



- Water Surplus and Drought Management Plan

### Summary

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This report provides a preliminary accounting of water supply, demand, and storage conditions for calendar year (CY) 2017. This report considers conditions as of February 1, 2017.

A series of atmospheric river events continued to bring heavy precipitation to the Western United States. Two powerful storm systems in January 2017 significantly boosted snowpack accumulations in both the Upper Colorado River and northern California watersheds. These watersheds are the water sources for Metropolitan's two imported water supplies. Following these January storms, both watersheds have already received their average annual peak snowpack accumulation. These current wet conditions have not been seen in either watershed since water year (WY) 2010/11 before the drought began. Staff is projecting that supplies will exceed demand levels in CY 2017 and anticipates adding to Metropolitan's 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 \(70% SWP allocation\)](#)

[Attachment 2: 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 February 1, 2017, snowpack in the Upper Colorado River Basin measured 156 percent of normal, with a basin weighted snow water content of 15.3 inches. The current water year forecast projects above normal runoff of 122 percent into Lake Powell. 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 over fifty years. Even with the improved hydrologic conditions The U.S. Bureau of Reclamation (Reclamation) is not currently projecting higher releases from Lake Powell. Should wet condition persist however, reservoir levels may increase triggering the Equalization Tier operation allowing Reclamation to make significant releases later this year.

The table below shows staff's estimate of Colorado River Aqueduct (CRA) supplies from the Colorado River for CY 2017 prior to water management actions. The total of 960 TAF is referred to as the CRA base supply and is an estimate that will have some variability based on higher priority agricultural use. 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 estimated water supply includes Metropolitan's Basic Apportionment (550 TAF) and 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 Following 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 February 1, 2017, northern Sierra precipitation measured at eight weather stations, known as the 8-Station Index, was 53.2 inches or 197 percent of normal for that date. The northern Sierra snowpack measured 140 percent of normal for that date. The January storms brought nearly half the annual average precipitation for the 8-Station Index in that month alone. Lake Oroville began flood control releases in early January and the reservoir remains encroached in the flood boundary zone, however within the allowed range of operation for this time of year.

On January 18, 2017, DWR increased the State Water Project (SWP) allocation to 60 percent based on improved hydrologic conditions observed through the end of December 2016. Given the near record-breaking precipitation that occurred in January with its resulting snowpack accumulations and with one-third of the annual precipitation historically occurring in February and March potentially still to come, staff expects the SWP allocation to increase further. In addition, favorable flow conditions in the Delta, preemptive actions taken by both the Central Valley Project (CVP) and SWP to reduce the risk to endangered fish, and recently passed legislation have all allowed for higher export rates on net from the Delta so far this year.

As such, Metropolitan staff recommends a SWP allocation range of 70 to 80 percent to be used for planning scenarios in this report. The table below shows the associated SWP contracted Table A supplies for this range of SWP allocations.

<b>2017 State Water Project Supply Estimate (Acre-Feet)</b>	
	Planning Scenario Range
SWP Allocation	70% - 80%
<b>Table A Supply</b>	<b>1,338,000 – 1,529,000</b>

### 2017 Demands and Losses Estimate

The table below summarizes the estimated demands, obligations and losses for CY 2017 under an average and low demand projection. 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 is working 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.

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<b>2017 Estimated Demands, Losses and Obligations (Acre-Feet)</b>		
	Average	Low
Member Agency Consumptive Demands	1,287,000	1,223,000
Member Agency Replenishment Demands	136,000	70,000
Coachella Valley Water District Agreement	35,000	35,000
System and Storage Losses	50,000	50,000
<b>Total Estimated Demands and Losses</b>	<b>1,508,000</b>	<b>1,378,000</b>

### 2017 Water Supply Balance

The following table shows the estimated net balance between demands and water supplies at SWP allocations of 70 and 80 percent for CY 2017, and represents staff’s most likely range of scenarios at this time.

<b>2017 Water Supply and Demand Balance Estimate (Acre-Feet)</b>		
	70% SWP Allocation w/ Average Demands	80% SWP Allocation w/ Low Demands
CRA Supplies	960,000	960,000
SWP Supplies	1,338,000	1,529,000
<b>Total Supplies</b>	<b>2,298,000</b>	<b>2,489,000</b>
Total Demands and Losses	1,508,000	1,378,000
<b>Net Water Supply and Demand Balance</b>	<b>790,000</b>	<b>1,111,000</b>

Metropolitan is projecting that supplies will exceed demand levels in CY 2017. As shown above, there is an estimated surplus of 790 TAF under a 70 percent SWP allocation and 1.1 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 balances at the end of CY 2017 could range from 2.1 MAF to 2.4 MAF. This includes a 200 TAF increase to Metropolitan’s Intentionally Created Surplus (ICS) account in Lake Mead. [Attachments 1 and 2](#) show the starting balance, estimated put and take capacities for CY 2017 and total storage capacity for each of Metropolitan’s storage programs at a 70 and 80 percent SWP allocation respectively. 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.

### Transfer/Exchanges

Metropolitan staff is recommending 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. The California Department of Water Resources’ 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 for transfer supplies between July and September to move. Metropolitan staff is, however, pursuing mutually beneficial exchange agreements with other parties who require assistance in managing their water supplies in CY 2017. These supplies can be moved whenever capacity is available and not restrained to the transfer window.

### Drought/Surplus Condition Recommendation Considerations

The WSDM Plan provides a water management framework that accounts for the degree or “stage” of shortage. These stages are defined by parameters such as shortage levels and expected SWP and CRA supplies. Each stage has associated actions that could be taken as part of the response to prevailing shortage conditions.

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Currently, Metropolitan is in a “Condition 2 – Water Supply Alert” stage as defined in the WSDM plan. Staff will recommend a course of action for the current drought/surplus condition consistent with this framework in April, accompanied with updated analyses of supply/demand balances and projected storage levels for CY 2017. Staff will consider the easing of drought conditions in California given recent storm events and the public’s reaction to the flood control releases at Oroville and the imminent filling of San Luis Reservoir. Staff will also consider developments with the SWRCB’s existing emergency water conservation regulations.

### 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 in 2015 to expand volumes. 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 exchange agreement with the Imperial Irrigation District (IID) executed in 2007 and later amended in 2015 to expand volumes allows Metropolitan to store conserved IID water in excess of their transfer agreement. The water may be returned at IID’s request.

In 2014, Metropolitan exercised Article 54 (Flexible Storage Account) 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 an additional 30 TAF repayment in January 2017, leaving a payback balance of 35 TAF. Repayments are subject to final DWR accounting.

<b>Dry-year Exchange/Program</b>	<b>Payback Amount</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	Any year, conditional on whether or not Metropolitan is implementing a WSAP
SWP Flex Storage	35,000	Full repayment by 2020
<b>Total</b>	<b>463,000</b>	

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.

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<b>Operational Exchange/Program</b>	<b>Payback Amount</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 (70% SWP Allocation)

WSDM Storage	1/1/2017 Storage Levels	CY 2017 Take Capacity <sup>1</sup>	CY 2017 Put Capacity <sup>1</sup>	Total Capacity <sup>1</sup>
<b>Colorado River Aqueduct System</b>	<b>71,000</b>	<b>49,000</b>	<b>200,000</b>	<b>1,571,000</b>
Lake Mead Extraordinary Conservation ICS	0	0	200,000	1,500,000
System Efficiency ICS	71,000	49,000	0	71,000
<b>State Water Project System</b>	<b>723,000</b>	<b>572,000</b>	<b>280,000</b>	<b>1,805,000</b>
MWD SWP Carryover	168,000	168,000	12,000	180,000
DWCV SWP Carryover	42,000	42,000	45,000	87,000
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	28,000	45,000	389,000
Semitropic Storage Program	125,000	125,000	68,000	350,000
Kern Delta Storage Program	99,000	55,000	45,000	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 Monks Hill)	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>319,000</b>	<b>1,328,000</b>
Other Emergency Storage	328,000	0	0	328,000
To Be Determined Storage Action <sup>2</sup>	0	0	200,000	0
DWCV Advance Delivery Account	38,000	38,000	119,000	800,000
<b>Total</b>	<b>1,899,000</b>	<b>1,100,000</b>	<b>1,187,000</b>	<b>5,893,000</b>
Emergency	626,000	0	0	626,000
<b>Total WSDM Storage<sup>3</sup></b>	<b>1,273,000</b>	<b>1,100,000</b>	<b>1,187,000</b>	<b>5,267,000</b>

<sup>1</sup> Take, Put, and Total capacities assumed under a 70% SWP Table A Allocation.

<sup>2</sup> Metropolitan will exercise flexibility and opportunities within current storage programs to increase put capacities if needed.

<sup>3</sup> Total WSDM Storage level is subject to change based on accounting adjustments.

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

WSDM Storage	1/1/2017 Storage Levels	CY 2017 Take Capacity <sup>1</sup>	CY 2017 Put Capacity <sup>1</sup>	Total Capacity <sup>1</sup>
<b>Colorado River Aqueduct System</b>	<b>71,000</b>	<b>49,000</b>	<b>200,000</b>	<b>1,571,000</b>
Lake Mead Extraordinary Conservation ICS	0	0	200,000	1,500,000
System Efficiency ICS	71,000	49,000	0	71,000
<b>State Water Project System</b>	<b>723,000</b>	<b>578,000</b>	<b>315,000</b>	<b>1,835,000</b>
MWD SWP Carryover	168,000	168,000	32,000	200,000
DWCV SWP Carryover	42,000	42,000	55,000	97,000
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	45,000	389,000
Semitropic Storage Program	125,000	125,000	68,000	350,000
Kern Delta Storage Program	99,000	60,000	50,000	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 Monks Hill)	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>300,000</b>	<b>1,328,000</b>
Other Emergency Storage	328,000	0	0	328,000
To Be Determined Storage Action <sup>2</sup>	0	0	200,000	0
DWCV Advance Delivery Account	38,000	38,000	100,000	800,000
<b>Total</b>	<b>1,899,000</b>	<b>1,106,000</b>	<b>1,203,000</b>	<b>5,923,000</b>
Emergency	626,000	0	0	626,000
<b>Total WSDM Storage<sup>3</sup></b>	<b>1,273,000</b>	<b>1,106,000</b>	<b>1,203,000</b>	<b>5,297,000</b>

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

<sup>2</sup> Metropolitan will exercise flexibility and opportunities within current storage programs to increase put capacities if needed.

<sup>3</sup> Total WSDM Storage level is subject to change based on accounting adjustments.