. Defendants Moordigian and Hersch & Plumb own lands overlying Sylmar Basin and have a prior correlative right to extract native waters from said Basin for reasonable beneficial uses on their said overlying lands. Said right is appurtenant to said overlying lands and water extracted pursuant thereto may not be exported from said lands nor can said right be transferred or assigned separate and apart from said overlying lands.

5.1.2.3 Appropriative Rights of San Fernando and Los Angeles. San Fernando and Los Angeles own appropriative rights, of equal priority, to extract and put to reasonable beneficial use for the needs of said cities and their inhabitants, native waters of the Sylmar Basin in excess of the exercised reasonable

beneficial needs of overlying users. Said appropriative rights are:

San Fernando	3,580 acre feet
Los Angeles	1,560 acre feet.

5.1.2.4 No Prescription. The Sylmar Basin is not presently in a state of overdraft and no rights by prescription exist in said Basin against any overlying or appropriative water user.

5.1.2.5 Other Parties. No other party to this action owns or possesses any right to extract native ground waters from the Sylmar Basin.

5.1.3 Verdugo Basin Rights.

5.1.3.1 No Pueblo Rights. The pueblo right of Los Angeles does not extend to or include ground water in Verdugo Basin.

5.1.3.2 Prescriptive Rights of Glendale and Crescenta Valley. Glendale and Crescenta Valley own prescriptive rights as against each other and against all private overlying or appropriative parties in the Verdugo Basin to extract, with equal priority, the following quantities of water from the combined safe yield of native and imported waters in Verdugo Basin:

Glendale	3,856 acre feet
Crescenta Valley	3,294 acre feet.

5.1.3.3 Other Parties. No other party to this action owns or possesses any right to extract native ground waters from the Verdugo Basin.

5.1.4 Eagle Rock Basin Rights.

5.1.4.1 No Pueblo Rights. The pueblo right of Los Angeles does not extend to or include ground water in Eagle Rock Basin.

5.1.4.2 No Rights in Native Waters. The Eagle Rock Basin has no significant or measurable native safe yield and no parties have or assert any right or claim to native waters in said Basin.

5.2 Rights to Imported Waters.

5.2.1 San Fernando Basin Rights.

5.2.1.1 Rights to Recapture Import Return Water. Los Angeles, Glendale, Burbank and San Fernando have each caused imported waters to be brought into ULARA and to be delivered to lands overlying the San Fernando Basin, with the result that percolation and return flow of such delivered water has caused imported waters to become a part of the safe yield of San Fernando Basin. Each of said parties has a right to extract from San Fernando Basin that portion of the safe yield of the Basin attributable to such import return waters.

5.2.1.2 Rights to Store and Recapture Stored Water. Los Angeles has heretofore spread imported water directly in San Fernando Basin. Los Angeles, Glendale, Burbank and San Fernando each have rights to store water in San Fernando Basin by direct spreading or in lieu practices. To the extent of any future spreading or in lieu storage of import water or reclaimed water by Los Angeles, Glendale, Burbank or San Fernando, the party

causing said water to be so stored shall have a right to extract an equivalent amount of ground water from San Fernando Basin. The right to extract waters attributable to such storage practices is an undivided right to a quantity of water in San Fernando Basin equal to the amount of such Stored Water to the credit of any party, as reflected in Watermaster records.

5.2.1.3 Calculation of Import Return Water and Stored Water Credits. The extraction rights of Los Angeles, Glendale, Burbank and San Fernando in San Fernando Basin in any year, insofar as such rights are based upon import return water, shall only extend to the amount of any accumulated import return water credit of such party by reason of imported water delivered after September 30, 1977. The annual credit for such import return water shall be calculated by Watermaster based upon the amount of delivered water during the preceding water year, as follows:

Los Angeles:	20.8% of all delivered water (including reclaimed water) to valley fill lands of San Fernando Basin.
San Fernando:	26.3% of all imported and reclaimed water delivered to valley-fill lands of San Fernando Basin.
Burbank:	20.0% of all delivered water (including reclaimed water) to San Fernando Basin and its tributary hill and mountain areas.

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Glendale:	20.0% of all delivered water (including reclaimed water) to San Fernando Basin and its tributary hill and mountain areas (i.e., total delivered water, [including reclaimed water], less 105% of total sales by Glendale in Verdugo Basin and its tributary hills).

In calculating Stored Water credit, by reason of direct spreading of imported or reclaimed water, Watermaster shall assume that 100% of such spread water reached the ground water in the year spread.

5.2.1.4 Cummulative Import Return Water Credits. Any import return water which is not extracted in a given water year shall be carried over, separately accounted for, and maintained as a cummulative credit for purposes of future extractions.

5.2.1.5 Overextractions. In addition to extractions of stored water, Glendale, Burbank or San Fernando may, in any water year, extract from San Fernando Basin an amount not exceeding 10% of such party's last annual credit for import return water, subject, however, to an obligation to replace such overextraction by reduced extractions during the next succeeding water year. Any such overextraction which is not so replaced shall constitute physical solution water, which shall be deemed to have been extracted in said subsequent water year.

5.2.1.6 Private Defendant. No private defendant is entitled to extract water from the San Fernando Basin on account of the importation of water thereto by overlying public entities.

5.2.2 Sylmar Basin Rights.

5.2.2.1 Rights to Recapture Import Return Waters. Los Angeles and San Fernando have caused imported waters to be brought into ULARA and delivered to lands overlying the Sylmar Basin with the result that percolation and return flow of such delivered water has caused imported waters to become a part of the safe yield of Sylmar Basin. Los Angeles and San Fernando are entitled to recover from Sylmar Basin such imported return waters. In calculating the annual entitlement to recapture such import return water, Los Angeles and San Fernando shall be entitled to 35.7% of the preceding water year's imported water delivered by such party to lands overlying Sylmar Basin. Thus, by way of example, in 1976-77, Los Angeles was entitled to extract 2370 acre feet of ground water from Sylmar Basin, based on delivery to lands overlying said Basin of 6640 acre feet during 1975-76. The quantity of San Fernando's imported water to, and the return flow therefrom, in the Sylmar Basin in the past has been of such minimal quantities that it has not been calculated.

5.2.2.2 Rights to Store and Recapture Stored Water. Los Angeles and San Fernando each have the right to store water in Sylmar Basin equivalent to their rights in San Fernando Basin under paragraph 5.2.1.2 hereof.

5.2.2.3 Carry Over. Said right to recapture stored water, import return water and other safe yield waters to which a party is entitled, if not exercised in a given year, can be carried over for not to exceed five

years, if the underflow through Sylmar Notch does not exceed 400 acre feet per year.

5.2.2.4 Private Defendants. No private defendant is entitled to extract water from within the Sylmar Basin on account of the importation of water thereto by overlying public entities.

5.2.3 Verdugo Basin Rights.

5.2.3.1 Glendale and Crescenta Valley. Glendale and Crescenta Valley own appropriative and prescriptive rights in and to the total safe yield of Verdugo Basin, without regard as to the portions thereof derived from native water and from delivered imported waters, notwithstanding that both of said parties have caused waters to be imported and delivered on lands overlying Verdugo Basin. Said aggregate rights are as declared in Paragraph 5.1.3.2 of these Conclusions.

5.2.3.2 Los Angeles. Los Angeles may have a right to recapture its import return waters by reason of delivered import water in the Basin, based upon imports during and after water year 1977-78, upon application to Watermaster not later than the year following such import and on subsequent order after hearing by the Court.

5.2.3.3 Private Defendants. No private defendant, as such, is entitled to extract water from within the Verdugo Basin on account of the importation of water thereto by overlying public entities.

5.2.4 Eagle Rock Basin Rights.

5.2.4.1 Los Angeles. Los Angeles has caused

imported water to be delivered for use on lands overlying Eagle Rock Basin and return flow from said delivered imported water constitutes the entire safe yield of Eagle Rock Basin. Los Angeles has the right to extract or cause to be extracted the entire safe yield of Eagle Rock Basin.

5.2.4.2 Private Defendants. No private defendants have a right to extract water from within Eagle Rock Basin, except pursuant to the physical solution herein.

6. INJUNCTIONS

Each of the parties named or referred to in this Part 6, its officers, agents, employees and officials is, and they are, hereby ENJOINED and RESTRAINED from doing or causing to be done any of the acts herein specified:

6.1 Each and Every Defendant -- from diverting the surface waters of the Los Angeles River or extracting the native waters of SAN FERNANDO BASIN, or in any manner interfering with the prior and paramount pueblo right of Los Angeles in and to such waters, except pursuant to the physical solution herein decreed.

6.2 Each and Every Private Defendant -- from extracting ground water from the SAN FERNANDO, VERDUGO, or EAGLE ROCK BASINS, except pursuant to physical solution provisions hereof.

6.3 Defaulting and Disclaiming Parties (listed in Attachments "C" and "D") -- from diverting or extracting water within ULARA, except pursuant to the physical solution herein decreed.

6.4 Glendale -- from extracting ground water from SAN FERNANDO BASIN in any water year in quantities exceeding its

import return water credit and any stored water credit, except pursuant to the physical solution; and from extracting water from VERDUGO BASIN in excess of its appropriative and prescriptive right declared herein.

6.5 Burbank -- from extracting ground water from SAN FERNANDO BASIN in any water year in quantities exceeding its import return water credit and any stored water credit, except pursuant to the physical solution decreed herein.

6.6 San Fernando -- from extracting ground water from SAN FERNANDO BASIN in any water year in quantities exceeding its import return water credit and any stored water credit, except pursuant to the physical solution herein decreed.

6.7 Crescenta Valley -- from extracting ground water from VERDUGO BASIN in any year in excess of its appropriative and prescriptive right declared herein.

6.8 Los Angeles -- from extracting ground water from SAN FERNANDO BASIN in any year in excess of the native safe yield, plus any import return water credit and stored water credit of said city; provided, that where the needs of Los Angeles require the extraction of Underlying Pueblo Waters, Los Angeles may extract such water subject to an obligation to replace such excess as soon as practical; and from extracting ground water from VERDUGO BASIN in excess of any credit for import return water which Los Angeles may acquire by reason of delivery of imported water for use overlying said basin, as hereinafter confirmed on application to Watermaster and by subsequent order of the Court.

6.9 Non-consumptive and Minimal Consumptive Use Parties. The parties listed in Attachment "F" are enjoined from extracting

water from San Fernando Basin, except in accordance with practices specified in Attachment "F", or pursuant to the physical solution herein decreed.

7. CONTINUING JURISDICTION

7.1 Jurisdiction Reserved. Full jurisdiction, power and authority are retained by and reserved to the Court for purposes of enabling the Court upon application of any party or of the Watermaster by motion and upon at least 30 days' notice thereof, and after hearing thereon, to make such further or supplemental orders or directions as may be necessary or appropriate, for interpretation, enforcement or carrying out of this Judgment, and to modify, amend or amplify any of the provisions of this Judgment or to add to the provisions thereof consistent with the rights herein decreed; provided, however, that no such modification, amendment or amplification shall result in a change in the provisions of Section 5.2.1.3 or 9.2.1 hereof.

8. WATERMASTER

8.1 Designation and Appointment.

8.1.1 Watermaster Qualification and Appointment. A qualified hydrologist, acceptable to all active public agency parties hereto, will be appointed by subsequent order of the Court to assist the Court in its administration and enforcement of the provisions of this Judgment and any subsequent orders of the Court entered pursuant to the Court's continuing jurisdiction. Such Watermaster shall serve at the pleasure of the Court, but may be removed or replaced on motion of any party after hearing and showing of good cause.

8.2 Powers and Duties.

8.2.1 Scope. Subject to the continuing supervision and control of the Court, Watermaster shall exercise the express powers, and shall perform the duties, as provided in this Judgment or hereafter ordered or authorized by the Court in the exercise of the Court's continuing jurisdiction.

8.2.2 Requirement for Reports, Information and Records. Watermaster may require any party to furnish such reports, information and records as may be reasonably necessary to determine compliance or lack of compliance by any party with the provisions of this Judgment.

8.2.3 Requirement of Measuring Devices. Watermaster shall require all parties owning or operating any facilities for extraction of ground water from ULARA to install and maintain at all times in good working order, at such party's own expense, appropriate meters or other measuring devices satisfactory to the Watermaster.

8.2.4 Inspection by Watermaster. Watermaster shall make inspections of (a) ground water extraction facilities and measuring devices of any party, and (b) water use practices by any party under physical solution conditions, at such times and as often as may be reasonable under the circumstances to verify reported data and practices of such party. Watermaster shall also identify and report on any new or proposed new ground water extractions by any party or non-party.

8.2.5 Policies and Procedures. Watermaster shall, with the advice and consent of the Administrative Committee, adopt and amend from time to time Policies and Procedures as may be

reasonably necessary to guide Watermaster in performance of its duties, powers and responsibilities under the provisions of this judgment.

8.2.6 Data Collection. Watermaster shall collect and verify data relative to conditions of ULARA and its ground water basins from the parties and one or more other governmental agencies. Where necessary, and upon approval of the Administrative Committee, Watermaster may develop supplemental data.

8.2.7 Cooperation With Other Agencies. Watermaster may act jointly or cooperate with agencies of the United States and the State of California or any political subdivisions, municipalities or districts (including any party) to secure or exchange data to the end that the purpose of this Judgment, including its physical solution, may be fully and economically carried out.

8.2.8 Accounting for Non-consumptive Use. Watermaster shall calculate and report annually the non-consumptive and consumptive uses of extracted ground water by each party listed in Attachment "F."

8.2.9 Accounting for Accumulated Import Return Water and Stored Water. Watermaster shall record and verify additions, extractions and losses and maintain an annual and cummulative account of all (a) stored water and (b) import return water in San Fernando Basin. Calculation of losses attributable to Stored Water shall be approved by the Administrative Committee or by subsequent order of the Court. For purposes of such accounting, extractions in any water year by

Glendale, Burbank or San Fernando shall be assumed to be first from accumulated import return water, second from stored water, and finally pursuant to physical solution; provided, that any such city may, by written notice of intent to Watermaster, alter said priority of extractions as between import return water and stored water.

8.2.10 Recalculation of Safe Yield. Upon request of the Administrative Committee, or on motion of any party and subsequent Court order, Watermaster shall recalculate safe yield of any basin within ULARA. If there has been a material long-term change in storage over a base period (excluding any effects of stored water) in San Fernando Basin the safe yield shall be adjusted by making a corresponding change in native safe yield of the Basin.

8.2.11 Watermaster Report. Watermaster shall prepare annually and (after review and approval by Administrative Committee) cause to be served on all active parties, on or before May 1, a report of hydrologic conditions and Watermaster activities within ULARA during the preceding water year. Watermaster's annual report shall contain such information as may be requested by the Administrative Committee, required by Watermaster Policies and Procedures or specified by subsequent order of this Court.

8.2.12 Active Party List. Watermaster shall maintain at all times a current list of active parties and their addresses.

8.3 Administrative Committee.

8.3.1 Committee to be Formed. An Administrative Committee shall be formed to advise with, request or consent to, and

review actions of Watermaster. Said Administrative Committee shall be composed of one representative of each party having a right to extract ground water from ULARA, apart from the physical solution. Any such party not desiring to participate in such committee shall so advise Watermaster in writing.

8.3.2 Organization and Voting. The Administrative Committee shall organize and adopt appropriate rules and regulations to be included in Watermaster Policies and Procedures. Action of the Administrative Committee shall be by unanimous vote of its members, or of the members affected in the case of an action which affects one or more basins but less than all of ULARA. In the event of inability of the Committee to reach a unanimous position, the matter may, at the request of Watermaster or any party, be referred to the Court for resolution by subsequent order after notice and hearing.

8.3.3 Function and Powers. The Administrative Committee shall be consulted by Watermaster and shall request or approve all discretionary Watermaster determinations. In the event of disagreement between Watermaster and the Administrative Committee, the matter shall be submitted to the Court for review and resolution.

8.4 Watermaster Budget and Assessments.

8.4.1 Watermaster's Proposed Budget. Watermaster shall, on or before May 1, prepare and submit to the Administrative Committee a budget for the ensuing water year. The budget shall be determined for each basin separately and allocated between the separate ground water basins. The

total for each basin shall be allocated between the public agencies in proportion to their use of ground water from such basin during the preceding water year.

8.4.2 Objections and Review. Any party who objects to the proposed budget, or to such party's allocable share thereof, may apply to the Court within thirty (30) days of receipt of the proposed budget from Watermaster for review and modification. Any such objection shall be duly noticed to all interested parties and heard within thirty (30) days of notice.

8.4.3 Notice of Assessment. After thirty (30) days from delivery of Watermaster's proposed budget, or after the order of Court settling any objections thereto, Watermaster shall serve notice on all parties to be assessed of the amount of assessment and the required payment schedule.

8.4.4 Payment. All assessments for Watermaster expenses shall be payable on the dates designated in the notice of assessment.

8.5 Review of Watermaster Activities.

8.5.1 Review Procedures. All actions of Watermaster (other than budget and assessment matters, which are provided for in Paragraph 8.4.2) shall be subject to review by the Court on its own motion or on motion by any party, as follows:

8.5.1.1 Noticed Motion. Any party may, by a regularly noticed motion, apply to the Court for review of any Watermaster's action. Notice of such motion shall be served personally or mailed to Watermaster and to all active parties.

8.5.1.2 De Novo Nature of Proceedings. Upon the

filing of any such motion, the Court shall require the moving party to notify the active parties of a date for taking evidence and argument, and on the date so designated shall review de novo the question at issue. Watermaster's findings or decision, if any, may be received in evidence at said hearing, but shall not constitute presumptive or prima facie proof of any fact in issue.

8.5.1.3 Decision. The decision of the Court in such proceeding shall be an appealable supplemental order in this case. When the same is final, it shall be binding upon the Watermaster and all parties.

9. PHYSICAL SOLUTION

9.1 Circumstances Indicating Need for Physical Solution. During the period between 1913 and 1955, when there existed temporary surplus waters in the San Fernando Basin, overlying cities and private overlying landowners undertook to install and operate water extraction, storage and transmission facilities to utilize such temporary surplus waters. If the injunction against interference with the prior and paramount rights of Los Angeles to the waters of the San Fernando and Eagle Rock Basins were strictly enforced, the value and utility of those water systems and facilities would be lost or impaired. It is appropriate to allow continued limited extraction from the San Fernando and Eagle Rock Basins by parties other than Los Angeles, subject to assurance that Los Angeles will be compensated for any cost, expense or loss incurred as a result thereof.

9.2 Prior Stipulated Judgments. Several defendants

heretofore entered into separate stipulated judgments herein, during the period June, 1958 to November, 1965, each of which judgments was subject to the Court's continuing jurisdiction. Without modification of the substantive terms of said prior judgments, the same are categorized and merged into this judgment and superseded hereby in the exercise of the Court's continuing jurisdiction, as follows:

9.2.1 Eagle Rock Basin Parties. Stipulating defendants Foremost and Deep Rock have extracted water from Eagle Rock Basin, whose entire safe yield consist of import return waters of Los Angeles. Said parties may continue to extract water from Eagle Rock Basin to supply their bottled drinking water requirements upon filing all required reports on said extraction with Watermaster and Los Angeles and paying Los Angeles annually an amount equal to $21.78 per acre foot for the first 200 acre feet, and $39.20 per acre foot for any additional water extracted in any water year.

9.2.2 Non-consumptive or Minimal-consumptive Operations. Certain stipulating defendants extract water from San Fernando Basin for uses which are either non-consumptive or have a minimal consumptive impact. Each of said defendants who have a minimal consumptive impact has a connection to the City of Los Angeles water system and purchases annually an amount of water at least equivalent to the consumptive loss of extracted ground water. Said defendants are:

Non-Consumptive

Walt Disney Productions

Sears, Roebuck & Co.

Minimal-Consumptive

Conrock Co., for itself and as successor to California Materials Co.; Constance Ray White and Lee L. White; Mary L. Akmadzich and Peter J. Akmadzich

Livingston Rock & Gravel, for itself and as successor to Los Angeles Land & Water Co.

The nature of each said defendant's water use practices is described in Attachment "F". Subject to required reports to and inspections by Watermaster, each said defendant may continue extractions for said purposes so long as in any year such party continues such non-consumptive or minimal-consumptive use practices.

9.2.3 Abandoned Operations. The following stipulating defendants have ceased extracting water from San Fernando Basin and no further need exists for physical solution in their behalf:

Knickerbocker Plastic Company, Inc.

Carnation Company

Hidden Hills Mutual Water Company

Southern Pacific Railroad Co.

Pacific Fruit Express Co.

9.3 Private Defendants. There are private defendants who installed during the years of temporary surplus relatively substantial facilities to extract and utilize ground waters of San Fernando Basin. Said defendants may continue their extractions for consumptive use up to the indicated annual quantities upon payment of compensation to the appropriate city wherein their use of water is principally located, on the basis of the following physical solution:

9.3.1 Private Defendants and Appropriate Cities. Said private defendants and the cities to which their said extractions shall be charged and to which physical solution payment shall be made are:

			Annual Quantities (acre feet)
Los Angeles	-	Toluca Lake	100
		Sportsman's Lodge	25
		Van de Kamp	120
Glendale	-	Forest Lawn	400
		Southern Service Co.	75
Burbank	-	Valhalla	300
		Lockheed	25

Provided that said private defendants shall not develop, install or operate new wells or other facilities which will increase existing extraction capacities.

9.3.2 Reports and Accounting. All extractions pursuant to this physical solution shall be subject to such reasonable reports and inspections as may be required by Watermaster.

9.3.3 Payment. Water extracted pursuant hereto shall be compensated for by annual payment to Los Angeles, and as agreed upon pursuant to paragraph 9.3.3.2 to Glendale and Burbank, thirty days from day of notice by Watermaster, on the following basis:

9.3.3.1 Los Angeles. An amount equal to what such party would have paid had water been delivered from the distribution system of Los Angeles, less the average energy cost of extraction of ground water by Los Angeles from San Fernando.

9.3.3.2 Glendale or Burbank. An amount equal to

the sum of the amount payable to Los Angeles under paragraph 9.4 hereof and any additional charges or conditions agreed upon by either such city and any private defendant.

9.4 Glendale and Burbank. Glendale and Burbank have each installed, during said years of temporary surplus, substantial facilities to extract and utilize waters of the San Fernando Basin. In addition to the use of such facilities to recover import return water, the distribution facilities of such cities can be most efficiently utilized by relying upon the San Fernando Basin for peaking supplies in order to reduce the need for extensive new surface storage. Glendale and Burbank may extract annual quantities of ground water from the San Fernando Basin, in addition to their rights to import return water or stored water, as heretofore declared, in quantities up to:

Glendale	5,500 acre feet
Burbank	4,200 acre feet;

provided, that said cities shall compensate Los Angeles annually for any such excess extractions over and above their declared rights at a rate per acre foot equal to the average MWD price for municipal and industrial water delivered to Los Angeles during the fiscal year, less the average energy cost of extraction of ground water by Los Angeles from San Fernando Basin during the preceding fiscal year. Provided, further, that ground water extracted by Forest Lawn and Southern Service Co. shall be included in the amount taken by Glendale, and the amount extracted by Valhalla and Lockheed shall be included in the amount taken by Burbank. All water taken by Glendale or Burbank pursuant hereto shall be charged against Los Angeles' rights in the year of such extractions.

In the event of emergency, and upon stipulation or motion and subsequent order of the Court, said quantities may be enlarged in any year.

9.5 San Fernando. San Fernando delivers imported water on lands overlying the San Fernando Basin, by reason of which said city has a right to recover import return water. San Fernando does not have water extraction facilities in the San Fernando Basin, nor would it be economically or hydrologically useful for such facilities to be installed. Both San Fernando and Los Angeles have decreed appropriative rights and extraction facilities in the Sylmar Basin. San Fernando may extract ground water from the Sylmar Basin in a quantity sufficient to utilize its San Fernando Basin import return water credit, and Los Angeles shall reduce its Sylmar Basin extractions by an equivalent amount and receive an offsetting entitlement for additional San Fernando Basin extractions.

9.6 Effective Date. This physical solution shall be effective on October 1, 1978, based upon extractions during water year 1978-79.

10. MISCELLANEOUS PROVISIONS

10.1 Designation of Address for Notice and Service. Each party shall designate the name and address to be used for purposes of all subsequent notices and service herein by a separate designation to be filed with Watermaster within thirty (30) days after Notice of Entry of Judgment has been served. Said designation may be changed from time to time by filing a written notice of such change with the Watermaster. Any party desiring to be relieved of receiving notices of Watermaster activity may file a waiver of

notice on a form to be provided by Watermaster. Thereafter such party shall be removed from the Active Party list. For purposes of service on any party or active party by the Watermaster, by any other party, or by the Court, of any item required to be served upon or delivered to such party or active party under or pursuant to the Judgment, such service shall be made personally or by deposit in the United States mail, first class, postage prepaid, addressed to the designee and at the address in the latest designation filed by such party or active party.

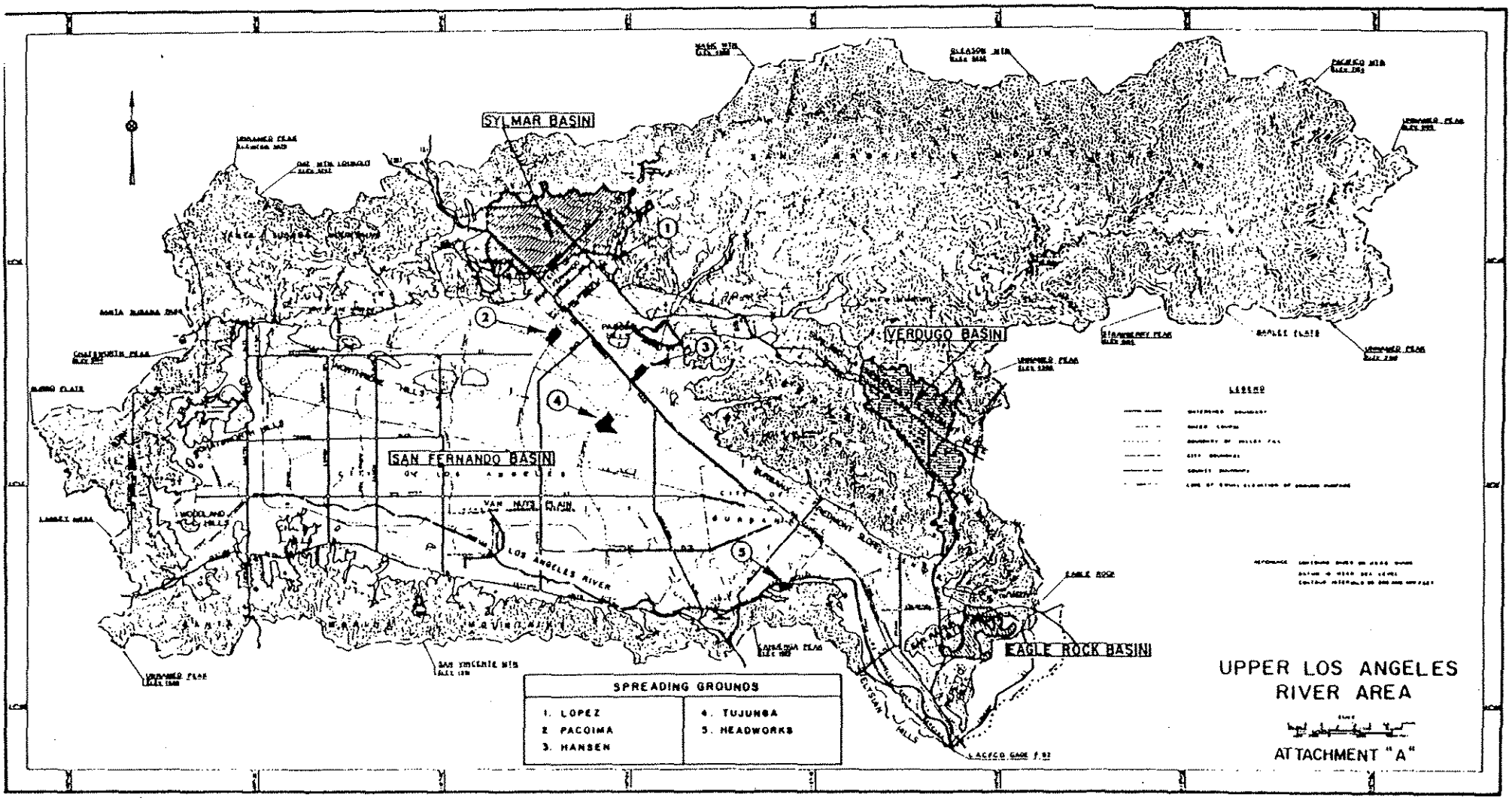
10.2 Notice of Change in Hydrologic Condition -- Sylmar Basin. If Sylmar Basin shall hereafter be in a condition of overdraft due to increased or concurrent appropriations by Los Angeles and San Fernando, Watermaster shall so notify the Court and parties concerned, and notice of such overdraft and the adverse effect thereof on private overlying rights shall be given by said cities as prescribed by subsequent order of the Court, after notice and hearing.

10.3 Judgment Binding on Successors. This Judgment and all provisions thereof are applicable to and binding upon not only the parties to this action, but also upon their respective heirs, executors, administrators, successors, assigns, lessees and licensees and upon the agents, employees and attorneys in fact of all such persons.

10.4 Costs. Ordinary court costs shall be borne by each party, and reference costs shall be borne as heretofore allocated and paid.

DATED: Jan 26, 1979.

Judge of the Superior Court


SYLMAR BASIN
VERDUGO BASIN
SAN FERNANDO BASIN
EAGLE ROCK BASIN
LOS ANGELES RIVER
SPREADING GROUNDS
1. LOPEZ
2. PACOIMA
3. HANSEN
4. TUJUNGA
5. HEADWORKS
UPPER LOS ANGELES RIVER AREA
ATTACHMENT "A"

ATTACHMENT "B"
LIST OF DISMISSED PARTIES

Adams, Catherine

Adair, Leo W.

Anderson, Jesse E.

Anderson, Elizabeth A.

Anderson, Leland H.

Anderson, Bessie E.

Bank of America, N.T. & S.A., (Trustee)

Becker, Barbara

Beatrice Foods Company

Becker, Bert

Bishop, Elfreda M.

Bishop, William E.

Block, Leonard W.

Block, Margery J.

Burbank C. U. School District

Busk, Rodney E.

California, State of

California Trust Company, (Trustee)

California Trust Company, Trustee for First National Bank of Glendale

Citizens N.T.S. Bank of L.A., Trustee of M. M. Crenshaw

Citizens National Trust & Savings Bank of Los Angeles

Citizens National Trust & Savings Bank of Los Angeles, Trustee, Deed of Trust 3724

Color Corporation of America

Corporation of America

Corporation of America, Trustee for Bank of America 32

Doe Corporation, 10-50

Doe 18-500

Duckworth, John W., (Estate of)

Equitable Life Assurance Society of the United States

Fidelity Federal Savings & Loan Association

Fitz-Patrick, Ada H.

Fitz-Patrick, C. C.

Frank X. Enderle, Inc., Ltd.

George, Florence H.

George, Elton

Ghiglia, Frank P.

Givan, Amelia (Deceased)

Glendale Junior College District of Los Angeles County

Glendale Unified School District

Glenhaven Memorial Park, Inc.

Griffith, Howard Barton

Handorf, August V., Heirs of

Hanna, George

Hicks, Forrest W., Executor of Estate of (California Bank)

Houston-Fearless Corp., The

Industrial Fuel Supply Co.

Intervalley Savings & Loan Association

Julius, Adenia C.

Julius, Louis A.

Kaesemeyer, Edna M.

Karagozian, Charles

Kates, Nathan as Co-Executor, Estate of Duckworth

Kelley, June

Kelley, Victor H.

Kiener, Harry, Deceased, Heirs of

Knupp, Guy, Trustee

Landes, Clara Bartlett

Lentz, Richard

Los Angeles County Flood Control District

Los Angeles Land and Water Company

Los Angeles Trust and Savings Deposit Company (Sale)

Los Angeles Safe Deposit Company, Trustee for Security First National Bank of Los Angeles

Los Angeles Trust and Safe Deposit Company, Trustee for H. Kiener

Lytle, Lydia L.

Massachusetts Mutual Life Insurance Company

Mahannah, E. E.

Mahannah, Hazel E.

M.C.A., Inc.

Mangan, Blanche M.

Mangan, Nicholas

McDougal, Murray

McDougal, Marian Y.

Mellenthin, Helen Louise

Mellenthin, William

Metropolitan Life Insurance Company

Morgan, Kenneth H.

Morgan, Anne

Mulholland Orchard Company

Mutual Life Insurance Company of New York

Northwestern Mutual Life Insurance Company

Oakmont Club

Oakwood Cemetery Association

Pasadena Savings & Loan Association

Pagliai, Bruno

Pacific Lighting Corporation

Pierce Brothers Mortuary

Premier Laundry Company, Inc.

Pur-o-Spring Water Company

Renfrow, Mary Mildred

Renfrow, Pleasant Thomas

Reinert, H. C.

Reinert, Lauretta

Richardson, Helen I.

Richardson, William L.

Security First National Bank of Los Angeles, Trustee

Security First National Bank of Los Angeles, Trustee for L. Schwaiger, etc.

Smith, T. A.

Smith, Sidney, Estate of, F. Small, Administrator

Southern California Service Corp., Trustee for Verdugo Savings and Loan Association

Sylmar Properties Inc.

Title Insurance and Trust Co., Trustee for Metropolitan Life Insurance Company, I. 1570

Title Insurance and Trust Co., Trustee for Western Mortgage Company

Title Guarantee & Trustee Company, Trustee

Title Insurance & Trust Company, Trustee for C. Fitz-Patrick

Title Insurance & Trust Company, Trustee for Intervalley Savings and Loan Association, 1114

Title Insurance & Trust Company, for Fidelity Savings & Loan Association

Title Insurance & Trust Company for Equitable Life Assurance Society, U.S.

Union Bank & Trust Company of Los Angeles Trustee for B. Becker, et al.

Valliant, Grace C.

Verdugo Savings & Loan Association

Warner Brothers Pictures, Inc.

Warner Ranch Company, Inc.

Walleck, Henry L., as Executor of the Estate of A. Givan

Western Mortgage Company

Wheeland, H. W.

Wilcox, Ray C.

Wise, Constance Julia

Wise, Robert Taylor

Young, Donald M.

Young, Marcia S.

ATTACHMENT "C"
LIST OF DEFAULTED PARTIES

Aetna Life Insurance Company

American Savings & Loan Association

Babikian, Helen

Bank of America, N.T. & S.A., Trustee

Bannan, B. A.

Bannan, Clotilde R.

Berkemeyer, Henry W.

Berkemeyer, Hildur M.

Bell, William M.

Bell, Sallie C.

Borgia, Andrea, Estate of

Borgia, Frances

Brown, Stella M.

Burns, George A.

Burns, Louise J.

California Bank, Trustee re Hollywood State Bank

California Bank, Trustee

Citizens National Bank & Savings Bank of Los Angeles, Trust for W. Stavert

Citizens National Trust & Savings Bank of Los Angeles, Mort. I. 164

Citizens National Trust & Savings Bank of Los Angeles Trustee

Citizens National Trust & Savings Bank of Los Angeles, Co-Trustee for Estate of A. V. Handorf

Clauson, Emma S.

Continental Auxillary Company (Doe Corporation 1)

Cowlin, Josephine McC.

Cowlin, Donald G.

Cowlin, Dorothy N.

Corporation of America, Trustee for Bank of America, I. 54

Desco Corp.

Diller, Michael

Erratchuo, Richard

Glendale Towel and Linen Supply Company

Guyer, Irene W.

Herrmann, Emily Louise by Louis T. Herrmann, Successor In Interest

Hicks, Forrest W., Executor of Estate of (California Bank)

Hidden Hills Corporation

Holmgrin, Neva Bartlett

Hope, Lester Townes

Hope, Dolores Defina

Huston Homes (Doe Corporation 8)

Johnson, William Arthur, Sr. (Doe 11)

Johnson, Grace Luvena (Doe 12)

Jessup, Marguerite R., Trustee (for 6)

Jessup, Marguerite Rice

Jessup, Roger

La Maida, James V. (Doe 10)

La Marda, Tony (La Maida)

Lancaster, Paul E.

Lancaster, William

Land Title Insurance Company, as Trustee

Land Title Insurance Company

Los Angeles Pet Cemetary

Metropolitan Savings & Loan Association of Los Angeles

Monteria Lake Association

Mosher, Eloise V.

Mosher, W. E.

Murray, Marie

Pacific Lighting and Gas Supply Co.

Plemmons, Florence S.

Plemmons, John R.

Polar Water Company

Pryor, Charles

Rauch, Phil

Roger Jessup Farms

Rushworth, Helen

Rushworth, Lester

Schwaiger, Cecil A.

Schwaiger, Lester R.

Sealand Investment Corporation, Trustee for Metropolitan Savings & Loan Association

Sealand Investment Corporation

Smith, Florence S. (Plemmons)

Southern Service Company, Ltd.

Stavert, Walter W.

Sun Valley National Bank of Los Angeles

Title Insurance and Trust Co., Trustee T. I. Deed of Trust, I. 31, 32

Title Insurance and Trust Co., Trustee for Intervalley Savings & Loan Association I. 2509

Title Insurance & Trust Co., Trustee for Massachusetts Mutual Life Insurance Co.

Title Insurance and Trust Co.

Title Insurance and Trust Co., Trustee A.

Title Insurance and Trust Co., Trustee for Sun Valley National Bank of Los Angeles

Title Insurance and Trust Co., Trustee for J. McC. Cowlin

Title Insurance and Trust Co., Trustee for P. E. Lancaster

Title Insurance and Trust Co., Trustee T. I., Deed of Trust I. 829

Title Insurance and Trust Co., Trustee for C. R. Bannan, et al.

Wheeland, Henry R.

Wheeland, Elizabeth A.

Woodward, E. C., Co-Trustee of the Estate of A. V. Handorf

Wright, Alice M.

Wright, J. Marion

Wright, Irene Evelyn

Wright, Ralph Carver

ATTACHMENT "D"

DISCLAIMING PARTIES

Andrew Jergens Company, The

Boyar, Mark

Chace, William M.
(dba V.P.L.C.)

DeMille, Cecil B., Estate of

Drewry Photocolor Corp.

Hayes, Hay B. (Hal)

Houston Color Film
Laboratories, Inc.

Krown, Samuel P.

La Canada Irrigation District

Lakeside Golf Club (of Hollywood)

Lakewood Water & Power Company

Mack, Lucille

Mollin Investment Co.

Mulholland, P. & R., Trustees
for R. Wood

Mulholland, Rose

Mulholland, Perry

Mulholland, Thomas

Mureau, Charles

Nathan, Julia N., Trustee

Oakmont Country Club

Platt, George E. Company

Richfield Oil Corporation

Riverwood Ranch Mutual Water
Company

Smith, Benjamin B.

Southern California Edison
Company

Spinks Realty Company

Sportsman's Lodge Banquet
Corporation

Stetson, G. Henry

Technicolor Corporation

Valley Lawn Memorial Park

ATTACHMENT "E"

LIST OF PRIOR STIPULATED JUDGMENTS

PARTY	DATE JUDGMENT FILED
Akmadzich, Mary L.	July 24, 1959
Akmadzich, Peter J.	July 24, 1959
California Materials Company	July 24, 1959
Carnation Company	Nov. 20, 1958
Consolidated Rock Products Co.	July 24, 1959
Hidden Hills Mutual Water Company	March 11, 1965
Knickerbocker Plastic Company, Inc.	Feb. 15, 1960
Livingston Rock & Gravel Co., Inc.	July 24, 1959
Pacific Fruit Express Company	March 11, 1965
Pendleton, Evelyn M., dba Deep Rock Artesian Water Company	Nov. 1, 1965
Sears, Roebuck and Company	June 9, 1958
Southern Pacific Company	March 11, 1965
Sparkletts Drinking Water Corporation	Nov. 1, 1965
Valley Park Corporation	July 24, 1959
Walt Disney Productions	May 15, 1961
White, Constance Ray	Feb. 15, 1960
White, Leo L.	Feb. 15, 1960

ATTACHMENT "F"

STIPULATED

NON-CONSUMPTIVE OR MINIMAL-CONSUMPTIVE USE

PRACTICES

Non-Consumptive Uses

Disney -- extracted ground water is used for air conditioning cooling water in a closed system, which discharges to the channel of the Los Angeles River and is subsequently spread and recharges San Fernando Basin, without measurable diminution or loss.

Sears, Lockheed and Carnation -- extracted ground water, or a portion thereof, is used for air conditioning cooling in a closed system, which discharges to San Fernando Basin through an injection well.

Toluca Lake -- that portion of extracted ground water which is not consumptively used, by evaporation or otherwise, is circulated and passed through the lake to the channel of the Los Angeles River immediately upstream from Los Angeles' spreading grounds, where such water is percolated into the ground water of the Basin without measurable diminution or loss.

Sportsman's Lodge -- that portion of extracted ground water which is not consumptively used, by evaporation or otherwise, is circulated and passed through fish ponds and returned to channels tributary to Los Angeles River upstream from Los Angeles' spreading grounds, where such water is percolated into the ground water of the Basin without measurable loss.

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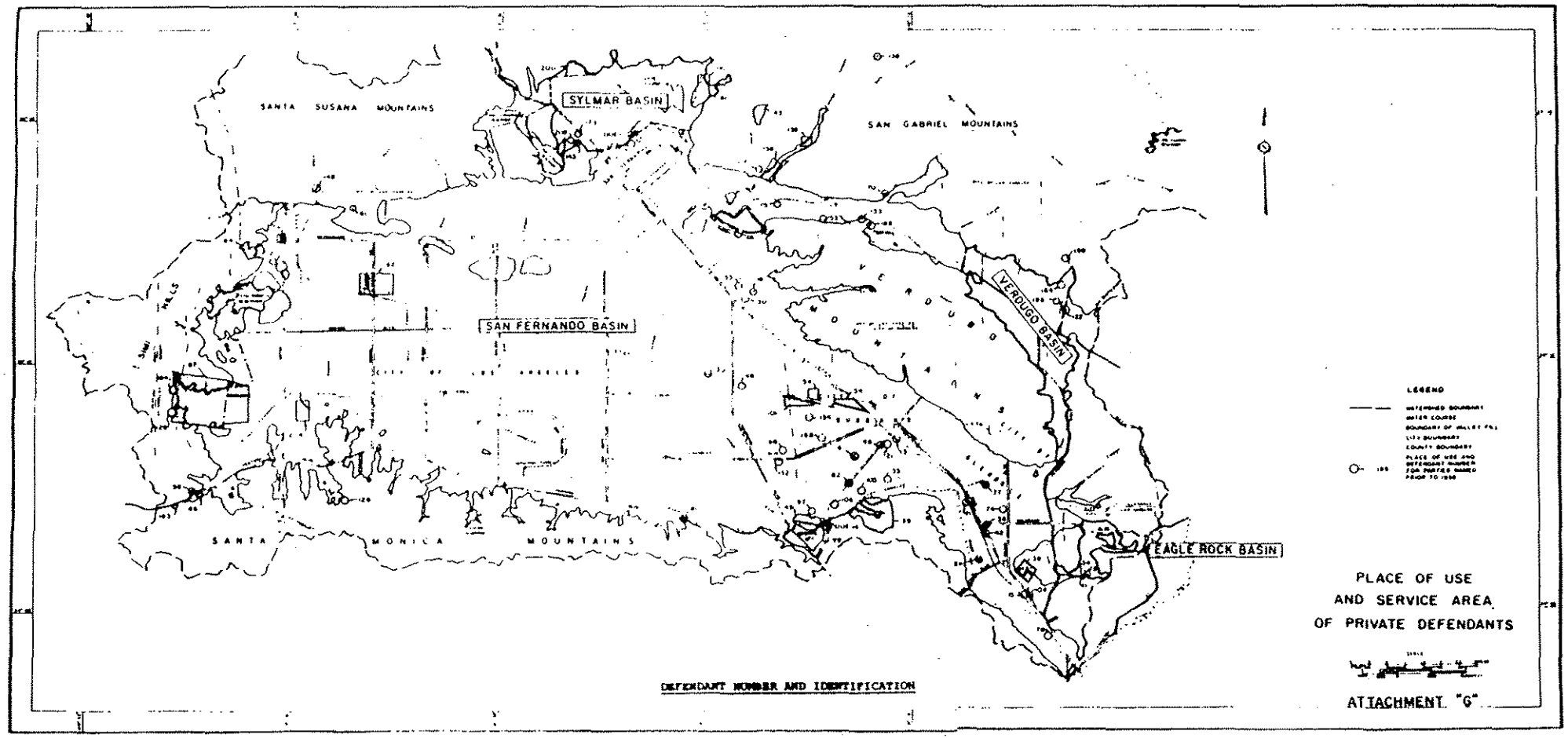
MINIMAL-CONSUMPTIVE USES

Conrock & Livingston -- extracted ground water is used in rock, sand and gravel, and ready-mix concrete operations with net consumptive use of 10%, with the remaining 90% returning to the ground water. Each party purchases surface water from Los Angeles in amounts at least equivalent to such consumptive losses.



4	BURBANK UNIFIED SCHOOL DIST.
6	L.A.C.F.C.D.
13	THE ANDREW JERGENS CO.
15	BEATRICE FOODS CO.
18	CALIFORNIA MATERIALS CO.
21	CARNATION CO.
30	CONSOLIDATED ROCK PROD. CO.
34	DEEP ROCK ARTESIAN WATER CO.
35	DISCO CORP.
36	DRENKY PHOTOCOLOR CORP.
39	FOREST LAWN CO.
41	FRESHPURO WATER CO.
42	GLENDALE TOWEL & LINEN SUPPLY CO.
43	GLENHAVEN MEMORIAL PARK, INC.
46	HOUSTON COLOR FILM LAB, INC.
48	KNICKERBOCKER PLASTIC CO., INC.
49	LAKESIDE GOLF CLUB OF HOLLYWOOD
53	LIVINGSTON ROCK & GRAVEL CO.
54	LOCKHEED AIRCRAFT CORP.
56	LOS ANGELES PET CEMETERY
61	MONTERIA LAKE ASSOC.
62	MULHOLLAND ORCHARD CO.
64	OAKWOOD CEMETERY ASSOC.
66	PACIFIC LIGHTING & GAS SUPPLY CO.
67	GEORGE E. PLATT CO.
68	POLAR WATER CO.
70	RIVERWOOD RANCH MUTUAL WATER CO.
71	ROGER JESSUP FARMS
74	SEARS, ROEBUCK & CO.
75	SOUTHERN CAL. EDISON CO.
76	SOUTHERN PACIFIC RAILROAD CO.
77	SOUTHERN SERVICE CO., LTD.
78	SPARKLETTS DRINKING WATER CORP.
79	SPINKS REALTY CO.
80	SPORTSMEN'S LODGE, INC.
82	TECHNICOLOR CORP.
97	TOLUCA LAKE PROP. OWNERS ASSOC.
99	UNIVERSAL PICTURES CO.
101	VALHALLA MEMORIAL PARK
104	VAN DE KAMPS DUTCH BAKERS INC.
105	WALT DISNEY PRODUCTIONS
106	WARNER BROS. PICTURES, INC.
117	WILLIAM O. BARTHOLOMAUS
120	HENRY M. BERKEMEYER
122	ELFRIEDA M. BISHOP
127	STELLA M. BROWN
126	MARK BOYAR
128	GEORGE A. BURNS
132	WILLIAM M. CHACE
134	EMMA L. CLAUSON
138	CECIL B. DEMILLE
141	MAXINE DUCKWORTH
143	RICHARD ERRATCHUO
148	HOWARD BARTON GRIFFITH
153	NEVA BARTLETT
164	E. E. MAHANNAH
168	CELESTE LOUISE McCABE
173	KIRAG MOORDIGIAN
181	JOHN E. MULLIN
183	CHARLES MUREAU
188	FLORENCE S. PLEMMONS
194	LESTER RUSHWORTH
195	LESTER R. SCHWAIGER
198	SIDNEY SMITH
200	G. HENRY STETSON
204	A. M. WARNER
205	ELISABETH A. WHEELAND
211	ALICE M. WRIGHT
DOR CORP 6	MOLLIN INVESTMENT CORP.
DOR 1	EMILY LOUIS HERZOGAIN
DOR 14	LESTER TOWNES HOPE

APPENDIX D:

City of Glendale
Ordinance 5660-Additional Prohibited Uses of Water
Ordinance 5854-Amendments to the Glendale Municipal Code Relating to Water Conservation

ORDINANCE NO. 5660

AN ORDINANCE OF THE COUNCIL OF THE CITY OF GLENDALE AMENDING SECTIONS 1.20.010 AND 2.72.140 AND CHAPTER 13.36 OF THE GLENDALE MUNICIPAL CODE, 1995, TO ESTABLISH ADDITIONAL PROHIBITED USES OF WATER AND TO ELIMINATE PERCENT-BASED WATER RATIONING REQUIREMENTS

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF GLENDALE:

SECTION 1. Section 1.20.010 of the Glendale Municipal Code, 1995, regarding penalties and punishment for code violations, is hereby amended to read as follows:

1.20.010 Penalties and punishment for code violations.

A. Except as provided in subsections B, C or D of this section, whenever in this code any act is prohibited or declared unlawful, or the doing of any act is required, or the failure to do any act is declared to be unlawful, it shall be a misdemeanor. Unless a specific penalty is provided, any person convicted of such misdemeanor shall be punished by a fine not to exceed one thousand dollars ($1,000.00), or imprisonment for a term not to exceed six (6) months, or by both such fine and imprisonment.

B. With the exception of Title 10 of this code, any other provision of this code where the specific penalty of infraction is provided, shall be deemed an infraction, punishable as follows:

1. A fine not exceeding one hundred dollars ($100.00) for a first violation;

2. A fine not exceeding two hundred dollars ($200.00) for a second violation within one (1) year; and

3. A fine not exceeding five hundred dollars ($500.00) for each additional violation within one (1) year.

C. A violation of any provision of Title 10, with the exception of Chapter 10.56, unless otherwise specifically provided, shall be deemed an infraction. An infraction under Title 10, except Chapter 10.56, is punishable by a fine which shall be established by resolution of the city council, either for a specific section under Title 10 or pursuant to a bail or fine schedule applicable to numerous sections thereunder. Any such bail or fine shall not exceed the sum of five hundred dollars ($500.00) for each violation.

D. A violation of the following Glendale Municipal Code sections shall be deemed an infraction punishable as provided in subsection B of this section, except that all violations after three (3) convictions or nolo contendere pleas, or any combination totaling three (3), within one (1) year, shall be misdemeanors punishable pursuant to Section 1.20.010(A): Sections 8.32.050, 8.52.040(A), 8.52.040(B), 8.52.040(D), 9.04.040(B), 9.04.040(C), 9.04.060(B), 10.28.090, 13.36.060, 13.36.070, 30.11.030, 30.11.070(A)(4), 30.11.070(B)(5), 30.11.070(C),

30.11.070(C)(4), 30.12.040(A)(1)(a), 30.12.040(A)(2)(a), 30.12.040(A)(2)(b), 30.12.050(A)(2), 30.12.050(B)(2), 30.13.040(A)(1), 30.13.040(B), 30.13.050(A)(2), 30.15.040(A), 30.15.050(A)(2), 30.15.050(B)(2), 30.31.010, 30.31.020, 30.31.030(A), 30.31.030(B)(1), 30.32.040(C), 30.32.040(D), 30.32.040(F), 30.32.040(H), 30.33.050, 30.33.210(B)(2), 30.34.020(F), 30.34.020(K), 30.34.030(B)(8), 30.34.030(D), 30.34.030(D)(1), 30.34.030(D)(2), 30.34.090(A), 30.34.090(D), 30.34.090(G) and 30.34.100(A).

SECTION 2. Section 2.72.140 of the Glendale Municipal Code, 1995, regarding the powers and duties of the Glendale Water & Power commission, is amended to read as follows:

2.72.140 Powers and duties generally.

The powers and duties of the Glendale water and power commission shall be as follows:

A. Investigations. To investigate the operations and facilities of the Glendale water and power department and the need for changes or additions in its plant or in its operation and to make recommendations to the city manager and the council accordingly;

B. Recommendations. To recommend to the city manager and the council ways and means of financing changes and additions to the plant or the methods of operation of the Glendale water and power department;

C. Change in Administrative Policy. To recommend to the city manager changes of administrative policy which the commission deems desirable in order that the Glendale water and power department may better serve the people of the city;

D. Powers and Duties of Advisory Nature. The power and duties of the commission are of an advisory nature only, and do not include the power of directing the conduct of the Glendale water and power department or its divisions.

SECTION 3. Section 13.36.040 of the Glendale Municipal Code, 1995, regarding definitions, is hereby amended to read as follows:

13.36.040 Definitions.

The following words and phrases, whenever used in this chapter, shall be construed as defined in this section unless from the context a different meaning is intended or unless a different meaning is specifically defined within individual sections of this chapter:

"California-friendly plantings" or **"California-friendly landscaping"** means those landscape plantings, including but not limited to trees, shrubs, perennials, groundcovers, ornamental grasses and California-native plants, that require low water use for maintenance and that are included in the Metropolitan Water District's California Friendly Garden Guide catalogue, available at http://www.bewaterwise.com.

"Dining establishment" means a catering business or a restaurant, hotel, café, cafeteria or other public place where food or drink is sold, served or offered for sale.

"Low income individual" means any individual that is eligible for participation in the division's public benefit charge low-income program.

"Potable water" shall be defined as set forth in section 13.38.020 of this code.

"Process water" means water used to manufacture, alter, convert, clean, heat or cool a product, or the equipment used for such purpose; water used for plant and equipment washing and for transporting the raw materials and products; and water used to grow and maintain trees and plants for sale or installation. Process water does not include water used in the preparation of food or drinks.

"Recycled water" shall be defined as set forth in section 13.38.020 of this code.

SECTION 4. Section 13.36.050 of the Glendale Municipal Code, 1995, regarding the scope of the water conservation provisions, is hereby amended to read as follows:

13.36.050 Scope.

The provisions of this chapter shall apply to all water customers and property served water by the department wherever situated, and shall also apply to all property and facilities owned, maintained, operated or under the jurisdiction of the various officers, boards, departments or agencies of the city.

SECTION 5. Section 13.36.060 of the Glendale Municipal Code, 1995, regarding the "no water waste" policy, is hereby amended to read as follows:

13.36.060 No water waste policy.

There is in effect at all times in the city a "no water waste" policy as set forth herein. Except as otherwise provided in this chapter, at no time shall any person make, cause, use, or permit the use of water from the department for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this chapter or in an amount in excess of that use permitted by the conservation phase then in effect pursuant to action taken by the city council in accordance with the provisions of this chapter.

A. Water Use Restrictions.

1. Hose washing. There shall be no hose washing of sidewalks, walkways, driveways, or parking areas, tennis courts, patios, porches or other paved areas, except that flammable or other dangerous substances may be disposed of by direct hose flushing by public safety officers for the benefit of public health and safety.

2. Overspray or runoff. There shall be no use of water for any purpose which results in overspray, runoff in flooding or runoff onto hardscape, driveways, streets, adjacent lands or into gutters.

3. Decorative fountains. No water shall be used to clean, fill or maintain levels in decorative fountains or similar structures unless such water is part of a recirculation system or unless such water is reecycled water, which must be clearly posted.

4. Leaks. No water customer of the department shall permit water to leak from any facility on his premises; failure to effect the repair of any leak, within seventy-two hours after the customer is notified of or discovers the leak, shall subject said customer to all penalties provided herein for waste of water.

5. Irrigation times.

a. No landscaped or vegetated areas, whether or not such areas include California-friendly plantings and including, but not limited to grass, lawn, groundcover, shrubbery, annual and perennial plants, crops, and trees, including in golf courses, cemeteries, parks and school areas, shall be watered, sprinkled, or irrigated between the hours of nine a.m. and six p.m., except for very short periods of time for the express purpose of adjusting or repairing an irrigation system. Irrigation using recycled water is exempt from this limitation provided such usage is permitted by law and is clearly posted.

b. No landscaped or vegetated areas, whether or not such areas include California-friendly plantings, shall be watered, sprinkled or irrigated on days when the wind is blowing causing overspray and on days when it is raining.

6. Vehicle washing. The washing of commercial and noncommercial privately owned automobiles, trucks, trailers, motor homes, boats, busses, airplanes and other types of vehicles is restricted to use of a hand-held bucket and quick rinses using a hose with a positive shutoff nozzle. Exceptions: the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; or where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.

7. Commercial car wash and laundry systems. The installation of a non-recirculating water system for any new commercial conveyor car wash system or new commercial laundry system is prohibited. Effective July 1, 2014, no commercial conveyor car wash may use a non-recirculating water system in its operation.

8. Water for construction purposes. Water for construction purposes including but not limited to debrushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall only be used in an efficient manner which will not result in runoff. Recycled water shall be used whenever it is an available and feasible alternative source of water.

9. Fire hydrants. Unless a permit has been obtained in accordance with section 13.04.080 of this code, the use of potable water from fire hydrants shall be limited to firefighting, related activities or other activities immediately necessary to maintain the health, safety and welfare of the residents of the city.

10. Dining establishments.

a. No dining establishment shall serve drinking water to any customer unless expressly requested by the customer.

b. Effective January 1, 2010, dining establishments are prohibited from using non water-conserving pre-rinse dishwashing spray valves.

11. Conservation notices. Dining establishments, hotels, motels and other commercial lodging establishments are required to post notices informing their guests about the city's "no water waste policy" and urging guests to conserve water.

12. Laundry service. Hotels, motels and other commercial lodging establishments are required to post notices giving their guests the option of not laundering towels and linens daily.

13. Single pass cooling systems. The installation of a single pass cooling system is prohibited in any building requesting new or expanded water service from the department.

14. Process water. Process water shall be recycled to the greatest extent possible.

B. The water use restrictions set forth in paragraph A of this section shall be in effect at all times, except that in the event that the city council declares the need for conservation as set forth in section 13.36.080, the water use restrictions shall be amended and the use of water shall be further restricted as required by the phase of conservation then in effect, as described in section 13.36.070.

SECTION 6. Section 13.36.070 of the Glendale Municipal Code, 1995, regarding phases of conservation, is hereby amended to read as follows:

13.36.070 Phases.

A. Phase I.

1. Water Use Restrictions.

a. No use of water may be made contrary to the provisions of the no water waste policy set forth in Sections 13.36.060(A)(1) through (14).

/ / /

B. Phase II.

1. Water Use Restrictions.

a. No use of water may be made contrary to the no water waste policy set forth in Sections 13.36.060(A)(1) through(14).

b. During conservation phase II, the following additional water use restrictions shall also be in effect:

i. Decorative fountains. The use of potable water to clean, fill or maintain levels in decorative exterior fountains or similar exterior structures is prohibited.

ii. Lakes or ponds. The use of potable water to fill decorative lakes or ponds is prohibited.

iii. Landscape irrigation days and durations. The use of potable water to irrigate any landscaped or vegetated areas shall only be permitted on Tuesdays, Thursdays and Saturdays, for no more than ten minutes per watering station per permitted irrigation day. Irrigation by a drip irrigation system or with low-flow sprinkler heads that require additional spray time are exempt from the time limitation, but such irrigation shall be limited to the permitted irrigation days and times of day. The restriction on landscape irrigation days and durations shall not apply to: (a) an area designated by the fire chief or city engineer as an area that must be watered for fire prevention or for erosion control; (b) commercial nurseries and commercial growers that water to the extent necessary to sustain plants, trees, shrubs, crops or other vegetation intended for lawful commercial sale and (c) irrigation with recycled water in a manner that complies with all applicable laws.

iv. Landscaping projects. Except for California-friendly landscaping, there shall be a deferral of all new or retrofit landscaping or turf planting requiring potable water service for irrigation. However, the deferral shall not be required for any new or retrofit landscaping plans that have been approved in accordance with chapter 30.47 of the code prior to the date of adoption of a resolution implementing conservation phase II, III, IV or V, as applicable.

v. New and retrofit city and agency landscapes. Except for California-friendly landscaping, there shall be a deferral of all new and retrofit landscape and turf planting which requires potable water service for irrigation, on any property owned, controlled or maintained by the city or the redevelopment agency. However, the deferral shall not be required for any new or retrofit landscaping plans that have been approved in accordance with chapter 30.47 of the code prior to the date of adoption of a resolution implementing conservation phase II, III, IV or V, as applicable.

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C. Phase III.

1. Water Use Restrictions.

a. Except as further restricted or as amended by this subsection C, no use of water may be made contrary to the provisions of the no water waste policy set forth in Sections 13.36.060(A)(1) through (14) and conservation phase II as set forth in subsection B of this section.

b. During conservation phase III, the following additional water use restrictions shall also be in effect:

i. Decorative fountains. The use of potable water to clean, fill or maintain levels in decorative fountains or similar structures, whether such fountains or structures are on the interior or exterior of a site, is prohibited.

ii. Landscape irrigation days and durations. The use of potable water to irrigate any landscaped or vegetated areas shall only be permitted on Tuesdays and Saturdays, for no more than ten minutes per watering station per permitted irrigation day. Irrigation by a drip irrigation system or with low-flow sprinkler heads that require additional spray time are exempt from the time limitation, but such irrigation shall be limited to the permitted irrigation days and times of day. The restriction on landscape irrigation days and durations shall not apply to: (a) an area designated by the fire chief or city engineer as an area that must be watered for fire prevention or for erosion control; (b) commercial nurseries and commercial growers that water to the extent necessary to sustain plants, trees, shrubs, crops or other vegetation intended for lawful commercial sale and (c) irrigation with recycled water in a manner that complies with all applicable laws.

D. Phase IV.

1. Water Use Restrictions.

a. Except as further restricted or as amended by this subsection D, no use of water may be made contrary to the provisions of Sections 13.36.060(A)(1)through (14) and conservation phases II and III as set forth in Subsections (B) and (C) of this section.

b. During conservation phase IV, the following additional water use restriction shall also be in effect:

i. Landscape irrigation days and durations. The use of potable water to irrigate any landscaped or vegetated areas shall only be permitted on Saturdays, for no more than fifteen minutes per watering station. Irrigation by a drip irrigation system or with low-flow sprinkler heads that require additional spray time are exempt from the time limitation, but such irrigation shall be limited to the permitted irrigation days and times of day. The restriction on landscape irrigation days and durations shall not apply to: (a) an area designated by the fire chief or city engineer as an area that must be watered for fire prevention or for erosion control; (b)

commercial nurseries and commercial growers that water to the extent necessary to sustain plants, trees, shrubs, crops or other vegetation intended for lawful commercial sale and (c) irrigation with recycled water in a manner that complies with all applicable laws.

E. Phase V.

1. Water Use Restrictions.

a. Except as further restricted or as amended by this subsection E, nouse of water may be made contrary to the provisions of the no water waste policy set forth in Sections 13.36.060(A)(1) through (14) and conservation phases II, III, and IV as set forth in subsections (B),(C) and (D) of this section.

b. During conservation phase V, the following additional water use restriction shall also be in effect:

i. Landscape irrigation days and durations. The use of potable water to irrigate any landscaped or vegetated areas shall only be permitted on the first and third Saturdays of each month. Irrigation is limited to the deep irrigation of trees and shrubs for no more than twenty minutes per permitted watering station per irrigation day. Irrigation by a drip irrigation system or with low-flow sprinkler heads that require additional spray time are exempt from the time limitation, but such irrigation shall be limited to the permitted irrigation days and times of day. The restriction on landscape irrigation days and durations shall not apply to: (a) an area designated by the fire chief or city engineer as an area that must be watered for fire prevention or for erosion control; (b) commercial nurseries and commercial growers that water to the extent necessary to sustain plants, trees, shrubs, crops or other vegetation intended for lawful commercial sale and (c) irrigation with recycled water in a manner that complies with all applicable laws.

ii. Vehicle washing. There shall be no washing of any commercial or non commercial privately-owned automobile, truck, trailer, motor home, boat, bus, airplane or other types of vehicles, except by the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; or where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.

F. Exception. The prohibited use of water from the department provided for by Sections 13.36.060(A)(1) through (14) and subsections (A)(1), (B)(1), (C)(1), (D)(1) and (E)(1) of this section are not applicable to that use of water necessary to preserve the public health and safety or for essential government services such as police, fire, and other similar emergency services.

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SECTION 7. Section 13.36.080 of the Glendale Municipal Code, 1995, regarding phase implementation, is hereby amended to read as follows:

13.36.080 Phase implementation.

The department shall monitor and evaluate the projected supply and demand for water by its customers monthly, and shall recommend to the city manager the extent of the conservation required by the customers of the department in order for the department to prudently plan for and supply water to its customers. The city manager shall, in turn, notify and recommend to the city council the appropriate phase of water conservation to be implemented. Such phase implementation shall be made by council resolution. Any such resolution shall such findings or other determinations as may be required to comply with the California Environmental Quality Act. Such phase implementation and the water use restrictions for the declared conservation phase shall become operable immediately upon the effective date of the resolution of the council and shall be published once in a daily newspaper of general circulation. Each new customer of the department shall be provided with a copy of said prohibited use provisions at the time of application for service.

SECTION 8. Section 13.36.090 of the Glendale Municipal Code, 1995, regarding application of surplus reduction, is hereby deleted in its entirety.

SECTION 9. Section 13.36.100 of the Glendale Municipal Code, 1995, regarding penalties for failure to comply, is hereby renumbered as Section 13.36.090 and amended to read as follows:

13.36.090 Enforcement.

A. Penalties. It is unlawful for any customer of the department to fail to comply with any of the provisions of this chapter. The penalties set forth in this section shall be additional to those penalties provided in any other section of this code. The penalties for failure to comply with any of the provisions of this chapter shall be as follows:

1. For the first observed or reported violation of any of the provisions of subsections (A)(1) through (14) of Section 13.36.060 and subsection (A)(1), (B)(1), (C)(1), (D)(1) or (E)(1) of Section 13.36.070, in accordance with the applicable water conservation phase in effect at the time of the violation, the department shall issue a written courtesy notice of the fact of such violation to the customer and a written copy of Chapter 13.36 of this title.

2. Any subsequent violation of any of the provisions of subsections (A)(1) through (14) of Section 13.36.060 and subsection (A)(1), (B)(1), (C)(1), (D)(1) or (E)(1) of Section 13.36.070, in accordance with the applicable water conservation phase in effect at the time of the violation, shall be punishable as an infraction in accordance with chapter 1.20 of the code.

3. In addition to the penalties set forth in chapter 1.20 of the code, the city may pursue any available civil remedies and criminal penalties, including but not limited to seek a court order permitting the installation of a flow-restricting device and/ or disconnection of water service on the service of the customer at the premises at which the violation occurred or is

occurring, together with any and all costs incurred by the city as a result of the waste of water, including but not limited to attorneys fees, the costs of installation and removal of said flow restrictor and the cost of disconnection and restoration of service.

B. The general manager, or his or her designee, may enter into a written agreement to resolve any violation provided that such agreement is consistent with the purpose and intent of this chapter.

C. Reservation of Rights, The rights of the department hereunder shall be cumulative to any other rights of the department, including but not limited to its right to discontinue service.

SECTION 10. Section 13.36.110 of the Glendale Municipal Code, 1995, regarding compliance relief, is hereby deleted in its entirety.

SECTION 11. Section 13.36.120 of the Glendale Municipal Code, 1995, regarding enforcement, is hereby renumbered 13.36.100 and amended to read as follows:

13.36.100 Reports.

A. All commercial and industrial customers of the department using twenty-five thousand billing units per year or more shall submit a water conservation plan to the city manager's office and the general manager. These users shall submit quarterly to the city manager's office and the general manager a report on the progress of their conservation plans.

B. All city departments shall submit to the city manager and the general manager an annual public report on their water conservation efforts. The reports are present the level of performance compared to their water conservation plans.

SECTION 12. A new Section 13.36.110 is hereby added to the Glendale Municipal Code, 1995, to read as follows:

13.36.110 Rules and regulations.

The general manager shall have the power to establish rules and regulations consistent with the provisions of this chapter 13.36 for the administration of the provisions of this chapter.

SECTION 13. Severability.

If any Section, subsection, clause, phrase, sentence or word of this Ordinance or the application thereof to any person or circumstance is for any reason held invalid, the validity of the remainder of the Ordinance or the application of such provision to other persons or circumstances shall not be affected thereby and shall not affect any other Section, subsection, clause, phrase, sentence or word of the Ordinance that can be given effect without the invalid Section, subsection, clause, phrase, sentence or word of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each Section, subsection, clause, phrase, sentence and word hereof,

irrespective of the fact that one or more Sections, subsections, clauses, phrases, sentences or words or the application hereof to any person or circumstance is held invalid.

Passed by the Council of the City of Glendale on the 30th day of June, 2009.

Mayor

ATTEST:

City Clerk

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS.
CITY OF GLENDALE)

I, ARDASHES KASSAKHIAN, City Clerk of the City of Glendale, certify that the foregoing Ordinance No. 5660 was passed by the Council of the City of Glendale, California, at a regular meeting held on the 30th day of June, 2009, and that the same was passed by the following vote:

Ayes: Drayman, Friedman, Najarian, Weaver, Quintero

Noes: None

Absent: None

City Clerk

APPROVED AS TO FORM

CHIEF ASSISTANT CITY ATTORNEY

DATED 7/1/09

FORM CM-36

CITY OF GLENDALE CALIFORNIA
REPORT TO CITY COUNCIL

June 23, 2009

AGENDA ITEM

Proposed Amendment of Chapter 13.36 of the Glendale Municipal Code, 1995 - Water Conservation

1. Ordinance for Introduction (Percentage Reduction in Water Allotments) – Option # 1
2. Ordinance for Introduction (Landscape Watering Restrictions) – Option # 2
3. Resolution Adopting a Water Conservation Appeal Fee
4. Motion Providing Direction to Staff

COUNCIL ACTION

Public Hearing [ ] Ordinance [ ] Consent Calendar [ ] Action Item [X] Report Only [ ]

Approved for June 23, 2009 calendar

ADMINISTRATIVE ACTION

Signature

Submitted
Glenn O. Steiger, General Manager .....

Prepared
Peter Kavounas, Assistant General Manager.....

Approved
James E. Starbird, City Manager.....

Reviewed
Scott H. Howard, City Attorney.....

RECOMMENDATION

GWP recommends that the City Council amend the city's water conservation ordinance (Chapter 13.36 of the Glendale Municipal Code) in order to bring the city's code in line with current Best Management Practices established by the California Urban Water Conservation Council.

8 D

SUMMARY

As a result of the need to modify the existing Water Conservation Ordinance, staff presents two options to Council for consideration. The options, developed with input gathered from the community, differ in the method by which conservation is achieved.

Option #1 requires all residents and businesses to reduce consumption based on the consumption of a previous year, or base year. This is the existing ordinance methodology, and the option proposes relatively minor modifications to the existing code.

Option #2 requires all outdoor landscaping irrigation to be limited to certain days of the week.

Council is respectfully requested to select one of these options or give staff alternate direction.

FISCAL IMPACT

Water conservation, if effective, will result in a loss of GWP revenue. Option #1 results in predictable revenue impact. Staff intends to propose a water shortage charge to make up for the lost revenue should this option be selected. If the charge is approved there would be no anticipated fiscal impact.

Option #2 may also result in reduction of the water utility's revenue, however the reduction is difficult to quantify at this time because of the number of unknowns and variables associated with outdoor watering. As discussed below, GWP intends to present an amended rate structure in 2010 to take into account future revenue impacts associated with conservation.

Failure to amend the water conservation ordinance would impact the city's ability to obtain state grants and loans. Under Assembly Bill 1420, compliance with current Best Management Practices for water conservation is a prerequisite to obtaining state grants and loans.

BACKGROUND

On April 28, 2009, staff presented to Council the need to modify existing Glendale Municipal Code (GMC) sections relating to water conservation. The report to Council described the need for modifications, water utility financial considerations, and current water supply conditions (Exhibit 1). Council gave its permission to staff to proceed with proposing changes, and directed staff to conduct a public outreach effort to gather comments from the community.

The City's existing Water Conservation Ordinance (Chapter 13.36 of the GMC) describes the city's approach to conservation in four sections:

1. No water waste provisions that are in effect at all times; and
2. Mandatory conservation provisions to be triggered as necessary. Mandatory conservation can be invoked in phases by requiring a percentage cutback from a prior year's use (also called "baseline year"); and
3. Penalty provisions in case of violations of either sections above; and
4. Appeal process to allow for customers to dispute a penalty assessment.

Based on the need for changes and input received during the public outreach, staff is presenting Council with options for moving forward. Council is respectfully requested to select one of the options, or give staff different direction.

Option #1	Option #2
No Water Waste Provision Changes Percent-Based Conservation Phases	No Water Waste Provision Changes Days-Of-Week Watering Limitation Phases

After an ordinance is adopted, staff will bring to Council recommendations for an appropriate phase of mandatory conservation for the year and a recommendation for a water shortage charge if Option #1 is selected.

Public Outreach

Staff held a series of meetings to gather input from the community. Public meetings were held at the Sparr Heights Community Center, the Edison-Pacific Center, and the Perkins Building. Additional meetings were held with the Board of Realtors and Chamber of Commerce, and a group of large/ business account customers. The meetings were advertised on GTV6. GWP also issued a press release with the meeting dates to all local media outlets and also posted meeting notices on the GWP and the City website. The Glendale News-Press posted the meetings on the front page of the newspaper. In addition, five thousand letters were mailed to randomly selected residential customers. Letters were also sent to all homeowners association groups in Glendale, including all of their board members. Attendance ranged from as few as 10 people to as many as 40.

During the meetings, attendees were presented information about the existing GMC and the need for amendments, current water supply conditions, and the existing rate structure of the water utility. A question and answer session gave the opportunity for residents to express their point of view and offer comments and suggestions. Some of the comments related to broader issues outside the immediate scope of the water conservation ordinance, and as such, need to be addressed separately. GWP staff committed to the public to relay these comments to City Council and thus these are presented below:

- Council should not approve any more development in the City of Glendale as development strains existing water supplies.
- City should consider expanding the Recycled Water system with consideration for cost.
- City should provide a Grey Water permitting process.
- City should look into desalination of sea water and capture of rainwater as alternate sources of supply.

In addition to the above comments, a number of comments were a consistent theme during all the meetings. These were considered and incorporated to the extent possible in the options that are presented for Council's consideration, and are:

- Some residents have been diligently conserving water starting prior to 2006 (the current baseline for Voluntary Conservation), and it is unfair to use 2006 as the baseline for mandatory conservation.
- Some residents have already been conserving a lot of water, and it is unfair to ask them to conserve more.
- If the selected mandatory conservation approach is based on percent reduction from a baseline, how is the baseline selected? What happens if circumstances have changed since the baseline?
- Given that water meters in the City are read bi-monthly, how would residents know what their use is and their progress toward a conservation goal?
- Some plumbing devices that conserve water should be made mandatory (specifically hot-water circulating pumps).

- City should give rebates for water conservation improvements.
- Car washing by individual residents should not be prohibited, even at higher stages of conservation.
- How can a landlord of an apartment building with a single master meter enforce water conservation on individual tenants?
- If a resident exceeds their conservation goal for a bi-monthly period they should be given credit for the additional savings.
- City should consider a water budget customized for each connection.
- Landscaping irrigation should be provided through separate water meters.
- Customers should be provided with information that allows comparison of their usage to the typical usage in their neighborhood.
- There should be no penalty if the water is necessary to comply with the City's Landscaping Ordinance.
- City should have tiered rates that make the big water users pay much more.

A summary of GWP's responses to the above questions is attached to this report as Exhibit B. In general, the comments received by the public revealed anxiety about the need to conserve water and about the fairness of the existing mandatory conservation approach. There was good discussion regarding the No Water Waste provisions of the GMC and the proposed changes were generally understood and accepted.

Prior to the community outreach effort, staff developed recommended changes to the existing mandatory conservation provisions of the GMC aimed at clarifying the percent-based phases of conservation (Option #1). In light of the public perception of this approach, a separate approach has been developed and is presented as an option for Council's consideration. The alternate approach is to simply limit the days of the week during which watering of landscaping is permitted (Option #2). The pros and cons of both approaches are summarized later in this report.

No Water Waste Provisions

Both options presented to Council contain identical modifications to the No Water Waste provisions of the Water Conservation Chapter in the GMC. These are:

1. Extending the hours during which irrigation of landscaping is prohibited to the time between 9:00 a.m. and 6:00 p.m. (current restriction is from 10:00 a.m. to 5:00 p.m.)
2. Adding a provision prohibiting the installation of non-recirculating water systems for new commercial car wash and laundry facilities; mandating that existing car wash facilities replace non-recirculating water systems by 2014
3. Prohibiting dining establishments from using non-water conserving pre-rinse spray valves
4. Requiring lodging establishments to post notices giving guests an option of not laundering towels and linens daily
5. Prohibiting the installation of single pass cooling systems

These are required for Glendale to comply with Best Management Practices described in the California Water Conservation Council MOU to which Glendale is a signatory. Compliance with the Best Management Practices is a pre-requisite for eligibility for state grants and loans. The above modifications to the "No Water Waste" policy did not elicit a strong reaction from the public and are recommended by staff.

Plumbing Fixtures Retrofit

In addition to the No Water Waste provisions and the Mandatory Conservation phases, staff originally proposed to make the retrofit of plumbing fixtures a condition for the sale of a property. This was the main focus of the discussion with the Board of Realtors. As a result of that meeting, staff is evaluating a number of alternatives to a local "retrofit on resale" program. Staff is also closely tracking proposed state legislation (Senate Bill 407 - Padilla) which may make plumbing retrofit upon resale or upon issuance of a construction permit a state-wide requirement. If state legislation mandating the retrofit of water-wasting plumbing fixtures is not adopted, then GWP may, in the future, present a proposed retrofit ordinance to the City Council for its consideration.

Mandatory Conservation Approach

As mentioned earlier in this report, two approaches to mandatory conservation phases have been developed and are presented for City Council's consideration. These are: A modification of existing approach, which uses percent target based on a baseline year (Option 1); and, days-of-the-week-watering limitation (Option 2). A brief description of each approach follows.

Option #1: Percent Based: Under this approach, once the need for mandatory conservation is identified, a phase is recommended, along with a relevant base year. Residents and businesses are required to reduce their use compared to that of the same period in the base year. A floor is established below which a customer does not have to conserve, thus allowing a basic apportionment of water to each connection. If conservation is not achieved, progressive penalties are assessed. An appeals process provides relief for those who believe there are extenuating circumstances and a change of target is warranted. As the need for mandatory conservation increases, the percentage reduction would increase up to a maximum of 50%. This is the City's existing approach, and currently, the City is in Phase I-Voluntary Conservation using 2006 as a base year.

Option #2: Days-of-the-Week Watering Limitation: Under this approach, once the need for mandatory conservation is identified, a phase is recommended. Those that use water for irrigation are permitted to do so only on certain days of the week. The initial stage limits watering to three prescribed days per week, and as the need for mandatory conservation increases, the allowed days of the week are reduced. Penalties for violation are assessed like any other code violation, and there is no need for an appeal process as enforcement is viewed like any other code compliance issue.

These approaches vary in their philosophy and impact to customers and the utility. To assist Council in understanding these further, the table below offers a comparison of the advantages and disadvantages of each.

Method	Pro	Con
Option #1: Percent-based w/ baseline	• Can achieve desired level of conservation (can be measured and enforced) • Can adjust to levels up to 50% reduction of demand • Does not require those using at or below 10 hcf per month to conserve further • Every customer shares in the effort to conserve • Matches MWD conservation approach	• Not as easy to explain to customers • Perceived unfair by those who have adopted a conservation ethic if use is above 10 hcf per month "floor" • Baseline is difficult for customers to accept • May affect some businesses • More complicated billing • Will create many appeals and lead to upset customers • Requires staffing-up to process appeals

Method	Pro	Con
Option #2: Days-of-the Week Watering Limitations	• Easy to understand • Easy on commercial & industrial customers • No impact on billing function of GWP • No appeals necessary-less staff work • Perceived as fair by those who are already making conservation efforts • Matches the Burbank and Pasadena approach (although these Cities also implemented a different rate structure at the same time)	• Uncertain level of conservation • Maximum possible conservation is less than 20% and may be insufficient if drought worsens • Cannot be enforced broadly throughout the City (can be enforced case-by-case) • More likely to lead to penalties (shared by all) especially in higher stages of mandatory conservation • Conservation burden is placed mostly on single family residences and large irrigation (non-recycled water) accounts • Creates challenge for professional gardeners

Ultimately, the City's goal is to have a policy that will effectively lead to reduction in demand when necessary. At this time, the regional shortage is estimated at 10%. Either approach will get the City to come close to the desired 10% reduction.

If Council selects the percent-based approach, staff's recommendation will be to invoke Phase II (10% mandatory conservation) as soon as the ordinance goes into effect. If the Days-of-the Week Water Limitations approach is selected, staff's recommendation will be to invoke Phase II (limit watering to three days per week). Staff's recommendation will be presented to City Council as a separate agenda item after the Ordinance is adopted.

Future Option -- Water Budgeting: GWP is moving steadily toward installation of an advanced metering infrastructure (AMI) which, in addition to enhanced customer service, will also lead to increased ability to conserve water. The advent of AMI will enable GWP to develop individual water budgets tailored to customers -- an approach that is gaining popularity in the industry because it is perceived to be more equitable than current approaches. This approach is consistent with the contemplated changes to the water rate structure in 2010.

Financial Considerations

1. Penalties

Both water conservation ordinance options would include penalties to the customer for violation of the water conservation requirements. Option #1 includes penalties (unchanged from current code provisions) for customers that exceed the specified target. The penalties are progressive, and assess the amount by which a customer exceeds the target at 2x (twice the rate) for a first violation, and 4x (quadruple the rate) for a second violation. Option # 2 would treat water waste as a municipal code violation. Violators would be subject to code enforcement which could result in criminal penalties ranging from $100 to $1,000 (and/or 6 months' jail time), installation of a flow restrictor, or water shut off for repeat offenders.

2. Appeal Fee

The City's existing water conservation ordinance provides an appeal process to afford customers an opportunity to dispute penalties. The bases for appeals can include, among other provisions, water conservation practices that were established before the base period, addition of members to the

household, and changes in vacancy factors in multi-family units. Option #1 would retain the appeal process with adjustments including:

- Requiring a finding that the customer has achieved maximum practical reduction in their water use; and
- A $50 appeal fee to recover a portion of staff expense to process appeals. The fee would be refundable if the appeal is successful and would not be required of low-income customers (*e.g.* those meeting the criteria for GWP public benefit charge low-income programs).

As mentioned earlier, Option #2 does not include a specific water conservation appeals process because enforcement would be handled through existing code enforcement process.

3. Revenue Reduction Due to Decreased Water Sales

Reduction in sales impacts the water utility's revenue, and it is prudent to establish a mechanism to recover the anticipated loss of revenue. This practice is received well by rating agencies that evaluate the financial stability of businesses.

The percent-based option (Option #1) allows staff to develop an estimate of lost revenue and propose a water shortage charge to recover and maintain a revenue-neutral position for the utility. If Council selects this approach staff would present a recommendation for an appropriate charge for each stage of conservation. This charge would be applied to Tier 2 sales, placing the burden on those that use greater volumes of water.

The water savings related to days-of-week watering limitations (Option #2) are harder to quantify and the impact to the utility's revenue is less certain. As such staff would recommend moving forward without a water shortage charge. As presented to Council in 2007, GWP plans to revisit water rates in 2010. At that time a new rate structure will be presented incorporating individual water-budgets and an automatic adjustment for conservation. Revenue lost from any shortage of water sales under Option #2 during 2009-2010 would not be recaptured.

4. MWD Penalties for Excess Water Consumption

The MWD Water Shortage Allocation Plan provides financial penalties in case member agencies exceed their allotment. These penalties range from approximately $1,600/ac-ft to $3,200/ac-ft, above the regular price of $701/ac-ft. For Glendale these penalties, if incurred, would be paid through the existing Adjustment Charge as explained in the April 28, 2009 Council Report. The charge is assessed on all water sales in the City, and thus, is shared by all customers. As mentioned in the table above, Option #1 is more likely to achieve the desired conservation outcome thus avoiding penalties.

Coordination with Other City Departments

These options have been reviewed by the Neighborhood Services, Planning, Parks & Recreation Departments and the Building & Safety Department in order to reach a common understanding regarding enforcement and consistency with other city ordinances.

Environmental Review

The adoption of the proposed amendments to Chapter 13.36 of the Glendale Municipal Code is categorically exempt from review under the California Environmental Quality Act (CEQA) under the State CEQA Guidelines Section 15061(b)(3). The proposed conservation ordinance will conserve and protect existing water supplies and will not result in any environmental impacts.

The proposed ordinance is also exempt under Section 15304 regarding minor public or private alterations in the condition of land, water and/ or vegetation. Additionally, the proposed ordinance is exempt under CEQA Guidelines Section 15307 relating to actions by regulatory agencies for the protection of natural resources.

Recommendations

Option 1: Introduce the attached Ordinance amending existing Glendale Municipal Code Chapter 13.36 -Water Conservation. Amendments include changes to the No Water Waste provisions, and modifications of the percent-based targets to achieve various conservation stages. The ordinance also amends the Penalties and Appeals portions of the Section. In the event that Council selects this option, Council would need to consider the resolution establishing a fee for water conservation appeals.

Option 2: Introduce the attached Ordinance amending existing Glendale Municipal Code Chapter 13.36 - Water Conservation. Amendments include changes to the No Water Waste provisions, and replace the percent-based targets with limited days-of-the-week watering provisions to achieve various conservation stages. The ordinance also amends the Penalties and eliminates the Appeals portions of the existing ordinance.

Option 3: Provide alternate direction to staff.

EXHIBIT(S)

Exhibit A: April 28, 2009 Council Report
Exhibit B: Questions from the Public and GWP Responses

ORDINANCE NO. 5854

AN ORDINANCE OF THE COUNCIL OF THE CITY OF GLENDALE AMENDING SECTIONS 13.36.040, 13.36.060 AND 13.36.090 OF CHAPTER 13.36 OF THE GLENDALE MUNICIPAL CODE, 1995, RELATING TO WATER CONSERVATION

WHEREAS, on April 1, 2015, Governor Jerry Brown issued an Executive Order B-20-15 ("Order"), thereby ordering for the very first time in California's history, mandatory water use restrictions; and

WHEREAS, Governor Brown's Order directs the State Water Resources Control Board ("Water Board") to impose a 25% reduction on the state's local water supply agencies over the next year until February 2016; and

WHEREAS, in order to reach the 25% reduction goal, the Order sets forth various mandates inclusive of mandates relating to water saving through restrictions on water waste, and an increase in enforcement against water waste, which mandates the City of Glendale already has implemented through its Water Conservation Ordinance, Glendale Municipal Code, 1995 ("GMC") Chapter 13.36; and

WHEREAS, on April 18, 2015, the Water Board issued draft regulations which contain updates to the Water Board's regulations which were adopted in July 2014 and which are also implemented through the City's Water Conservation Ordinance; and

WHEREAS, the April 18, 2015 Water Board regulations update includes prohibitions on watering landscaping for 48 hours after measurable precipitation, on watering ornamental turf on public street medians, irrigation with potable water outside of newly constructed homes and buildings that is not delivered by drip or micro-spray systems, and limiting outdoor irrigation of ornamental landscapes or turf with potable water to no more than two days per week, as well as additional reporting requirements on conservation efforts and enforcement efforts; and

WHEREAS, in order to implement all of the mandates of the Water Board regulations, the City needs to amend its Water Conservation Ordinance, Section 13.36.060, to add a prohibition on watering landscaping for 48 hours after rain to the existing prohibition of watering landscaping during rain; and

WHEREAS, Section 13.36.090 should also be amended to allow the City the flexibility and ability to enforce the Water Conservation mandates through the City's Administrative Citation process.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF GLENDALE:

SECTION 1. Section 13.36.060 of the Glendale Municipal Code, 1995 ("Glendale Municipal Code"), is hereby amended to read as follows:

13.36.040 Definitions.

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The following words and phrases, whenever used in this chapter, shall be construed as defined in this section unless from the context a different meaning is intended or unless a different meaning is specifically defined within individual sections of this chapter:

"California-friendly plantings" or "California-friendly landscaping" means those landscape plantings, including, but not limited to, trees, shrubs, perennials, groundcovers, ornamental grasses and California-native plants, that require low water use for maintenance and that are included in the Metropolitan Water District's California Friendly Garden Guide catalogue, available at http://www.bewaterwise.com.

"Dining establishment" means a catering business or a restaurant, hotel, cafe, cafeteria or other public place where food or drink is sold, served or offered for sale.

"Low income individual" means any individual that is eligible for participation in the division's public benefit charge low-income program.

"Potable water" shall be defined as set forth in Section 13.28.020 of this code.

"Process water" means water used to manufacture, alter, convert, clean, heat or cool a product, or the equipment used for such purpose; water used for plant and equipment washing and for transporting the raw materials and products; and water used to grow and maintain trees and plants for sale or installation. Process water does not include water used in the preparation of food or drinks.

"Recycled water" shall be defined as set forth in Section 13.38.020 of this code. (Ord. No. 5660, § 3, 6-30-2009; Ord. 5112 § 63, 1996; prior code § 9-154)

SECTION 2. Section 13.36.060 of the Glendale Municipal Code, 1995 ("Glendale Municipal Code"), is hereby amended to read as follows:

13.36.060 No water waste policy.

There is in effect at all times in the city a "no water waste" policy as set forth herein. Except as otherwise provided in this chapter, at no time shall any person make, cause, use, or permit the use of water from the department for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this chapter or in an amount in excess of that use permitted by the conservation phase then in effect pursuant to action taken by the city council in accordance with the provisions of this chapter.

A. Water Use Restrictions.

1. Hose Washing. Potable water shall not be used for hose washing of sidewalks, walkways, driveways, or parking areas, tennis courts, patios, porches or other paved areas, except (i) where necessary to alleviate safety or sanitary hazards, and then only by use of a handheld bucket or similar container or a hand-held hose equipped with a water shut-off device; (ii) when using a low-volume high-pressure cleaning machine or (iii) that flammable or other dangerous substances may be disposed of by direct hose flushing by public safety officers for the benefit of public health and safety.

2. Overspray or Runoff. There shall be no use of water for any purpose which results in overspray, runoff in flooding or runoff onto hardscape, driveways, streets, adjacent lands or into gutters.

3. Decorative Fountains. Except for water play features in city parks, no water shall be used to clean, fill or maintain levels in decorative fountains or similar structures unless such water is part of a recirculation system or unless such water is recycled water, which must be clearly posted.

4. Leaks. No water customer of the department shall permit water to leak from any facility on his premises; failure to effect the repair of any leak, within seventy-two (72) hours after the customer is notified of or discovers the leak, shall subject said customer to all penalties provided herein for waste of water.

5. Irrigation Times.

a. No landscaped or vegetated areas, whether or not such areas include California-friendly plantings and including, but not limited to, grass, lawn, groundcover, shrubbery, annual and perennial plants, crops, and trees, including in golf courses, cemeteries, parks and school areas, shall be watered, sprinkled, or irrigated between the hours of nine a.m. and six p.m., except for very short periods of time for the express purpose of adjusting or repairing an irrigation system. Irrigation using recycled water is exempt from this limitation provided such usage is permitted by law and is clearly posted.

b. No landscaped or vegetated areas, whether or not such areas include California-friendly plantings, shall be watered, sprinkled or irrigated on days when the wind is blowing causing overspray and on days when it is raining, or within forty eight (48) hours after it rains.

6. Vehicle Washing. The washing of commercial and noncommercial privately owned automobiles, trucks, trailers, motor homes, boats, busses, airplanes and other types of vehicles is restricted to use of a hand-held bucket and quick rinses using a hose with a positive shutoff nozzle. Exceptions: the use of wash water which is on the immediate premises of a commercial car wash or commercial service station; or where health, safety and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles which transport food and perishables.

7. Commercial Car Wash and Laundry Systems. The installation of a nonrecirculating water system for any new commercial conveyor car wash system or new commercial laundry system is prohibited. Effective July 1, 2014, no commercial conveyor car wash may use a nonrecirculating water system in its operation.

8. Water for Construction Purposes. Water for construction purposes including, but not limited to, debrushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall only be used in an efficient manner which will not result in runoff. Recycled water shall be used whenever it is an available and feasible alternative source of water.

9. Fire Hydrants. Unless a permit has been obtained in accordance with Section 13.04.080 of this code, the use of potable water from fire hydrants shall be limited to firefighting, related activities or other activities immediately necessary to maintain the health, safety and welfare of the residents of the city.

10. Dining Establishments.

a. No dining establishment shall serve drinking water to any customer unless expressly requested by the customer.

b. Effective January 1, 2010, dining establishments are prohibited from using nonwater-conserving pre-rinse dishwashing spray valves.

11. Conservation Notices. Dining establishments, hotels, motels and other commercial lodging establishments are required to post notices informing their guests about the city's "no water waste policy" and urging guests to conserve water.

12. Laundry Service. Hotels, motels and other commercial lodging establishments are required to post notices giving their guests the option of not laundering towels and linens daily.

13. Single Pass Cooling Systems. The installation of a single pass cooling system is prohibited in any building requesting new or expanded water service from the department.

14. Process Water. Process water shall be recycled to the greatest extent possible.

B. The water use restrictions set forth in paragraph (A) of this section shall be in effect at all times, except that in the event that the city council declares the need for conservation as set forth in Section 13.36.080, the water use restrictions shall be amended and the use of water shall be further restricted as required by the phase of conservation then in effect, as described in Section 13.36.070 (Ord. No. 5675, § 1, 10-27-2009; Ord. No. 5660, § 5, 6-30-2009; Ord. 5112 § 64, 1996)

SECTION 3. Section 13.36.090 of the Glendale Municipal Code, 1995 ("Glendale Municipal Code"), is hereby amended to read as follows:

13.36.090 Enforcement.

A. Penalties. It is unlawful for any customer of the department to fail to comply with any of the provisions of this chapter. The penalties set forth in this section shall be additional to those penalties provided in any other section of this code. The penalties for failure to comply with any of the provisions of this chapter shall be as follows:

1. For the first observed or reported violation of any of the provisions of subsection (A)(1) through (14) of Section 13.36.060and subsections (A)(1), (B)(1), (C)(1), (D)(1) or (E)(1) of Section 13.36.070, in accordance with the applicable water

conservation phase in effect at the time of the violation, the department shall issue a written warning notice of the fact of such violation to the customer and a written copy of Chapter 13.36 of this title.

2. Any subsequent violation of any of the provisions of subsections (A)(1) through (14) of Section 13.36.060 and subsections (A)(1), (B)(1), (C)(1), (D)(1) or (E)(1) of Section 13.36.070, in accordance with the applicable water conservation phase in effect at the time of the violation, shall be punishable as an infraction in accordance with Chapter 1.20 and Chapter 1.24 of the code.

3. In addition to the penalties set forth in Chapter 1.20 and Chapter 1.24 of the code, the city may pursue any available civil remedies and criminal penalties, including, but not limited to, seek a court order permitting the installation of a flow-restricting device and/or disconnection of water service on the service of the customer at the premises at which the violation occurred or is occurring, together with any and all costs incurred by the city as a result of the waste of water, including, but not limited to, attorneys' fees, the costs of installation and removal of said flow restrictor and the cost of disconnection and restoration of service.

B. The general manager, or his or her designee, may enter into a written agreement to resolve any violation provided that such agreement is consistent with the purpose and intent of this chapter.

C. Reservation of Rights. The rights of the department hereunder shall be cumulative to any other rights of the department, including, but not limited to, its right to discontinue service. (Ord. No. 5660, §§ 8, 9, 6-30-2009; Ord. 5112 § 67, 1996: prior code § 9-159)

SECTION 4. Severability. This Ordinance is adopted under the authority of the Charter of the city of Glendale and State law. If any section, subsection, clause or phrase is declared invalid or otherwise void by a court of competent jurisdiction, it shall not affect any remaining provision hereof. In this regard the city council finds and declares that it would have adopted this measure notwithstanding any partial invalidity hereof.

SECTION 5. Effective Date. This Ordinance shall take effect and be in force thirty (30) days after the date of its passage.

Passed by the Council of the City of Glendale on the 5th day of May, 2015.

Mayor

ATTEST:

City Clerk

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS.
CITY OF GLENDALE)

I, Ardashes Kassakhian, City Clerk of the city of Glendale, certify that the foregoing Ordinance No. 5854 was passed by a majority vote of the Council of the city of Glendale, California, at a regular meeting held on the 5th day of May, 2015, and that the same was passed by the followed vote.

Ayes: Devine, Friedman, Gharpetian, Sinanyan, Najarian

Noes: None

Absent: None

Abstain: None

City Clerk

APPROVED AS TO FORM

Senior Assistant City Attorney

Date 5/4/15

APPENDIX E:

Submittal 2020 UWMP Tables

Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
Add additional rows as needed			
CA1910043	Glendale Water & Power	36,513	23,737
	TOTAL	36,513	23,737
**** Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*			

Submittal Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* (select from drop down list)
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
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)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	

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

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045*(opt)*
	202,831	204,859	206,908	208,977	211,067	213,177

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable[1] Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume[2]
Add additional rows as needed			
Single Family		Drinking Water	8,470
Multi-Family		Drinking Water	8,912
Commercial		Drinking Water	2,622
Industrial		Drinking Water	452
Other Potable	Municipal	Drinking Water	460
Landscape	Irrigation	Drinking Water	381
Other Potable	Public Authority	Drinking Water	74
		TOTAL	21,372

[1] Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.
[2] Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Units of Measurement - AF

Submittal Table 4-2 Retail: Use for Potable and Non-Potable[1] Water - Projected						
Use Type	Additional Description (as needed)	Projected Water Use[2] *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 WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family		8,555	8,640	8,727	8,814	8,902
Multi-Family		9,001	9,091	9,182	9,274	9,367
Commercial		2,648	2,675	2,701	2,728	2,756
Industrial		457	461	466	470	475

Other Potable	Municipal	465	469	474	479	483
Landscape	Irrigation	385	389	393	396	400
Other Potable	Public Authority	75	75	76	77	78
	TOTAL	21,585	21,801	22,019	22,239	22,461

[1] Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.
[2] Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: According to chapter 3, a population growth rate of .2% was applied. So, I am increasing the usage by the same percentage.

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)

	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable *From Tables 4-1R and 4-2 R*	21,372	21,585	21,801	22,019	22,239	22,461
Recycled Water Demand[1] *From Table 6-4*	1,811	1,912	4,630	4,630	4,630	4,630
Optional Deduction of Recycled Water Put Into Long-Term Storage[2]						
TOTAL WATER USE	23,184	23,496	26,431	26,649	26,869	27,091

[1]Recycled water demand fields will be blank until Table 6-4 is complete
*[2] Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier **may** deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.*

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss [1,2]
01/2015	667.131
01/2016	301.247
01/2017	1010.237
01/2018	890.262
01/2019	328.618
[1] Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet. *[2] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES: Units of Measurement - AF/Y	

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	No
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.	
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	No

Submittal Table 5-1 Baselines and Targets Summary From SB X7-7 Verification Form
Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	*2000*	*2009*	*144*	*137*
5 Year	*2004*	*2008*	*144*	

All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)
NOTES: Required gpcd of 137 based on 5% reduction of 5-year baseline

Submittal Table 5-2: 2020 Compliance From SB X7-7 2020 Compliance Form *Retail Supplier or Regional Alliance Only*				
2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* *(Adjusted if applicable)*		
104	*0*	*104*	*137*	*Y*
**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*				

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
☐	All or part of the groundwater described below is desalinated.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
Add additional rows as needed						
Alluvial Basin	San Fernando Basin	6771.48	7366.72	6801.15	7678.44	7485.68
Alluvial Basin	Verdugo Basin(Wells 3, 4, 6 and Foothill)	859.89	932.74	855.29	805.84	774.68
	TOTAL	7,631	8,299	7,656	8,484	8,260
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*						

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
100%	Percentage of 2020 service area covered by wastewater collection system *(optional)*					
100%	Percentage of 2020 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Glendale Dept of Public Works	Metered	6,024	LA Sanitation	Los Angeles-Glendale Water Reclamation Plant	Yes	No
Total Wastewater Collected from Service Area in 2020:		6,024				
**** Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

☐ **No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)* [2]	Method of Disposal ***Drop down list***	Does This Plant Treat Wastewater Generated Outside the Service Area? ***Drop down list***	Treatment Level ***Drop down list***	2020 volumes [1]				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
LAGWRP	NPDES No. CA0053953	LA River Latitude: 34'08'25 N Longitude: 118'17'24W		River or creek outfall	No	Tertiary	14,983	10,059	1,811	2,805	TBD
						Total	14,983	10,059	1,811	2,805	0

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.
[2] If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

NOTES: Units of Measurement - AF; TBD - River study is on-going

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

☐ Recycled water is not used and is not planned for use within the service area of the supplier.
The supplier will not complete the table below.

Name of Supplier Producing (Treating) the Recycled Water:	Glendale (1358.25 AF) and the City of Los Angeles (452.75 AF)
Name of Supplier Operating the Recycled Water Distribution System:	Glendale (1358.25 AF) and the City of Los Angeles (452.75 AF)
Supplemental Water Added in 2020 (volume) *Include units*	0
Source of 2020 Supplemental Water	N/A

Beneficial Use Type *Insert additional rows if needed.*	**Potential** Beneficial Uses of Recycled Water (Describe)	Amount of **Potential** Uses of Recycled Water (Quantity) *Include volume units* [1]	General Description of 2020 Uses	Level of Treatment *Drop down list*	2020 [1]	2025 [1]	2030 [1]	2035 [1]	2040 [1]	2045 [1] (opt)
Agricultural irrigation										
Landscape irrigation (exc golf courses)	Camino San Rafael/Glenoaks Median	379	No additional info	Tertiary	289	379	379	379	379	379
Golf course irrigation	Irrigation for Chevy Chase Golf Course	477	No additional info	Tertiary	407	407	477	477	477	477
Commercial use	Grandview Direct Potable Reuse	3,619	No additional info	Tertiary	719	719	3,619	3,619	3,619	3,619
Industrial use	Cooling towers for Power Plant	251	No additional info	Tertiary	241	251	0	0	0	
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)										
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)	Dust Control/Soil Compaction/Street Cleaning	155			155	155	155	155	155	155
				Total:	1,811	1,912	4,630	4,630	4,630	4,630
				2020 Internal Reuse						

[1] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Units of Measurement - AF/Y;
Current Usage - [2020] Current Use consists of all recycled water use currently being used within the City. It is made up of multiple accounts.
Potential/Planned Use Landscape consists of: Camino San Rafael (80 AF/Y) beginning 2026 + Glenoaks Median (10AF/Y) beginning 2027; Golf Course Irrigation consists of: CC Golf Course (70AF/Y) beginning 2028; Commercial consists of: Grandview DPR (2900AF/Y) beginning 2030; Industrial Use consists of: Grayson Power Plant Cooling Towers (10 AF/Y).
THE TOTAL VALUES IN COLUMNS 2025-2040 CONSISTS OF CURRENT + POTENTIAL/PLANNED (AS DESCRIBED ABOVE)

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

☐ Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.

Beneficial Use Type	2015 Projection for 2020 [1]	2020 Actual Use[1]
Insert additional rows as needed.		
Agricultural irrigation		
Landscape irrigation (exc golf courses)	1,429	289
Golf course irrigation		407
Commercial use	17	719
Industrial use		241
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)	216	155
Total	1,662	1,811

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use

☐ Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.

Provide page location of narrative in UWMP

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *

Add additional rows as needed			
Camino San Rafael		2026	80
Glenoaks Median		2027	10
Chevy Chase Golf Course		2028	70
Grandview Direct Potable Reuse		2030	2,900
Cooling Tower for Grayson Power Plant		2025	10
		Total	3,070
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES: This Table summarizes the projects mentioned in Table 6-4R. Values are in AF.			

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Supplier* *This may be a range*
	Drop Down List (y/n)	*If Yes, Supplier Name*				
Add additional rows as needed						
Glorietta Well 7	No			2022	All Year Types	500-600
Foothill Well	No			2021	All Year Types	170-210
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)	Verdugo Basin	775	Drinking Water	3,856
Groundwater (not desalinated)	San Fernando Basin	7,486	Drinking Water	7,660
Purchased or Imported Water	MWD	15,476	Drinking Water	26,000
Recycled Water	LAGWRP	2,441	Recycled Water	7,492
	Total	26,178		45,008
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*				

Submittal Table 6-9 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	Projected Water Supply * Report To the Extent Practicable									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**2025**		**2030**		**2035**		**2040**		**2045** (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Recycled Water	LAGWRP	7,492	7,492	7,492	7,492	7,492	7,492	7,492	7,492	7,492	7,492
Purchased or Imported Water	MWD	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000
Groundwater (not desalinated)	San Fernando Basin	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660
Groundwater (not desalinated)	Verdugo Basin	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,856	3,856
	Total	45,008	45,008	45,008	45,008	45,008	45,008	45,008	45,008	45,008	45,008
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*											

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	**Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	**% of Average Supply**
Average Year	1922-2017	45,008	100%
Single-Dry Year	1977	45008	100%
Consecutive Dry Years 1st Year	1988	45008	100%
Consecutive Dry Years 2nd Year	1989	45008	100%
Consecutive Dry Years 3rd Year	1990	45008	100%
Consecutive Dry Years 4th Year	1991	45008	100%
Consecutive Dry Years 5th Year	1992	45008	100%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Single dry year and five year dry period are assumed to be 2021 and 2021-2025 repectively. The hydology of the single dry year and 5 consecutive dry years mimics the historic lows provided by MWD: 1977 and 1988 to 1992 respectively (see text). Available volume for 2020 = 26,000 AFY from MWD, 7,660 AF from San Fernando Basin, 3,856 AF from Verdugo Basin, and 7,492 AF of recycled water.

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 *(Opt)*
Supply totals *(autofill from Table 6-9)*	45,008	45,008	45,008	45,008	45,008
Demand totals *(autofill from Table 4-3)*	23,496	26,431	26,649	26,869	27,091
Difference	21,512	18,577	18,359	18,139	17,917

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	10,210	13,270	13,270	13,270	13,270
Demand totals*	25,708	25,671	25,499	25,620	25,692
Difference	(15,498)	(12,401)	(12,229)	(12,350)	(12,422)
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*					
NOTES: NOTES: Thia table is for local supply and demand only. Supply increases in 2030 due to projected increased use of reycled water, principally for direct potable reuse (DPR). Demand decreases through 2035 due to increased conservation, which more than offsets increased population use. Differnce for each year is made up by imported water.					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	10,340	12,046	13,270	13,270	13,270
	Demand totals	25,743	26,069	25,950	25,953	26,049
	Difference	(15,403)	(14,023)	(12,680)	(12,683)	(12,779)
Second year	Supply totals	10,681	12,292	13,270	13,270	13,270
	Demand totals	25,808	26,045	25,951	25,972	
	Difference	(15,127)	(13,753)	(12,681)	(12,702)	13,270
Third year	Supply totals	11,022	12,536	13,270	13,279	13,270
	Demand totals	25,873	26,021	25,952	25,991	
	Difference	(14,851)	(13,485)	(12,682)	(12,712)	13,270
Fourth year	Supply totals	11,363	12,781	13,270	13,279	13,270
	Demand totals	25,938	25,997	25,953	26,010	
	Difference	(14,575)	(13,216)	(12,683)	(12,731)	13,270
Fifth year	Supply totals	11,704	13,026	13,270	13,270	13,270
	Demand totals	26,003	25,973	25,954	26,029	
	Difference	(14,299)	(12,947)	(12,684)	(12,759)	13,270
Sixth year *(optional)*	Supply totals	12,046	13,270	13,270	13,270	13,270
	Demand totals	26,069	25,950	25,955	26,049	
	Difference	(14,023)	(12,680)	(12,685)	(12,779)	13,270

***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: This table is for local supply and demand only.

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	21,415
Total Supplies	26,178
Surplus/Shortfall w/o WSCP Action	4,763
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	4,763
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	21,458
Total Supplies	10,876
Surplus/Shortfall w/o WSCP Action	(10,582)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	6,290
WSCP - use reduction savings benefit	4,292
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	20%

2023	Total
Total Water Use	21,500
Total Supplies	10,876
Surplus/Shortfall w/o WSCP Action	(10,624)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	6,324
WSCP - use reduction savings benefit	4,300
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	20%

2024	Total
Total Water Use	21,543
Total Supplies	10,876
Surplus/Shortfall w/o WSCP Action	(10,667)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	6,358
WSCP - use reduction savings benefit	4,309
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	20%

2025	Total
Total Water Use	21,587
Total Supplies	10,876
Surplus/Shortfall w/o WSCP Action	(10,711)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	6,394
WSCP - use reduction savings benefit	4,317
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	20%

Submittal Table 8-2: Demand Reduction Actions				
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? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? ***For Retail Suppliers Only*** *Drop Down List*
Add additional rows as needed				
Phase I to V	Expand Public Information Campaign	0 to > 50%	Will provide tailored outreach information on use restrictions as needed.	No
Phase I	Improve Customer Billing	0%	Already in place.	No
Phase I	Increase Frequency of Meter Reading	0%	Full AMI implemented with hourly reads.	No
Phase I	Offer Water Use Surveys	<1%	Ongoing program.	No
Phase I	Provide Rebates on Plumbing Fixtures and Devices	<1%	Ongoing program.	No
Phase I	Provide Rebates for Landscape Irrigation Efficiency	>1%	Ongoing program.	No
Phase I	Provide Rebates for Turf Replacement	1-2%	Program varies depending on MWD rebates that are available.	No
None	Decrease Line Flushing	0%	Line flushing is essential to maintain water safety and is not wasting water.	No
Phase I	Reduce System Water Loss	1%	Ongoing program.	No

Phase III	Increase Water Waste Patrols	0%	Will implement as needed depending on shortage conditions.	Yes
None	Moratorium or Net Zero Demand Increase on New Connections	0%	Will not implement due to statewide affordable housing shortage and legislated ADU permitting.	No
Phase II to V	Implement or Modify Drought Rate Structure or Surcharge	0%	Will implement to maintain fixed cost recovery, not intended to increase conservation.	No
Phase I	Landscape - Restrict or prohibit runoff from landscape irrigation	0%	Already in place.	No
Phase II to V	Landscape - Limit landscape irrigation to specific times	0 to > 50%	Coupled with specific limitation on days.	Yes
Phase II to V	Landscape - Limit landscape irrigation to specific days	0 to > 50%	Coupled with specific limitation on times.	Yes
Phase II to V	Landscape - Prohibit certain types of landscape irrigation	0 to > 50%	Limits on watering of public facilities.	No
Special Action	Landscape - Prohibit all landscape irrigation	> 50%	Will implement via Council action if required.	Yes
Phase II to V	Landscape - Other landscape restriction or prohibition	0 to >50%	Limits on watering of types of vegetation.	Yes
Phase I	CII - Lodging establishment must offer opt out of linen service	0%	Ongoing program.	Yes

Phase I	CII - Restaurants may only serve water upon request	0%	Ongoing program.	Yes
Phase I	CII - Commercial kitchens required to use pre-rinse spray valves	0%	Ongoing program.	Yes
Phase I	CII - Other CII restriction or prohibition	0%	No new single pass cooling systems. Process water to recycled to greatest extent possible.	Yes
Phase IV to V	Water Features - Restrict water use for decorative water features, such as fountains	30 to > 50%	No use of potable water for filing deorative fountains. Phase IV and V of restrictions.	Yes
Phase III to V	Other water feature or swimming pool restriction	20 to > 50%	Phase III through IV of restrictions. Limit hour of operation of water play features at City parks.	No
Phase I	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	0%	Ongoing program.	Yes
Phase I	Other - Require automatic shut of hoses	0%	Ongoing program.	Yes
Phase I	Other - Prohibit use of potable water for construction and dust control	0%	Recycled water required where available.	No
Phase I	Other - Prohibit use of potable water for washing hard surfaces	0%	Ongoing program.	Yes
Phase I	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	0%	Ongoing program.	Yes

Submittal Table 8-3: Supply Augmentation and Other Actions			
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? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
Add additional rows as needed			
Any	Other Purchases	1	Glendale has 3 connections with MWD. MWD can supply 100% of Glendale's peak demands.
As needed	Exchanges	Limited to area adjacent to CVWD	Emergency connections.
As needed	Exchanges	Limited to area adjacent to Burbank	Emergency connections.
Any	Other Actions (describe)	1	Support Delta Conveyance Upgrades
Any	Other Actions (describe)	1	Support MWD Regional Recycled Project
NOTES: The Burbank and Crescenta Valley Water District connections are for emergency use. The MWD connections normally supply 60% of Glendales Water Demand but can supply 100% of Glendale's demands.			

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Glendale	Yes	Yes
Crescenta Valley	Yes	Yes
Burbank	Yes	Yes
Pasadena	Yes	Yes
Los Angeles	Yes	Yes
Valley Water	Yes	Yes
Foothill Municipal	Yes	Yes
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Los Angeles County	Yes	Yes
NOTES: Includes water districts with which we have interties.		

Table O-1A: Recommended Energy Reporting - Water Supply Process Approach

Enter Start Date for Reporting Period	1/1/2020								
End Date	12/30/2020	Urban Water Supplier Operational Control							
		Water Management Process						Non-Consequential Hydropower (if applicable	
☐ Is upstream embedded in the values reported?									
	Water Volume Units Used	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process	AF	*0*	*0*	*0*	*0*	*23,718.65*	*23,718.65*	*0*	*23718.654*
Energy Consumed (kWh)	*N/A*	*0*	*0*	*0*	*0*	*9,124,903.00*	*9,124,903.00*		*9124903*
Energy Intensity (kWh/vol.)	*N/A*	*0.0*	*0.0*	*0.0*	*0.0*	*384.70*	*384.70*	*0.0*	*384.7*

Table O-2: Recommended Energy Reporting - Wastewater & Recycled Water

Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control			
End Date	12/30/2020	Water Management Process			
☐ Is upstream embedded in the values reported?		Collection / Conveyance	Treatment	Discharge / Distribution	Total
Volume of Water Units Used	AF				
Volume of Wastewater Entering Process (volume units selected above)		*0*	*0*	*0*	*0*
Wastewater Energy Consumed (kWh)		*0*	*0*	*0*	*0*
Wastewater Energy Intensity (kWh/volume)		*0.0*	*0.0*	*0.0*	*0.0*
Volume of Recycled Water Entering Process (volume units selected above)		*0*	*18,487.00*	*0*	*-*
Recycled Water Energy Consumed (kWh)		*0*	*2,783,200*	*0*	*2,783,200*
Recycled Water Energy Intensity (kWh/volume)		*0.0*	*150.50*	*0.0*	*-*

APPENDIX F:

DWR Checklist

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Sections 4, 6, 9
x	x	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Section LD
x	x	Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 10, Appd. I
x	x	Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Sections 2, 10, p. 2-4, Appd. J
x	x	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Section 10, p. 10-3, Appd. L
x		Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Section 2, p. 2-3, 2-4, Appd. E Table 2-4R
	x	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	NA
x	x	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Section 3,, p.3-1
x	x	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3, p. 3-4
x	x	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 3, p. 3-4, 3-5
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 3, p. 3-4, 3-5
x	x	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Section 3, p.3-5
x	x	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 3, p. 3-5, 3-6
x	x	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4, p. 4-16, 4-17
x	x	Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4, p. 4-10, 4-11, 4-17
x	x	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	
x	x	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	
x	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 4, p. 4-17
x	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4, p. 4-18
x	x	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 4, p. 4-19, 4-20
x		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Section 5, p. 5-2 to 5-5, Appd. A
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Section 5, p. 5-2, 5-3, Appd. A
	x	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	NA
x		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	NA
x		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5, p. 5-2
x		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Section 5, p.5-3, Appd. E
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Section 7, p. 7-2 to 7-4
x	x	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, *including changes in supply due to climate change.*	System Supplies	Sections 1, 4, & 8, p. 1-5 to 1-7, 4-19
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Section 6
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	p.6-15 to 6-17, p. LD-3
x	x	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	p. 6-10, 6-21
x	x	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6, p. 6-1, p. 6-6 to 6-10
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	p.6-7
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	p. 6-6, 6-7
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	p. 6-7, Appd.C
x	x	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	NA
x	x	Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6, p.6-10, p. 6-18
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 6, p. 6-15, 6-20, 6-21
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	p. 6-15
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6, p.6-11 to 6-13, 6-19
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	p. 6-19
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	p. 6-12, 13, 19, Table 6-6 Appd. E
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	p. 6-19, Table 6-5 Appd. E
x	x	Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	p. 6-12, 13
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	p. 6-12, 13
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	p. 6-15
x	x	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	p. 6-11 to 14, 6-18
x	x	Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	p.6-15 to 17, Section 8
x	x	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	p. 6-21,22, Table O Appd. E
x	x	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	p. 6-8, 9
x	x	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	p. 6-15 to 17, LD-3
x	x	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7, p. 7-2 to 7-4
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	p. 7-8, 9
x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	p. 7-8, 9, Table 7-5 Appd E, Section 8
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Table 7-1 Appd. E
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Tables 7-2 to 7-5 Appd. E
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	p. 7-4 to 7-9
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Section 8
x	x	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Section 7, p-2 to 7-4

x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Section 8, p.8-72 to 8-75
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Section 8, p. 8-72
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Section 8, p. 8-27 to 8-31
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	p.8-14 to 8-21
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	p. 8-21
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	p.8-23 to p. 8-25
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	p.8-22, 23, p. 9-1 to 9-8
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	p. 8-25
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	p. 8-25, 9-2
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	p. 8-22, 23
x	x	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	p.8-26, 27
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	p. 8-32
x	x	Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	p. 8-32
x		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	p. 8-34 to 68
x		Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	p. 8-34 to 37
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	p. 8-19
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	p. 8-10
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	p. 8-69, 70
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	p. 8-69, 70, p. 9-3 to 9-5
x		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	p. 8-69, 70
x		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	p. 8-27, p.71
x		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	p. 8-18
x	x	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	p. 10-4
x	x	Section 8.12	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	p. 10-4
	x	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	NA
x		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	p. 9-1 to 9-8
x		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	p. 10-3, Appd. I, L
x	x	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	p. 10-2, 3, Appd. J
x	x	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	p. 10-2
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	p. 10-3, Appd, I, L
x	x	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Appd. J
x	x	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Appd. I
x	x	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	p. 10-4
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	p. 10-4
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	p. 10-4
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	p. 10-4
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	p. 10-4
x	x	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	NA
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	NA

APPENDIX G:

Public Comments from the June 08, 2021 Public Hearing on the 2020 UWMP

No comments from the Public Hearing

held on June 8, 2021

APPENDIX H:

California Urban Water Management Planning Act

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING [10610 - 10656]

All codes have been updated to include the 2015 Statutes, effective January 1, 2016.

CHAPTER 1. General Declaration and Policy [10610 - 10610.4]

10610.
This part shall be known and may be cited as the “Urban Water Management Planning Act.”

10610.2.
(a) The Legislature finds and declares all of the following:
(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
(3) A long-term, reliable supply of water is essential to protect the productivity of California’s businesses and economic climate.
(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
(7) Water quality regulations are becoming an increasingly important factor in water agencies’ selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.
(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4.
The Legislature finds and declares that it is the policy of the state as follows:
(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. Definitions [10611 - 10617]

10611.
Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5.
“Demand management” means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612.
“Customer” means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613.
“Efficient use” means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614.
“Person” means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615.
“Plan” means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area’s characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616.
“Public agency” means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5.
'Recycled water” means the reclamation and reuse of wastewater for beneficial use.

10617.
“Urban water supplier” means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. Urban Water Management Plans [10620 - 10645]

ARTICLE 1. General Provisions [10620 - 10621]

10620.
(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).
(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.
(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.
(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.
(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.
(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.
(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.
(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivisions (d) and (e).
(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).
(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.
(e) Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.

ARTICLE 2. Contents of Plans [10630 - 10634]

10630.
It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631.
A plan shall be adopted in accordance with this chapter that shall do all of the following:
(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.
(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.
(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.
(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
(c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:
(A) An average water year.
(B) A single-dry water year.
(C) Multiple-dry water years.
(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.
(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:
(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.
(J) Distribution system water loss.
(2) The water use projections shall be in the same five-year increments described in subdivision (a).
(3) (A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.
(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.
(4) (A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.
(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:
(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.
(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.
(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:
(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.
(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:
(i) Water waste prevention ordinances.
(ii) Metering.
(iii) Conservation pricing.
(iv) Public education and outreach.
(v) Programs to assess and manage distribution system real loss.
(vi) Water conservation program coordination and staffing support.
(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.
(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.
(g) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The

description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.
(h) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
(i) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.
(j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1.
(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.
(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.2.
(a) In addition to the requirements of Section 10631, an urban water management plan may, but is not required to, include any of the following information:
(1) An estimate of the amount of energy used to extract or divert water supplies.
(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
(3) An estimate of the amount of energy used to treat water supplies.
(4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
(6) An estimate of the amount of energy used to place water into or withdraw from storage.
(7) Any other energy-related information the urban water supplier deems appropriate.
(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

10631.5.
(a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).
(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water

supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).
(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.
(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.
(B) For purposes of this paragraph, “not locally cost effective” means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.
(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:
(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.
(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.
(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:
(i) Compliance on an individual basis.
(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.
(B) The department may require additional information for any determination pursuant to this section.
(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.
(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).
(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.
(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7.
The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632.
(a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:
(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.
(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
(6) Penalties or charges for excessive use, where applicable.
(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
(8) A draft water shortage contingency resolution or ordinance.
(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.
(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

10632.5.
(a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.
(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

10633.
The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:
(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634.
The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

ARTICLE 2.5. Water Service Reliability [10635 - 10635.]

10635.
(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.
(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.
(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

ARTICLE 3. Adoption and Implementation of Plans [10640 - 10645]

10640.
Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).
The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641.
An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642.
Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643.
An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644.
(a) (1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.
(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.
(b) (1) (A) Notwithstanding Section 10231.5 of the Government Code, and except as provided in subparagraph (B), the department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.
(B) The department shall submit the report to the Legislature for the 2015 plans by July 1, 2017, and the report to the Legislature for the 2020 plans by July 1, 2022.
(2) A report to be submitted pursuant to paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.
(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).
(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645.
Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. Miscellaneous Provisions [10650 - 10656]

10650.
Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:
(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.
(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.
(Amended by Stats. 1995, Ch. 854, Sec. 15. Effective January 1, 1996.)
10651.
In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652.
The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653.
The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654.
An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the “Memorandum of Understanding Regarding Urban Water Conservation in California” is deemed to be reasonable for the purposes of this section.

10655.
If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656.
An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

APPENDIX I:

City Council Resolution Adopting 2020 UWMP & WSCP

Adopted
06/08/21
Kassakhian/Agajanian
All Ayes

RESOLUTION NO. 21-81

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GLENDALE, CALIFORNIA, ADOPTING THE GLENDALE 2020 URBAN WATER MANAGEMENT PLAN

WHEREAS, the Urban Water Management Planning Act, California Water Code Section 10610 through 10657, requires that each urban water supplier as defined therein, prepare and adopt an Urban Water Management Plan (UWMP) in accordance with the Urban Water Management Planning Act's requirements, and that the UWMP be reviewed and updated periodically and the updates be submitted to the State Department of Water Resources every five years; and

WHEREAS, the City prepared its initial UWMP in 1985, and has been updating its UWMP every five years as required; and

WHEREAS, the City's 2020 UWMP includes changes and updates to the City's last 2015 UWMP based on changes which have occurred within the City over the past five years; and

WHEREAS, the 2020 UWMP is consistent with the requirements established by law; and

WHEREAS, the 2020 UWMP has been available for public review and a public hearing for the 2020 UWMP was held on June 8, 2021, as required by law.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF GLENDALE:

That the Council of the City of Glendale hereby approves and adopts the 2020 Urban Water Management Plan and authorizes the City Manager, or his designee, to submit same to the State Department of Water Resources.

Adopted by the Council of the City of Glendale on this 8th day of June, 2021.

Paula Devine
Mayor

ATTEST:

City Clerk

APPROVED AS TO FO:

CITY ATTORNEY

DATE 6/8/21

STATE OF CALIFORNIA) SS.
COUNTY OF LOS ANGELES)

I, Aram Adjemian, City Clerk of the City of Glendale, hereby certify that the foregoing Resolution No. 21-81 was adopted by a majority vote of the Council of the City of Glendale, California, at a regular meeting held on the 8th day of June, 2021, and that the same was adopted by the following vote:

Ayes: Agajanian, Brotman, Kassakhian, Najarian, Devine

Noes: None

Absent: None

Abstain: None

Aram Adjemian
City Clerk

APPENDIX J:

Public Notifications

City of Glendale
Glendale Water & Power
Water Engineering

141 N. Glendale Ave., Suite 420
Glendale, CA 91206-4975
Tel: (818) 548-2062 Fax: (818) 240-4754
www.glendaleca.gov

4/8/2021

Richard Harasick
Senior Assistant General Manager - Water System
Los Angeles Department of Water & Power
PO Box 51111
Los Angeles, CA 90051

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Mr. Harasick:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

This letter is intended to notify your agency that the City of Glendale is in process of preparing the 2020 Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP). A draft of the 2020 UWMP and WSCP will be available for public review on GWP's website prior to a public hearing, which is currently scheduled at 6 P.M. on June 8, 2021 at City Hall, with probable virtual attendance. Based on the City's current schedule, we expect to have a public review draft of the 2020 UWMP and WSCP available for review in mid-May 2021.

If you have any questions, please contact me at (818) 548-3982 or via email RRuyle@GlendaleCA.GOV

Respectfully yours,

_____
Richard Ruyle
Water Services Administrator

City of Glendale
Glendale Water & Power
Water Engineering

141 N. Glendale Ave., Suite 420
Glendale, CA 91206-4975
Tel: (818) 548-2062 Fax: (818) 240-4754
www.glendaleca.gov

4/8/2021

Sergio Fierro
State of California Department of Water Resources
Division of Statewide Integrated Water Management - Water Use Efficiency
770 Fairmont Avenue
Glendale, CA 91203

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Mr. Fierro:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

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If you have any questions, please contact me at (818) 548-3982 or via email RRuyle@GlendaleCA.GOV

Respectfully yours,

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Richard Ruyle
Water Services Administrator

City of Glendale
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www.glendaleca.gov

4/8/2021

Richard Wilson
Assistant General Manager - City of Burbank Water & Power
164 West Magnolia Boulevard
PO Box 631
Burbank, CA 91503-0631

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Mr. Wilson:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

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Respectfully yours,

Richard Ruyle
Water Services Administrator

City of Glendale
Glendale Water & Power
Water Engineering

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www.glendaleca.gov

4/8/2021

Mitch Dion Assistant - General Manager Water Delivery
City of Pasadena, Water and Power Department
150 S. Los Robles Ave., Suite 200
Pasadena, CA 91101

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Mr. Dion:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

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Respectfully yours,

_____
Richard Ruyle
Water Services Administrator

City of Glendale
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Water Engineering

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www.glendaleca.gov

4/8/2021

Bob Fan
General Manager - Valley Water Company
4524 Hampton Road
P0 Box 706
La Canada Flintridge, CA 91011

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Mr. Fan:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

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If you have any questions, please contact me at (818) 548-3982 or via email RRuyle@GlendaleCA.GOV

Respectfully yours,

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Richard Ruyle
Water Services Administrator

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www.glendaleca.gov

4/8/2021

Nemesciano Ochoa
General Manager
Crescenta Valley Water District
2700 Foothill Boulevard
La Crescenta, CA 91214

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Mr. Ochoa:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

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Respectfully yours,

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Richard Ruyle
Water Services Administrator

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4/8/2021

Nina Jazmadarian - General Manager
Foothill Municipal Water District
4536 Hampton Road
La Canada Flintridge, CA 91011

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Ms. Jazmadarian:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

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Richard Ruyle
Water Services Administrator

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4/8/2021

Dan Lafferty - Deputy Director Water Resources
County of Los Angeles, Department of Public Works Watershed Management Division
900 S. Fremont Avenue, 5th Floor
Alhambra, CA 91803

Subject: Notice of Preparation of Glendale 2020 Urban Water Management Plan

Dear Mr. Lafferty:

Pursuant to the requirements of the California Water Code Section, Division 6, Part 2.6. Urban Water Management Planning, Section 10621(b), every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The deadline for completing and adopting the UWMP is July 1, 2021.

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If you have any questions, please contact me at (818) 548-3982 or via email RRuyle@GlendaleCA.GOV

Respectfully yours,

Richard Ruyle
Water Services Administrator

APPENDIX K:

MWD 2020 Energy Sustainability Plan (ESP)

Stantec

ENERGY SUSTAINABILITY PLAN

REPORT NO. 1630 | VOL 1 | NOV 2020

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Metropolitan Water District of Southern California

Energy Sustainability Plan

Report No. 1630

November 2020

***Metropolitan Study Leadership Team**:*

Greg De Lamare: Team Manager – Facility Planning, Engineering Services Group

Ha Nguyen: Senior Resource Specialist, Engineering Services Group

Shawn Bailey: Section Manager – Power Operations and Planning, Water System Operations

Austen Nelson: Assistant Engineer, Engineering Services Group

Acknowledgements

It is warmly acknowledged that the following Metropolitan staff were instrumental in the development of this report:

Engineering Services Group

John Bednarski: Group Manager – Engineering Services Group
Ernie Ariza: Principal Engineer
Ish Singh: Principal Engineer
Saurabh Shekhar: Senior Engineer

Environmental Planning

Tom Napoli: Principal Environmental Specialist
Malinda Stalvey: Senior Environmental Specialist
Brenda Marines: Environmental Specialist

General Counsel

Mark Parsons: Senior Deputy General Counsel

Information Technology

Brian Brenhaug: Team Manager – Enterprise Water System Program

Water Resource Management

Brad Coffey: Group Manager – Water Resource Management
Grace Chan: Section Manager
Warren Teitz: Team Manager – Resource Development

Water System Operations

Brent Yamasaki: Group Manager – Water System Operations
Mickey Chaudhuri: Assistant Group Manager – Water System Operations
Heather Collins: Section Manager - Water Treatment
Keith Nobriga: Section Manager – Water Operations and Planning
Tim Hutcherson: Unit Manager – Conveyance and Distribution
Chris Gabelich: Principal Environmental Specialist
Stacie Takeguchi: Senior Engineer

Report written and prepared for Metropolitan by:

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TABLE OF CONTENTS

VOLUME 1

ACRONYMS AND ABBREVIATIONS

VOLUME 2

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

Acronyms and Abbreviations

1932 Act	Metropolitan Water District Act of June 18, 1932
AB	Assembly Bill
AEPCO	Arizona Electric Power Cooperative
AI	Artificial Intelligence
a.k.a.	also known as
BESS	Battery Energy Storage System
CAISO	California Independent System Operator
CEQA	California Environmental Quality Act
CEC	California Energy Commission
CO_2-e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CRA	Colorado River Aqueduct
EF	emission factor
EMRS	Energy Management and Reliability Study
EO	Executive Order
ESP	Energy Sustainability Plan
GHG	Greenhouse Gas
GRP	General Reporting Protocol
ICS	Intentionally Created Surplus
kWh	kilowatt-hour
LADWP	Los Angeles Department of Water and Power
Metropolitan	The Metropolitan Water District of Southern California
MW	megawatt
MWh	megawatt-hour
NPV	Net Present Value
PPA	Power Purchase Agreement
REC	renewable energy credits
RPS	renewable portfolio standard
RPU	Riverside Public Utilities
SB	Senate Bill
SCADA	supervisory control and data acquisition
SCE	Southern California Edison
SGIP	Self-Generation Incentive Program
SWP	State Water Project
TOU	Time-of-Use
WAPA	Western Area Power Administration
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

The Metropolitan Water District of Southern California (Metropolitan) is a regional wholesaler providing a reliable supply of high-quality water to its 26-member public agencies, collectively serving nearly 19 million Southern Californians in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Metropolitan's mission is to provide its service area with an adequate and reliable supply of high-quality water to meet present and future needs in an environmentally and economically responsible way. The conveyance, treatment, and distribution of water is an energy-intensive and energy-dependent process, and as such, Metropolitan has goals of controlling operational costs and conserving valuable natural resources.

Metropolitan's net energy use and costs are dominated by the pumping (transport) required to import water via the Colorado River Aqueduct (CRA) and State Water Project (SWP) systems (Figure ES-1). Given that Metropolitan does not have direct control over operations of the SWP, this plan focuses exclusively on the energy use and cost for CRA operations (wholesale power) and for Metropolitan's distribution, treatment, and office facilities (retail power), which on average totals $43.1 million per year.

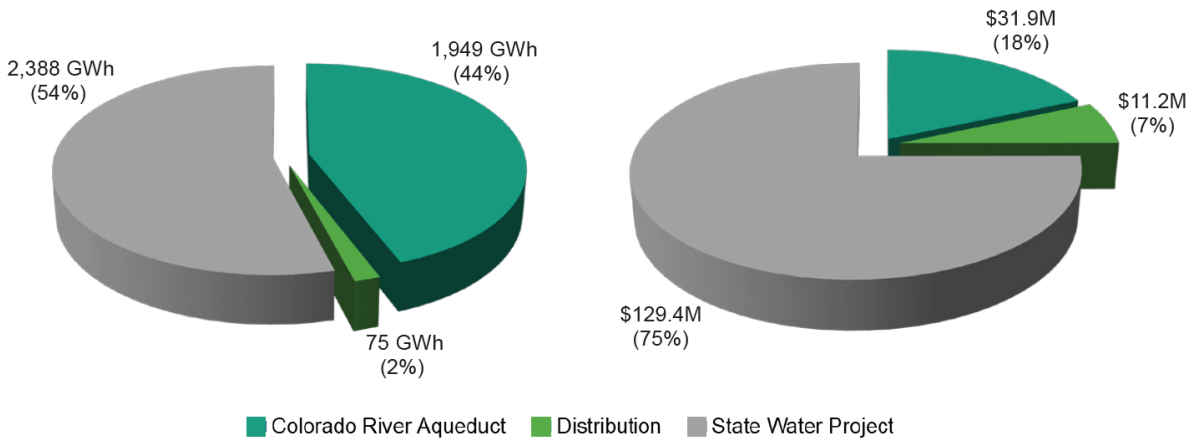


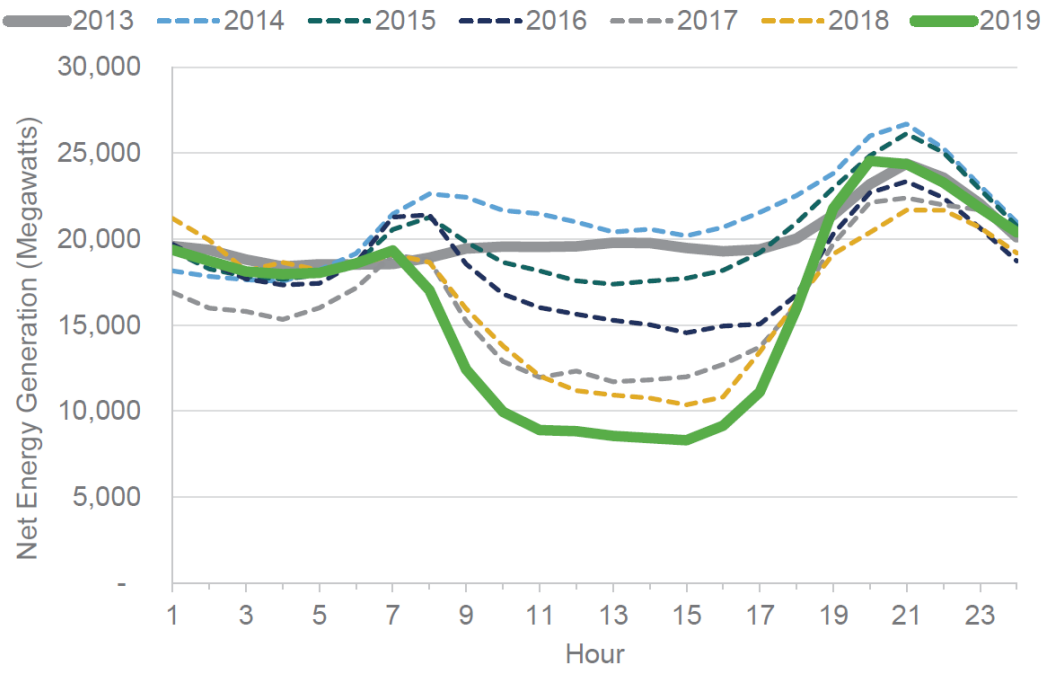
Figure ES-1 Metropolitan's overall electricity requirements and cost (average 2013-2018)

Over the past several decades, Metropolitan has implemented many energy initiatives that have reduced energy costs and use, while diversifying its energy portfolio. This has included 130 megawatts (MW) of small hydropower generating facilities, 5.5 MW of solar power generation installations, and a 50-year agreement executed in 2017 to receive low-cost carbon-free hydropower from Hoover Dam for CRA operations. Despite these efforts, external factors have resulted in increased energy costs. Five major drivers influence the future energy market and Metropolitan's corresponding energy sustainability strategy, including:

- ***Progression of environmental regulations***. California is leading the nation with energy and environmental policy initiatives that are driving electrical grid changes. In particular,

California's shift to renewables and carbon-free energy by 2045 (Senate Bill 100) is a primary driver in future energy dynamics and will impact both the cost and volatility of energy markets.

- ***Energy market pricing uncertainty.*** Approximately 50 to 85 percent of Metropolitan's energy for CRA pumping is supplied from low-cost federal hydropower, and the balance is supplied from supplemental purchases of wholesale energy from the market. The adoption of recent policies and state goals in greenhouse gas (GHG) emission reductions and environmental protection are fundamentally changing the wholesale electric grid and its operation. The high penetration of renewable generation across the state resulted in the "duck curve" effect which has shifted peak prices from periods when demand is highest (typically midday) to periods in which solar generation declines (typically evening hours) (see Figure ES-2). In certain times of the year, a significant net load drop occurs when solar generation decreases at the end of the day. This drop must be mitigated by conventional fossil fired energy generators. This effect creates over-generation during the middle of the day, which produces a "belly" appearance, and a steep ramp for fossil fuel generators during the late afternoon and evening, creating an "arch". The consequent changes in wholesale and retail energy price and structures are impacting hourly energy costs and operations at Metropolitan.



Source: IEA, 2019

Figure ES-2 CAISO's duck curve of average net electric load for a spring day in California

- ***Grid reliability***. California has historically been dependent on fossil-fired generation to provide for the bulk of its energy needs, as well as peaking capacity and operating reserves to balance the system and compensate for system contingencies. The state's environmental policies to reduce fossil generation emissions and cooling water impacts have and will continue to result in the retirement of fossil generation throughout the state and the region. The transition to

renewable, non-emitting generation creates challenges for grid operators without the traditional sources of on-demand, fast-ramping capacity.

- ***Climate change and natural disasters*.** Natural disasters and a changing climate pose substantial risks to the availability and price of energy for Metropolitan. While the timing and extent of these events is unpredictable, their effects can be anticipated and estimated. The main challenge for Metropolitan and its energy providers will be to develop and nimbly execute energy management initiatives that preserve a high degree of long-term flexibility and stable costs.

- ***Technological advances and incentives***. New technological advancements and improved practices in the renewable energy and energy storage sectors provide viable options for Metropolitan's long-term energy management goals. For example, energy storage systems are able to capture the energy generated by renewables and store it until the energy is needed. Energy storage can address the power intermittency challenges from renewables and effectively increase utility resiliency and reliability. Several incentive and credit programs are also available, such as the California Public Utilities Commission Self-Generation Incentive Program (SGIP), to further improve the economic feasibility of battery energy storage projects.

The evolution in California's energy mix and resulting uncertainty in the reliability and cost of energy supplies affects the affordability and reliability of Metropolitan's water supply operations. Metropolitan's review of its energy strategies, practices and projects is an important step to help position itself as a leader in energy sustainability. This is a critical time for Metropolitan to develop a new Energy Sustainability Plan (ESP) and an updated implementation roadmap, to formulate actions and strategies that best position Metropolitan to adapt to future wholesale and retail energy market changes for its CRA operations and conveyance and distribution system. ***The ESP's purpose is to foster informed energy management decisions by Metropolitan through the development of a framework of sustainable actions focused on energy cost containment, reliability, affordability, conservation and adaptation – now and into the future*.**

The main planning objectives of the ESP are to develop an adaptive energy management strategy and project implementation roadmap resulting in projects and initiatives that:

- Contain costs and reduce Metropolitan's exposure to energy price volatility
- Increase operational reliability and flexibility
- Move Metropolitan towards energy independence and sustainability
- Support Metropolitan's Climate Action Plan (CAP) effort to meet proposed GHG emissions reduction target

ES.1 APPROACH

The development of the ESP and associated roadmap was conducted using an innovative and holistic multi-phase planning approach, including:

- A review of energy management plans from multiple U.S. water utilities conducted to summarize the state of knowledge on energy sustainability goals and practices in the water sector.
- Data collection from internal and publicly available sources for the assessment of energy baseline operations at Metropolitan and projected energy market scenarios.
- Development of a list of potentially viable renewable energy and energy storage projects in the retail and wholesale energy market. These projects were assessed through a financial and environmental analysis, which considered the potential net present value (NPV), payback periods, and carbon emission reductions of the identified projects. Projects evaluated in the retail market involved expanding Metropolitan's solar generation capabilities and implementing battery energy storage to complement self-generation and provided a method to shift low-cost energy to periods of high cost. Projects that rely on energy from the wholesale market were evaluated for their ability to reduce the energy cost of CRA pumping operations and included large-scale renewable energy and energy storage projects. Energy best management practices were also identified.
- Comparison of relative project performance using a multi-criteria decision analysis (MDA) that looks beyond costs alone. The MDA ranks project options based on a variety of objective performance criteria, including improved cost containment, reduced exposure to price volatility, increased operational flexibility, increased redundancy, increased revenue potential, increased energy independence and reduced carbon footprint.
- Considering the uncertainties in the water and energy sectors, a detailed scenario analysis effectively "stress tested" each project option under a range of plausible future conditions (Figure ES-3).
- Development of the ESP and related roadmap with recommended projects and actions for short- (less than three years), mid- (4-7 years) and long-term (up to 10 years) implementation to meet Metropolitan's policies and goals.

This planning approach and interim findings were validated through four interactive workshops that included participation of senior management and staff from different groups at Metropolitan (e.g., engineering, operations, environmental planning, and water resources management).

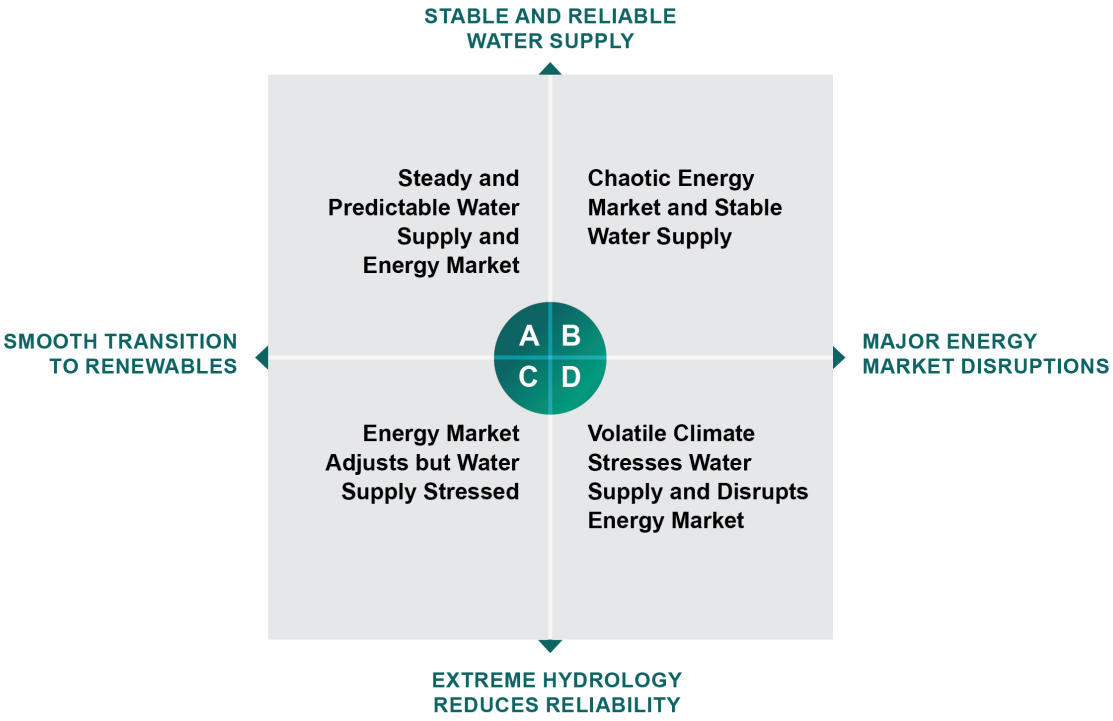


Figure ES-3 Scenario analysis matrix for evaluating robustness of identified projects and actions under uncertain future conditions

ES.2 KEY FINDINGS

The energy management initiatives included in the ESP address the significant energy market changes observed over the last decade and position Metropolitan as a leader in energy efficiency and forward-thinking energy management. The development of these initiatives incorporated considerations of the evolving regulatory landscape, economic considerations, water supply reliability, and development of new or existing technologies. As these factors change over time, options are recommended based on their economic and operational benefits that can serve Metropolitan's needs. The comprehensive evaluation of energy market drivers and their potential impact on Metropolitan's operations, revealed a number of key findings:

- The delivery of water and the demand for energy are intrinsically linked. Actions taken with regard to one will consequently have an effect on the other, for example, shifting high energy pumping operations to periods of low energy prices.
- The analyses and prioritization for renewable energy and energy storage projects in the retail and wholesale energy markets yielded similar results (see Table ES-1). This is in part due to the multiple benefits including improved cost containment, reduced exposure to energy price changes, increased operational flexibility, increased redundancy, increased revenue potential, increased energy independence and reduced carbon footprint. These options received high

rankings in the MDA. The benefits of each project across multiple assessments including financial, carbon emission reduction, MDA, and scenario analysis provide Metropolitan with the perspective to consider projects that may not have the most optimal financial results but provide lower risk with increased flexibility to address future uncertainties.

- The preferred approach is to install and own small-scale energy storage units and plan for long-term energy management in anticipation of additional retail rate changes and programs that will enhance the value of usage flexibility. Metropolitan should evaluate the specific market conditions and drivers affecting power prices at its pump locations along the CRA to assess the benefits of large-scale energy storage. Considering the limited funding available for energy storage incentive and development programs, a swift implementation of the most economically and operationally beneficial energy storage projects is imperative.

- While Metropolitan is not directly affected by recent California legislation, such as Senate Bill (SB) 100, calling for 100 percent "carbon free" energy by 2045, the carbon emissions cap-and-trade system is imbedded into the cost of energy throughout the state. It appears that energy utilities and other load-serving entities are on track to hit these targets. Until then, carbon emission costs will continue to affect Metropolitan through its supplemental energy purchases for the CRA. Additional steps to reduce operational GHG emissions are under consideration through Metropolitan's CAP.

- Metropolitan engages in several energy best practices to reduce Metropolitan's overall energy consumption. These practices focus on energy auditing, monitoring and benchmarking, cost optimization of process and pumping operations, energy efficient design and rehabilitation measures, and providing staff training and communication strategies for energy management. Energy efficiency opportunities that reduce energy usage should be evaluated on a continuous basis for short- and long-term benefits to help reduce energy-related costs and GHG emissions.

- On a daily basis, the wholesale market includes significant price changes. The energy purchased for operations of the CRA pumping plants are not necessarily under a fixed price purchase agreement and are therefore subject to these price swings and pumping operations have minimal flexibility to dynamically adapt to the price changes. The addition of variable frequency drives, if and as feasible, to a few of these pumps would not only provide greater operational flexibility for supplying water to Southern California but could create added financial benefits by increased pumping during hours of low energy prices.

In general, the energy projects presented in Table ES-1 integrate well with the above factors and perform well in the multi-criteria and scenario evaluations demonstrating relative robustness now and robustness with respect to both current and future uncertainties.

Table ES-1 Retail and wholesale project options and results of financial, MDA, and scenario planning assessments

	Size	NPV ($)	Payback Period (years)	Carbon Emission Reduction (MT CO_2/year)	MDA Ranking	Scenario Assessment Performance*			
						A	B	C	D
Retail Project Options									
Yorba Linda behind meter at Diemer	--	$5,000,000	4	1,061	1				
Skinner – BESS + New Solar	1 MW or 2 MW solar 1 MW/2 MWh BESS	$1,600,000	10	256	2, 3				
Weymouth – BESS + Existing Solar	1 MW/2 MWh	$345,000	5	10	4				
Skinner – BESS + Existing Solar	1 MW/2 MWh	$396,000	5	10	5				
Jensen – BESS + Existing Solar	1 MW/2 MWh	$275,000	5	10	6				
Mills – BESS + New Solar	300 kW/900 kWh BESS 500 kW solar	$356,000	14	131	7				
Skinner – New Solar (PPA)	1 MW or 2 MW	$277,000	-	271	8, 9				
Skinner – New Solar (Owned)	1 MW or 2 MW	$240,000	14	271	10, 14				
Mills – New Solar (PPA)	500 kW	$566,000	-	145	11				
OC-88 – BESS + Grid	1 MW/2 MWh	$308,000	5	10	12				
Mills – BESS + Grid	1 MW/2 MWh	$102,000	7	10	13				
Mills – New Solar (Owned)	500 kW	$140,000	14	145	15				
Wholesale Project Options									
CRA Pump Upgrades	To be determined in the preliminary investigation of the CRA's pumps				1				
Utility-Scale Battery Storage (Owned)	30 MW/156 MWh	$17,800,000	15	Varies	2				
Utility-Scale Wind Power	To be determined based on discussion with potential developers				3				
Pumped Storage (Third Party)					4				
Utility-Scale Solar Power					5				
Pumped Storage (Owned)	Varies – see Appendix D				6				
Small Hydropower	Varies – see Appendix D				7				

Scenario Performance: Acceptable; Uncertain; Poor

*Scenario Descriptions: A: Steady and predictable water and energy; B: Chaotic energy market and stable water supply; C: Energy market adjusts but water supply stressed; D: Volatile climate stresses water and energy market disrupted.

Acronyms: BESS: Battery Energy Storage Systems; CRA: Colorado River Aqueduct; MDA: Multi-criteria Decision Analysis; MT: Metric Ton; NPV: Net Present Value; PPA: Power Purchase Agreement; Yorba Linda: Yorba Linda Power Plant.

ES.3 RECOMMENDATIONS

Metropolitan's adaptive energy management strategy incorporates a roadmap of actions and projects addressing issues surrounding energy management and cost mitigation (see Figure ES-4). The energy strategy roadmap addresses near- to long-term energy issues and achieves Metropolitan's overarching goals by including projects that address both retail and wholesale energy markets, and energy management best practices. The recommended actions are impacted by numerous factors, considered as indicators in this plan that will signal the acceleration or change of course for certain actions. The magnitude, nature, and timing of these signals will result in different responses and actions for Metropolitan in the long-term and should be continuously monitored over time.

As an immediate action, prior to implementation of the ESP roadmap, it is recommended that a dedicated Energy Sustainability team be established to further expand Metropolitan's current energy management practices.

Selected near-term actions (1-3 years) identified are:

- Coordinate the overall energy plan implementation, with the involvement of the Energy Sustainability team previously established and all interested parties and stakeholders.
- Continue to engage routinely with retail electric utilities (SCE, LADWP, RPU) regarding anticipated potential changes and/or increases to energy rate structures, or release of favorable electric utility programs and incentives.
- Begin implementation of reconfiguring Yorba Linda Power Plant feed to serve the Diemer water treatment plant (WTP) retail load behind the Southern California Edison meter.
- Begin the application process for SGIP funding for recommended BESS projects at the Weymouth, Skinner, Jensen, and Mills WTPs and the OC-88 Pumping Plant before funds decline.
- Evaluate the feasibility of integration and implementation of islanded operations for applicable projects for possible future microgrid purposes.
- Monitor wholesale energy market developments for major changes to CRA energy costs and evaluate appropriate options, such as generation or energy storage.
- Assess pump modifications at Intake and Gene pumping plants to implement targeted application of variable-speed pump drives.
- Continue to monitor third-party developer projects for opportunities in retail and large-scale wholesale renewable energy and energy storage opportunities.

Selected mid-term actions (4-7 years) identified include:

- Assess the performance of implemented BESS projects, and later implement the previously deferred project options based on first phase performance results.

- Implement renewable energy and/or energy storage projects with third-party developers, if determined feasible.
- Continue evaluating low/no carbon power for CRA pumping operations to hedge against rising carbon prices.
- Reevaluate small hydropower opportunities within the distribution system if project economics become favorable.

Long-term planning should focus on the next 10 years to adapt relevant actions and strategies to current conditions. Even though the energy market is rapidly changing, a long-term planning horizon of 10 years allows for early consideration of opportunities while maintaining flexibility to adapt as the market shifts. The key goal for Metropolitan's long-term energy management plan is to continuously update the ESP, monitor implemented projects and initiatives, reassess the main market drivers to better understand potential project and energy management opportunities, and adjust the Plan and roadmap accordingly.

The framework is intended to be flexible by accommodating future projects, preferences, and localized needs, and be adaptable as Metropolitan's goals and technology evolve. The roadmap provides a plan for implementation of the recommended energy projects and initiatives, while accounting for changes in the future. Signals assigned to each action are meant to be monitored over time by Metropolitan staff to indicate when these actions and their economic and operational benefits can serve Metropolitan's needs.

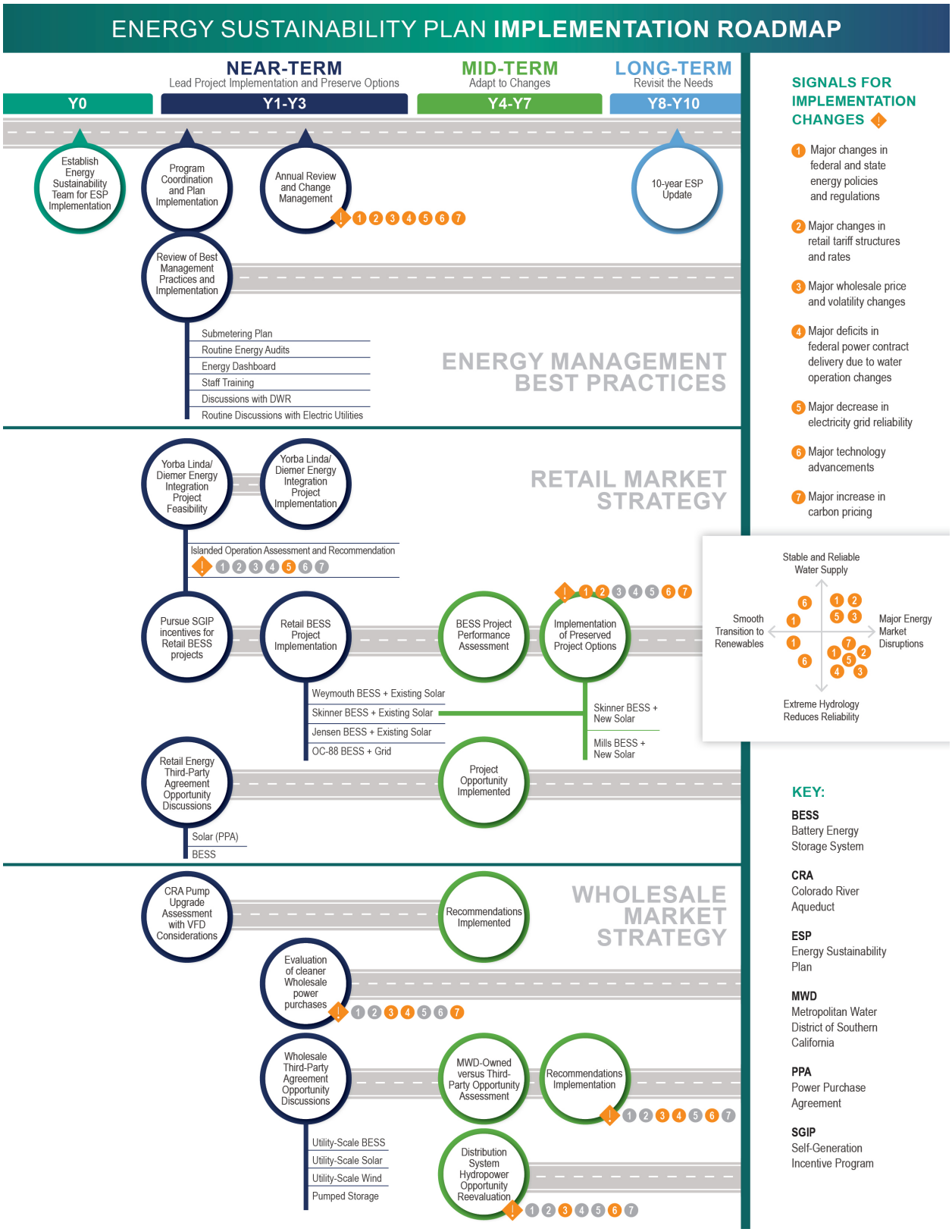


Figure ES-4 Energy Sustainability Plan Roadmap

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1.0 INTRODUCTION

The Metropolitan Water District of Southern California (Metropolitan) is the nation's largest wholesale water provider. Metropolitan's mission is to provide its service area with an adequate and reliable supply of high-quality water to meet present and future needs in an environmentally and economically responsible way. During a normal year, Metropolitan moves approximately 1.3 - 2.0 million acre-feet (MAF) of water per year through its conveyance and distribution system, delivering supplies to 26 member agencies serving more than 19 million Southern Californians across six counties. The conveyance, treatment, and distribution of water is an energy-intensive, energy-dependent process. Metropolitan—as a steward of the public interest and in conjunction with its mission—has overriding goals of controlling operational costs and conserving valuable natural resources. Metropolitan continues to show leadership in the areas of energy resource sustainability and conservation.

Metropolitan imports water from Northern California via the State Water Project (SWP) and from the Colorado River via the Colorado River Aqueduct (CRA). About 45 percent of Southern California's water supply comes from these two sources, with the remainder supplied from the Los Angeles Aqueduct and local sources. The available supply mix from these sources can vary greatly as a result of the hydrologic conditions in a given year. Given the highly varied topography and sheer size of California, water moved throughout the state and imported into Southern California has an associated high energy intensity. Consequently, large amounts of electricity are required to pump water from its source to Southern California. Additional electricity is required to treat and deliver the imported water through Metropolitan's conveyance and distribution system.

Metropolitan owns and operates the CRA, five regional water treatment facilities and a conveyance and distribution system that delivers water throughout Southern California (Figure 1-1). Metropolitan has sole discretion in associated investments and management of these facilities for the purpose of water supply. Energy for these facilities comes from either the retail or wholesale energy markets.

In contrast, the SWP is owned and operated by the California Department of Water Resources (DWR), and Metropolitan, as an SWP contractor, is responsible for the largest share of operational costs (including energy costs). Although Metropolitan monitors the indirect costs associated with the SWP, it does not directly control SWP decisions related to electric power. Since the focus of this plan is the development of strategies to manage energy costs directly under Metropolitan's control, an analysis of SWP power costs is not included within the scope of this report. DWR has been proactive in managing its energy use and associated greenhouse gas (GHG) emissions. Metropolitan will continue working with DWR on its energy management activities and initiatives.

The Energy Sustainability Plan's purpose is to foster informed energy management decisions by Metropolitan through the development of a framework of sustainable actions focused on energy reliability, affordability, conservation and adaptation – now and into the future

The development of the Energy Sustainability Plan (ESP) represents an important milestone for Metropolitan in its adaption to changing energy market and water supply conditions. Recent significant changes in California's energy markets have created

uncertainty in the reliability and cost of energy supplies, which in turn affects the affordability and reliability of Metropolitan's water supply operations. The purpose of the ESP is to foster informed energy management decisions through a framework of sustainable actions focused on energy cost containment, reliability, affordability, conservation and adaptation – now and into the future. Options were identified for improving efficiency of facility operations, enhancing Metropolitan's energy management practices, leveraging available resources to reduce energy costs and maintain water supply reliability. For each option, the potential GHG emissions reduction was estimated. The focus of this effort is to expand options for market adaptation and develop business strategies and recommendations for the next 10 years. To support the implementation, this ESP also includes a systematic approach and consideration for adaptation during implementation.

Figure 1-1 General overview of Metropolitan's facilities

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1.1 HISTORY OF METROPOLITAN'S ENERGY MANAGEMENT INTIATIVES

Metropolitan has a long history of implementing energy management strategies that provide cost savings and carbon emission reductions for the agency, establishing Metropolitan's leadership in energy management (Figure 1-2). In the 1930s, during the construction of the CRA and Hoover and Parker Dams, Metropolitan secured power agreements for a portion of the generation from both dams. Over the next few decades Metropolitan's five water treatment plants (WTPs) and distribution system were designed and constructed to maximize the delivery of water to customers via gravity to limit the energy expenditures associated with the treatment and distribution of water. During the 1970s, Metropolitan began developing hydroelectric power recovery plants throughout its conveyance and distribution system. Currently, there are 15 power plants that generate over 200 million kilowatt-hours per year and the power is sold under contract to various load-serving entities at a value comparable with California-certified renewable energy. In the late 1980s, Metropolitan began investing in reliability improvements for pumping operations along the CRA by restoring pumps, motors and other systems for energy savings (Metropolitan, 1996).

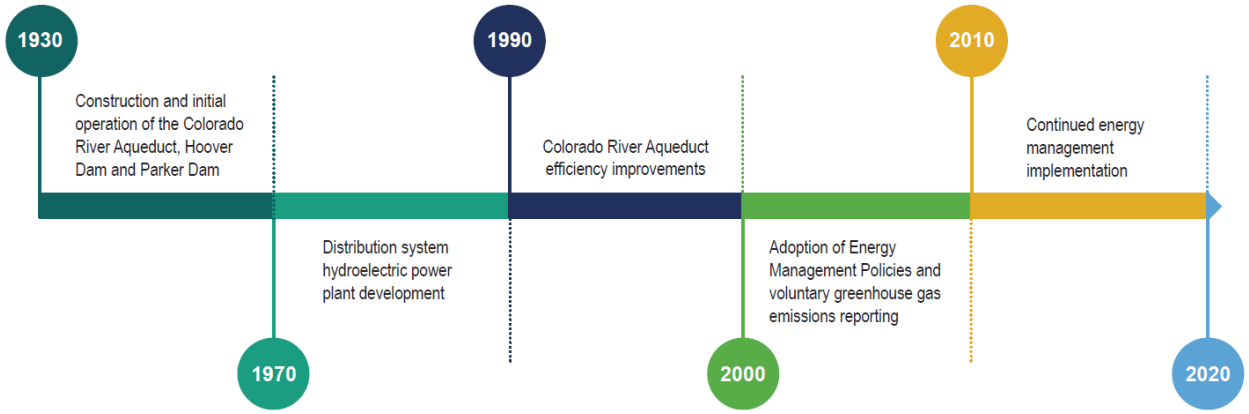


Figure 1-2 History of Metropolitan's energy initiatives

In 2007, Metropolitan began voluntary reporting of annual GHG emissions to the Climate Registry and continues to report GHG emissions to both the Climate Registry and the California Air Resources Board (CARB). In 2009, an Energy Management and Reliability Study (EMRS) was conducted and followed by the proposal and adoption of Metropolitan's Energy Management Policies, discussed below. Following adoption of the Energy Management Policies, cost effective projects, such as solar generating facilities at Skinner, Weymouth, and Jensen water treatment plants, were implemented to reduce energy costs with an added benefit of reducing GHG emissions.

In September 2017, Metropolitan successfully negotiated and secured a 50-year Energy Service Contract for low-cost carbon-free hydropower generated at the Hoover Dam for CRA operations. In 2018, Metropolitan joined the California Resilience Challenge. This is a new initiative to reinforce the state's recognition of, and reaction to, climate change. In 2019, Metropolitan participated in the development of and became a founding member of the Water Energy Nexus Registry, which was established to help water agencies and utilities better understand the energy and GHG emissions associated with each process in water management and use. More details on the energy initiatives and facility improvement achievements implemented by Metropolitan are provided in the following sections.

1.1.1 Energy management policies

After the completion of the 2009 EMRS, Metropolitan's Board of Directors adopted the Energy Management Policies in August 2010 (Figure 1-3). In accordance with the policies, all programs, projects, and initiatives related to strategic energy management at Metropolitan must meet the following major objectives:

- Contain costs and reducing Metropolitan's exposure to volatile energy prices;
- Increase system reliability;
- Provide a revenue stream to offset energy costs; and
- Move Metropolitan towards energy independence and sustainability.

Metropolitan's energy management practices and the ability to adapt to changes in the energy sector are integral to achieving its mission to provide its service area with an adequate and reliable supply of high-quality water in an environmentally and economically responsible way.

Figure 1-3 Metropolitan's Energy Management Policies

1.1.2 Recent energy management initiatives

Over the past decade, Metropolitan has implemented several energy initiatives consistent with the Energy Management Policies to move Metropolitan forward on the path towards comprehensive energy management. These initiatives range from planning studies aimed at evaluating energy savings opportunities to facility upgrades to increase energy efficiency. Prior planning studies are briefly summarized below by subject:

- **Hydropower**: Potential new hydropower opportunities within Metropolitan's conveyance and distribution system were evaluated, including increasing hydropower generation at existing sites, construction of new hydropower facilities and the implementation of new technologies (such as in-line hydropower). Based on recent analyses, new facilities or technologies are not considered cost effective. However, Metropolitan's current Capital Investment Plan includes a project to assess and rehabilitate each of the 15 existing small hydroelectric plants to develop a multi-phase program to rehabilitate the plants and optimize revenue generation over the next 30 years.
- **Solar**: Additional solar opportunities at Metropolitan's WTPs were studied. These studies led to the implementation of a total of 5 megawatts (MW) of solar generating facilities at Skinner, Weymouth, and Jensen WTPs.
- **Wind**: Opportunities for development of wind generation resources on or near Metropolitan-owned properties, specifically near the CRA were evaluated and found not to be cost effective.
- **Pumped Storage**: Pumped storage project opportunities were evaluated. Specifically, opportunities at Diamond Valley Lake were considered but found to be not cost effective.
- **Energy Efficiency Pilot Program:** Metropolitan is currently conducting an Energy Efficiency Pilot Program at the Weymouth WTP to evaluate the effectiveness of various approaches and upgrades for eventual implementation district-wide.

Metropolitan has also made numerous improvements at its facilities to increase energy efficiency with the objective of reducing overall energy costs. A full list of these energy efficiency accomplishments is presented in Appendix A.

1.2 DRIVERS FOR AN ENERGY SUSTAINABILITY STRATEGY UPDATE

Over the past several decades, Metropolitan has implemented many energy initiatives that have reduced energy costs and use, while diversifying its energy portfolio. Despite these efforts, new complexities of California's rapidly evolving electric grid have resulted in increased energy costs, which is a major driver of Metropolitan's energy management and sustainability strategy update. At the same time, technological advancements could also mitigate these effects and enhance the reliability of Metropolitan's supplies to its' member agencies. Overall, there are five major factors influencing the future of the energy market and Metropolitan's corresponding energy sustainability strategy, including:

- Progression of environmental regulations
- Energy market pricing uncertainty
- Grid reliability
- Climate change and natural disasters
- Technological advances and incentives

These drivers have and will continue to impact the feasibility of energy strategies implemented by Metropolitan, as discussed in Section 5.1. An in-depth analysis of the implications of each of these uncertainties on Metropolitan's operations is presented in the following sections.

1.2.1 Progression of environmental regulations

California is leading the nation with energy and environmental policy initiatives that are driving electrical grid changes. Key state initiatives include:

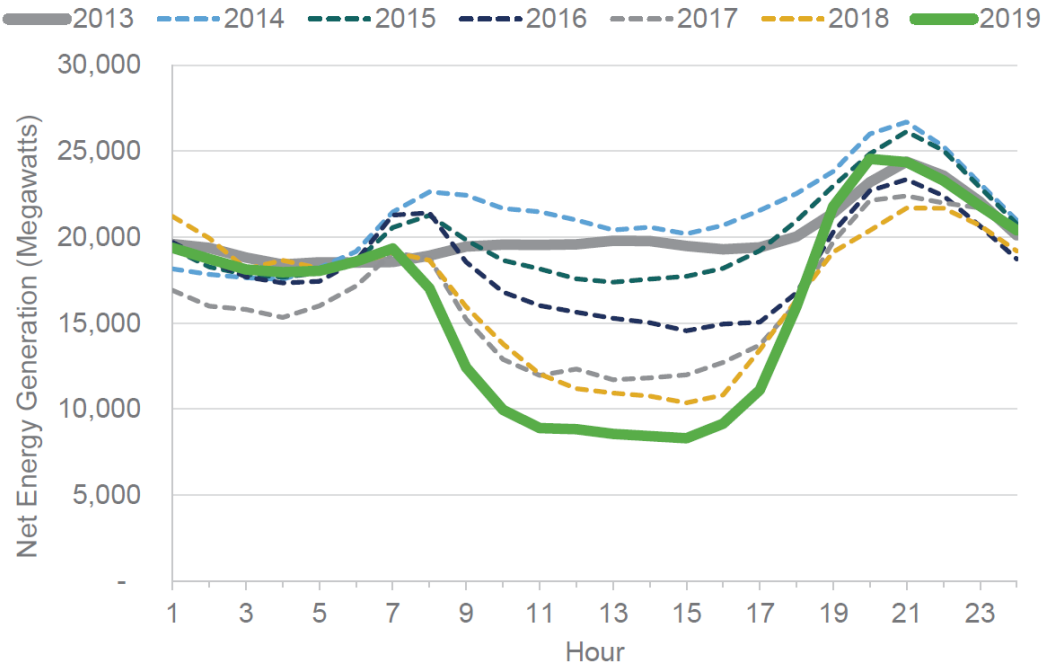
- Executive Order (EO) S-3-05, requiring the state to reduce its GHG emission levels to 2000 levels by 2010, to 1990 levels by 2020, and to a level 80 percent below 1990 levels by 2050
- Assembly Bill (AB) 32 (a.k.a. the Global Warming Solution Act of 2006), requiring the CARB to develop regulations and market mechanisms to reduce California's GHG emissions to 1990 levels by 2020
- The California Public Utility Commission's (CPUC) 2008 Energy Action Plan Update, establishing the policy and preferences regarding distributed generation
- The State Water Resources Control Board's 2010 Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (Once-Through Cooling Policy), requiring power plants that use coastal water for cooling to either repower, retrofit, or retire within the next decade
- CARB's Cap-and-Trade Program for carbon dioxide equivalent (CO_2-e) launched in 2013 in accordance with AB 32, setting a state-wide limit on sources responsible for 85 percent of California's GHG emissions, and establishing a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy
- EO B-16-12 and B-48-18, setting the targeted number of zero emission vehicles at 1.5 million by 2025, and 5 million by 2030
- Senate Bill (SB) 32, expanding upon AB 32 by establishing a new GHG emissions reduction target of 40% below 1990 levels by 2030
- EO B-55-18, establishing a new state-wide GHG reduction goal of carbon neutrality as soon as possible, and no later than 2045, and meeting the goal of net negative emissions thereafter
- Senate Bill (SB) 100, requiring 60 percent of California utility-provided electricity from renewable power sources by 2030, and 100 percent from "carbon free" sources by 2045

The implementation of these key initiatives has a significant effect on Metropolitan's exposure to energy market change and uncertainties. For example, Metropolitan's carbon emissions from energy purchases will decrease significantly due to the implementation of SB 100. However, the added cost of carbon embedded in the wholesale and retail energy consumed by Metropolitan will directly affect the overall energy cost as carbon prices are expected to increase over time.

California's shift to renewables and carbon-free energy by 2045 is a primary driver in future energy dynamics and will impact both the cost and volatility of energy markets.

1.2.2 Energy market pricing uncertainty

The adoption of the aforementioned policies and state goals in GHG emission reductions and environmental protection are fundamentally changing the wholesale electric grid and its operation. In 2013, the California Independent System Operator (CAISO) published a chart representing the difference between forecasted load and expected electricity production from variable generation resources (a.k.a. the "duck curve") to illustrate the changing conditions in future renewable scenarios (CAISO, 2016). In certain times of the year, a significant net load drop occurs when solar generation decreases at the end of the day. This drop must be mitigated by conventional fossil fired energy generators (see Figure 1-4). This effect creates over-generation during the middle of the day, which produces a "belly" appearance, and a steep ramp for fossil fuel generators during the late afternoon and evening, creating an "arch". The progression of this trend is illustrated in Figure 1-4 and follows the increased penetration of solar in California from 2013 to 2019. During times of over-generation, CAISO may curtail or restrict renewable energy generation in order to balance supply and demand on the grid. In 2019 alone, over 11 million MWh of wind and solar energy was curtailed across the state. Due to this effect, the variation of daily wholesale energy market real-time prices ranges from greater than $1,000/megawatt hour (MWh) to less than $0/MWh. This trend in the wholesale energy market can also affect the retail market, as discussed in later sections.



Source: IEA, 2019

Figure 1-4 CAISO's duck curve with net load from fossil fuel generation plotted versus time for a spring day in California

The potential risk of over/under generation is likely to increase as utilities bring additional solar generation online (i.e., a deepening duck curve) to meet the California mandate for 100 percent carbon-free energy by 2045. While balancing the grid is always a challenge, the duck curve signals a recognition of the high penetration of variable generation from renewable sources and the need for

new operating practices that allow greater system flexibility. Two types of responses have been deployed in the market by energy utilities to ease the impacts. The first response is to "fatten" the duck by increasing the flexibility of the power system—which means changing operational practices to enable more frequent power plant cycling, starts and stops, and so on. The second response is to "flatten" the deepened duck curve by shifting demand to the solar hours and using energy storage to shift solar energy to non-solar hours.

The duck curve effects can be observed through two energy price forecasts (Wood Mackenzie and S&P Global Platts) demonstrating alternative future price profiles (Figure 1-5). The main difference between the two forecasts is the assumptions regarding large-scale implementation of energy storage throughout the state. The Wood Mackenzie forecast assumes swift and large implementation of energy storage, which will help mitigate the hourly variability in wholesale prices. The S&P Global Platts forecast assumes the implementation of large-scale energy storage will not keep up with the continuing implementation of renewables on the market, resulting in greater hourly wholesale price variability.

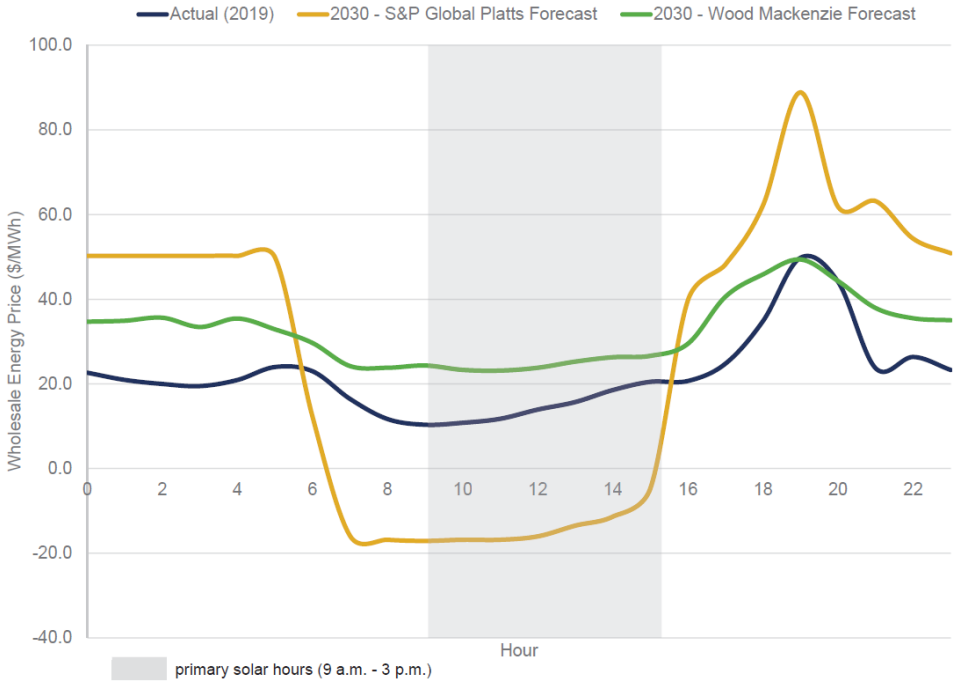


Figure 1-5 Average June hourly wholesale energy price forecasts

These shifts in hourly peak pricing are resulting in new retail time-of-use (TOU) tariffs and are expected to further alter retail prices in the future. As stated previously, the high penetration of renewable generation across the state resulted in the “duck curve” effect which has shifted peak pricing from periods when demand is highest (typically midday) to periods in which solar generation declines (typically evening hours). Current operations at Metropolitan’s facilities and previous renewable energy implementations (i.e., solar) were employed to avoid peak prices as much as possible. For example, filter backwashes were rescheduled to off peak pricing

Strategies to reduce exposure to energy price volatility are important for Metropolitan’s long-term energy management planning as the future of California’s energy market is uncertain.

periods at the WTPs and load shedding has been employed at Intake and Gene Pumping Plants to address high wholesale prices. Recent discussions with Metropolitan's utility providers indicate continued shifts of TOU pricing periods, which would require operations to adapt as necessary to avoid peak prices. These shifts have been considered for this analysis in addition to trends of increasing retail prices. More details on these assumptions and forecasted retail pricing is presented in Appendix D.

Consequently, the duck curve effect has changed wholesale and retail energy price and structures, which are impacting energy costs and operations at Metropolitan.

1.2.3 Grid reliability

California has historically been dependent on fossil-fired generation to provide for the bulk of its energy needs, as well as peaking capacity and operating reserves to balance the system and compensate for system contingencies. At the beginning of the 21st century, California had high and volatile energy prices. At the time, the Federal Energy Regulatory Commission removed state-imposed price caps and the average cost of energy in California proceeded to reach $300/MWh. This ultimately led to precipitous price increases, market manipulation by generators and marketers, and the collapse and eventual bankruptcy of the state Power Exchange and Pacific Gas and Electric Company. In addition, large-scale rolling blackouts were seen across the state that affected thousands of customers, both residential and commercial.

As a result of this energy crisis, CAISO made significant changes to the way that the state's transmission grid is planned, operated and priced in the form of the Market Redesign and Technology Upgrade. Under the new market structure, there are thousands of pricing nodes, which are adjusted every 5 minutes. Utilities and other electricity providers purchase wholesale electricity from the CAISO markets at a given node, and the price is determined by a function of the energy, transmission losses, congestion, and other key factors in the day ahead and real-time optimization. However, the state's environmental policies to reduce fossil generation emissions and cooling water impacts have and will continue to result in the retirement of fossil generation throughout the state and the region. The transition to renewable non-emitting generation creates challenges for grid operators without the traditional sources of on-demand, fast-ramping capacity.

Securing supplemental power independent of California's energy grid reduces Metropolitan's exposure to grid reliability issues.

Approximately 50 to 85 percent of Metropolitan's energy for CRA pumping has historically been supplied from low-cost federal hydropower transmitted to the CRA pumps via Metropolitan-owned transmission lines. In 2017, Metropolitan negotiated new long-term power contracts for the CRA power system, securing continued, low-cost federal hydropower from the Hoover Dam and balancing services from the CAISO. More details on these contracts is provided in Section 3.1. However, Metropolitan is still dependent on supplemental purchases of wholesale energy, which exposes Metropolitan to price increases and variability due to grid reliability issues.

1.2.4 Climate change and natural disasters

Natural disasters and a changing climate pose substantial risks to the availability and price of energy for Metropolitan. While the timing and occurrence of these events is unpredictable, their effects can be anticipated and estimated. For these reasons, events that could affect Metropolitan's or its retail

energy providers' (e.g., Southern California Edison [SCE], Los Angeles Department of Water and Power [LADWP], Riverside Public Utilities [RPU]) infrastructure represent an opportunity to manage and, where possible, mitigate risk. California's power grid is vulnerable to rapidly evolving hazards (e.g., earthquake, flooding, fires) and slowly unfolding threats (e.g., climate change) that could cause major disruptions to operations within the region. Due to California's interconnected power grid, electricity providers have recently begun to pre-emptively turn off customers' electricity (i.e., Public Safety Power Shutoffs) during extreme dry-and-windy weather conditions to reduce the risk of overloading the system and power lines sparking wildfires. While Metropolitan has not been significantly affected by these forced blackouts to date, it is probable that this could become a regular occurrence in the future. Separate from this effort, Metropolitan has conducted studies to evaluate the vulnerability of the CRA electric system assets and taken measures to reduce the consequences of failure while increasing system flexibility and redundancy.

Potential climate change impacts remain wide and uncertain. Energy management initiatives that preserve a high degree of long-term flexibility, increase energy independence (i.e., reduced reliability on the grid for power) and stabilize costs are essential.

Future changes in Colorado River flow and storage in Lake Mead, due to climate change, may translate to reductions of low-cost power from the Hoover and Parker power plants and associated energy cost increases. In addition, more frequent and extended drought conditions in the Colorado River Basin may pose a significant risk to the availability of Colorado River water supplies. The low-cost hydropower from Hoover and Parker Dams is delivered to Metropolitan's CRA pumping plants through a series of power transmission lines, which themselves are at risk for interruptions and failures. Maintaining adequate and reliable water supply and low-cost hydropower is key to the long-term cost and operational viability of the CRA system.

1.2.5 Technology advances and incentives

Over the past few decades, California has begun shifting away from fossil fuel energy and moving towards renewable and carbon-free energy. Non-fossil energy generation methods (such as hydropower) have been used for centuries, but only recently have other technologies achieved the necessary factors required for large-scale implementation and self-generation. These include low capital costs, regulatory support, stable incentive program funding, and higher efficiency. Solar photovoltaic, biogas, landfill methane capture, and wind are all viable technologies for consideration as sources of energy and may even be more cost-effective if paired with an energy storage system, such as a battery.

To address the challenges associated with the deployment of renewable energy and the volatility of energy prices, battery energy storage systems (BESS) are able to capture the energy generated by renewables and store the energy until it is needed. BESSs also have the potential to overcome the availability and intermittency challenges of power from renewable sources, and to prevent curtailment of periods of oversupply by storing renewable energy and then releasing energy when the renewable sources are not available. Battery storage can effectively increase utility resiliency and energy reliability, as it supports energy loads by providing backup power during significant power outages or other emergency situations when utilized in an islanded, or microgrid, mode disconnected from the grid.

These new technological advancements and improved practices in the renewable and energy storage sectors provide additional, viable options for Metropolitan's long-term energy management (e.g., the use of battery energy storage for increased reliability, energy regulation, and savings). There are several incentive and credit programs, such as the CPUC Self-Generation Incentive Program (SGIP) and investment tax credit (ITC), that further improve the economic feasibility of battery energy storage projects.

New technological advancements and improved practices in the renewable energy and energy storage sectors provide viable options for Metropolitan's long-term energy management.

In the past several years, Metropolitan has taken advantage of these advancements by installing solar power generating facilities at its WTPs to reduce retail electricity costs, increase Metropolitan's energy independence, and lower Metropolitan's overall GHG emissions. The capital costs for installing solar power generating facilities have drastically decreased in recent years. Power utilities have reduced their incentives for additional solar installation and are beginning to modify their tariff rate structures as discussed above, resulting in decreases in potential cost savings from self-produced solar energy. Many water utilities in California have also installed in-line hydropower units where economically justifiable to recover energy in their system and offset energy demand (CEC, 2020). Similarly, pumped-storage systems that fell out of favor in past decades are now being evaluated because of the changes in California's energy market and the need to store supplies of renewable energy.

1.3 OBJECTIVES OF THE ENERGY SUSTAINABILITY PLAN

Energy management is critical for mitigating the effects of the factors stated above. Developed from Metropolitan's Energy Management Policies (Section 1.1.1), the main planning objectives of the ESP are to develop an adaptive energy management strategy and a project implementation roadmap resulting in projects and initiatives that:

1. **Contain costs and reduce Metropolitan's exposure to energy price volatility** –In general, projects and strategies that provide a payback period less than an asset life are considered favorable to Metropolitan. The changing energy market landscape provides Metropolitan with opportunities to implement projects and measures that reduce its energy and demand charges. Projects that protect against price volatility and respond to shifting tariff structures also help position Metropolitan to preemptively contain future energy costs.

2. **Increase operational reliability and flexibility** – Water system operations are critical for Metropolitan to continue delivering high-quality water to its customers throughout Southern California. The reliability of these operations is dependent on a multitude of factors, including the flexibility of where, how, and when water is delivered. Energy storage options that add flexibility in water operations also provide greater reliability.

3. **Move Metropolitan towards energy independence and sustainability** – While it is unlikely that Metropolitan could (or should) be fully independent from the energy grid (either in the retail or wholesale markets), implementation of projects with non-grid sources of energy can provide Metropolitan with a more reliable and resilient system. The ability to take advantage of high

and low energy prices in the market by adapting energy usage throughout the day allows Metropolitan more control over its energy costs, leading to more energy independence.

4. **Support Metropolitan's CAP effort to reduce GHG emissions** – California's GHG-related regulations (such as SB 100) are driving the state towards 100 percent carbon-free energy by 2045. Comprehensive programmatic planning documents, known as Climate Action Plans (CAP), are designed to identify GHG reduction actions and programs that offset future GHG emissions. Metropolitan is developing a CAP to inventory existing and historical GHG emissions, set a target for future emissions reductions and streamline the environmental review of GHG emissions from future capital projects. The ESP will support the CAP's GHG reduction target, if adopted by the Board, and evaluate projects that support the GHG emission reductions goals.

The purpose of this ESP is to develop a framework of sustainable actions focused on near-term and mid-term issues, and recommendations surrounding energy management, cost control, reliability, and adaptation on the CRA (which utilizes wholesale power) and the conveyance and distribution system (which utilizes retail power).

While the ESP focuses on energy management and cost control, this planning effort will also support other efforts and initiatives within Metropolitan, including integrated resource planning, the CAP, capital investment planning, compliance with requirements of California Environmental Quality Act (CEQA) documents (Appendix B), partnerships with member and peer agencies and utilities, ongoing discussions with DWR regarding SWP operations and costs, and supporting and influencing legislation beneficial to Metropolitan and its member agencies.

2.0 METROPOLITAN'S ENERGY SUSTAINABILITY PLANNING PROCESS

The development of the ESP and associated roadmap was conducted using an innovative multiphase approach, as presented in Figure 2-1 and detailed in the following sections. This plan has taken a holistic approach to energy sustainability planning, not only to evaluate energy opportunities for their financial viability, but also to include a multitude of benefits, such as operational reliability, revenue generating potential, energy independence, and carbon emission reduction.

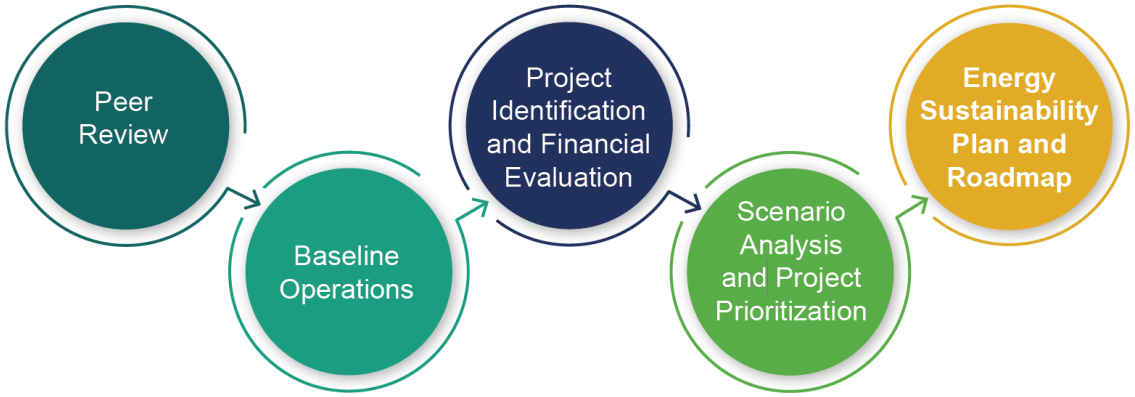


Figure 2-1 Conceptual approach used to develop Metropolitan's Energy Sustainability Plan

2.1 PEER REVIEW OF BEST PRACTICES FOR ENERGY SUSTAINABILITY IN THE WATER SECTOR

A review of energy management practices of 17 water utilities was conducted to define energy sustainability best practices in the water sector. The assessment identified each agency's energy management goals, planning approach, initiatives, and achievements. In combination with the peer review, workshops were held with staff from five California water and wastewater utilities to foster knowledge transfer on energy management and planning topics.

Key findings from the review of the energy management plans and workshop discussions were as follows:

- A limited number of water utilities develop energy master plans or have energy and sustainability targets that drive the selection of energy management strategies.
- Common energy management policies and goals focus on reducing energy cost and uncertainty, improving energy efficiency and reducing carbon emissions.
- Energy management plans are utility- and goal-specific; however, they often follow similar approaches used for evaluation and prioritization of energy sustainability initiatives.

- BESS options are now being integrated into water utility energy portfolios to provide opportunities for cost savings, operational flexibility, and better management of on-site renewable generation.
- Agencies implemented renewable energy and energy storage projects through power purchase agreements (PPA) or shared saving structures, which shifts project risks from the agencies to a third-party developer and allows monetization of federal tax incentives.
- Understanding energy use, generation, and wastage at water utilities is critical, and can be improved through advanced data management programs, conducting energy audits, and improving data acquisition processes through submetering.
- Communicating with the electric utilities and understanding electric utility programs is critical for a cost-effective management of energy use and power generation at water utilities.

An in-depth summary of the information collected through the workshops and the review of the energy management plans developed by the selected water and wastewater utilities is presented in Appendix C. This review, in conjunction with other resources, was used to identify potential energy projects and benchmarking initiatives for evaluation, as described in Section 4.0.

2.2 ASSESSMENT OF ENERGY BASELINE OPERATIONS

A large quantity of data was collected for the assessment of energy baseline operations at Metropolitan (Section 3.0) from a variety of sources, including supervisory control and data acquisition (SCADA), previous internal reports, third-party analysts, and electric utilities. The key data obtained for the assessment at Metropolitan's facilities (e.g., WTPs, conveyance and distribution system, CRA) can be broadly segmented in the following main categories:

- Site locations and constraints;
- Power demands of WTPs and major pump stations, including those from CRA operations (over the last 5-10 years);
- Energy generation from on-site renewable sources (e.g., solar, hydropower) at WTPs and other facilities (over the last 5-10 years);
- Energy bills and TOU structures from various energy suppliers (SCE, RPU, LADWP);
- Retail and wholesale energy market price forecasts (e.g., Wood Mackenzie and S&P Global Platts);
- Levelized cost of energy and levelized cost of storage;
- Federal contract hydropower and other constraints;
- Future capital improvement projects impacting Metropolitan's energy demands; and
- GHG emission factors and cost of carbon.

The data was gathered in relation to baseline assessment conditions and projected energy market scenarios, and was checked for accuracy, consistency, and completeness. In addition, relevant publicly available literature was reviewed and discussions were held with technology providers to assess the capital and operations and maintenance costs of renewable energy and energy storage systems. A description of the use of the above-mentioned data for the evaluation of projects selected for the ESP is detailed throughout the various sections of Appendix D.

2.3 IDENTIFICATION AND EVALUATION OF PROJECTS

The ESP identified a list of potentially viable project options to pursue for further evaluation. The project list is not exhaustive and is meant to be modified over time, as this plan provides an adaptive framework approach to evaluate new project options when they become applicable to Metropolitan's needs. The selection of projects was based on the findings of the previous EMRS, a review of previous energy management efforts at Metropolitan, a peer-review of other proactive water and wastewater utilities, and discussions with Metropolitan staff. The projects differ based on the type of facility and energy management project, the retail or wholesale market they participate in, and the type of technology assessed (e.g., renewable energy, battery energy storage, pumped storage, and hydropower). Identified projects fit in the following three major categories:

- **Retail energy market projects** - Renewable energy and energy storage projects within Metropolitan's WTPs and conveyance and distribution systems
- **Wholesale energy market projects** - Renewable energy and energy storage projects along the CRA
- **Energy management best practices** - Other utility-wide energy management initiatives, including energy efficiency and best management practices to increase internal resource advancement

The methodology used to assess the selected projects' financial and environmental feasibility is summarized in Figure 2-2. A summary of the outcomes of the project financial and environmental feasibility analyses is presented in Section 4.0. Detailed information on the approach, assumptions, and results of the financial and environmental feasibility assessment is presented in Appendix D.

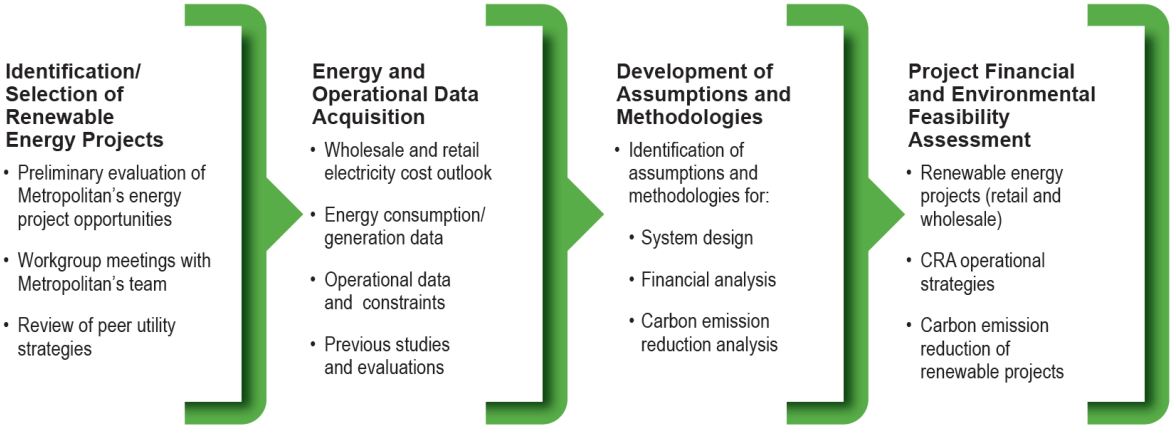


Figure 2-2 Conceptual methodology used to develop the financial and environmental feasibility assessment of selected renewable energy and storage projects at Metropolitan

Projects that involve third-party contracts (such as large-scale renewable energy along the CRA, or pumped storage projects) were identified in this plan as options for Metropolitan to consider, but were not fully evaluated. These types of projects have numerous considerations besides financial payback, including environmental constraints, permitting, land use, risk mitigation, and third-party contract agreements. Due to these factors, each project requires its own in-depth evaluation with potential third-party providers, which is beyond the scope of this plan.

2.4 PROJECT RANKING, PRIORITIZATION, AND SCENARIO ANALYSIS

Following the financial and environmental assessment, identified projects were further evaluated using two alternative decision-making tools:

- A multi-criteria decision analysis (MDA) that compares the relative performance of options based on considerations that go beyond costs alone, and
- A detailed scenario analysis that effectively "stress tests" each option under a range of plausible future conditions based on the key energy market drivers identified in Section 1.2.

These comparative analyses utilize both quantitative and qualitative criteria for the purpose of ranking the relative performance of options against one another (in an MDA) and under alternative future scenarios. The combination of the MDA and scenario assessments is intended to assist in the decision-making process and illustrate trade-offs that should be considered when setting priorities. The scenario evaluation was also helpful in identifying future conditions that might justify reprioritizing options or signal a change in the energy market's direction.

Planning tools were developed and applied during a series of four interactive workshops that included participation of senior management and staff from different groups at Metropolitan, including engineering, operations, environmental planning, and water resources management. The workshop process, including the topics covered and outcomes, is presented in Figure 2-3.

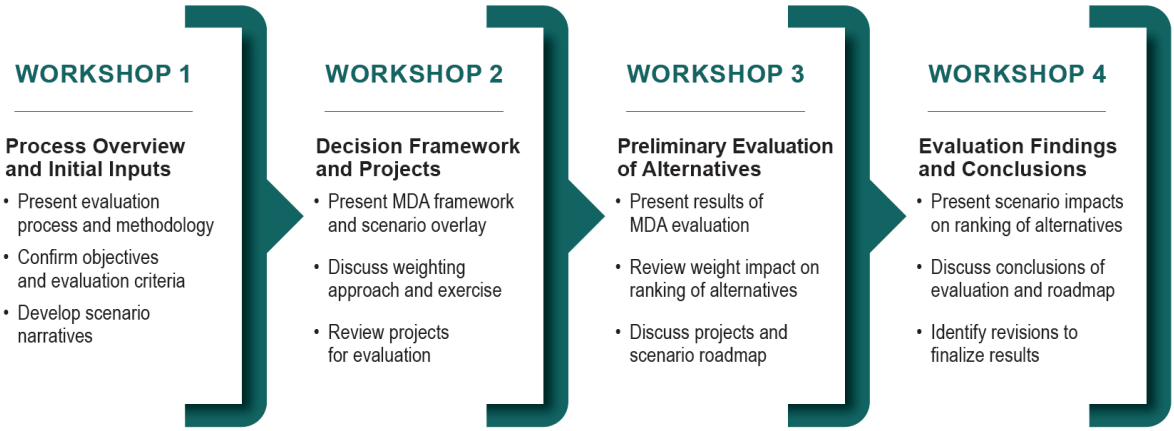


Figure 2-3 Overview of workshop process, topics, and outcomes

Together, the two approaches highlighted the trade-offs among options, while indicating the robustness of options under plausible future conditions. The approach and process undertaken during the workshops, and the details of the MDA and scenario frameworks, are presented in Section 5.0 and Appendix E.

2.5 DEVELOPMENT OF ENERGY SUSTAINABILITY PLAN AND ROADMAP

The information collected through the steps identified in the previous sections was used to develop the ESP and a related roadmap to direct the short-term (less than three years) to long-term (up to 10 years) future projects and activities Metropolitan should consider to meet the policies and goals described in Section 1.0. The roadmap and related description are presented in Section 6.0.

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3.0 METROPOLITAN BASELINE FACILITIES AND OPERATIONS

Metropolitan's net energy use and costs are dominated by the pumping (transport) of water over the CRA and SWP systems. For the period of 2013-2018, approximately 93 percent of Metropolitan's annual electricity costs were for the SWP and CRA systems, and the remaining 7 percent of energy costs were associated with retail electricity purchases for water treatment plants and other Metropolitan facilities (Figure 3-1).

During this period, 75 percent of Metropolitan's total annual energy expenditures were associated with the SWP, which accounted for approximately 55 percent of total annual energy consumption to pump water into Southern California. This disproportionate energy cost is attributed to a higher unit price for electricity to pump water along the SWP, as compared to the unit price of electricity for the CRA (which includes low cost federal hydropower from Hoover and Parker Dams). Additionally, the large energy cost is also due to the higher energy intensity of SWP supplies (approximately 3,300 kWh/acre-foot [AF]) compared to CRA supplies (approximately 2,000 kWh/AF).

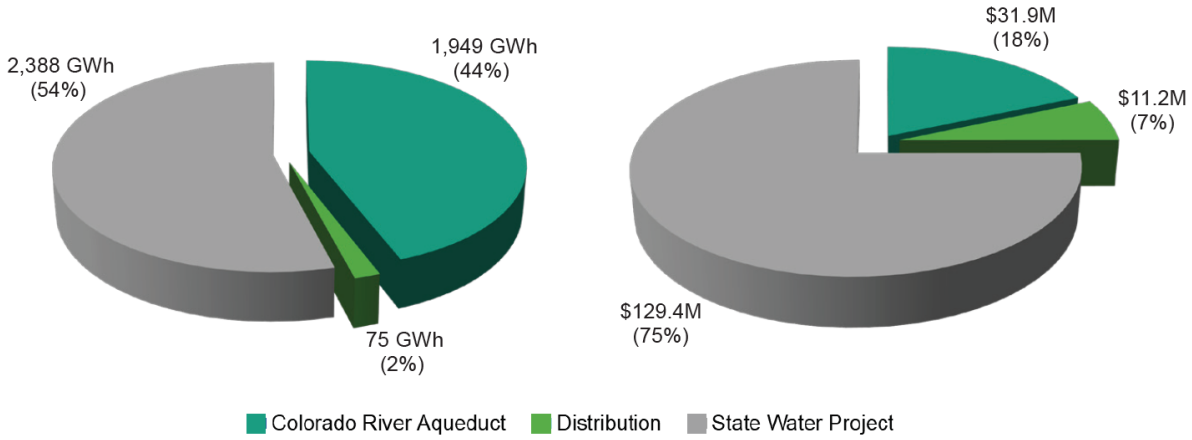


Figure 3-1 Metropolitan's overall electricity requirements and cost (average 2013-2018)

Given Metropolitan does not have direct control over operations of the SWP, the remainder of this section will focus exclusively on the energy use and cost for CRA operations (wholesale power) and for Metropolitan's treatment, distribution and office facilities (retail power).

For wholesale power, Metropolitan has proactively maintained several power contracts with various suppliers that have contract prices and terms set to help Metropolitan and its member agencies maintain a favorable overall low cost for wholesale electricity related to transporting water via the CRA. Today, Metropolitan has existing advantageous contracts with the U.S. Department of Interior, Bureau of Reclamation (USBR), Western Area Power Administration (WAPA) and others. Details on these contracts are discussed in the following sections. Annual costs for wholesale electricity have varied widely due to a variety of factors, including pumping volume, the utilization of energy banking provisions, and the volatility in the energy markets. Additionally, California's cap-and-trade program established in 2013 resulted in an added cost to market prices for energy with GHG emissions, including imported electricity, and affects Metropolitan's wholesale energy cost. Due to this embedded cost of carbon, Metropolitan's carbon footprint is evaluated as a continuing future factor in higher

wholesale energy costs and is an essential aspect of energy cost mitigation recommendations. Additional information on this is provided in Appendix D.

Metropolitan relies on retail power from several local retail energy providers for its water treatment facilities and conveyance and distribution system. Retail energy providers utilize tariff structures and TOU rates to establish more stable energy rates for their retail customers. For this reason, retail energy costs are more predictable, although historically greater, than wholesale energy costs. Additional information on this is provided in Section 3.1.5.

In addition to low cost hydropower from Hoover and Parker Dams, Metropolitan employs a diversified portfolio of energy sources, including renewable energy, that helps offset a small share of its energy demand and/or incurred cost. Metropolitan's energy portfolio includes 15 small hydropower generating facilities at various locations within the conveyance and distribution system (total nameplate capacity of approximately 130 MW) and four solar power installations (total capacity of 5.5 MW). In addition, at all critical facilities, Metropolitan maintains diesel emergency generators that support operations in case of grid power outages at all critical facilities (e.g., treatment plants, pumping plants).

3.1 ENERGY SUPPLIERS AND POWER CONTRACTS

Metropolitan's energy needs are supplied by generators within CAISO as well as energy imports into CAISO. The following sections provide information on Metropolitan's federal hydropower contracts and wholesale energy arrangements to serve CRA loads, and electric utility service for Metropolitan's retail loads.

3.1.1 CRA power management

Metropolitan is entitled to the largest single share of energy from Hoover Dam at 27 percent, 12 percent of Hoover Dam's generation capacity, and the largest single share of power generated at Parker Dam at 50 percent. Depending on the CRA pumping level and generation from these large federal hydropower projects, Metropolitan may purchase supplemental energy from the CAISO or bilateral spot markets in the Southwest. When Metropolitan imports power from Hoover Dam, Parker Dam, or Southwest purchases using its transmission system, it avoids transmission costs associated with receiving power from the CAISO. However, the build out of renewable wind and solar generation in recent years to meet the California renewable portfolio standards (RPS) has depressed power prices in the CAISO during mid-day hours (the duck curve). During some periods, power prices from the CAISO are sufficiently lower than those available from the Southwest, that it is more economic to purchase power from the CAISO and pay the CAISO transmission charges rather than import power. This trend is expected to continue as additional solar and wind capacity is built in eastern California to meet the SB100 renewable goals. Purchasing power from the CAISO when economic also allows Metropolitan to better optimize the value of its federal hydropower energy during higher priced periods in early morning and late in the day.

Metropolitan is also optimizing its' CRA power operations by disaggregating its pumping loads. The Metropolitan pumping locations have been historically aggregated into a single load aggregation point for the purposes of scheduling and settlement with the CAISO. In March of 2020, Metropolitan disaggregated its pumping loads in order to optimize the use of CAISO purchases or imports to each

individual pumping location for each hour. This strategy along with further optimization of Hoover and Parker Dams energy scheduling noted previously, is expected to generate substantial savings in CRA power costs moving forward.

3.1.2 CRA capacity obligations

Metropolitan and other load-serving entities in California are required to have and make available sufficient Resource Adequacy capacity to meet peak loads in the CAISO balancing area. Metropolitan's federal hydropower entitlements and the ability to interrupt loads at Gene and Intake Pumping Plants have generally been used to meet Metropolitan's capacity obligations. However, the CAISO capacity obligations have evolved to require flexible capacity attributes that are not met by static schedules from the federal hydropower projects. In order to meet these requirements, Metropolitan implemented dynamic scheduling of its Hoover Dam capacity entitlement in April 2020. Other California contractors of Hoover Dam capacity have also implemented dynamic scheduling of Hoover capacity to gain flexibility. Absent this development, Metropolitan would be required to purchase flexible capacity from third party generators to meet its flexible capacity obligation, at substantial additional cost.

3.1.3 Federal hydropower supply for CRA

Hoover Contract (WAPA)

Metropolitan has a 50-year Energy Service Contract through September 30, 2067, with WAPA for a portion of hydropower generated at the Hoover Dam. Hydropower is generated by the release of Colorado River water stored in Lake Mead. The cost of Hoover Dam power is typically between $0.018 and $0.020 per kilowatt-hour (kWh) ($18 to $20 per MWh), but varies year-to-year based on rates set by WAPA. The cost is based on funding operating and maintenance costs, extraordinary maintenance items, capital additions, and paying back capital costs invested by the U.S. government associated with Hoover Dam hydropower.

The Energy Service Contract contains a new provision for Hoover contractors to voluntarily request that WAPA reallocate its portion of capacity and energy. Other contractors that accept a reallocation from WAPA are responsible for paying for the established rates associated with the reallocation. Until a reallocation is complete, a contractor is obligated to continue paying for such capacity and energy. In the event of a contractor default, such contractor remains responsible for paying for the established rates until a reallocation is complete. In addition, there are also ongoing concerns over future changes in hydrology which may result in a reduction in energy generation and thus increase the energy rates paid by the contractors. As such, this creates a short- to medium-term uncertainty for energy costs to serve CRA operations.

Parker Contract (USBR)

The Parker Dam is owned and operated by the USBR and hydropower is generated by the release of Colorado River water stored in Lake Havasu. The contract with the USBR entitles Metropolitan to 50 percent of the Parker Power Plant capacity and the associated energy in perpetuity. Energy availability is contingent on the availability of Colorado River water. Costs for Parker Dam hydropower are based on dam operating and maintenance costs, extraordinary maintenance items, and capital additions.

The long-term reliability of Parker Dam hydropower output is also dependent on Colorado River hydrologic conditions. As discussed in Section 1.2.4, it is possible that climate change could significantly alter future hydrologic conditions along the Colorado River. Therefore, Metropolitan is working closely with federal agencies and other entities with interests in maintaining fundamental operations along the Colorado River.

3.1.4 Supplemental energy services at CRA

Metropolitan has two long-term agreements with AEPCO to support CRA operations. The scheduling and trading agreement with AEPCO provides for energy scheduling from Hoover and Parker Dams, procurement of supplemental energy for CRA operations, trading services, and power system operations services. The operations services agreement establishes AEPCO as the operator of the CRA transmission system and identifies tasks to be delegated to Metropolitan to comply with the North American Electric Reliability Corporation electric reliability standards.

Metropolitan also has a new long-term agreement with CAISO to provide balancing area services to support CRA operations. CAISO is a not-for-profit, public-benefit corporation charged with operating the majority of California's high-voltage wholesale power grid as of March 31, 1998. Although Metropolitan's transmission lines are within CAISO's control area, Metropolitan maintains ownership and control of its transmission lines.

3.1.5 Retail energy providers

While the majority of Metropolitan's energy usage is derived from CRA pumping operations, the remainder of operations within the conveyance and distribution system, including water treatment plants, pump stations, reservoirs, office buildings and other ancillary facilities, relies on retail grid-power. Energy for these facilities is dependent on the retail power provider where each Metropolitan facility is located. The primary retail energy providers for Metropolitan are SCE, LADWP, and RPU. Retail energy prices have historically always been greater than wholesale energy prices due to added transmission, distribution, and other charges included in retail energy rates. Retail rates include both variable and fixed charges, which contribute to an overall higher average price than wholesale energy rates. Retail variable charges are dependent on energy usage and demand and can therefore be reduced by decreasing overall energy usage. Fixed charges are independent of energy usage and do not change on a customer's monthly bill. On the other hand, wholesale rates are dependent on the energy price determined on the spot market. Figure 3-2 illustrates that on average, retail rates can be twice as high as average wholesale rates for the CRA.

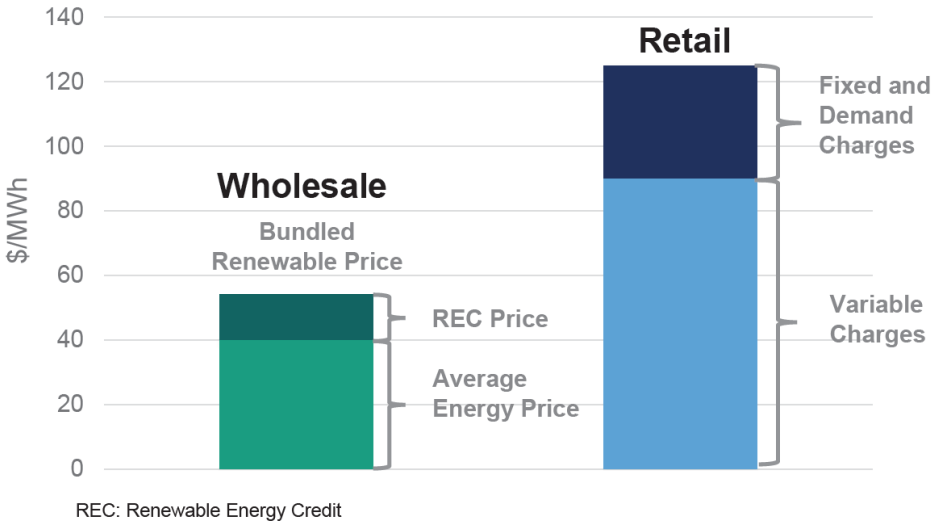


Figure 3-2 Typical wholesale and retail energy costs

In general, per-MWh costs of retail power rise from year to year due to factors related to cap-and-trade program compliance, RPS goal compliance, electricity grid expansion/upgrades, and the decommissioning of local generating stations. The costs of these efforts are borne by the electric entities but are passed along over time to their customers. With the emergence of the "duck curve" effect in the wholesale energy market (Section 1.2.2), retail energy providers are beginning to revise their tariff structures accordingly and shift their TOU periods to be more in-line with the new patterns seen in the wholesale market (Figure 3-3).

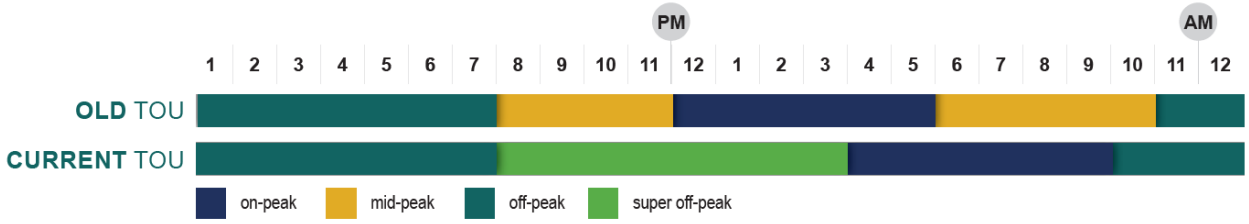


Figure 3-3 Summer weekday retail energy rate time-of-use (TOU) shift

In general, the only practical strategies available to consumers to mitigate such retail energy costs are to shift the timing of demand through operational changes or energy storage; by implementing energy efficiency measures by reducing use, generally; or self-generating their own (non-grid) power. Metropolitan has adopted similar strategies in the past to hedge against rising retail costs.

3.2 ENERGY DEMAND AND COST

Metropolitan's energy demand profile consists of energy use for CRA pumping operation, and for retail distribution and treatment facilities. Wholesale electricity is used to meet the CRA load while retail electricity is used to meet all other conveyance and distribution system needs, including five water treatment plants, the Union Station Headquarters, OC-88 pumping station, Diamond Valley Lake pumping facilities, reservoirs, and other Metropolitan ancillary facilities (Figure 3-4). Of the electricity

that Metropolitan purchases directly, 96 percent is wholesale electricity used to meet the CRA load, 2 percent is retail energy utilized at the treatment plants, and the remaining 2 percent is energy used at other facilities supplied by retail providers. Although the CRA accounts for 96 percent of Metropolitan's energy usage, the CRA only accounts for 74 percent of Metropolitan's direct energy costs, which is primarily due to the low-cost federal hydropower energy from Hoover and Parker Dams.

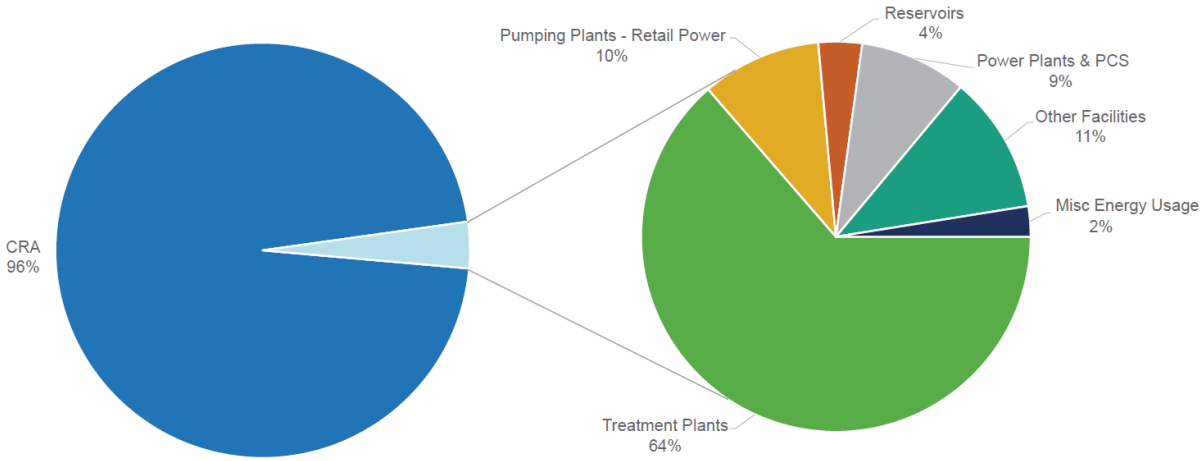


Figure 3-4 Average direct energy usage distribution at Metropolitan's facilities

3.2.1 CRA energy demand

As shown in Figure 3-5, CRA water deliveries and electricity loads historically have been highly correlated and vary annually. Recent planning efforts anticipate CRA water deliveries at an average of 900 thousand acre-feet per year in the future (Metropolitan, 2015) and electricity needs along the CRA can be expected to be similar to periods with deliveries of that magnitude. Generally, it takes 2 MWh to pump an acre-foot of water on the CRA. Of this electricity, approximately 50 to 85 percent is supplied by low-cost and no-GHG electricity from the Hoover and Parker Dams, while the remaining demand has been met with wholesale electricity purchases. All wholesale power purchases derived from carbon-fueled sources will carry an additional cost in the form of purchased carbon allowance credits, which is reflected in the wholesale energy price Metropolitan pays for purchases from the CAISO, and the incremental cost of allowances Metropolitan must purchase for imports to support CRA operations.

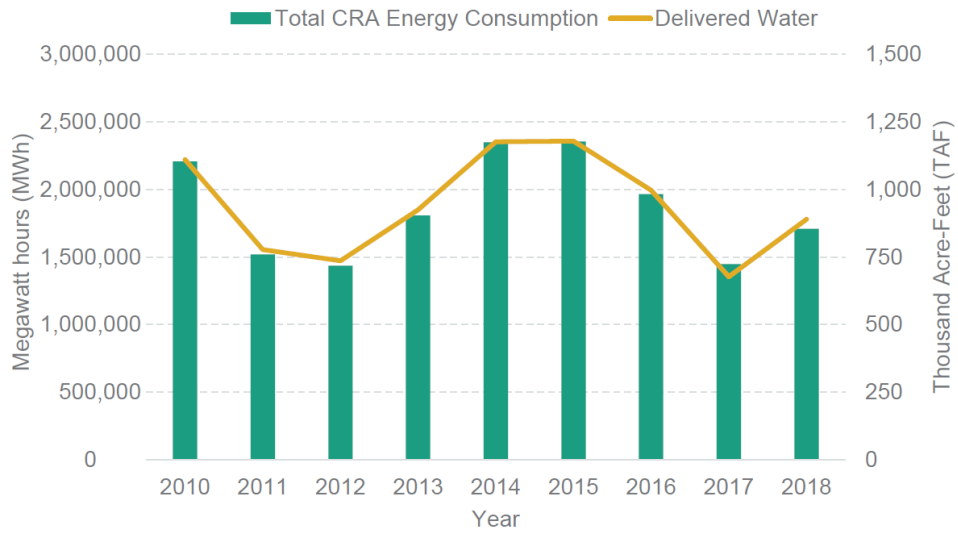


Figure 3-5 Historical CRA energy consumption and volumes of water delivered

Figure 3-6 illustrates that the annual energy use for the CRA is not directly proportional to cost. While historical electricity consumption has varied between 1,300 to 2,400 GWh, costs have fluctuated between $0.17 million to greater than $47.5 million. The price of Hoover Dam and Parker Dam power is extremely low relative to retail market rates and average on-peak (and sometimes off-peak) wholesale market rates, and fairly constant (e.g., $18-$20 per MWh for Hoover Dam power).

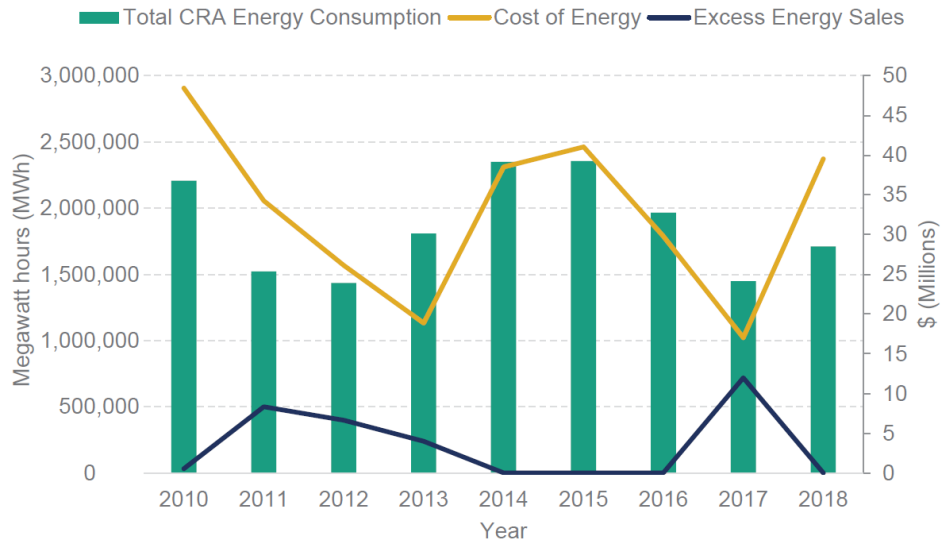


Figure 3-6 Historical CRA energy consumption and cost

3.2.2 Retail energy demand

Excluding the SWP, retail energy accounts for 4 percent of Metropolitan's total energy consumption and 26 percent of total energy costs (see Figure 3-1). This disproportionate cost for retail energy as compared to wholesale energy is due to higher retail energy rates (Figure 3-2) and the availability of

low cost federal hydropower for the CRA, as noted in Section 3.1.5. Metropolitan's demands for retail energy are directly impacted by population growth and conservation efforts; and unlike the CRA, retail energy usage and costs are directly correlated (Figure 3-7). Moving forward, shifts in retail TOU rates or increases in the rates themselves can have significant impacts to Metropolitan's total energy costs.

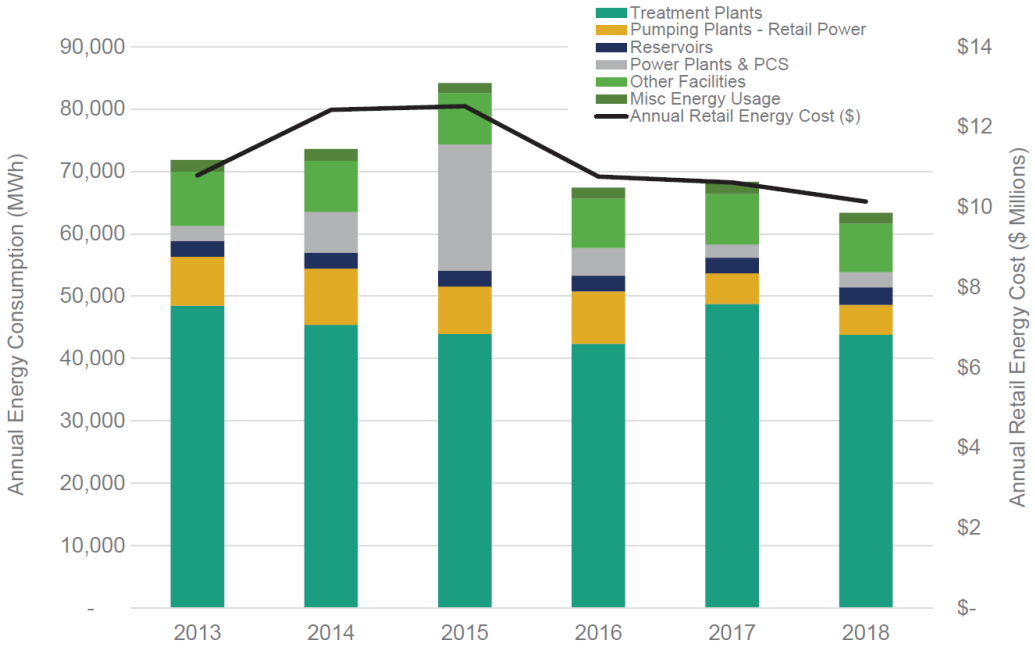


Figure 3-7 Historical annual retail energy consumption and cost (2013-2018)

3.3 ENERGY GENERATION

Metropolitan's energy portfolio includes renewable and non-renewable sources that help offset a small share of its energy demand and/or incurred cost. The following sections provide details on the small hydropower and solar generating facilities that are currently in operation at various locations within Metropolitan's service area.

3.3.1 Small hydropower

Metropolitan owns and operates 15 small hydropower facilities (total nameplate capacity of approximately 130 MW) at various locations within its conveyance and distribution system. These facilities each have a design capacity under 30 MW, which qualifies them as renewable resources under current California law. As renewable resources, these facilities generate renewable energy credits (RECs), in addition to electricity, which can be sold to third parties (e.g., electric utilities) at wholesale rates to meet those parties' (or the end-purchaser/users) RPS goals. Currently, the generated hydropower (with associated RECs) is sold at a contracted, fixed rate, and it is not used to offset the energy demand of Metropolitan's facilities.

Since 2005, cumulative annual energy production at all of Metropolitan's small hydropower generating facilities has ranged from 138 to 525 gigawatt hours per year (Figure 3-8). Hydropower production has

seen a downward trend in the last decade, which can be attributed to drought conditions throughout California, reducing SWP deliveries and local conservation efforts that have altered flows in the conveyance and distribution system.

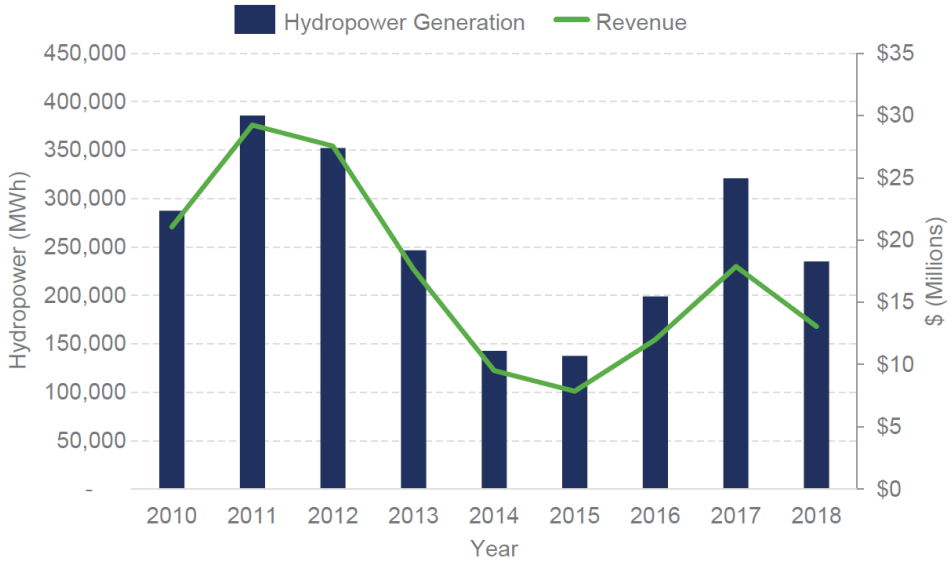


Figure 3-8 Historical annual generation and revenue from small hydropower facilities

3.3.2 Solar generation

Since 2006, Metropolitan has operated four solar power generating facilities for a total of 5.5 MW of solar generating capacity. The first solar installation was installed at the Diamond Valley Lake Visitor Center, with 0.5 MW of roof-mounted photo-voltaic panels. Subsequent solar facilities of 1 MW, 3 MW, and 1 MW were installed over the following decade at Skinner WTP, Weymouth WTP, and Jensen WTP, respectively (Figure 3-9). The solar generation is used directly at the above facilities to not only decrease retail energy costs at these sites, but also contribute to reducing Metropolitan's carbon footprint. The implementation of these solar facilities has subsequently reduced Metropolitan's carbon emissions by approximately 2,000 metric tons of carbon dioxide per year.

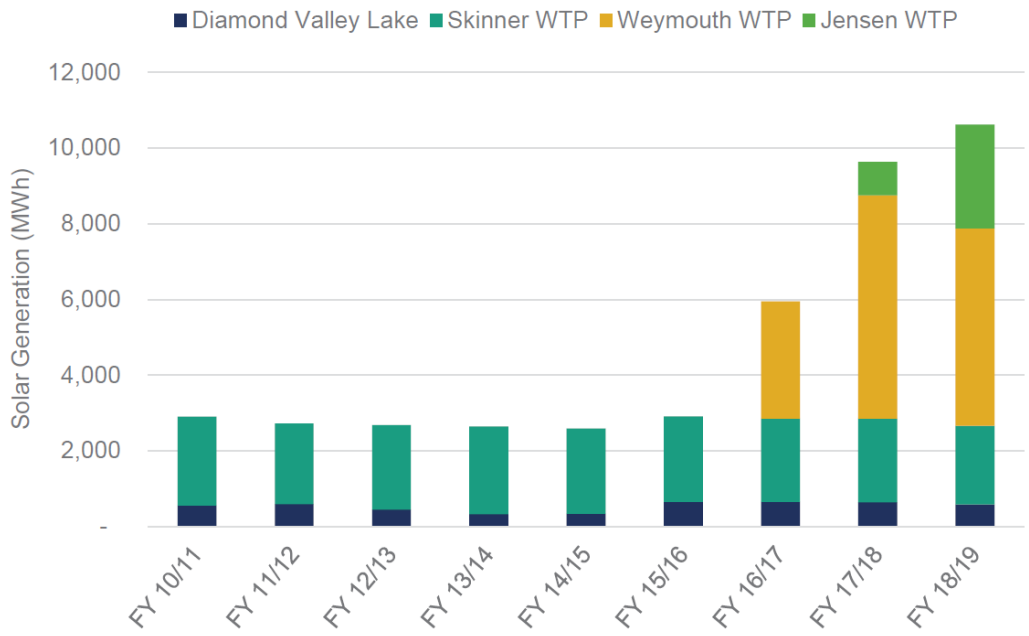


Figure 3-9 Historical annual solar generation at Metropolitan's facilities

On any given day, solar generation may exceed the energy demand at the site and the excess renewable generation is utilized by Metropolitan through participation in the following two programs:

- **Net-metering** allows self-generation customers to receive bill credit for excess power fed back to the local power utility provider. Net-metering applies only to grandfathered, on-site self-generation.
- **Renewable Energy Self-Generation – Bill Credit Transfer** allows self-generation customers to receive a credit for any excess power at a facility, and that credit can then be applied to the energy portion of the bill for multiple other accounts within the same utility territory.

3.3.3 Wholesale generation

Under current conditions, federal hydropower from Hoover and Parker Dams is on average the least expensive source of power for the CRA operations. Development of new wholesale generation by Metropolitan may only be financially beneficial if generating energy is less expensive than purchasing energy in the spot market. However, as seen in Figure 3-10, Metropolitan's demand for energy on the spot market varies widely by year. In some years, hundreds of thousands of MWh are purchased, some of which are imported from carbon-derived fuel sources, which requires Metropolitan to purchase and surrender carbon allowances under the CARB cap-and-trade regulation. Given the range of wholesale energy needs, Metropolitan-sponsored generation along the CRA has the potential to produce excess electricity. In such a case, Metropolitan would sell excess power at wholesale rates back to the market (e.g., CAISO or exported to the southwest), thereby offsetting a portion of its wholesale energy costs.

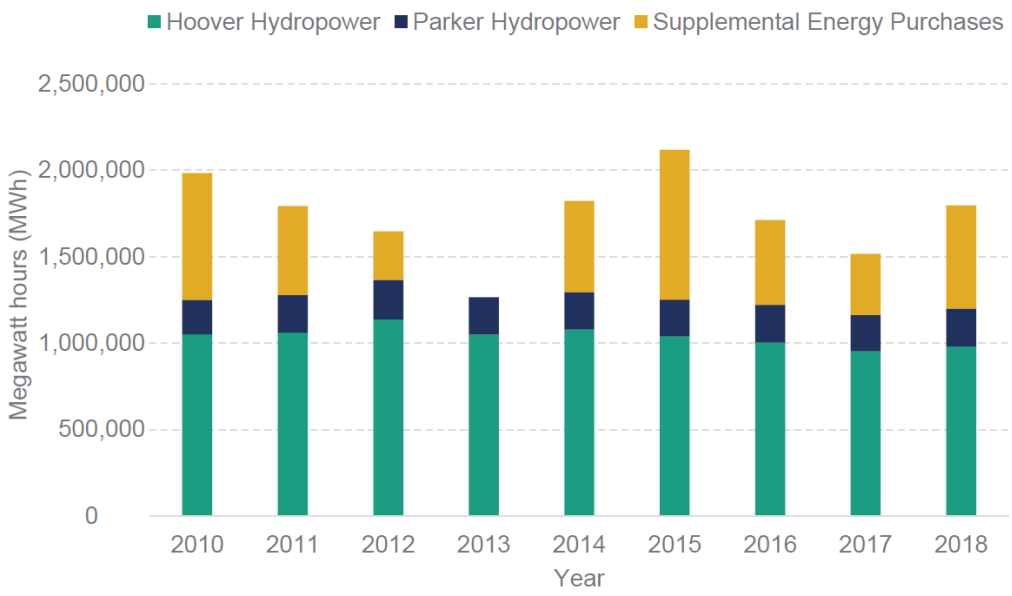


Figure 3-10 CRA pumping energy sources

3.4 GHG EMISSIONS

Since 2005, Metropolitan has been tracking its GHG emission inventory and reporting to CARB and to the Climate Registry beginning in 2007. Under CARB Mandatory Reporting Regulations, Metropolitan is required to report electric power transactions and the GHG emissions associated with power imported to, exported from, or wheeled through California. Metropolitan is also required to report fugitive sulfur hexafluoride (aka SF_6, an insulating gas used in electrical equipment) from its distribution systems, substations, and circuit breakers. Under the Climate Registry General Reporting Protocol (GRP) and Electric Power Sector Protocol, Metropolitan reports its Scope 1 and Scope 2 GHG emissions from district-wide operations, which include the CRA pumping plants, water treatment plants, pressure control structures, and various other administration and operations buildings.

GHG emissions from energy consumption is reported under Scope 2 of the GRP protocol. Just as the majority of Metropolitan's direct-pay energy demand is used to meet the CRA load, approximately 80 to 90 percent of Metropolitan's annual GHG emissions are from wholesale electricity purchased for CRA pumping operations, as shown in Figure 3-11 below. GHG emissions for 1990 were estimated based on available data and calculations using CARB guidelines and are currently used as a baseline to calculate GHG emissions reduction.

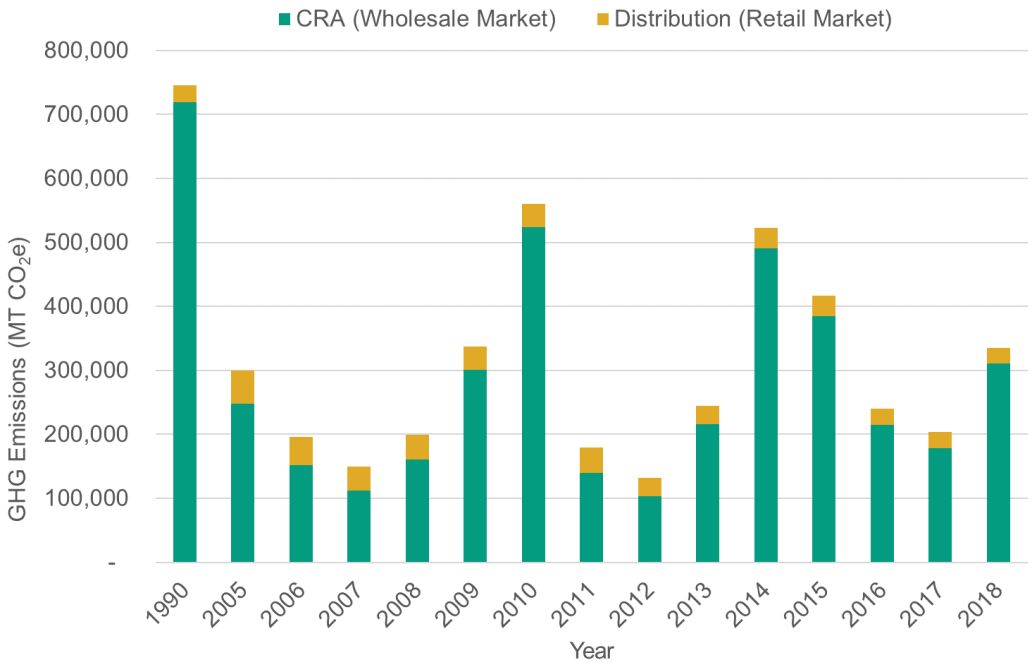


Figure 3-11 Metropolitan's annual GHG emissions by energy market

Historically, GHG emissions from the CRA system varied widely, as shown in Figure 3-12. The calculated CRA system emission factor (EF) ranged from 0.072 kilograms (kg) CO_2e/kWh for a low flow year (2012) to 0.239 kg CO_2e/kWh for a high flow year (2010). A higher EF is the direct result of a higher percentage of supplemental non-hydro energy purchases for CRA pumping energy demands and, as such, should be one of the main focuses when developing strategies to reduce Metropolitan's GHG emissions.

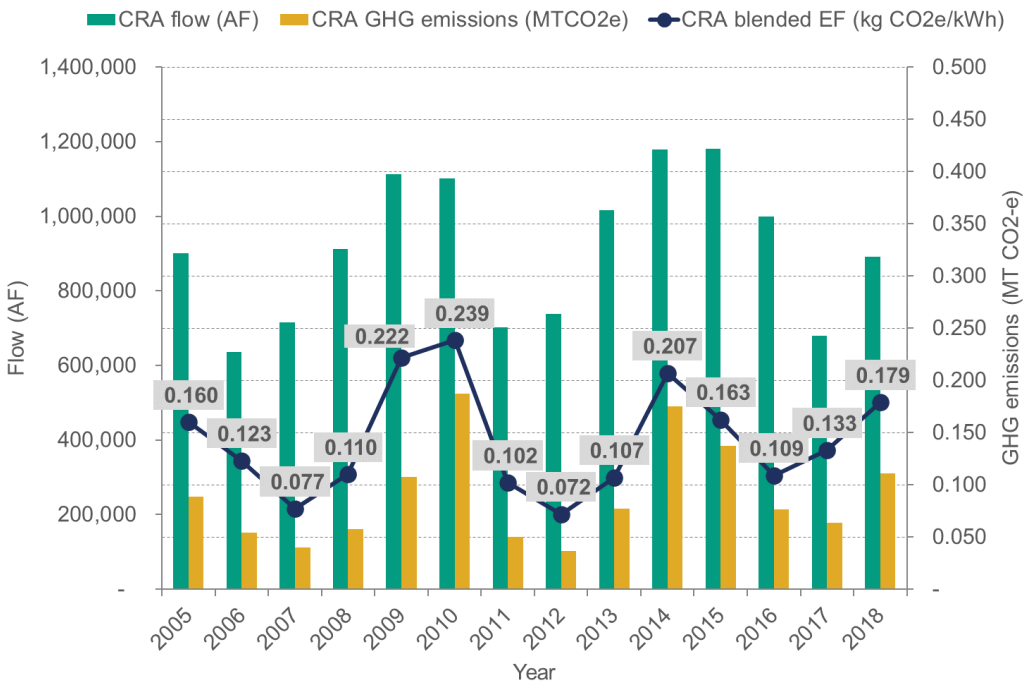
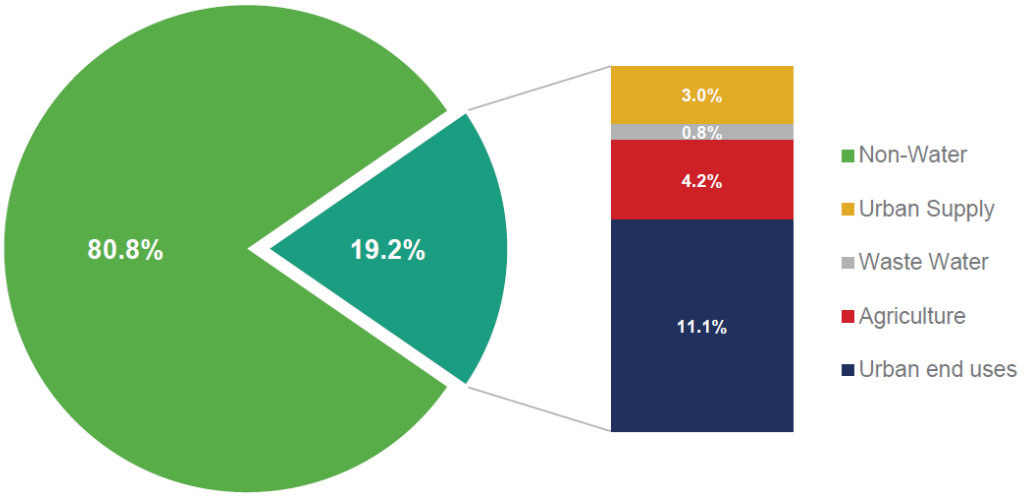


Figure 3-12 Historical GHG emissions from CRA operations energy demand

3.4.1 Water energy nexus

Water and energy are often managed separately, despite the important links between the two resources. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems. Therefore, a sustainable management of either resource requires consideration of the other.

In California, this water-energy relationship is significant, since water-related energy use consumes 19 percent of the state's electricity (Figure 3-13) (Schwarzenegger, 2005). Of the 19 percent of water sector electrical use, approximately 3 percent is associated with urban water agency conveyance, treatment and distribution. Over half of the water-related electricity use is attributed to consumer end uses such as heating and cooling. The 3 percent of electricity associated with urban water supply represents the "embedded energy" in water, whereas the 11 percent of electricity attributed to end uses represent a direct use of energy by consumers. The sources of energy used to power these water activities is directly tied to the volume of GHG emissions emitted into the atmosphere.



Source: CEC, 2005

Figure 3-13 California's water sector electricity usage breakdown

To address this, the California Environmental Protection Agency and the Climate Registry launched a Water-Energy Nexus Registry in May 2019 for organizations operating in California. The new registry will help water agencies and utilities better understand the energy and GHG emissions associated with each process in water management and use; provide standardized methodologies to quantify the GHG emissions embedded in the complete water use cycle; and develop reporting registries based on these methodologies. In turn, this will help these agencies become more energy efficient and reduce their carbon footprints.

Metropolitan is one of the founding members of the Climate Registry, participated in its development and will begin to report its GHG intensity metrics in 2020. Metropolitan maintains an internal team to coordinate Metropolitan Water-Energy Nexus activities.

4.0 ENERGY MANAGEMENT PROJECT EVALUATION

As stated in Section 1.3, the main objective of this plan is to develop an adaptive energy management strategy resulting in projects and initiatives that provide multiple benefits to Metropolitan. Identified prospective projects and initiatives for this strategy fall under one of the following categories:

- **Retail energy market projects** - Renewable energy and energy storage projects within Metropolitan's WTPs, and conveyance and distribution systems
- **Wholesale energy market projects** - Renewable energy and energy storage projects along the CRA
- **Energy management best practices** - Other utility-wide energy management initiatives, including resource development, energy efficiency, and best energy management practices

The main focus of this planning effort was on renewable energy and energy storage projects due to the potential benefits they provide and declining costs. For these projects to be considered part of Metropolitan's adaptive energy management strategy, they must first be considered financially feasible. Economically feasible projects are those that have a payback period less than the asset life and a positive net present value (NPV). In addition to financial feasibility, identified projects were also assessed for carbon emission reductions, as applicable, to determine additional environmental benefits. A summary of this evaluation is discussed in the sections below with final results presented in Section 5.3. The full report detailing the specifics of each project evaluation, including capital costs, payback, and NPV, is found in Appendix D.

4.1 RETAIL ENERGY MARKET PROJECTS

Potential renewable energy and energy storage project opportunities within Metropolitan's WTPs and conveyance and distribution system are presented in Table 4-1.

Projects evaluated on Metropolitan's treatment and distribution system involved expanding Metropolitan's solar generation capabilities and implementing battery energy storage to complement self-generation and enable low-cost energy to be used during periods of high energy prices. Another project evaluated was connecting Yorba Linda Power Plant behind the SCE meter at Diemer WTP to fully meet the plant's energy demand with carbon-free hydropower when the hydroelectric plant is running. All evaluated projects were considered financially feasible and provided additional GHG emission reduction benefits. However, it should be noted that financial feasibility of BESS projects would rely heavily on available incentives through the SGIP.

Table 4-1 Renewable and energy storage projects evaluated in the retail energy market

Energy Provider	Project Location	Technology/Project
Southern California Edison	Weymouth WTP	BESS with existing solar or grid
	Skinner WTP	Solar expansion (Metropolitan-owned vs PPA)
		BESS with solar expansion
		BESS with existing solar or grid
	Diemer WTP	Yorba Linda connected behind retail energy meter
	OC-88 Pumping Plant	BESS (stand-alone)
Riverside Public Utilities	Mills WTP	New solar (Metropolitan-owned vs PPA)
		BESS with new solar
		BESS (stand-alone)
Los Angeles Department of Water and Power	Jensen WTP	BESS with existing solar or grid

BESS = Battery energy storage system
PPA = Power purchase agreement
WTP = Water treatment plant

The energy storage industry is relatively new and expected to grow as BESS technology is placed in wider ranging and challenging environments. Thus, there are recognized risks and concerns pertaining to the product warranties and financial health and flexibility of the companies involved on provisioning the systems. End-of-life and disposal is also a concern for BESS, but would be further evaluated during project implementation with consideration for future innovations in energy storage technologies.

4.2 WHOLESALE ENERGY MARKET PROJECTS

Renewable energy and energy storage project opportunities identified on the wholesale energy market are presented in Table 4-2. These include hydropower within the conveyance and distribution system, and projects along the CRA.

Table 4-2 Renewable and energy storage projects evaluated in the wholesale energy market

Energy Provider	Project Location	Technology/Project
California Independent System Operator (CAISO)*	Conveyance and Distribution System	Small-scale hydroelectric facilities
		In-line hydroelectric facilities
		Pumped storage
	Colorado River Aqueduct (CRA)	Pumped storage (Metropolitan-owned vs. third-party developer)
		Large-scale solar
		Large-scale wind
		BESS (stand-alone)
		Operational flexibility

BESS = Battery energy storage system
*CAISO is a public-benefit corporation in charge of operating the wholesale power grid and provides balancing area services to support CRA operations

Considering that energy for CRA pumping operations constitutes the majority of Metropolitan's electricity purchases, large-scale renewable energy and energy storage projects along the CRA are potential options to manage energy costs. With respect to large-scale wind and solar projects along the CRA, SB 100 imposed an RPS of 60 percent by 2030 on utilities and other energy service providers (Metropolitan is not subject to the standard). RPSs are already resulting in deep penetration of solar generation as the preferred choice in California and throughout the southwest based on declining capital cost, tax credits, and efficiency gains. Although the 60 percent goal is 10 years away, the solar buildout has already resulted in depressed mid-day energy prices during much of the year. In evaluating the economics of building additional solar to directly serve the CRA pump load, the results indicate that continued build out of solar to meet the utility RPS and further declining wholesale energy prices affecting Metropolitan's pump locations make this option uneconomic at this time.

This same dynamic enhances the value of energy storage and load shifting, taking advantage of the duck curve effect. Energy stored during the mid-day hours can be used during peak price periods in the evening and early morning hours, when solar generation is not available and higher cost gas-fired peaking capacity must be used to meet load. Energy storage projects evaluated included both pumped and battery energy storage but due to the high capital costs and possible operational effects of pumped storage, battery energy storage is considered more viable at this time.

Similarly, to the degree that pumping operations can be modulated to respond to this price dynamic, energy costs can be reduced. The implementation of variable frequency drives (VFD) on the CRA pumps at Intake and Gene Pumping Plants in conjunction with the use of the reservoir storage available at Gene Wash and Copper Basin can facilitate this load shifting and reduce CRA energy costs. The implementation of VFDs should be studied in conjunction with the reliability upgrades already planned for the CRA pumping operation.

4.3 ENERGY MANAGEMENT BEST PRACTICES

As noted in Section 1.1.2, Metropolitan already participates in several best practices associated with energy management that have helped reduce Metropolitan's overall energy consumption. However, there are several additional practices and initiatives that Metropolitan could begin implementing to further reduce Metropolitan's energy usage and exposure to changes in energy prices. Increasing Metropolitan's energy management best practices includes the following:

- Establish a dedicated Energy Sustainability team to further expand Metropolitan's current energy best practices and implement the recommendations of this ESP
- Expand staff and resources for energy management by organizing regular staff trainings on operational and maintenance strategies to reduce energy and related costs
- Facilitate knowledge transfer within and outside Metropolitan on various aspects related to energy management to keep continued conversations with electric utility providers and other water utilities

Best practices to be maintained, enhanced or added to Metropolitan's energy management strategy include:

- Conduct regular facility energy auditing, monitoring through a submetering program and benchmarking with key performance indicators
- Evaluate energy and cost optimization of processes and pumping operations
- Promote energy efficient design and rehabilitation measures such as adding VFDs to pumps and motors, evaluating energy efficiency at administrative and support facilities, and including energy efficiency practices in project solicitations

While the detailed evaluation of these practices is outside the scope of this plan, these types of energy management best practices are known to reduce energy costs if implemented on a continual basis.

5.0 PROJECT PRIORITIZATION

California's electric system transition from fossil fuels to renewables is a massive undertaking. To accomplish the transition during a period of deep climate uncertainty—with impacts that could severely disrupt both water supply and energy supply reliability—requires a new approach to energy management. In this context, decision-making and strategy development must go beyond the evaluation of the least-cost solutions. Forecasts of cost-effectiveness rely on assumptions based on historical data and predictable future conditions. While historical data is plentiful, predicting future conditions is highly uncertain.

For these reasons, the evaluation of energy management options in both the retail and wholesale markets was undertaken using two alternative decision-making tools:

- A detailed scenario analysis that effectively "stress tests" each project option under a range of plausible future conditions, and
- A multi-criteria decision analysis that compares the relative performance of options based on considerations that go beyond costs alone.

The combination of these tools affords decision makers the ability to: (1) identify preferred options that achieve sustainability criteria under current assumptions, and (2) assess the resilience of those options under potential future scenarios that radically differ from the base assumptions. Options that perform well in both evaluations demonstrate relative strength now as well as robustness in an uncertain future.

Further, the scenario exercise allows planners to identify early indicators ("signals") of how the future may be unfolding. Remaining alert to these signals enables decision makers to adapt strategy, correct course, and implement new options that have been prepared in advance for emerging conditions. It is a process of dynamic, adaptive planning that can be coordinated with and complement Metropolitan's other integrated planning efforts.

The following sections present the approach and process that was undertaken for project prioritization. The MDA evaluation provided a comparative analytical tool based on available planning data, qualitative assessments, and assumptions regarding expected future conditions. The scenario framework provided an additional overlay, allowing for the introduction of significant uncertainties and possible impacts on the preferences identified in the MDA process. Together, the two approaches highlighted the trade-offs among options under current assumptions, while indicating the robustness of options under plausible future conditions.

5.1 SCENARIO DEVELOPMENT AND APPLICATION

Scenario-based planning was used to assess the performance of investment options under four future conditions. Scenarios were then developed using a two-by-two matrix constructed based on an assessment of the deepest uncertainties, threatening the greatest impact, on the future context within which options were expected to perform. As shown in Figure 5-1, these two axes of impact and uncertainty were identified within Metropolitan's water-energy context as:

- The water supply and demand conditions that Metropolitan will be faced with over the next several decades (vertical-axis), from a condition of a stable and reliable water supply to a condition of extreme hydrology that reduces the availability of hydropower from Hoover and Parker Dams; and
- The unknown market consequences of implementing the state-mandated transition to renewables (horizontal-axis), that can swing from a smooth transition to renewables to a volatile energy market with major disruptions.

> ***"Electric systems with large shares of variable renewable energy penetration will see profound changes in average electricity prices, diurnal price patterns, and price volatility"***
> ***- Lawrence Berkeley National Laboratory (2018)***

Scenario narratives for each quadrant are attached in Appendix E. From an analysis of historical water supply stability and reliability at Metropolitan, as well as energy market volatility observations over the last several years, Metropolitan is believed to be facing the challenges near the top of quadrant D, as graphically pointed out in Figure 5-1. Due to yearly variations in water supply and availability, Metropolitan fluctuates between quadrants B and D.

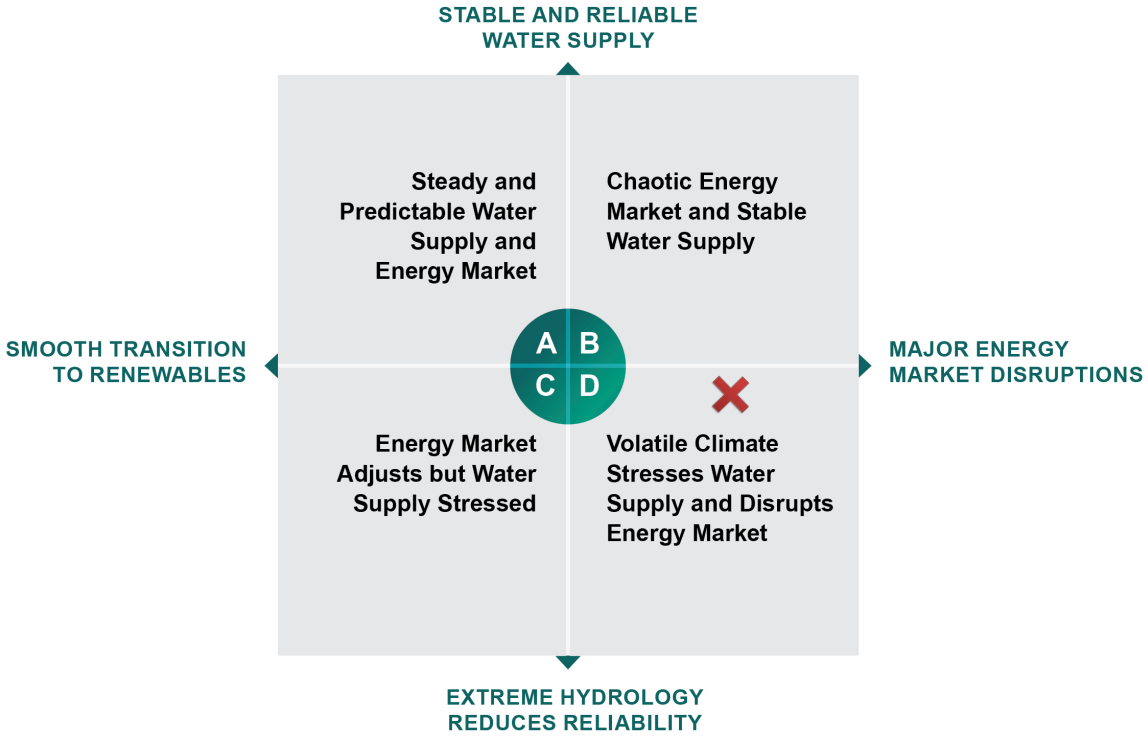


Figure 5-1 Scenario matrix and quadrant descriptions

While this scenario planning approach is not designed to predict the future, it can provide insights into the resilience of various options under plausible future conditions. All else being equal, options that can continue to deliver expected performance under all scenarios are preferable to those that only perform under a narrow range of assumptions. Both the retail and wholesale options were evaluated for vulnerabilities and weaknesses under the four scenario narratives. For example, stand-alone solar

projects provide more benefit in a market with high mid-day prices than a market saturated with solar energy where (as currently seen with the “duck curve”) solar facilities are producing when energy prices are already low. A high-level summary for each option is provided in Appendix F.

Each of these scenarios is driven by major changes in the energy and water sectors, which will influence the future performance of renewable energy and energy storage project opportunities. These drivers are the same that warranted the development of Metropolitan’s ESP, as provided in Section 1.2 and highlighted in Figure 5-2.

In addition to characterizing the performance of retail and wholesale options under the four scenarios, the scenario drivers were also used to identify signals that would potentially indicate significant changes in the energy market and water supply environment. Figure 5-2 provides a list of those signals mapped to the drivers from which they can originate. Each signal may affect only certain energy project opportunities, but all are important from a strategic energy management perspective. Ongoing scanning for these signals could provide Metropolitan with an early warning regarding the unfolding future as configured in the scenario framework.

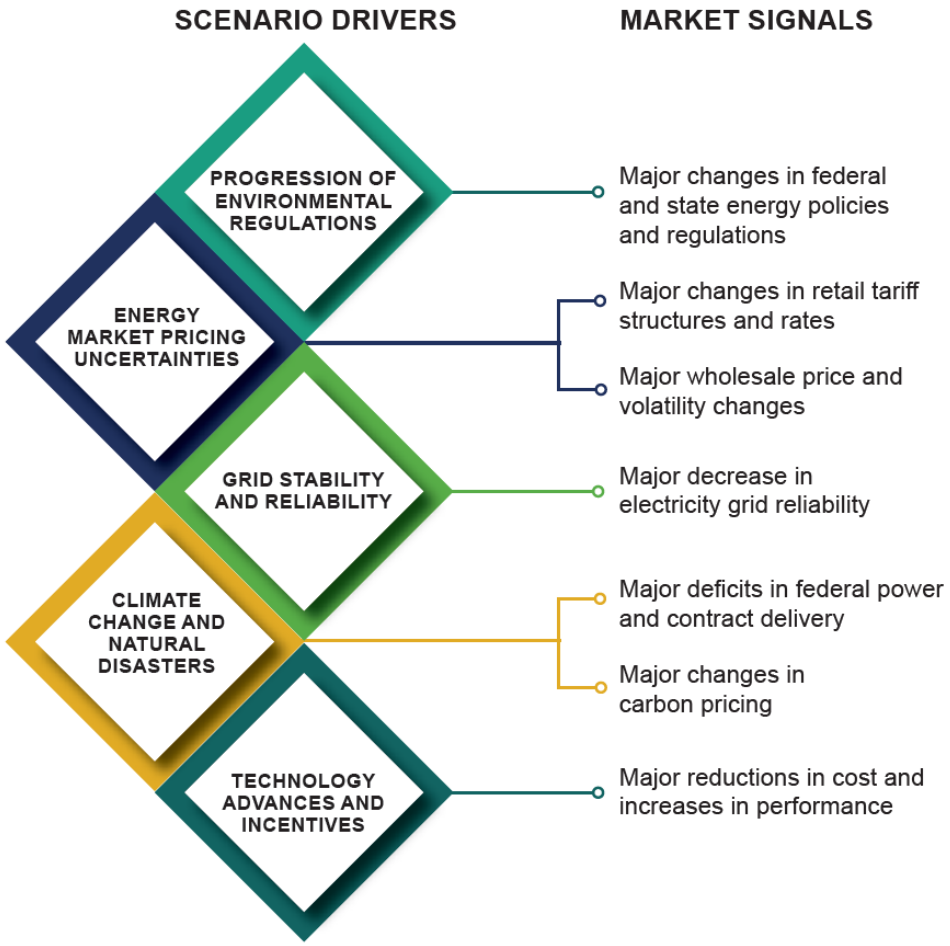


Figure 5-2 Scenario drivers and market signals

5.2 MULTI-CRITERIA DECISION ANALYSIS

MDA is a widely used method for ranking options based on a variety of objective performance criteria and the subjective weightings of decision makers regarding the relative importance of the criteria themselves. The overall process steps included:

- Establish objectives, evaluation criteria, and performance metrics.
- Develop quantifiable performance metrics (e.g., cost data, GHG emissions).
- Develop qualitative performance comparisons (expert ratings on a 1-to-5 scale).
- Apply weightings on an individual and group basis.
- Identify preferred options and the reasons for preferences.

A description of the project evaluation criteria, performance metrics, and weighting used for the MDA are presented in Section 5.2.1. The outcomes of the MDA for the selected retail and wholesale projects are included in Section 5.2.2 and 5.2.3, respectively.

5.2.1 Selection of project evaluation criteria and weighting

The first step in establishing evaluation criteria and associated performance metrics is a review of the overall objectives that Metropolitan's ESP is designed to achieve. Developed from Metropolitan's Energy Management Policies (Section 1.1.1), Table 5-1 summarizes the planning objectives and maps them to the specific evaluation criteria used in the analysis.

Table 5-1 Planning objectives and evaluation criteria

Planning Objective	Evaluation Criteria	Definition
Contain costs and reduce exposure to price volatility	Improved cost containment	Predictable annual average energy costs
	Reduced exposure to price volatility	Reduced hourly peak prices
	Increased revenue potential	Ability to produce net revenue within reasonable payback period
Increase operational reliability	Increased operational flexibility	Increased ability to avoid peaks and shed load
	Increased redundancy	Protection from generation and transmission disruptions on grid
Move toward energy independence	Increased energy independence	Power for direct use by Metropolitan outside of the grid
Support Metropolitan's CAP effort to reduce GHG emissions	Reduced carbon footprint	GHG reduction credited to Metropolitan

The performance measures used to compare options included a combination of:

- Quantitative metrics: estimated energy cost savings and estimated GHG emission reductions, where applicable
- Qualitative rankings: operational flexibility, redundancy, revenue potential and independence from the grid

The qualitative rankings were based on the expert judgements of the workshop participants and technical staff. In addition, the evaluation separated options in the retail markets (located at WTPs and facilities within the service area), from those in the wholesale market (CRA pumping and storage facilities). The quantitative and qualitative rankings were converted into dimensionless scores for comparison of the relative performance of options. More details on the combined quantitative metrics and qualitative scores for the project options evaluated in the MDA are found in Appendix F.

In order to capture the differences in importance placed on objectives by individual decision makers, each of the 16 participants in the workshop process described in Section 2.4 was asked to complete a survey used to compute relative weightings of planning objectives. Table 5-2 presents the total number of weighting points awarded to each criterion and the resulting percentages used to weight the performance scores of each option.

Table 5-2 Evaluation criteria weightings

Evaluation Criteria	Points	Percentage
Improve Cost Containment	57	17%
Reduce Impact of Price Volatility	49	15%
Increase Revenue Creation	24	7%
Increase Operational Flexibility	88	26%
Increase Redundancy	51	15%
Increase Energy Independence	26	8%
Reduce Carbon Footprint	41	12%
Total	**336**	**100%**

5.2.2 Retail market project option rankings and preferences

The results of the MDA on the weighted retail market project options is presented in Figure 5-3, with project options sorted from highest score to lowest. For each of the criteria, a range of dimensionless scores from the highest ranked option (assigned a score of 1.0) to the lowest ranked option (assigned a score of 0.0) was developed. The highest performing retail option is a new direct connection from the Yorba Linda Power Plant to the Diemer WTP (behind the SCE meter). As the figure illustrates, this investment has the potential to offer Metropolitan significant savings and a short payback of the initial capital investment. In addition, this project is anticipated to eliminate exposure to retail price increases of electricity purchased from SCE, allowing Diemer operations to function free from consideration of TOU penalties, and provide an alternative renewable power source to the grid at the Diemer WTP. The potential for the increased revenue criterion is not satisfied by this option since Yorba Linda hydropower is currently sold under a term contract, so utilizing it for Diemer WTP energy demand involves a trade-off of reduced energy sales.

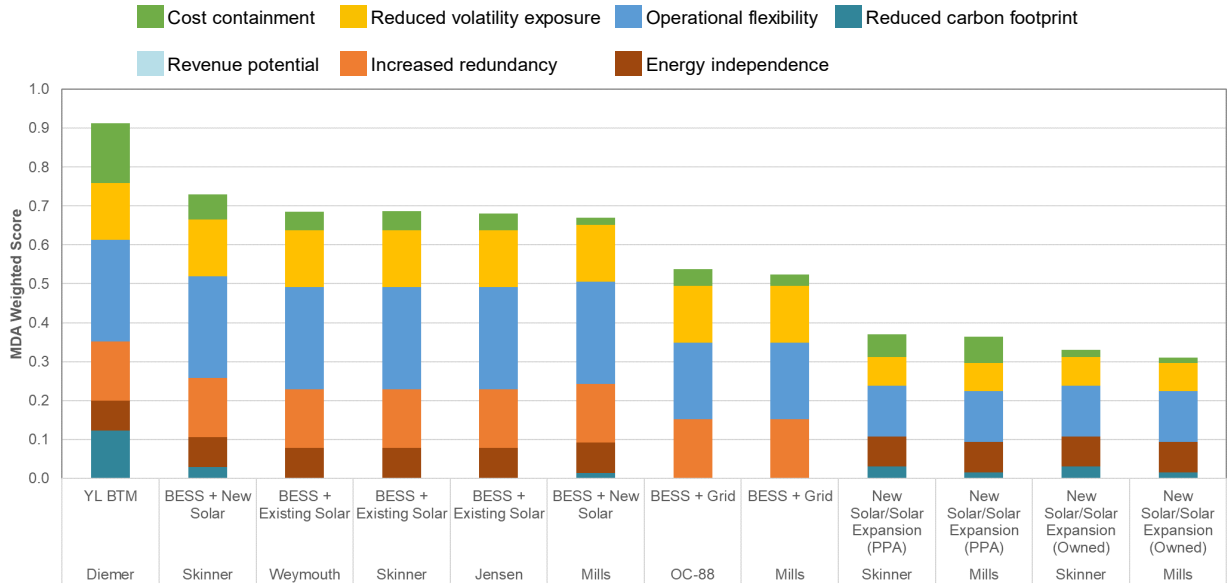


Figure 5-3 Breakdown of retail option weighted scores by criterion

Options with battery energy storage integrated with existing or expanded solar are the next highest performing investments after the Yorba Linda configuration. These projects have somewhat longer payback periods but enable treatment plants to utilize battery energy storage to optimize solar power generation throughout the day, reducing costs and providing TOU flexibility for operations. In addition, batteries charged with renewable energy reduce the potential for GHG emissions. The combination of battery energy storage and solar generation could also offer treatment plants the potential to operate independently from the grid in a microgrid configuration for a limited period, in conjunction with backup emergency generators. However, allowing microgrid (or islanded) operations at Metropolitan facilities has not yet been assessed.

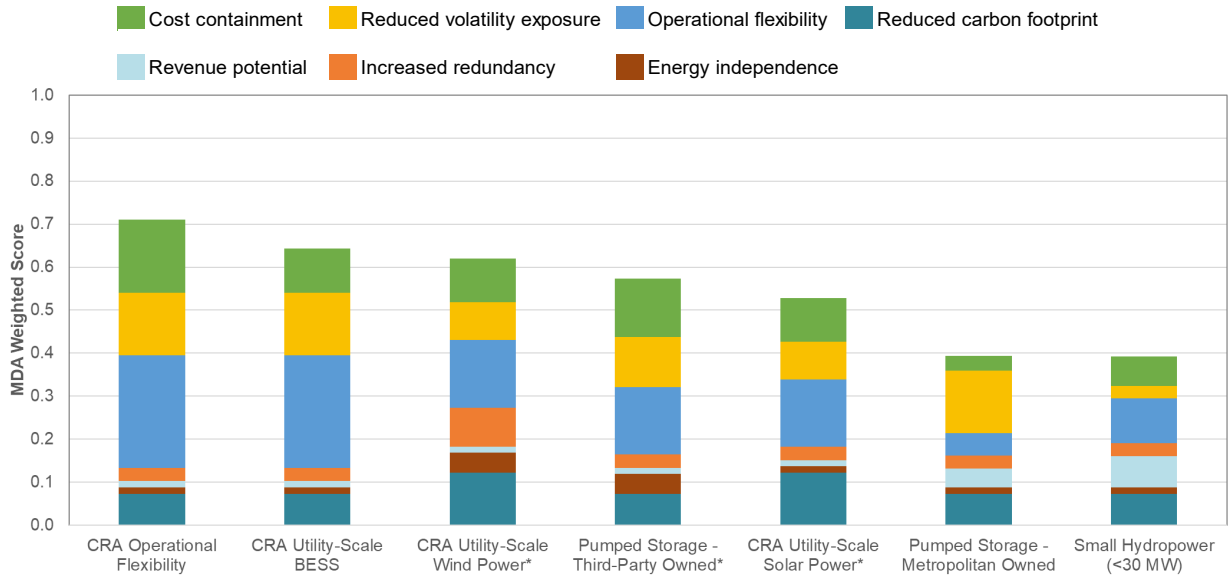
The options that include expanded solar facilities provide the additional benefit of further reducing carbon emissions. Procurement methods involving PPAs versus Metropolitan ownership would transfer project cost risk to the developer and monetize solar tax credits. An evaluation of the actual tradeoffs will require further development of PPA options versus Metropolitan's costs.

Options that utilize stand-alone battery storage to shift power purchases from the grid to off-peak hours can arbitrage TOU pricing periods and provide flexibility for operations relative to hourly pricing differences. However, unlike the combination of battery storage and solar generation, the quantification of the GHG emission reduction potential is challenging and only possible if the batteries are charged from renewable power. New innovative technologies to track the source of GHG emissions could enable both price arbitrage and GHG reduction tracking.

5.2.3 Wholesale market project option rankings and preferences

The MDA evaluation was also applied to the wholesale market project options considered in this plan. Unlike the approach used for the retail market project options, the project alternatives considered for the wholesale market were only scored qualitatively, and their ratings were only based on input from

the workshop participants. A brief explanation of the scores assigned for each option is presented in Appendix F. Figure 5-4 presents a comparison of the wholesale market project options with weighted scores by criterion, sorted from highest score to lowest.



**Note: Projects involving third-party developers are subject to large uncertainty due to legal and contract considerations for energy generation along the CRA. Benefits of these projects should be reevaluated once contract conditions are determined.*

Figure 5-4 Breakdown of wholesale option weighted scores by criterion

As illustrated, the CRA pump upgrades were the highest ranked option due to the high level of importance placed on increased operational flexibility, expected cost savings, and reduced exposure to and the ability to take advantage of price volatility. CRA utility-scale BESS also provides a similar level of operational flexibility, a reduced exposure to price volatility by taking advantage of the depressed prices of the duck curve, and the potential to reduce GHG emissions and obligations to purchase offsets for imported fossil fuel energy. Small hydropower scored lowest for reduced volatility, since Metropolitan-generated hydropower is sold at a contracted price and the counterparty would receive those benefits. Metropolitan-owned pump storage scored lowest for operational flexibility because this asset is relatively high cost and would operate independent of CRA pump operations. Adding pumped storage operations may impair the already limited flexibility Metropolitan has for CRA pumping and distribution operations. However, this is dependent on the annual supply through the CRA and would require a more detailed study to evaluate impacts to CRA operations.

As indicated in Figure 5-4, wholesale energy projects involving third-party developers (including wind, solar, and pumped storage) are subject to large uncertainty in the contract terms and conditions for energy generation projects along the CRA. These projects exchange CRA variable costs for fixed costs, but project economic assessment indicates that these options have a long payback and the benefits are uncertain as they are highly dependent on contract conditions with third-party developers. The results presented above are offered for comparison but should be reevaluated once contract conditions are determined.

5.2.4 Energy management best practices rankings and preferences

Energy management best practices were not evaluated on a project-level basis and, therefore, were not included in the MDA evaluation. In general, energy efficiency improvements (e.g., submetering, energy audits, energy dashboards) would typically rank high for cost containment, reduced exposure to volatility, and carbon emissions reductions due to reductions in overall energy usage through consistent implementation of these practices.

5.3 COMBINED EVALUATION CONCLUSIONS

Table 5-3 below provides a consolidated picture of the retail and wholesale energy market project options, respectively, presenting the ranking of the option in the MDA, as well as an assessment of the performance of the option in each of the four scenario settings. The table also provides, in parallel, the financial and carbon emission reduction assessment results. The vulnerabilities and weaknesses under the four scenario narratives were reported in a color-coded format, with the green square indicating acceptable performance, the red square indicating poor performance or stranded assets, and the yellow square used when the impact on the performance is uncertain. The rationale for the color codes used for each project under the different scenarios is presented in Appendix F.

Both methods produced similar results, in part due to the multiple benefits offered by options that received high rankings in the MDA. For example, an option that significantly increases operational flexibility (i.e. Solar paired with BESS, CRA pumps upgraded with VFDs) is more robust under a wide range of scenarios. It should be noted that while the projects in the above tables are ordered based on the MDA results, this is not the final ranking of project prioritization. The benefits of each project across multiple planning assessments (financial, carbon emission reduction, MDA and scenario analysis) are meant to be used by Metropolitan staff to consider projects that may not have the most optimal financial results but could provide less risk with added benefits in an unknown future.

Both of these evaluation tools, working together, go well beyond a simple cost-benefit calculation and provide a framework for dynamic planning into an uncertain future. They consider benefits beyond cost savings and can guide Metropolitan towards adaptive and sustainable energy management solutions, as found in the roadmap provided in Section 6.2.

Table 5-3 Retail and wholesale project options and results of financial, MDA, and scenario planning assessments

	Size	NPV ($)	Payback Period (years)	Carbon Emission Reduction (MT CO_2/year)	MDA Ranking	Scenario Assessment Performance*			
						A	B	C	D
Retail Project Options									
Yorba Linda behind meter at Diemer	--	$5,000,000	4	1,061	1				
Skinner – BESS + New Solar	1 MW or 2 MW solar 1 MW/2 MWh BESS	$1,600,000	10	256	2, 3				
Weymouth – BESS + Existing Solar	1 MW/2 MWh	$345,000	5	10	4				
Skinner – BESS + Existing Solar	1 MW/2 MWh	$396,000	5	10	5				
Jensen – BESS + Existing Solar	1 MW/2 MWh	$275,000	5	10	6				
Mills – BESS + New Solar	300 kW/900 kWh BESS 500 kW solar	$356,000	14	131	7				
Skinner – New Solar (PPA)	1 MW or 2 MW	$277,000	-	271	8, 9				
Skinner – New Solar (Owned)	1 MW or 2 MW	$240,000	14	271	10, 14				
Mills – New Solar (PPA)	500 kW	$566,000	-	145	11				
OC-88 – BESS + Grid	1 MW/2 MWh	$308,000	5	10	12				
Mills – BESS + Grid	1 MW/2 MWh	$102,000	7	10	13				
Mills – New Solar (Owned)	500 kW	$140,000	14	145	15				
Wholesale Project Options									
CRA Pump Upgrades	To be determined in the preliminary investigation of the CRA's pumps				1				
Utility-Scale Battery Storage (Owned)	30 MW/156 MWh	$17,800,000	15	Varies	2				
Utility-Scale Wind Power	To be determined based on discussion with potential developers				3				
Pumped Storage (Third Party)					4				
Utility-Scale Solar Power					5				
Pumped Storage (Owned)	Varies – see Appendix D				6				
Small Hydropower	Varies – see Appendix D				7				

Scenario Performance: Acceptable; Uncertain; Poor

*Scenario Descriptions: A: Steady and predictable water and energy; B: Chaotic energy market and stable water supply; C: Energy market adjusts but water supply stressed; D: Volatile climate stresses water and energy market disrupted.

Acronyms: BESS: Battery Energy Storage Systems; CRA: Colorado River Aqueduct; MDA: Multi-criteria Decision Analysis; MT: Metric Ton; NPV: Net Present Value; PPA: Power Purchase Agreement; Yorba Linda: Yorba Linda Power Plant.

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6.0 FINDINGS AND RECOMMENDATIONS

The energy management initiatives included in the ESP address the significant energy market changes observed over the last decade and would help position Metropolitan as a leader in energy efficiency and forward-thinking energy management. Establishing this cost-effective and more reliable energy system will promote Metropolitan's mission of providing its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. This plan provides a framework of sustainable actions focused on energy reliability, affordability, and conservation and adaptation – now and in the future. The proposed actions address many factors, including the evolving regulatory landscape; economic considerations; water supply demand, availability, and reliability; and the development of new or existing technologies. As these factors change over time, actions have been recommended for consideration when their economic and operational benefits can serve Metropolitan's needs. For this plan, the timing of these actions was categorized in the near-, mid- and long-term, as detailed in the following section.

In general, there is higher confidence in the outcomes and benefits of near- and mid-term actions due to a lower uncertainty in the factors of influence. Long-term outcomes can be impacted by unpredictable internal and external factors, such as carbon policy and costs, and technology cost declines. However, the scenario assessment and associated risks identified in Section 5.1 indicate that in the long-term there are significant energy price and water supply risks to Metropolitan that are not easily mitigated unless action begins in the near- and mid-terms.

The following sections summarize the key outcomes of the ESP effort conducted by Metropolitan and provide a roadmap of adaptive energy-related initiatives and strategies for the next decade.

6.1 SUMMARY OF ESP FINDINGS

In order to develop an adaptive energy strategy to protect against future price volatility and changing energy regulations, this plan evaluated Metropolitan's energy portfolio and historical energy usage, future energy, GHG-related regulations, and factors that can impact the future price of energy. This comprehensive evaluation of energy markets and drivers, and the potential impact to Metropolitan's operations, revealed a number of important considerations:

- The delivery of water and the demand for energy are intrinsically linked. Actions taken with regard to one will consequently have an impact on the other, such as shifting pumping operations to periods of low energy prices. Water costs and supply management strategies are inextricably tied to energy management and the ability to control operational energy-related costs.
- The rise of renewable energy installations throughout California resulted in the "duck curve" effect and have contributed to the rise of energy storage projects. Energy storage is considered essential to flattening the duck curve and reducing the volatility observed in the wholesale energy market. Despite its known benefits, the regulatory and deployment future of energy storage is unknown. However, near-term incentives make the preferred approach to install and own small-scale energy storage units and plan for long-term energy management in anticipation of additional renewable and storage development. The plan suggests additional

investigation into future energy prices at the CRA pump locations and the cost of large-scale energy storage.

- Within the last two decades, regulatory requirements and tax incentives have led to the emergence and acceleration of renewable energy and energy storage technological advancements with significant cost reductions. The resulting decrease in prices for solar, wind, and battery storage facilities has increased the feasibility of implementing these projects. Current incentive programs, such as the SGIP, are key to making energy storage projects financially viable. In consideration of the limited funding availability for these incentive programs, a swift implementation of the most economically and operationally beneficial energy storage projects is imperative.

- The emergence of new technologies, in particular battery energy storage, has created a dynamic and competitive market for developers to install and operate their systems throughout California. Developers fill water utilities' knowledge gaps relative to these new technologies and offer contract opportunities based on PPAs or shared savings models, which reduces much of the risk typically associated with these projects. As a result, developers are able to operate the systems for multiple methods of energy regulation and gain additional financial benefits beyond energy bill savings.

- While Metropolitan is not directly affected by recent California legislation, such as SB 100, which calls for 100 percent "carbon free" energy by 2045, the cap-and-trade system regulating carbon emissions is embedded into the cost of energy throughout the state. It appears that energy utilities are on track to hit their targets, but the transportation sector, which includes roughly half the program, is lagging. On this basis, carbon emission costs will continue to rise and affect energy customers, including Metropolitan, which is obligated to purchase carbon allowances for its supplemental energy imports. These imports, along with purchases from CAISO and the federally contracted hydro contracts, power the CRA pumping operations.

- Energy efficiency opportunities that reduce energy usage should be evaluated on a continuous basis for short- and long-term benefits to help reduce energy-related costs and GHG emissions.

- On a daily basis, the wholesale market includes significant price variation, with energy prices ranging from over $1,000/MWh to under $0/MWh. The CRA pumping plants are subject to these price swings. Considering that the pumps have minimal flexibility to dynamically adapt to the price changes throughout the day, the targeted application of VFDs at Intake and Gene Pumping Plants, if and as feasible, would not only provide greater operational flexibility for supplying water to Southern California, but could create added financial benefits by increased pumping during hours of low energy prices.

Actions taken through the implementation of the ESP have multiple potential benefits such as containing energy costs and reducing Metropolitan's exposure to energy price volatility, increasing operational reliability and flexibility, moving Metropolitan towards energy independence and sustainability, and supporting Metropolitan's CAP effort to meet proposed emissions reduction target. In general, energy project opportunities that take into consideration the above factors, along with high performance in both multi-criteria and scenario evaluations, demonstrate relative strength now and robustness with respect to future uncertainties.

6.2 ROADMAP

The overriding objective of the ESP was to develop an adaptive energy management strategy that is integrated with Metropolitan's water resource management plans and activities, which include maximizing operational reliability and flexibility. This strategy was developed through a roadmap of actions and projects Metropolitan should consider in order to address issues surrounding energy management and cost mitigation. The conceptual elements and modules of the roadmap are presented in Figure 6-1.

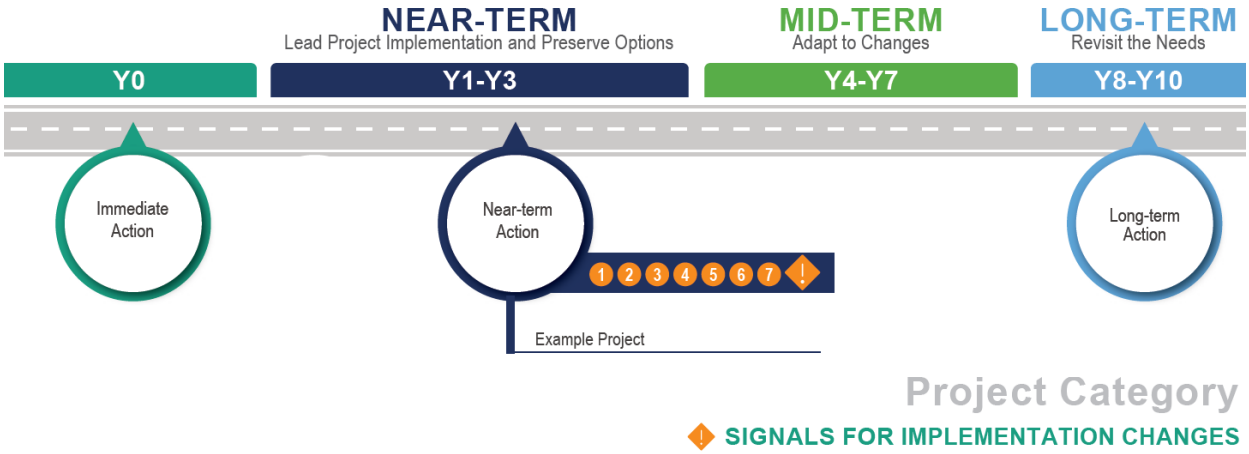

Figure 6-1 Conceptual elements of the ESP implementation roadmap

Briefly, the roadmap addresses near- to long-term energy issues at Metropolitan and, as such, was developed around three timeframes and their overarching goals:

- **Immediate** (current) – Actions that should start immediately to develop near-, mid-, and long-term projects
- **Near-term** (years 1 through 3) – The prioritization of project implementation begins while preserving other project options for consideration in the future
- **Mid-term** (years 4 through 7) – The performance of implemented projects is assessed and adaption to changes is performed as needed
- **Long-term** (years 8 through 10) – The overall roadmap performance is evaluated and Metropolitan's changing energy needs revisited

The roadmap was categorized to include the main categories of projects evaluated for this plan and described in detail in Section 4.0 (i.e., projects addressing the retail and wholesale energy markets, energy management best practices).The factors and constraints affecting each of these categories is distinctly different and the resulting actions, while all connected to Metropolitan's main goals around energy, should be reviewed and implemented within the context of each category. Based on the outcomes of the financial evaluation, and the holistic MDA and scenario assessment presented in Sections 4.0 and 5.0, respectively, a number of initiatives and projects were proposed under these specific timeframes and project categories.

The recommended actions are impacted by numerous factors, considered as indicators in this plan, that will signal the acceleration or change of course for certain actions. The magnitude, nature, and timing of these signals will result in different responses and actions for Metropolitan in the long-term and should be continuously monitored over time. A list of the potential signals to monitor are reported as numerical values within the roadmap (1 through 7) and include:

- Major changes in federal and state energy policies and regulations (Signal 1)
- Major changes in retail tariff structures and rates (Signal 2)
- Major wholesale price and volatility changes (Signal 3)
- Major deficits in federal power and contract delivery (Signal 4)
- Major decrease in electricity grid reliability (Signal 5)
- Major technology advancements (Signal 6)
- Major changes in carbon pricing (Signal 7)

The framework is intended to be flexible for accommodating future projects, preferences, and localized needs, and to be adaptable as goals and technologies evolve. The roadmap provides a plan for implementation of recommended energy projects and initiatives, while accounting for unknown changes in the future by assigning signals to each action for Metropolitan staff to monitor as the roadmap progresses. For a visual representation of the roadmap, refer to Figure 6-2 below.

6.2.1 Immediate to Near-Term Actions (Years 1-3)

As an immediate action, prior to implementation of the ESP roadmap, it is recommended that a dedicated Energy Sustainability team be established to further expand Metropolitan's current energy best practices; implement the recommendations of the ESP; review existing energy management practices; identify other recommended initiatives around energy data collection, analysis, open data initiatives, and visualization; and routinely monitor energy market conditions.

There are near-term actions that can be taken within the next three years that are consistent with and support the Energy Management Policies. These recommendations were assessed to be cost-effective, feasible, and provide an array of benefits that go beyond economics.

The near-term actions identified within energy management best practices:

- Coordinate the overall energy plan implementation, with the involvement of the Energy Sustainability team previously established and all interested parties and stakeholders.
- Review existing energy best management practices and Metropolitan's facilities energy baselines, and start implementing energy initiatives (e.g., energy audits, submetering, energy dashboards, pump and process optimization, staff trainings). These energy initiatives should be reviewed annually, and organizational change management executed as needed.
- Continue discussions with DWR concerning SWP energy prices and mitigation efforts.

- Continue to engage routinely with retail electric utilities (SCE, LADWP, RPU) regarding anticipated potential changes and/or increases to energy rate structures, or release of favorable electric utility programs and incentives.
- Set up a tracking system for market signals (e.g., retail tariff change, wholesale market price volatility, etc.) for the Energy Sustainability team to monitor routinely.

The near-term actions identified within the retail market strategy:

- Begin implementation of reconfiguring Yorba Linda Power Plant feed to serve the Diemer WTP retail load behind the SCE meter in order to meet the entire plant's energy demand when Yorba Linda is in operation.
- Begin the application process for SGIP funding for recommended BESS projects at Weymouth, Skinner, and Jensen WTPs, and OC-88 Pumping Plant before funds decline. Funds are allocated on a first-come, first-served basis, and the availability of SGIP incentives in the highest step is declining. Once SGIP funding has been secured, implement the aforementioned projects and begin to monitor battery use and energy savings. It is not recommended to pursue a BESS at Mills WTP at this time due to both the absence of existing on-site solar and the dynamics of RPU's rate tariffs.
- Evaluate the feasibility of integration and implementation of islanded operations for applicable projects, including battery storage and the Yorba Linda Power Plant, for possible future microgrid purposes.
- Engage in conversations with third-party developers to obtain pricing for solar generation and/or battery storage projects at a competitive energy price that is lower than the average retail energy price.

The near-term actions within the wholesale market strategy:

- Monitor wholesale energy market developments for major changes to CRA energy costs and evaluate appropriate options, such as generation or energy storage.
- Assess pump modifications at Intake and Gene pumping plants to implement targeted application of VFDs to accommodate effective load shifting, improve synchronization between Intake and Gene pumps, and fully utilize available storage capacity at Gene Wash and Copper Basin reservoirs.
- Continue to evaluate the purchase of low/no carbon power for CRA pumping operations to hedge against rising power prices impacted by rising carbon prices.
- Continue to monitor third-party developer projects for opportunities in large-scale renewable energy and energy storage opportunities along the CRA.

6.2.2 Mid-Term Actions (Years 4-7)

The mid-term actions identified within energy management best practices:

- Continue review and implementation of energy best management practices and initiatives.

The mid-term actions within the retail market strategy:

- Assess the performance of implemented BESS projects, and later implement the previously deferred project options based on first phase performance results.
- Implement renewable energy and/or energy storage projects with third-party developers, if determined feasible.

The mid-term actions within the wholesale market strategy:

- Continue monitoring wholesale energy market development and adapt the strategy as needed.
- Continue evaluating low/no carbon power for CRA pumping operations to hedge against rising power prices impacted by rising carbon prices
- Assess large-scale renewable energy and/or energy storage projects and more favorable options (e.g., Metropolitan-owned versus third-party).
- Reevaluate small hydropower opportunities on the distribution system if project economics become favorable.

6.2.3 Long-Term Actions (Years 8-10)

Considering the uncertainties of California's energy markets and climate, long-term planning should focus on the next 10 years in order to maintain relevant actions and strategies for current conditions. The prior energy management plan developed in 2010 had a 20-year planning horizon but due to the rapidly changing energy market, the ESP shortened the planning horizon to 10 years. Even though the energy market is rapidly changing, a long-term planning horizon of 10 years allows for early consideration of opportunities while maintaining flexibility to adapt as the market shifts. Therefore, the key goal for Metropolitan's long-term energy management plan is to monitor implemented projects and initiatives, reassess the main market drivers to better understand potential project and energy management opportunities; thus, adjusting the Plan and roadmap accordingly.

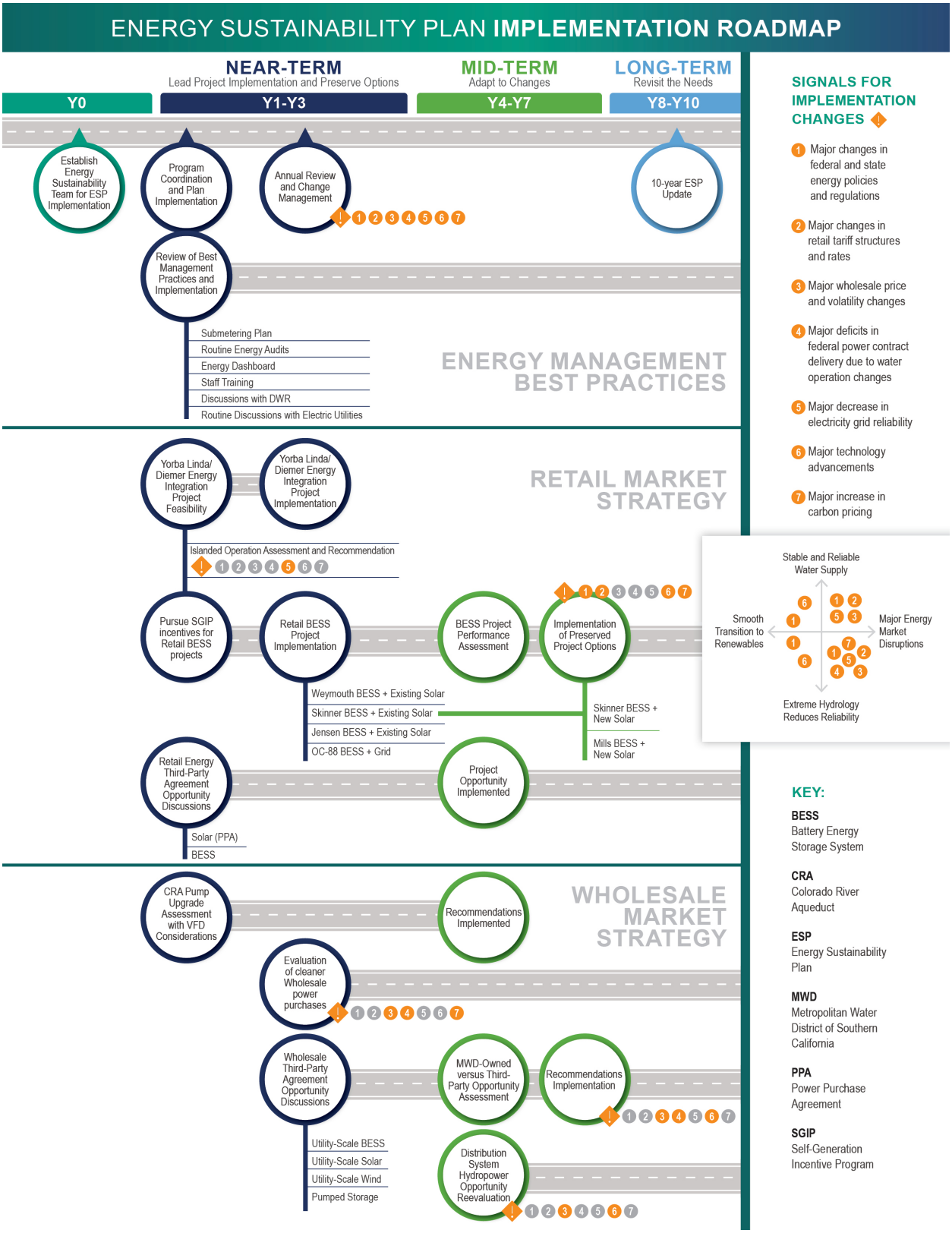

Figure 6-2 Energy Sustainability Plan Roadmap

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APPENDIX L:

Newspaper Advertisement

PROOF

Ad ID:

Ad Desc.: UWMP Public Input

Size: **6 col. in.**

# of runs: **2x**

TOTAL Cost: **$54.00**

GLENDALE NEWS-PRESS PUBLIC NOTICE

PUBLIC NOTICE

In accordance with the Urban Water Management Planning Act (California Water Code Sections 10610 to 10657), GWP is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2020 UWMP. The deadline for completing and adopting the UWMP is July 1, 2021. GWP is in process of preparing the 2020 UWMP and Water Shortage Contingency Plan (WSCP). A draft of the 2020 UWMP and WSCP will be available for public review and comment on GWP's website prior to a public hearing, which is currently scheduled at 6 P.M. on June 8, 2021 at City Hall, with probable virtual attendance. A hard copy of the documents will also be available at the GWP Engineering counter at 141 N. Glendale Ave., Level 4, at the City Clerk's office in City hall, and at the Glendale Central Library. Based on the City's current schedule, we expect to have a public review draft of the 2020 UWMP and WSCP available for review in mid-May 2021.

Aram Adjemian
City Clerk of the City of Glendale

Publsh Date May 15, 22, 2021, Glendale News-Press

APPENDIX M:

SB X7-7 2015 Verification Forms

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	31,908	Acre Feet
	2008 total volume of delivered recycled water	1,553	Acre Feet
	2008 recycled water as a percent of total deliveries	4.87%	Percent
	Number of years in baseline period[1]	10	Years
	Year beginning baseline period range	2000	
	Year ending baseline period range[2]	2009	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range[3]	2008	
[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
[2] The ending year must be between December 31, 2004 and December 31, 2010.			
[3] The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES:			

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☑	**4. Other** DWR recommends pre-review
NOTES: Population based on 2010 UWMP & DWR-38 Forms	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	2000	186,573
Year 2	2001	188,952
Year 3	2002	191,594
Year 4	2003	193,983
Year 5	2004	196,382
Year 6	2005	197,251
Year 7	2006	197,277
Year 8	2007	197,037
Year 9	2008	197,580
Year 10	2009	198,903
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2004	196,382
Year 2	2005	197,251
Year 3	2006	197,277
Year 4	2007	197,037
Year 5	2008	197,580
2015 Compliance Year Population		
2015		196,682
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *								
	Baseline Year *Fm SB X7-7 Table 3*	**Volume Into Distribution System** *Fm SB X7-7 Table(s) 4-A*	**Deductions**					**Annual Gross Water Use**
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *Fm SB X7-7 Table 4-B*	Water Delivered for Agricultural Use	Process Water *Fm SB X7-7 Table(s) 4-D*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	2000	30868			0		0	30,868
Year 2	2001	31119			0		0	31,119
Year 3	2002	31319			0		0	31,319
Year 4	2003	31039			0		0	31,039
Year 5	2004	32666			0		0	32,666
Year 6	2005	30745			0		0	30,745
Year 7	2006	31078			0		0	31,078
Year 8	2007	32846			0		0	32,846
Year 9	2008	31908			0		0	31,908
Year 10	2009	29699			0		0	29,699
Year 11	0	0			0		0	0
Year 12	0	0			0		0	0
Year 13	0	0			0		0	0
Year 14	0	0			0		0	0
Year 15	0	0			0		0	0
10 - 15 year baseline average gross water use								31,329
5 Year Baseline - Gross Water Use								
Year 1	2004	32,666			0		0	32,666
Year 2	2005	30,745			0		0	30,745
Year 3	2006	31,078			0		0	31,078
Year 4	2007	32,846			0		0	32,846
Year 5	2008	31,908			0		0	31,908
5 year baseline average gross water use								**31,849**
2015 Compliance Year - Gross Water Use								
2015		22,823			0		0	22,823
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES:								

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Ground: San Fernando & Verdugo Basin
This water source is:	
☑	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2000	732		732
Year 2	2001	2086		2,086
Year 3	2002	5187		5,187
Year 4	2003	8236		8,236
Year 5	2004	8870		8,870
Year 6	2005	8067		8,067
Year 7	2006	8761		8,761
Year 8	2007	9017		9,017
Year 9	2008	10027		10,027
Year 10	2009	8825		8,825
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	8870		8,870
Year 2	2005	8067		8,067
Year 3	2006	8761		8,761
Year 4	2007	9017		9,017
Year 5	2008	10027		10,027
2015 Compliance Year - Water into Distribution System				
2015		8097		8,097

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution				
Name of Source	Metropolitan Water District of So. Cal.			
This water source is:				
☐	The supplier's own water source			
☑	A purchased or imported source			
Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2000	30136		30,136
Year 2	2001	29033		29,033
Year 3	2002	26132		26,132
Year 4	2003	22803		22,803
Year 5	2004	23796		23,796
Year 6	2005	22678		22,678
Year 7	2006	22317		22,317
Year 8	2007	23829		23,829
Year 9	2008	21881		21,881
Year 10	2009	20874		20,874
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	23796		23,796
Year 2	2005	22678		22,678
Year 3	2006	22317		22,317
Year 4	2007	23829		23,829
Year 5	2008	21881		21,881
2015 Compliance Year - Water into Distribution System				
2015		14,726		14,726
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES:				

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2000	186,573	30,868	148
Year 2	2001	188,952	31,119	147
Year 3	2002	191,594	31,319	146
Year 4	2003	193,983	31,039	143
Year 5	2004	196,382	32,666	148
Year 6	2005	197,251	30,745	139
Year 7	2006	197,277	31,078	141
Year 8	2007	197,037	32,846	149
Year 9	2008	197,580	31,908	144
Year 10	2009	198,903	29,699	133
Year 11	0	0	0	
Year 12	0	0	0	
Year 13	0	0	0	
Year 14	0	0	0	
Year 15	0	0	0	
10-15 Year Average Baseline GPCD				**144**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	196,382	32,666	148
Year 2	2005	197,251	30,745	139
Year 3	2006	197,277	31,078	141
Year 4	2007	197,037	32,846	149
Year 5	2008	197,580	31,908	144
5 Year Average Baseline GPCD				**144**
2015 Compliance Year GPCD				
2015		196,682	22,823	104
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	144
5 Year Baseline GPCD	144
2015 Compliance Year GPCD	104
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☑	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	2020 Target GPCD
144	115
NOTES:	

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☑	100%	South Coast	149	142
☐		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**142**
NOTES:				

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target*	Calculated 2020 Target *Fm Appropriate Target Table*	Confirmed 2020 Target
144	137	137	137
** Maximum 2020 Target is 95% of the 5 Year Baseline GPCD*			
NOTES:			

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	2015 Interim Target GPCD
137	144	140
NOTES:		

SB X7-7 Table 9: 2015 Compliance								
		Optional Adjustments *(in GPCD)*						
Actual 2015 GPCD	2015 Interim Target GPCD	Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015?
104	140	*0*	*0*	*0*	0	104	104	YES
NOTES:								