



- Water Surplus and Drought Management Plan

### Summary

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This Water Surplus and Drought Management (WSDM) report provides a preliminary accounting of water supply, demand, and storage conditions for calendar year (CY) 2017. This report considers conditions as of March 1, 2017.

A series of atmospheric river events continued to bring heavy precipitation to the western United States. Snowpack accumulations in both the Upper Colorado River and northern California watersheds continue to climb well above their average peaks that generally occur on or around the April 1 timeframe. The water year runoff, comprised of both the observed flows to date and the anticipated snowmelt, are projected to be well above average for both watersheds as well. Staff is projecting that under all supply/demand balance scenarios that supplies will exceed demands in CY 2017 and anticipates adding to Metropolitan's dry-year storage reserves, continuing the storage recovery that began in CY 2016.

### Purpose

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Informational

### Attachments

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[Attachment 1: Projected 2017 WSDM Storage Detail \(80% SWP allocation\)](#)

### Detailed Report

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This WSDM report updates the developing water supply and demand conditions for CY 2017. This report provides the Board with an update on hydrologic conditions and a detailed accounting of WSDM conditions that may impact water supply reliability for CY 2017.

#### 2017 Estimated Colorado River Aqueduct Supplies

As of March 1, 2017, snowpack in the Upper Colorado River Basin measured 151 percent of normal, with a basin weighted snow water content of 19.4 inches. The current water year forecast projects runoff into Lake Powell at 132 percent of normal. Should this forecast hold, it would be the first above normal water year since WY 2010/11. In WY 2010/11, higher volumes were released from Glen Canyon Dam consistent with the Interim Guidelines and the Equalization Tier operations. This resulted in the largest single year increase in Lake Mead elevation in nearly fifty years. Despite the wet conditions, the U.S. Bureau of Reclamation is not currently projecting equalization releases from Lake Powell this year. If conditions are sufficiently wet, however, and the runoff projection in the April 24-Month Study increases to roughly 140 percent of normal, staff estimates that reservoir levels may increase enough to trigger the Equalization Tier operation. The objective of the Equalization Tier operation is to balance contents in Lake Powell and Lake Mead. If triggered, significantly more water than the 9.0 MAF currently scheduled for releases this year could be made to achieve this balancing objective, thereby substantially increasing Lake Mead levels.

The table below shows staff's estimate of Colorado River supplies for CY 2017 prior to water management actions. The total of 960 TAF is referred to as the Colorado River Aqueduct (CRA) base supply and is comprised of Metropolitan's Basic Apportionment (550 TAF) and the established Colorado River supply programs developed to date. The established supply programs have a range of uncertainty, therefore the yield shown reflect staff's current estimate. A larger degree of uncertainty involves the higher priority agricultural users. The agricultural use will be better known as the year progresses at which time the appropriate adjustments will be made to the Colorado River supply projection. Therefore, the projected water supply includes Metropolitan's Basic Apportionment (550 TAF) and estimate for the established Colorado River supply programs developed to date without an agricultural use adjustment.

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<b>2017 Colorado River Aqueduct Base Supply Estimate (Acre-Feet)</b>	
Basic Apportionment	550,000
IID/MWD Conservation Program	85,000
PVID/Bard Fallowing Programs	125,000
Exchange with SDCWA (IID Transfer and Canal Lining)	178,000
Canal Lining Water to MWD	16,000
Lower Colorado Water Supply Project	6,000
<b>CRA Supply Before Water Management And Storage Actions</b>	<b>960,000</b>

### 2017 Estimated State Water Project Supplies

As of March 1, 2017, northern Sierra precipitation measured at eight weather stations, known as the 8-Station Index, was 76.5 inches or 220 percent of normal for that date, making this the wettest October through February period in the historic record. The northern Sierra snowpack continues to build and measured 159 percent of normal as of March 1, 2017. Many reservoirs throughout the State have already filled and are making flood control releases as a result of the observed runoff to date. With a statewide snowpack of 185 percent of normal to date, higher flows along rivers, in particular the San Joaquin River, would continue later into the year leading to increased SWP supplies.

On January 18, 2017, Department of Water Resources (DWR) increased the State Water Project (SWP) allocation to 60 percent. Given the current water year is on track to being one of the wettest if not the wettest on record, staff continues to anticipate further increases to the SWP allocation. However, recently discovered damage to the main spillway structure at Lake Oroville and subsequent erosion that occurred while the emergency spillway operated in February may impact Oroville operations for the remainder of the year. Consequently, DWR has put a hold on allocation increases until it can assess the operating criteria over the remaining months of the year. Once this Oroville operating criteria is developed, DWR will update their SWP allocation study and announce any changes to the SWP allocation at that time. Given this development, the analysis in this report assumes a 60 to 80 percent SWP allocation, a wider range from last month's reporting. This range will be narrowed once additional expected information is released by DWR in April and thereafter.

Meanwhile, DWR is making available supplies that are in addition to the allocated SWP supplies consistent with Article 21 of the long-term contract for SWP water supplies. The wet conditions have sustained high San Joaquin River flows allowing maximum exports from the Delta while minimizing impacts to fisheries. These high river flows allow the SWP and Central Valley Project to meet Delta flow requirements including Old and Middle River reverse flow thresholds that are in place for the protection of delta smelt. To date, only 12 delta smelt have been salvaged, well below the concern level. Currently, DWR is meeting all State Water Contractor (Contractor) demands, has filled the State's share of San Luis Reservoir, and has excess capacity at Banks Pumping Plant. Under these conditions, DWR can make available this excess capacity or "Article 21" water supplies to Contractors who can use or store these supplies outside of SWP facilities. Metropolitan intends to take delivery of "Article 21" supplies for itself and on behalf of Coachella Valley Water District and Desert Water Agency should they choose to participate. Staff will have a better assessment of Metropolitan's share of the "Article 21" supplies in April and is not assuming a specific quantity in this report.

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The table below shows the associated SWP contracted Table A supplies for the range of SWP allocations specified.

<b>2017 State Water Project Supply Estimate (Acre-Feet)</b>		
SWP Allocation	60%	80%
<b>Table A Supply</b>	<b>1,147,000</b>	<b>1,529,000</b>

### 2017 Demands and Losses Estimate

The table below summarizes the estimated demands, obligations and losses for CY 2017 under the current trend demand projection at a 60 and 80 percent SWP allocation. Demands on Metropolitan include Member Agency consumptive use which includes water exchanged with San Diego County Water Authority and sea water barrier requirements. Member Agency replenishment demands include water for groundwater basins and surface reservoir recharge and reflect historical wet condition demand levels. Metropolitan staff continues to work with Member Agencies to refine these demands to reflect low groundwater levels and capacity to replenish as water supplies become available. CY 2017 demands also include obligations to deliver water to the Coachella Valley Water District under a long-term delivery and exchange agreement. Losses for CY 2017 are an estimate of Metropolitan distribution system losses, and evaporative and contractual losses from storage. Storage losses will fluctuate based on the SWP allocation and final accounting of the actual puts to storage.

<b>2017 Estimated Demands, Losses and Obligations (Acre-Feet)</b>	
Member Agency Consumptive Demands	1,257,000
Member Agency Replenishment Demands	129,000
Coachella Valley Water District Agreement	35,000
System and Storage Losses	74,000
<b>Total Estimated Demands and Losses</b>	<b>1,495,000</b>

### Transfer/Exchanges

Metropolitan is not pursuing transfer agreements with willing sellers in the Feather River Basin of northern California. This is due to the capacity constraints that will prevent export of north of Delta supplies. DWR's analysis projects that all available pumping capacity from the Delta, at the current 60 percent SWP allocation, will be used to move SWP contracted supplies, leaving no capacity to move transfer supplies between July and September.

Metropolitan staff is, however, pursuing exchange agreements that will benefit the region with other parties who require assistance in managing their water supplies in CY 2017. Metropolitan entered into an unbalanced exchange with Castaic Lake Water Agency and Central Coast Water Authority to help manage a total of nearly 46,000 acre-feet of their SWP supplies at risk of spilling from San Luis Reservoir. Under these agreements Metropolitan would yield roughly 15,000 acre-feet. These supplies can be moved whenever capacity is available and not restrained to the transfer window.

Metropolitan, Southern Nevada Water Authority (SNWA) and the Central Arizona Project are funding conservation programs in Mexico and share the conserved water per the terms of International Boundary and Water Commission Minute No. 319. Metropolitan contributed \$2.5 million for conservation projects and will receive roughly 24,000 acre-feet of binational Intentionally Created Surplus water for its share of the funding in 2017.

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### 2017 Water Supply Balance

The following table shows the estimated net balance between demands and water supplies at SWP allocations of 60 and 80 percent for CY 2017.

<b>2017 Water Supply and Demand Balance Estimate (Acre-Feet)</b>		
	60% SWP Allocation w/ Current Demands	80% SWP Allocation w/ Current Demands
CRA Supplies	960,000	960,000
SWP Supplies	1,147,000	1,529,000
Transfer/Exchanges	39,000	39,000
<b>Total Supplies</b>	<b>2,146,000</b>	<b>2,528,000</b>
Total Demands and Losses	1,495,000	1,495,000
<b>Net Water Supply and Demand Balance</b>	<b>651,000</b>	<b>1,033,000</b>

Metropolitan is projecting that supplies will exceed demand levels in CY 2017. As shown above, there is an estimated surplus of 651 TAF under a 60 percent SWP allocation and 1.0 MAF under an 80 percent SWP allocation. Under these scenarios, Metropolitan anticipates adding to its storage reserves in CY 2017 thus continuing the storage recovery that began in CY 2016.

Based on this estimated recovery and a beginning dry-year storage balance of 1.3 MAF, Metropolitan's dry-year storage balance at the end of CY 2017 could range from 1.9 MAF to 2.3 MAF. This includes a 214 TAF increase to Metropolitan's Intentionally Created Surplus (ICS) account in Lake Mead including the binational ICS component. [Attachment 1](#) shows the starting balance, estimated put and take capacities for CY 2017 and total storage capacity for each of Metropolitan's storage programs at an 80 percent SWP allocation. Metropolitan will exercise flexibility and opportunities within the current storage programs to increase put capacities depending on the final SWP allocation and supply/demand balances.

### Future Payback Agreements

Metropolitan has two types of payback agreements; Dry-year Exchanges and Operational Exchanges. The following table shows a list of the future dry-year exchange payback amounts from programs in which Metropolitan participates. Dry-year exchanges are those with payback provisions that are beyond one year from the exchange date.

The exchange agreement with the Southern Nevada Water Authority (SNWA) was executed in 2004 and later amended to address changing conditions. The agreement allows Metropolitan to store unused Nevada apportionment of Colorado River water in California. SNWA may request recovery of this stored water in the future. Return may commence as early as 2022, however, SNWA has other supplies available that would likely delay the need for returns until after this date. Metropolitan did not store any additional SNWA water in 2016.

The California Extraordinary Conservation ICS agreement with the Imperial Irrigation District (IID) and other agencies executed in 2007 and later amended in 2015 to expand volumes allows Metropolitan to store conserved IID water in excess of its Quantification Settlement Agreement (QSA) conservation commitments. The water may be returned at IID's request.

In 2014, Metropolitan exercised Article 54 of its long-term water supply contract with the State of California and took delivery of 219 TAF from the SWP system. Repayment is required by 2020. Metropolitan paid 30 TAF of this obligation back in 2015, an additional 124 TAF repayment in 2016 through storage management actions, and the remaining balance of 65 TAF repaid in January and February 2017.

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Repayments are subject to final DWR accounting. The table below shows all outstanding Dry-year Exchange payback amounts.

<b>Dry-year Exchange/Program</b>	<b>Payback Amount (Acre-Feet)</b>	<b>Payback Term</b>
Storage and Interstate Release Agreement with Southern Nevada Water Authority	330,000	Up to 30,000 AFY (no earlier than 2022)
California ICS Agreement - IID	98,000 <sup>1</sup>	Any year, conditional on whether or not Metropolitan is implementing a WSAP
<b>Total</b>	<b>428,000</b>	

<sup>1</sup> Estimated and subject to final U.S. Bureau of Reclamation Colorado River Accounting.

The following table shows the future Operational Exchange payback amounts from the programs in which Metropolitan participates. Operational exchanges are those with payback provisions that may be within one year of the exchange date and provide Metropolitan increased flexibility in the timing and conveyance of deliveries. In 2014, Metropolitan took possession of 5 TAF of water from Irvine Ranch. Metropolitan returned 1 TAF in 2015 and the remaining 4 TAF is to be returned no later than 2024 at Irvine Ranch's request. Metropolitan has also taken possession of 2 TAF of water from Dudley Ridge Water District in coordination with Irvine Ranch. Half of this supply must be returned to Dudley Ridge and the other half to Irvine Ranch no later than 2022.

<b>Operational Exchange/Program</b>	<b>Payback Amount (Acre-Feet)</b>	<b>Payback Term</b>
Strand Ranch - Irvine Ranch	4,000	No later than 2024
Dudley Ridge WD – Irvine Ranch	2,000	No later than 2022
<b>Total</b>	<b>6,000</b>	

## Projected 2017 WSDM Storage Detail (80% SWP Allocation)

WSDM Storage	1/1/2017 Storage Levels	CY 2017 Take Capacity <sup>1</sup>	CY 2017 Additional Put Capacity <sup>1</sup>	Total Capacity <sup>1</sup>
<b>Colorado River Aqueduct System</b>	<b>78,000</b>	<b>49,000</b>	<b>214,000</b>	<b>1,602,000</b>
Lake Mead Extraordinary Conservation ICS	0	0	190,000	1,500,000
System Efficiency and Binational ICS	78,000	49,000	24,000	102,000
<b>State Water Project System</b>	<b>723,000</b>	<b>578,000</b>	<b>285,000</b>	<b>1,845,000</b>
MWD SWP Carryover	168,000	168,000	32,000 <sup>2</sup>	200,000
DWCV SWP Carryover	42,000	42,000	65,000 <sup>2</sup>	107,000
Castaic Lake (DWR Flex Storage)	154,000	154,000	0	154,000
Lake Perris (DWR Flex Storage)	0	0	65,000	65,000
Arvin Edison Storage Program	108,000	29,000	34,000	389,000
Semitropic Storage Program	125,000	125,000	62,000	350,000
Kern Delta Storage Program	99,000	60,000	27,000	250,000
Mojave Storage Program	27,000	0	0	330,000
<b>In-Region Storage</b>	<b>739,000</b>	<b>441,000</b>	<b>388,000</b>	<b>1,389,000</b>
Diamond Valley Lake	566,000	376,000	244,000	810,000
Lake Mathews	135,000	57,000	47,000	182,000
Lake Skinner	37,000	7,000	7,000	44,000
IEUA/TVMWD (Chino Basin)	0	0	10,000	100,000
Long Beach (Cent. Basin)	0	0	0	13,000
Long Beach (Lakewood)	0	0	0	4,000
Foothill (Raymond and Monkhill)	0	0	0	9,000
MWDOC (Orange County Basin)	0	0	16,000	66,000
Three Valleys (Live Oak)	1,000	1,000	0	6,000
Three Valleys (Upper Claremont)	0	0	1,000	3,000
Western	0	0	3,000	12,000
Cyclic - Upper San Gabriel	0	0	60,000	100,000
Cyclic - Three Valleys	0	0	0	40,000
<b>Other Programs</b>	<b>366,000</b>	<b>38,000</b>	<b>349,000</b>	<b>1,128,000</b>
Other Emergency Storage	328,000	0	0	328,000
To Be Determined Storage Action <sup>3</sup>	0	0	200,000	0
DWCV Advance Delivery Account	38,000	38,000	149,000	800,000
<b>Total</b>	<b>1,906,000</b>	<b>1,106,000</b>	<b>1,236,000</b>	<b>5,964,000</b>
Emergency	626,000	0	0	626,000
<b>Total WSDM Storage<sup>4</sup></b>	<b>1,280,000</b>	<b>1,106,000</b>	<b>1,236,000</b>	<b>5,338,000</b>

<sup>1</sup> Take, Put, and Total capacities assumed under a 80% SWP Table A Allocation.

<sup>2</sup> Metropolitan could put amounts in addition to this subject to increase risk of spill.

<sup>3</sup> Metropolitan will exercise flexibility and opportunities within current storage programs to increase put capacities if needed.

<sup>4</sup> Total WSDM Storage level is subject to change based on accounting adjustments.