

**Appendix C7**  
**California Water Demand**  
**Scenario Quantification**

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# Appendix C7 – California Water Demand Scenario Quantification

## 1.0 Introduction

This appendix summarizes the data sources used in scenario quantification for Colorado River demand<sup>3</sup> for the state of California and presents the results of quantification. As presented in figure C7-1, California is divided into two planning areas in the hydrologic basin (Mainstem and Palo Verde Irrigation District [PVID]), and three planning areas in the adjacent area that are served by Colorado River water (Metropolitan Water District of Southern California [MWD], Coachella Valley Water District [CVWD], and Imperial Irrigation District [IID]). Data collection and development were completed at the planning area level.

The following sections present background information that summarizes the planning areas as well as data sources used to quantify demand scenarios by category. Following the background section, results of demand scenario quantification are presented. The results section is broken out into a California Study Area summary, followed by Colorado River demand by geography, and finally by category.

## 2.0 Background

The Colorado River Board (CRB) of California was established in 1937 and coordinates efforts among its members in planning for future Colorado River water demands. CRB has developed plans such as the draft *California's Colorado River Water Use Plan* (CRB, 2000).

CRB and member agencies coordinated California's efforts to provide information for scenario quantification. These efforts largely relied on information previously generated through regional plans and demographic studies. However, new assumptions and/or data development were required where the assumptions of the Colorado River Basin Water Demand and Supply Study (Study) required information not developed as part of the regional planning effort.

### 2.1 Data Sources for Quantification

This section discusses data sources for demand quantification by use category. Some category projections were based on relevant parameter data, while other category projections were developed directly as water demand. Sources include state, regional, and national agency reports.

- **Agricultural Demand:** Agricultural parameters and demand were derived differently for each planning area. For PVID, irrigated acreage and demand were derived from personal communication (PVID, 2011), and water delivery per acre was calculated based on acreage, consumptive demand, and a consumptive factor.

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<sup>3</sup>Eqmtef q"Tkgt"fgo cpf "cu'eqo r wgf "d{ 'Uwf { "Ctgc"fgo cpf "o kpwu'qj gt 'lwr r kgu0

FIGURE C7-1  
Colorado River Hydrologic Basin and Export Service Areas in California



For Mainstem, agricultural demand was provided by personal communication with CRB (CRB, 2011), water delivery per acre was assumed to be the same as PVID, and acreage was calculated based on demand, water delivery per acre, and a consumptive factor.

For IID, irrigated acres were derived from *IID Crop Report* (IID, 2011a), demand was derived from exhibit B of the *Colorado River Water Delivery Agreement* (Secretary of the Interior, 2003), and water delivery per acre was calculated.

For MWD, agricultural demand was derived from MWD's *The Regional Urban Water Management Plan* (MWD, 2010), and water delivery per acre was based on an irrigated acreage estimate from Southern California Association of Governments (2005) and San Diego Association of Governments (2007) data. Demands in 2060 are assumed to be the same as 2010.

For CVWD, demand was derived from the *Coachella Valley Water Management Plan* (CVWMP) (CVWD, 2010a), water delivery per acre was calculated based on 2010 acreage reported in *2010 Crop and Water Report* (CVWD, 2010b) and assumed to be constant through time, and acreage was then calculated based on demand and water delivery per acre.

- **Municipal and Industrial (M&I):** M&I parameters and demand were derived differently for each planning area. For PVID there is no M&I demand.

For Mainstem, population was derived from 2010 census data. Consumptive demand was derived from the Colorado River Simulation System (CRSS), and per capita usage was calculated based on an assumed consumptive factor.

For IID, population was derived from IID Integrated Regional Water Planning (preliminary data); per capita use was based on 2011 population and demand; and demand was calculated as population times per capita use.

For MWD, population and demands were derived from *The Regional Urban Water Management Plan* (MWD, 2010), for 2015 and 2035 and from the *Report of the Blue Ribbon Committee for 2060* (Blue Ribbon Committee, 2011), and per capita usage was calculated.

For CVWD, population, M&I demands, and self-served industrial (SSI) demands were derived from CVWMP (CVWD, 2010a), and per capita usage was calculated.

- **Energy:** IID energy demands were derived from IID Integrated Regional Water Management Planning (preliminary data; IID, 2011b).
- **Minerals:** There are no reported Colorado River minerals demands in California.
- **Fish, Wildlife, and Recreation:** Fish, wildlife, and recreation demands were derived from personal communication with IID (2011b), the Bureau of Land Management (2012), and from the CVWMP table 3-2 (CVWD, 2010a).
- **Tribal:** Tribal demands for the Mainstem area were derived from discussions with federally recognized tribes and Bureau of Reclamation's (Reclamation) 2005 to 2009 Decree Accounting Report (Reclamation, 2007 and 2010).

### **3.0 Results of Water Demand Scenario Quantification**

This section summarizes California's Colorado River water demand trends by category across the initial scenarios. The purpose of this section is to describe changes in demands, both temporally and geographically, parameters that influence changes in demands, and how the parameters and demands differ among scenarios.

Demands were first developed for areas that may be potentially served by Colorado River water (Study Area demands), independent of the source of supply. However, for areas outside of the hydrologic basin, a portion of the Study Area demand is satisfied from other supplies such as the California State Water Project (MWD and CVWD) and local groundwater (MWD and CVWD). To develop estimates of the Colorado River demand, the Study Area demand was reduced by estimates of the demand that may be met by supplies from other sources. This appendix focuses on Colorado River demands, but includes discussion of the Study Area parameters that led to these demands.

The following sections summarize the results of demand scenario quantification, presenting Study Area demand and Colorado River water demand, Colorado River Demand for the state and individual planning areas across the six scenarios, and Colorado River water demand by category across the six scenarios. Parameters and demands for all categories and all scenarios, along with references for data sources, are included.

#### **3.1 Summary Results of Scenario Quantification**

Values were developed for Study Area parameters to quantify Study Area demand for each of the scenarios. Colorado River demand was calculated as Study Area demand minus the demand that may be met by supplies from other sources. Table C7-1 presents summary results for the demand scenarios considered in the Study. The table presents agricultural and M&I demand parameters for the entire Study Area that distinguish the scenarios, the resulting Study Area demands, and finally the Colorado River demands by category. Because demands that may be met by supplies from other sources may vary among scenarios, trends observed in the parameters and Study Area demands may not be reflected identically in Colorado River demand trends.

The California agencies estimate that about 20.4 million people will reside in California's Study Area by 2015. This number is expected to change to 19.8 to 34.6 million by 2060. The greatest population growth is associated with the Rapid Growth (C1 and C2) Scenarios. The Slow Growth (B) scenario has the lowest population growth of the scenarios in 2035 and an overall population decline to 19.8 million by 2060, reflecting a shift of population from the Study Area to other areas of the state.

The growing municipal population, however, will continue to be more efficient in its per capita water use than today. Per capita water use, based on passive or existing conservation targets or continuing implementation of utility-funded conservation, is expected to be 9 to 18 percent less in 2060 than in 2015. Usage rates and per capita reductions vary across California's planning areas.

Under all scenarios, irrigated acreage is projected to decrease by about 16,000 acres through 2060, representing a 2 percent decrease. Water delivery per acre is projected to decline slightly across all scenarios. Due to variability across the planning area, these changes result in a 3 percent decline in agricultural demand in the Study Area.

TABLE C7-1  
Summary Results of California Water Demand Scenario Quantification by 2060

<b>Key Study Area Demand Scenario Parameters</b>							
	2015 <sup>1</sup>	2060 Scenario Parameters					
		A	B	C1	C2	D1	D2
<b>Population (millions)</b>	20.4	27.6	19.8	34.6	34.6	27.6	34.6
<b>Change in per capita water usage (%), from 2015</b>	—	-12%	-9%	-13%	-13%	-18%	-13%
<b>Irrigated acreage (millions of acres)</b>	0.71	0.69	0.69	0.69	0.69	0.69	0.69
<b>Change in per acre water delivery (%), from 2015</b>	—	-1%	-1%	-1%	-1%	-1%	-1%
<b>Study Area Demand (thousand acre-feet [kaf])</b>							
	2015 <sup>1</sup>	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
<b>Ag demand</b>	3,519	3,414	3,414	3,414	3,414	3,414	3,414
<b>M&amp;I demand<sup>2</sup></b>	4,117	5,312	4,035	6,435	6,426	4,961	6,426
<b>Energy demand</b>	52-61	157	157	285	160	139	139
<b>Minerals demand</b>	0	0	0	0	0	0	0
<b>FWR demand</b>	126	36.1	36.1	36.1	37.9	39.1	39.1
<b>Tribal demand</b>	92	92	92	92	92	92	92
<b>Total Study Area Demand</b>	<b>7,908</b>	<b>9,011</b>	<b>7,734</b>	<b>10,261</b>	<b>10,129</b>	<b>8,645</b>	<b>10,110</b>
<b>Colorado River Demand (kaf)</b>							
	2015 <sup>1</sup>	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
<b>Ag demand</b>	3,230	3,159	3,158	3,159	3,159	3,158	3,158
<b>M&amp;I demand<sup>2</sup></b>	1,481	1,765	1,744	1,770	1,760	1,744	1,760
<b>Energy demand</b>	52-61	156	156	284	159	138	139
<b>Minerals demand</b>	0	0	0	0	0	0	0
<b>FWR demand</b>	124	31.7	31.7	31.7	33.5	34.7	34.7
<b>Tribal demand</b>	92	92	92	92	92	92	92
<b>Total Colorado River Demand</b>	<b>4,979</b>	<b>5,203</b>	<b>5,182</b>	<b>5,336</b>	<b>5,203</b>	<b>5,168</b>	<b>5,184</b>

<sup>1</sup> If range across scenarios is less than 10 percent, Current Projected (A) is presented. Otherwise, range (min - max) is presented.

<sup>2</sup> M&I totals equal sum of M&I (parameter-based) and "other" categories.

Study Area demand for energy is projected to increase under all scenarios due to the growing need for energy sources (solar and geothermal). The greatest increases in Study Area demand for energy are anticipated in the IID planning area, ranging from 95 thousand acre-feet (kaf) to 139 kaf. A notable increase of 85 kaf also occurs in the Mainstem planning area under the Rapid Growth (C1) scenario.

There is no reported Study Area demand for minerals extraction under the scenarios analyzed for the Study.

Study Area demands for tribal use are projected to remain constant through time across all scenarios. For additional information on tribal demands, see appendix C9.

Figure C7-2 presents demands across the scenarios in three panels as follows: 1) Study Area demand with other supplies and Colorado River demand identified, 2) Colorado River demand, and 3) change in Colorado River demand by demand category.

From panel one it can be seen that Study Area demand changes from about 7.9 million acre-feet (maf) in 2015 to between 7.7 and 10.3 maf in 2060. Between 33 and 49 percent of the 2060 Study Area demand may be met by supplies from other sources.

Panel two provides a view of the range across scenarios of Colorado River demand. This demand increases from about 5.0 maf in 2015 to between 5.2 and 5.3 maf in 2060 (or 4 to 7 percent), depending on the scenario. This difference results in a Colorado River demand range of about 168 kaf across the scenarios in 2060, or 3 percent.

Panel three shows how specific categories affect the projected change in Colorado River demand by scenario. Growth in M&I and energy demand across all scenarios are offset by decreases in agricultural demand and demand for fish, wildlife, and recreation.

Figure C7-3 ties historical water use to the range of Colorado River demand in the quantified scenarios. The 168 kaf range across scenarios in 2060 is easily discernible, with a relatively even spread over the range across the scenarios. In addition, it appears that the quantified scenarios track well with the peaks in historical uses that likely represent the least supply limited conditions or actual demand.

### 3.2 Colorado River Water Demand by Geography

Colorado River water demand for areas served by the Colorado River is presented in figures C7-4 and C7-5. These figures show two geographic levels: Study Area in California, and individual planning areas. Demands at each geographic level are shown across the scenarios. The columns to the right show the Colorado River demand at a point in time (2015, 2035, or 2060) by relative contribution of the categories.

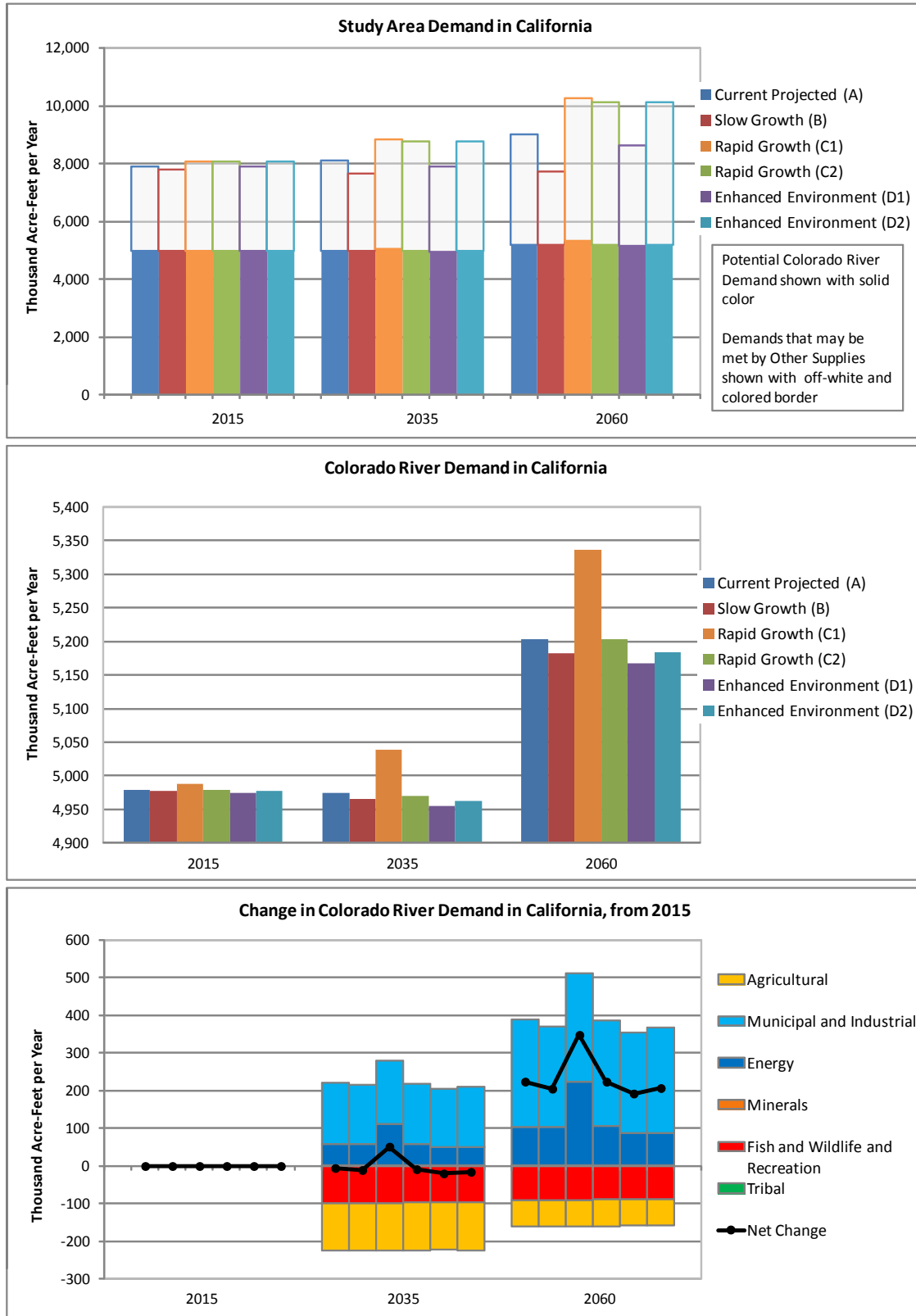
The greatest Colorado River demand<sup>4</sup> in California is in the IID planning area, followed by MWD. Lesser demands exist in CVWD, PVID, and Mainstem planning areas. Demand categories vary across planning areas, with IID and PVID being primarily agricultural and MWD being primarily M&I. Demands in the Mainstem area are primarily tribal, and demands in CVWD are a mix of agricultural and M&I.

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<sup>4</sup>RqygvkcnEqmctcfqTlxgt'fgo cpf 'ku'dcugf'qp'ej cpi gu'kp'rctco gygtu'uwej 'cu'r qr vrc'vqp'cpf 'hqt'vj g't wtr qug'qh'vj g'Uwxf {'ku'pqv' ""ho kgf'd{ 'cr rqt'vqpo gp0'



FIGURE C7-2  
Study Area, Colorado River, and Change in Colorado River Demand



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FIGURE C7-3  
Historical Use and Future Projected Demand

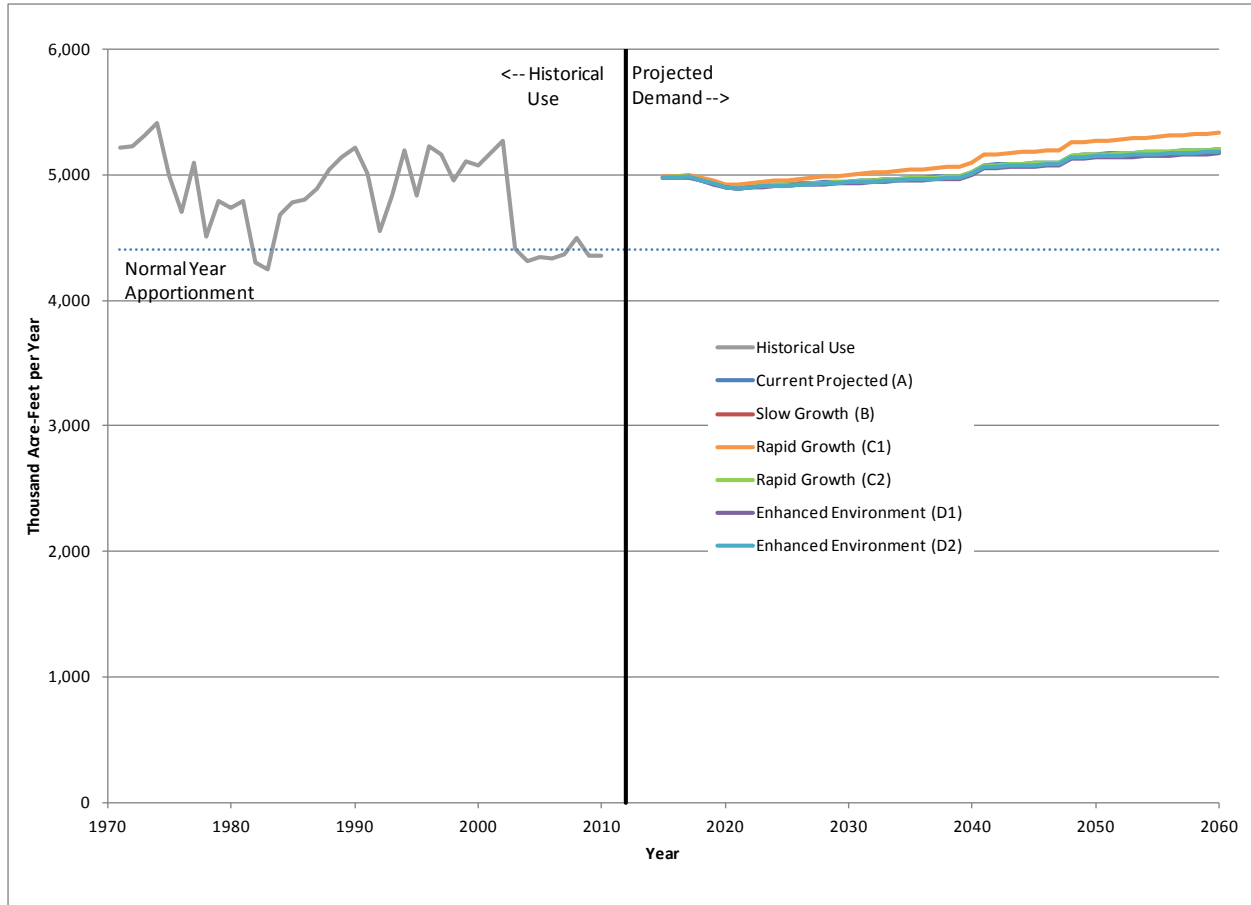
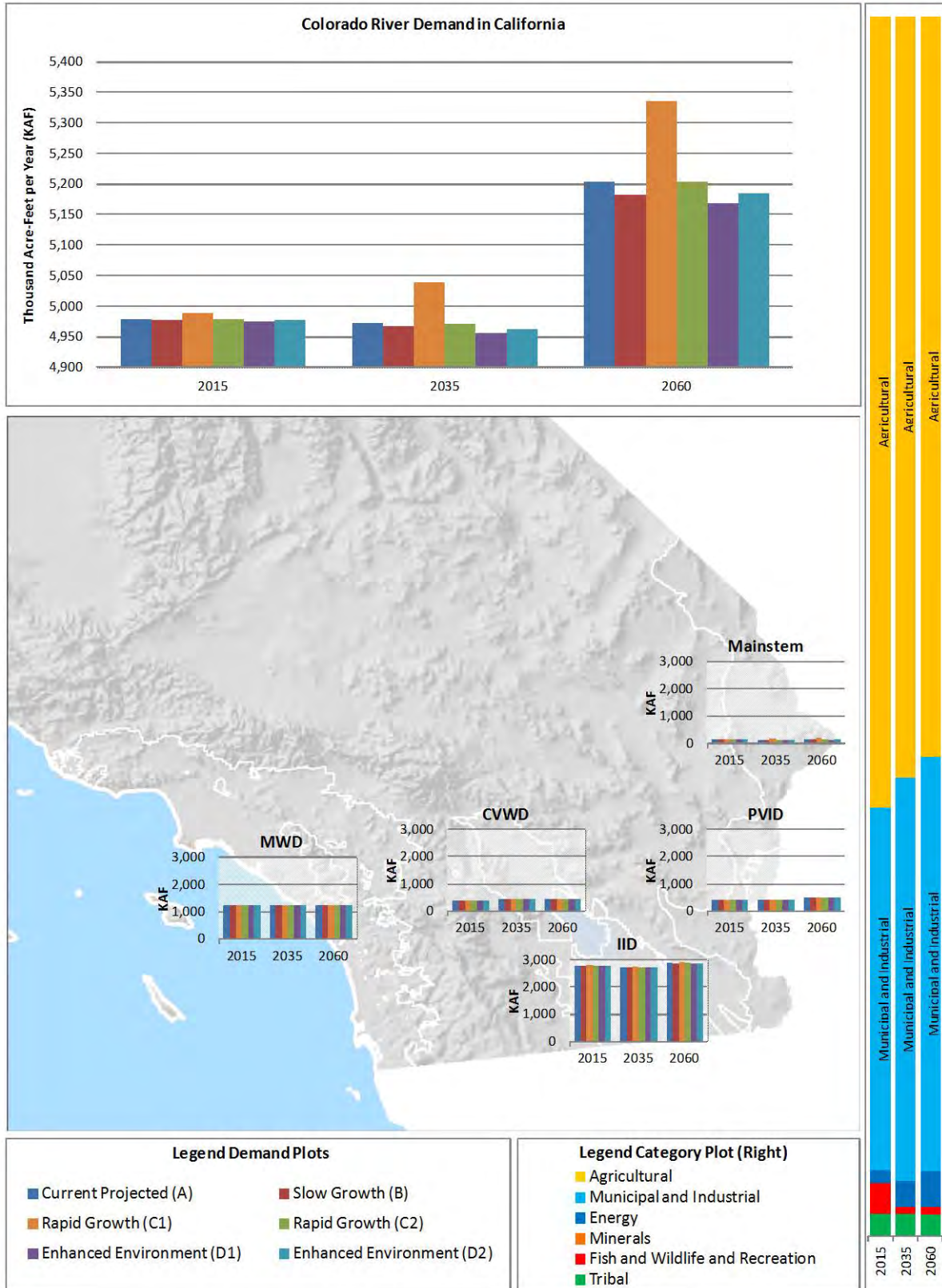


FIGURE C7-4  
Colorado River Demand in California



Colorado River Basin  
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FIGURE C7-5  
Colorado River Demand by Category

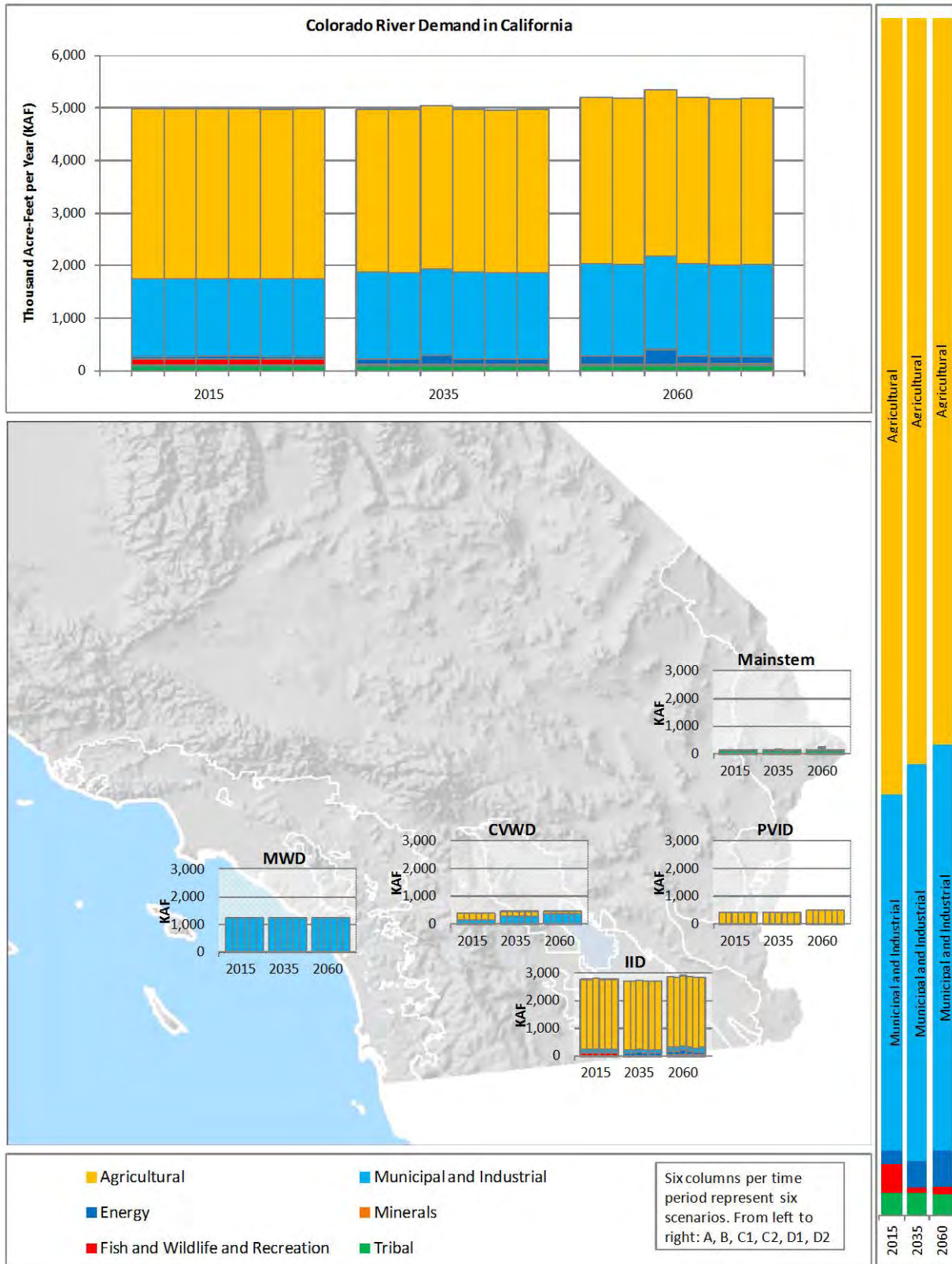


Figure C7-6 shows the change in Colorado River demand by category from 2015 across the scenarios. Increase in Colorado River demand is driven by increases in M&I demands (primarily in CVWD) and energy demands (primarily in IID). These are partially offset by decreases in agricultural (primarily in CVWD) and fish, wildlife, and recreation (primarily in IID) demands.

### 3.3 Colorado River Demand by Category

#### 3.3.1 Agriculture

Agricultural water demand is driven by irrigated acreage and water delivery per acre. Water delivery per acre is the amount of water diverted per irrigated acre. Components of this use include transmission and delivery losses (surface evaporation, riparian demand, seepage, and canal spills), and on-farm losses that are made up of evaporation, crop irrigation requirements, and tail and tile water (return). Each of these factors will vary by location (precipitation, growing season, etc.), irrigation method, and crop type.

Figure C7-7 presents the following by scenario in 2015, 2035, and 2060:

- Agricultural demand for Colorado River water
- Agricultural demand for Colorado River water by planning area
- Agricultural demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C7-7, agricultural water demand is the largest component of Colorado River demand in California, dropping from about 65 percent in 2015 to between 59 and 61 percent in 2060, depending on which scenario is considered. This drop results from both a decrease in agricultural water demand and an increase in other categories of demand, principally M&I.

Colorado River demand for agricultural use decreases over time from 2015 to 2060 in all scenarios. The decreases are primarily due to a loss of irrigated acreage as water delivery per acre decreases slightly across all scenarios.

In examining the planning areas, agricultural demand consistently decreases in all scenarios in the CVWD and IID and increases in all scenarios in PVID, with variability in planning area to planning area in the remaining scenarios. Agricultural demand for the Mainstem area is constant across all scenarios. More than 2.5 maf, or 80 percent, of California's agricultural demand is projected to occur in IID in 2060.

A strong driver for loss of agricultural acreage is urbanization, leading to physical loss of acreage.



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FIGURE C7-6  
Change in Colorado River Demand in California from 2015 by Category

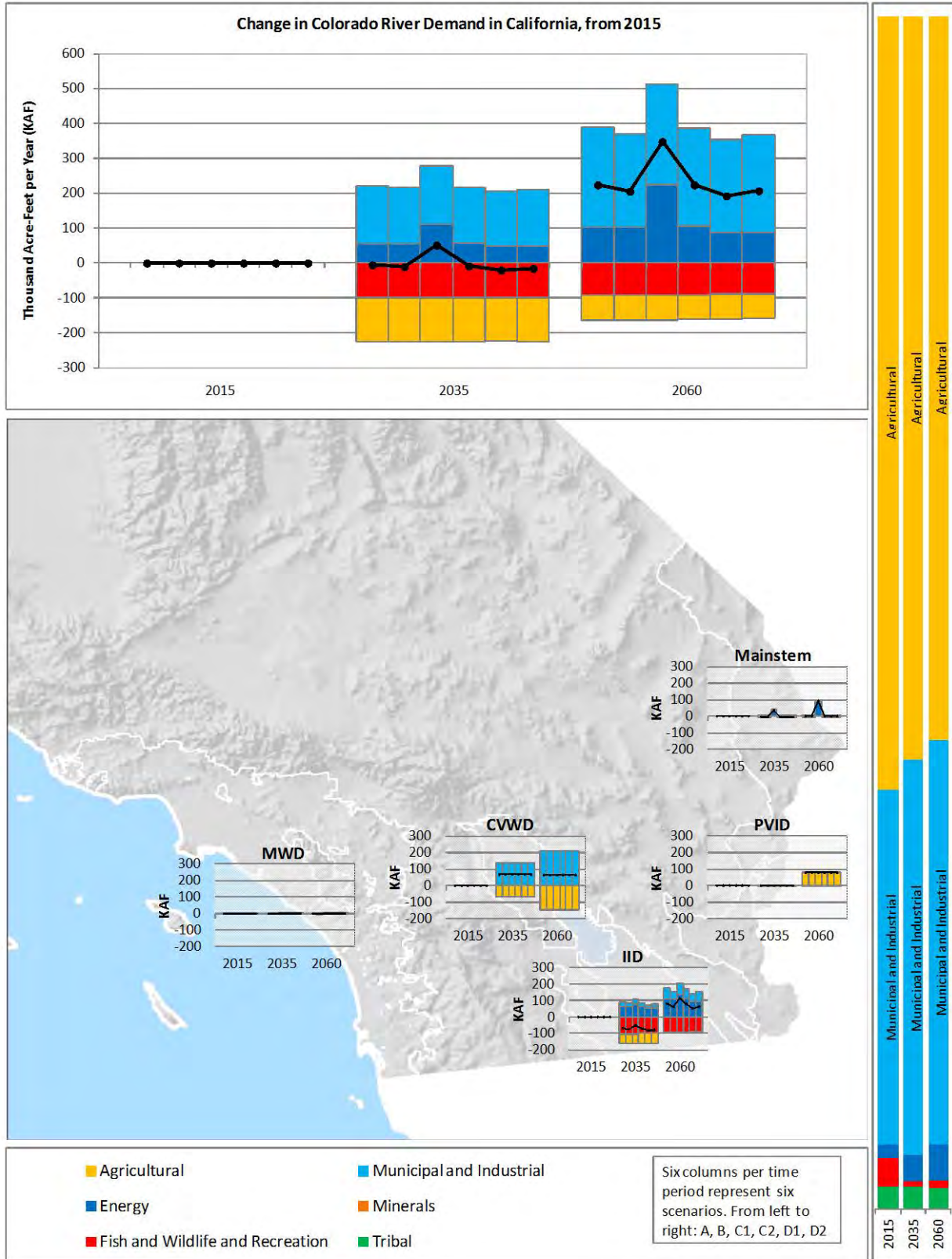
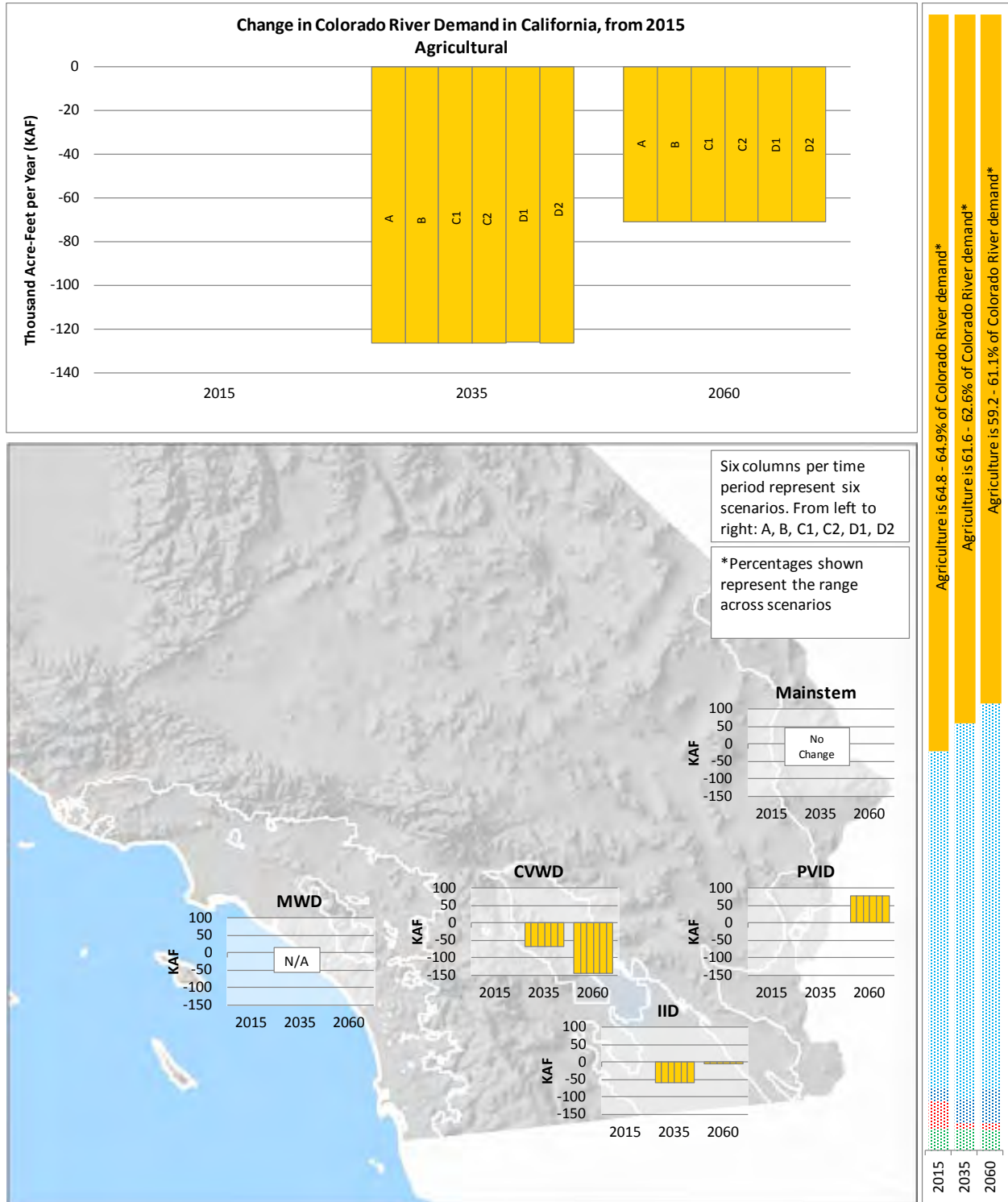


FIGURE C7-7  
Change in Colorado River Demand in California from 2015 for Agriculture



### **3.3.2 Municipal and Industrial**

M&I water demand can be estimated from population and M&I per capita use, with the addition of SSI demand. M&I per capita use is a measure of the amount of water produced or diverted per person in a given municipality. Because this measure examines all water produced by a given municipality, it often includes industrial, commercial, and institutional demand as well as residential demand. A number of factors may influence the M&I per capita use of a given community, including the amount of industrial demand, climate, number of institutional facilities, and number of visitors.

SSI are industries located in a given area that have their own water supply systems and are therefore not directly related to local measures of population and M&I per capita water use.

Figure C7-8 presents the following by scenario in 2015, 2035, and 2060:

- M&I demand for Colorado River water in the Study Area
- M&I demand for Colorado River water in individual planning areas
- M&I demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C7-8, M&I water demand is the second largest component of Colorado River demand, increasing from about 30 percent in 2015 to between 33 and 34 percent of Colorado River demand in 2060, depending on which scenario is considered.

Colorado River demand for M&I use increases over time from 2015 to 2060 across all scenarios. The increase is primarily due to population increase as Study Area M&I per capita use decreases over time across all scenarios and SSI demand is less than 10 percent of M&I demand.

In examining the planning areas, about 75 percent of the increase in M&I demand for Colorado River water from 2015 to 2060 over time is due to population increase in CVWD. The remaining increase in demand is primarily from M&I demand in the IID service area, with a small increase in the Mainstem planning area. While these planning areas show the greatest increase, MWD represents 71 percent of the total M&I demand. Population growth occurs in the MWD planning area, but growth in Colorado River demand is limited by existing infrastructure and remaining demands will be met by supplies from other sources.

Increases in population are somewhat tempered by decreases in M&I per capita use. Per capita water use decreases in all scenarios with reductions ranging from 9 to 18 percent by 2060.

### **3.3.3 Energy**

Water demand for energy can be estimated through known plans for new power plants or through applying a per capita energy water use factor. Power facilities often serve areas remote from their locations.

Figure C7-9 presents the following by scenario in 2015, 2035, and 2060:

- Energy demand for Colorado River water
- Individual planning area energy demand for Colorado River water
- Energy demand as a portion of Colorado River water demand (right hand side of graph)



FIGURE C7-8  
Change in Colorado River Demand in California from 2015 for M&I

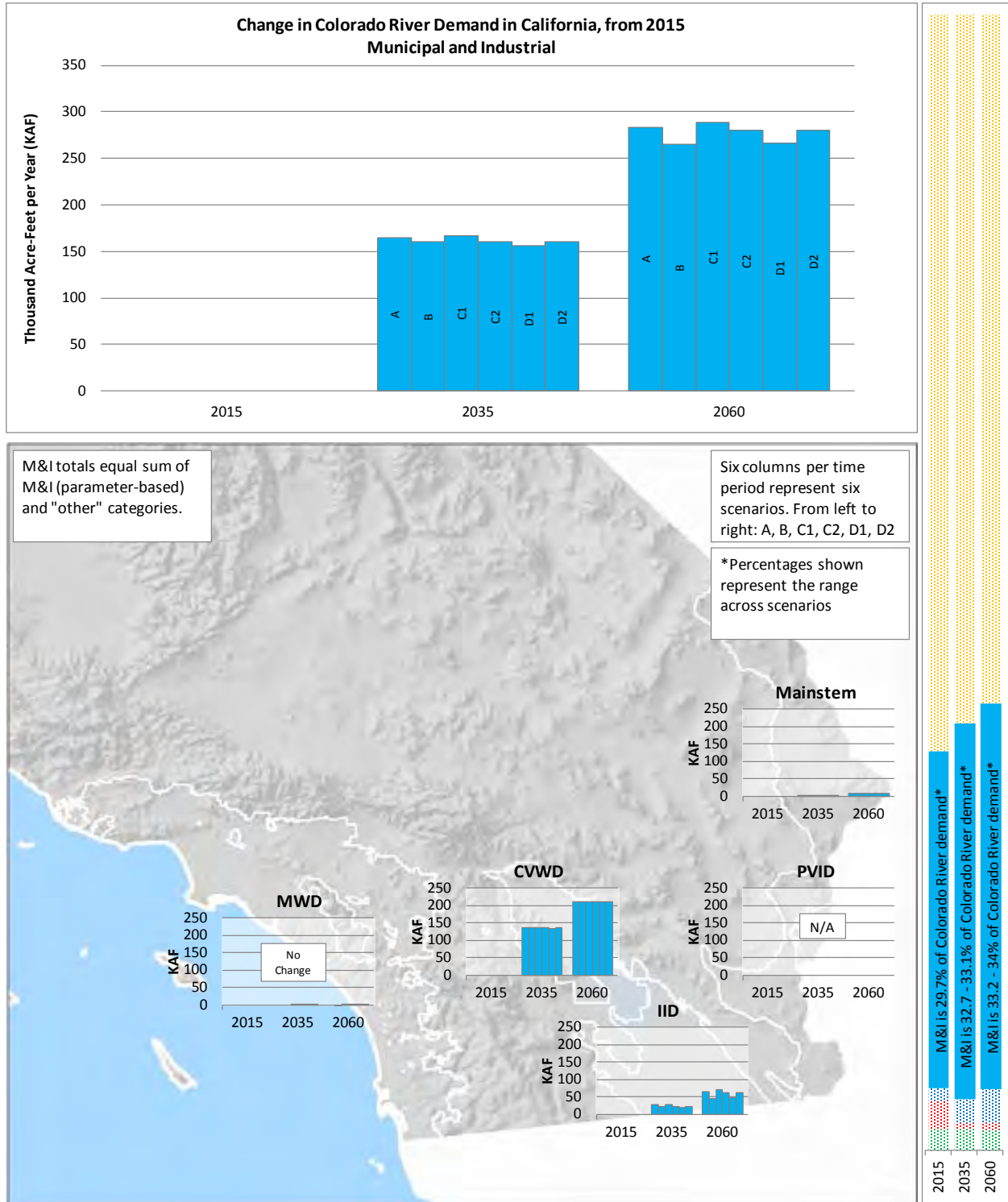
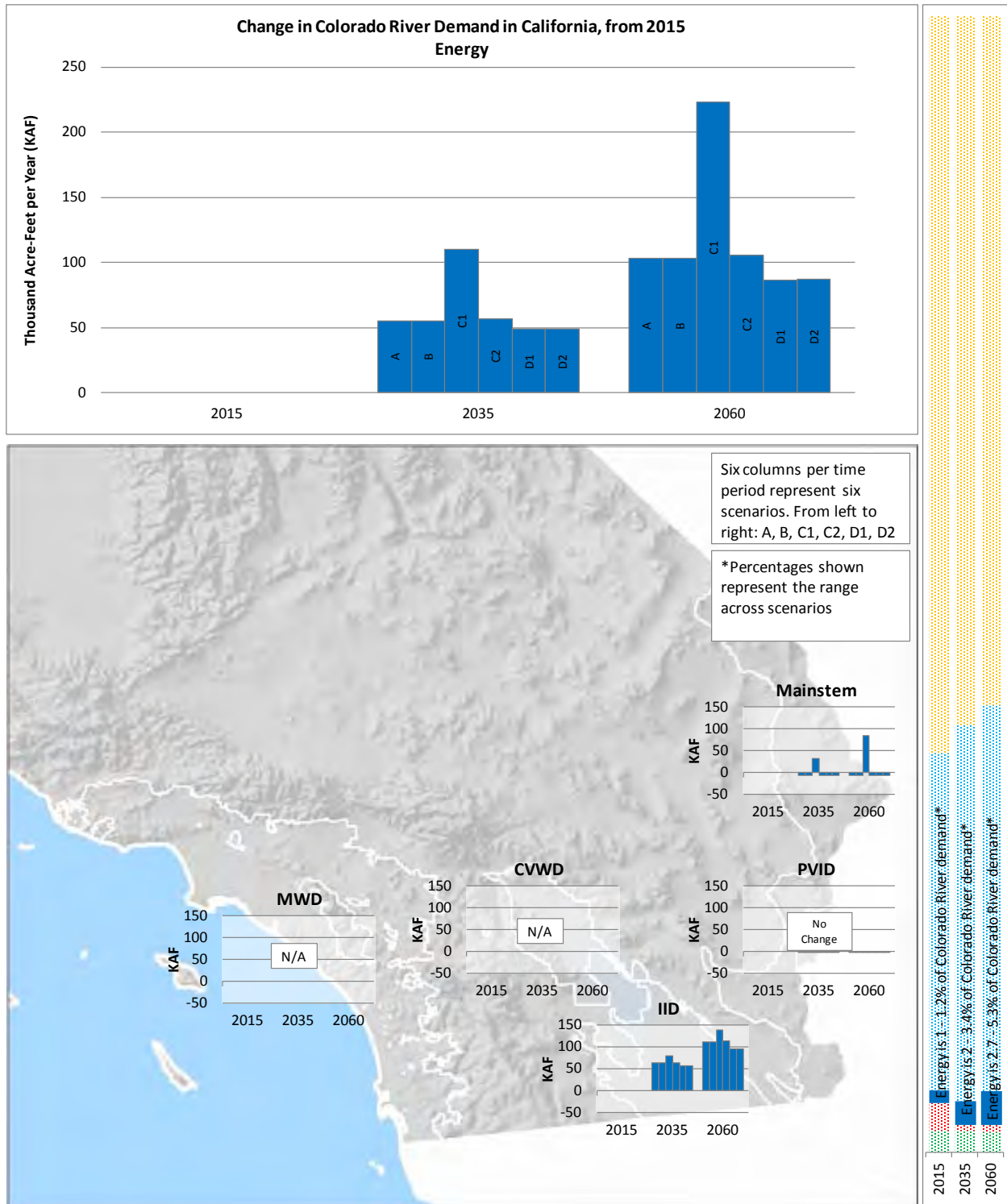


FIGURE C7-9  
Change in Colorado River Demand in California from 2015 for Energy



As can be seen from figure C7-9, energy water demand is a small fraction of Colorado River demand, increasing from 1 percent in 2015 to between 2.7 and 5 percent of demand in 2060, depending on which scenario is considered.

Energy demand for Colorado River water increases over time from 2015 to 2060 across all scenarios with notable increases for the Rapid Growth (C1) scenario.

Energy demands are shown only in the IID and Mainstem planning areas. Consistent increases occur in the IID planning area across all scenarios. The Mainstem planning area shows significant increases in energy demand in the Rapid Growth (C1) scenario and nominal decreases in the remaining scenarios. Growth in the IID planning area represents all of the increase in energy demand for water in all scenarios but the Rapid Growth (C1) scenario, where growth in the IID planning area is about 60 percent of the total growth. The water demand increases for energy are primarily due to expansion of geothermal and solar energy.

### **3.3.4 Minerals Extraction**

California does not report use of Colorado River water for minerals extraction.

### **3.3.5 Fish, Wildlife, and Recreation**

Water demand for fish, wildlife, and recreation is estimated from existing agreements or known consumptive use associated with this demand category. Non-consumptive demands associated with fish, wildlife, and recreation are represented through the metrics portion of the Study presented in *Technical Report D – System Reliability Metrics*.

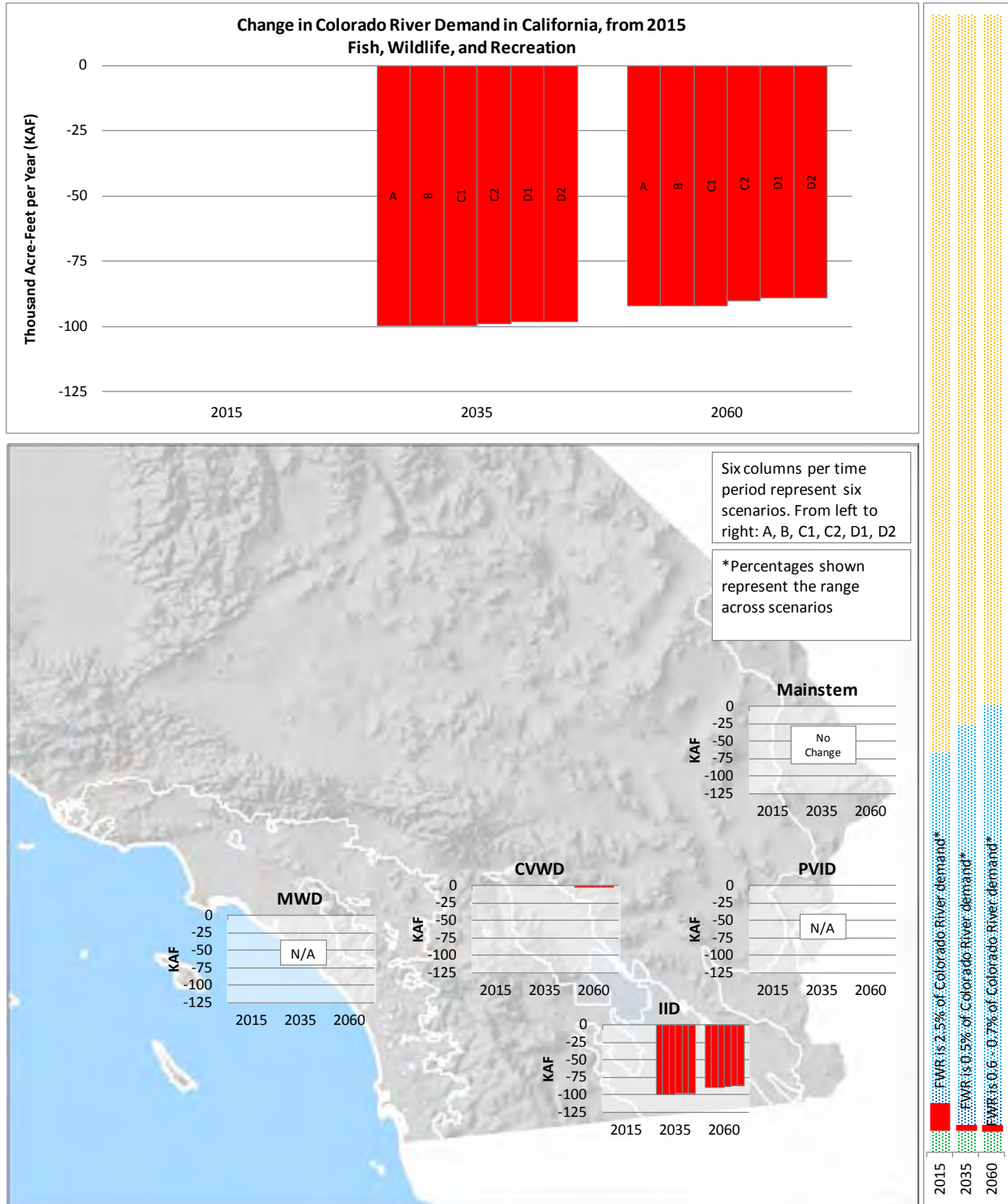
Figure C7-10 presents the following by scenario in 2015, 2035, and 2060:

- Change in fish, wildlife, and recreation demand for Colorado River water
- Change in fish, wildlife, and recreation demand for Colorado River water in individual planning areas
- Fish, wildlife, and recreation demand as a portion of Colorado River demand (right hand side of graph)

As can be seen from figure C7-10, fish, wildlife, and recreation water demand is a small fraction of Colorado River demand, decreasing from 2.5 percent in 2015 to between 0.6 and 0.7 percent of Colorado River demand in 2060 across all scenarios.

Total decrease in fish, wildlife, and recreation demands is about 90 kaf. These decreases are dominated by decreases in the IID planning area associated with the Salton Sea mitigation. Total demand decreases from about 124 kaf in 2015 to between 32 and 35 kaf in 2060.

FIGURE C7-10  
Change in Colorado River Demand in California from 2015 for Fish, Wildlife, and Recreation



### **3.3.6 Tribal**

The following federally recognized tribes divert Colorado River water under water rights assigned to reservations in California:

- Fort Mojave Indian Tribe
- Chemehuevi Tribe
- Colorado River Indian Tribes
- Quechan Indian Tribe

Tribal water demands relied on information submitted by the Ten Tribes Partnership for use in the *Colorado River Interim Surplus Criteria Final Environmental Impacts Statement* (Reclamation, 2000) and used in the more recent *Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead Final Environmental Impact Statement* (Reclamation, 2007) and Reclamation's 2005 to 2009 Decree Accounting Report (Reclamation, 2007 and 2010).

Tribal demands are forecast to remain constant through time and across scenarios, at about 92,000 acre-feet (af) per year.

For additional information on tribal demands, see appendix C9.

### **3.4 Summary Tables of Parameters and Demands by Category**

Tables C7-2 to C7-7 present the specific parameter data collected by planning area. Each table is a complete set of data for a given scenario. These data were used to develop Study Area demands and subsequently Colorado River demands once other supplies were considered. These tables provide the specific information used in the creation of the summary and category plots previously discussed and provide reference information for the data provided.

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TABLE C7-2  
Total Demand within Study Area under Current Projected (A) Scenario

		LEGEND: 999 From States 999 From State Plans 999 Calculated 999 From Study Team																		
Units are thousand acre-feet per year, unless otherwise noted		IID			MWD			CVWD			PVID			Mainstem			STATE TOTAL			
Hydrologic Basin	Planning Area Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	Notes
Agricultural	Irrigated Acreage [thousands]										91	91	107	4	4	4	95	95	111	1, 2
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										10.29	10.29	9.34	10.29	10.29	9.34	10.29	10.29	9.34	3
	Consumptive factor [%]										44%	44%	49%	44%	44%	49%	44%	44%	49%	4
	<b>Demand (Consumptive)</b>										412	412	490	19	19	19	430	430	509	5, 6
Municipal and Industrial (M&I)	Population [thousands]													7	14	28	7	14	28	7
	M&I Per Capita Use (Diversion) [gpcd]													442	505	522	442	505	522	8
	Consumptive factor [%]													69%	68%	67%	69%	68%	67%	9
	M&I Demand (Consumptive)													2	5	11	2	5	11	10
	Self Served Industrial Demand (Consumptive)													0	0	0	0	0	0	
	<b>Demand (Consumptive)</b>													2	5	11	2	5	11	
Energy	<b>Demand (Consumptive)</b>										5	5	5	15	8	8	20	13	13	
Minerals	<b>Demand (Consumptive)</b>										0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	<b>Demand (Consumptive)</b>										0	0	0	0.6	0.6	0.6	0.6	0.6	0.6	11
Tribal	<b>Demand (Consumptive)</b>										0	0	0	92	92	92	92	92	92	12
<b>Total Hydrologic Basin</b>	<b>Demand (Consumptive)</b>	0	0	0	0	0	0	0	0	0	417	416	495	129	125	130	546	541	625	
<b>Adjacent Areas</b>																				
Agricultural	Irrigated Acreage[thousands]	477	485	490	62	50	50	74	53	40							613	588	580	13, 14, 15
	Per-Acre Water Delivery (Diversion)[af/ac/yr]	5.4	5.2	5.2	3.57	3.57	3.57	4.0	4.0	4.0							5.04	4.94	5.00	16, 17
	<b>Demand (Diversion)</b>	2,567	2,510	2,563	222	180	180	300	214	162							3,089	2,904	2,905	18,19,20
Municipal and Industrial (M&I)	Population [thousands]	181	260	360	19,956	22,474	26,200	295	599	1,040							20,432	23,333	27,600	21, 22, 23
	M&I Per Capita Use (Diversion)[gpcd]	185	187	187	172	162	144	452	425	423							176	170	155	24
	M&I Demand (Diversion)	37	55	76	3,850	4,091	4,234	149	285	493							4,037	4,431	4,803	25, 26, 27
	Self Served Industrial Demand (Diversion)	0	0	0	0	0	0	30	62	106							30	62	106	28
	<b>Demand (Diversion)</b>	37	55	76	3,850	4,091	4,234	180	347	599							4,067	4,492	4,908	
Energy	<b>Demand (Diversion)</b>	33	96	144				0	0	0							33	96	144	29
Minerals	<b>Demand (Diversion)</b>	0	0	0				0	0	0							0	0	0	
Fish, Wildlife, and Recreation	<b>Demand (Diversion)</b>	115	15	25				11	11	11							126	26	36	30, 31
Tribal	<b>Demand (Diversion)</b>	0	0	0				0	0	0							0	0	0	
Other	<b>Demand (Diversion)</b>	48	58	75	0	0	318	0	0	0							48	58	393	32-33
<b>Total Adjacent Areas</b>	<b>Demand (Diversion)</b>	2,800	2,733	2,882	4,072	4,271	4,732	490	571	771	0	0	0	0	0	0	7,362	7,575	8,386	
<b>Total Demand in the Study Area</b>		2,800	2,733	2,882	4,072	4,271	4,732	490	571	771	417	416	495	129	125	130	7,908	8,117	9,011	34
Demand that may be met by Other Sources		0	10	10	2,822	3,021	3,482	98	112	315	0	0	0	0	0	0	2,928	3,143	3,807	35
<b>Potential Colorado River Demand</b>		2,791	2,723	2,872	1,250	1,250	1,250	392	459	456	417	416	495	129	125	130	4,979	4,974	5,203	36, 37
Agricultural	Colorado River Demand	2,559	2,501	2,554	0	0	0	240	172	96	412	412	490	19	19	19	3,230	3,103	3,159	38
Municipal and Industrial	Colorado River Demand	37	54	75	1,250	1,250	1,250	144	279	354	0	0	0	2	5	11	1,433	1,589	1,690	
Energy	Colorado River Demand	32	96	144	0	0	0	0	0	0	5	5	5	15	8	8	53	108	156	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	115	15	25	0	0	0	8	8	6	0	0	0	0.6	0.6	0.6	124	24	32	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	92	92	
Other	Colorado River Demand	48	58	75	0	0	0	0	0	0	0	0	0	0	0	0	48	58	75	

**Notes**

- 1) PVID: Roger Henning, personal communication, Aug 19, 2011; in 2015 assume 25,947 acres in the Forbearance and Following Program with MWD; in 2035 assume 23,352 acres in the Forbearance and Following Program with MWD.
- 2) Mainstem: computed as consumptive demand divided by consumptive factor divided by per-acre water delivery.
- 3) Mainstem: applied water use as determined for PVID in 2015, 2035 and 2060.
- 4) PVID: Derived from Reclamation's Decree Accounting reports. The 2015 and 2035 factors are based on the 1964 to 2004 excluding following years. The 2060 factor is the maximum historical value.
- 5) PVID: Roger Henning, personal communication, Aug 19, 2011; in 2015 assume 78,327 af provided to MWD under Forbearance and Following Program; in 2035 assume 78,327 af provided to MWD under Forbearance and Following Program.
- 6) Mainstem: Chris Harris, personal communication. Provided as CRSS input, includes Miscellaneous Agricultural Present Perfected Rights and Bard Unit.
- 7) Mainstem: population projections for city of Needles based on personal communication Dave Brownlee; 2015 Winterhaven projected increase from 2010 census based on 2010 to 2015 increase reflected in Population Projection from table 3, Lower Colorado Water Supply Study, California, Planning Report (Reclamation, 1986). 2035 and 2060 Winterhaven projected increase based on 2010 to 2015 increase in 1986 study continuing in each 5-year period through 2060, and Big River projected increase based on growth rate computed from the 2000 and 2010 census.
- 8) Mainstem: calculated based on population, consumptive demand, and consumptive factor.
- 9) Mainstem: Based on aggregate consumptive factor determined from Reclamation's 2010 Decree Accounting reports for Needles and Winterhaven, and the 2009 Decree Accounting Report for miscellaneous Present Perfected Rights.
- 10) Mainstem M&I: Values from CRSS demand input tool for City of Needles, Winterhaven and Miscellaneous Domestic Present Perfected Rights and Lower Colorado Water Supply Project Municipal and Industrial Use.
- 11) Mainstem Fish, Wildlife and Recreation: 612 af for Bureau of Land Management county park leases.
- 12) Mainstem: Chris Harris, personal communication. Provided as CRSS input, includes Fort Mohave, Chemehuevi, Colorado River, and Quechan federally recognized tribes.
- 13) IID: 2035: IID 2011 Crop Report plus additional 10,000 acres of reclaimed lands; 2060: IID 2011 Crop Report plus additional 15,000 acres reclaimed lands
- 14) MWD: Irrigated Acreage for 2015, 2035, and 2060 equal to Agricultural Demand divided by MWD per-acre water delivery.
- 15) CVWD: Form 7-2045 2010 Crop and Water Report. 2010 Irrigable Acres from Form 7-2045; 2015, 2035 and 2060: determined from demand over 2010 water use.
- 16) IID, CVWD: computed simply as Agricultural Demand (Diversion) divided by irrigated acres in 2011. In CVWD, values assumed to be the same for other years. In IID, other years are computed in same fashion as 2011. Actual Applied Water Use varies throughout IID depending on factors such as soil type and cropping patterns.
- 17) MWD per-acre water delivery (af/ac/yr) for 2015, 2035, and 2060 assumed to be the same as for 2010. 2010 per-acre water delivery equal to Agricultural Demand (Diversion) divided by Irrigated Acreage estimate from Southern California Association of Governments 2005 data and San Diego Association of Governments 2007 data.
- 18) IID: Exhibit B CRWDA. Revised w/+5 kaf for IID/MWD and + 50 kaf in 2060 for MWD obligation to CVWD; less M&I, FWR, Other, and existing (2011) energy demands

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- 19) MWD: 2015 and 2035 from MWD Regional Urban Water Management Plan (RUWMP) (2010), Determined as 2015 and 2035 demands from page A.1-10, table A.1-7; 2035 value assumed constant through 2060.  
Approximately 7 percent of Metropolitan's retail demands are used for agricultural purposes. Agricultural uses are expected to decline through 2030. For example, irrigated acreage declined by 51,361 acres between 2001–2007.
- 20) CVWD: 2010 Coachella Valley Water Management Plan (CVWMP) update. page 3-14, table 3-2.
- 21) IID: IID Integrated Regional Water Management Planning (preliminary data).
- 22) MWD: 2015 and 2035: RUWMP 2010 table A.1-2; 2060: provided by J. Matusak. Report of the Blue Ribbon Committee (Blue Ribbon Committee, 2011), based on moderate demand, sustained imports scenario 40 percent increase from 2010.
- 23) CVWD: 2010 CVWMP update. 2010, 2015, 2035, 2045 page 3-6, table 3-1, East Valley Population. 2060 assumed as 1.5 times growth from 2035 to 2045.
- 24) MWD: Future changes assume continued water savings due to conservation measures such as water savings resulting from plumbing codes, price effects, and the continuing implementation of utility-funded conservation Best Management Practices.
- 25) IID: 2035 and 2060: calculated based on M&I efficiency from 2011 and years population, where 2011 M&I efficiency was calculated as af/person/year based on 2011 population and M&I demand in af. 2015: interpolated from 2011 and 2035 estimate.
- 26) MWD: 2015, 2035: RUWMP 2010, table A.1-6; 2060: Blue Ribbon Committee Report, table B.2., Scenario 1.
- 27) CVWD: 2010 CVWMP update, table 3-2, page 3-14.
- 28) CWWD: 2010 CVWMP update and CVWD annual report on golf course water use. Total Industrial table 3-2, page 3-14 times percent of population in East Valley plus golf course water use. Assumed all golf growth occurs in East Valley.
- 29) IID: IID Integrated Regional Water Management Planning (preliminary data).
- 30) IID: values from Mike King personal communication, Oct 7, 2011 includes water sent to the Salton Sea via an exchange with SDCWA and CVWD to mitigate for Quantitative Settlement Agreement transfers through 2017. The transfer to San Diego is accounted for as a deduction to IID's priority 3 consumptive use cap.
- 31) CVWD: 2010 CVWMP update. Total Fish Farms and Duck Clubs table 3-2, page 3-14.
- 32) IID: Tina Shields personal communication, Aug 3, 2011; accounts for service pipes and miscellaneous uses, assumes 1 percent annual increase.
- 33) MWD: Represents demand of 268,200 af for seawater barrier and groundwater replenishment, and 50,000 af to account for uncertain regional growth and water demand projections. The demands shown are based on the April 12, 2011 Report of Blue Ribbon Committee.
- 34) Calculated from the sum of Hydrologic Basin (Consumptive) Demand and Adjacent Areas (Diversion) Demand. Adjacent Areas (Diversion) Demand is net of return flows to the Colorado River, (i.e. Depletions).
- 35) CVWD: Patti Reyes personal communication, Aug 11, 2011; groundwater and recycled water.
- 36) MWD: 2015, 2035 and 2060 assume nearly full Colorado River Aqueduct.
- 37) All values presented in table are contingent on the continued implementation of the Quantitative Settlement Agreement.
- 38) For MWD, all potential Colorado River demand is M&I. For IID and CVWD, distribute Colorado River demand among categories according to distribution of total Study Area demand.





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TABLE C7-3  
Total Demand within Study Area under Slow Growth (B) Scenario

CALIFORNIA		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter																		
Units are thousand acre-feet per year, unless otherwise noted		IID			MWD			CVWD			PVID			Mainstem			STATE TOTAL			
Hydrologic Basin	Planning Area	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	Notes
Agricultural	Irrigated Acreage [thousands]										91	91	107	4	4	4	95	95	111	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										10.29	10.29	9.34	10.29	10.29	9.34	10.29	10.29	9.34	2
	Consumptive factor [%]										44%	44%	49%	44%	44%	49%	44%	44%	49%	
	<b>Demand (Consumptive)</b>										<b>412</b>	<b>412</b>	<b>490</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>430</b>	<b>430</b>	<b>509</b>	
Municipal and Industrial (M&I)	Population [thousands]										0	0	0	7	14	28	7	14	28	3
	M&I Per Capita Use (Diversion) [gpcd]										0	0	0	442	505	522	442	505	522	4
	Consumptive factor [%]										0%	0%	0%	69%	68%	67%	69%	68%	67%	
	M&I Demand (Consumptive)										0	0	0	2	5	11	2	5	11	
	Self Served Industrial Demand (Consumptive)										0	0	0	0	0	0	0	0	0	5
	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>11</b>	<b>2</b>	<b>5</b>	<b>11</b>	
Energy	<b>Demand (Consumptive)</b>										<b>5</b>	<b>5</b>	<b>5</b>	<b>15</b>	<b>8</b>	<b>8</b>	<b>20</b>	<b>13</b>	<b>13</b>	6
Minerals	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	7
Fish, Wildlife, and Recreation	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	8
Tribal	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	9
<b>Total Hydrologic Basin</b>	<b>Demand (Consumptive)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>546</b>	<b>541</b>	<b>625</b>	
<b>Adjacent Areas</b>																				
Agricultural	Irrigated Acreage[thousands]	477	485	490	62	50	50	74	53	40							613	588	580	10
	Per-Acre Water Delivery (Diversion)[af/ac/yr]	5.38	5.17	5.23	3.57	3.57	3.57	4.04	4.04	4.04							5.04	4.94	5.00	11
	<b>Demand (Diversion)</b>	<b>2,567</b>	<b>2,510</b>	<b>2,563</b>	<b>222</b>	<b>180</b>	<b>180</b>	<b>300</b>	<b>214</b>	<b>162</b>							<b>3,089</b>	<b>2,904</b>	<b>2,905</b>	
Municipal and Industrial (M&I)	Population [thousands]	170	229	270	19,424	19,943	18,427	295	599	1,040							19,889	20,771	19,737	12a, 12b
	M&I Per Capita Use (Diversion)[gpcd]	185	184	180	172	162	144	452	425	423							176	170	159	13a, 13b
	M&I Demand (Diversion)	35	47	54	3,747	3,630	2,978	149	285	493							3,932	3,962	3,525	
	Self Served Industrial Demand (Diversion)	0	0	0	0	0	0	30	62	106							30	62	106	14
	<b>Demand (Diversion)</b>	<b>35</b>	<b>47</b>	<b>54</b>	<b>3,747</b>	<b>3,630</b>	<b>2,978</b>	<b>180</b>	<b>347</b>	<b>599</b>							<b>3,962</b>	<b>4,024</b>	<b>3,631</b>	
Energy	<b>Demand (Diversion)</b>	<b>33</b>	<b>96</b>	<b>144</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>33</b>	<b>96</b>	<b>144</b>	15
Minerals	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	16
Fish, Wildlife, and Recreation	<b>Demand (Diversion)</b>	<b>115</b>	<b>15</b>	<b>25</b>				<b>11</b>	<b>11</b>	<b>11</b>							<b>126</b>	<b>26</b>	<b>36</b>	17
Tribal	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	18
Other	<b>Demand (Diversion)</b>	<b>48</b>	<b>58</b>	<b>75</b>	<b>0</b>	<b>0</b>	<b>318</b>	<b>0</b>	<b>0</b>	<b>0</b>							<b>48</b>	<b>58</b>	<b>393</b>	
<b>Total Adjacent Areas</b>	<b>Demand (Diversion)</b>	<b>2,798</b>	<b>2,726</b>	<b>2,861</b>	<b>3,969</b>	<b>3,810</b>	<b>3,476</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7,257</b>	<b>7,107</b>	<b>7,109</b>	
<b>Total Demand in the Study Area</b>		<b>2,798</b>	<b>2,726</b>	<b>2,861</b>	<b>3,969</b>	<b>3,810</b>	<b>3,476</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>7,803</b>	<b>7,649</b>	<b>7,734</b>	
Demand that may be met by Other Sources		9	10	10	2,719	2,560	2,226	98	112	315	0	0	0	0	0	0	2,826	2,682	2,551	19
<b>Potential Colorado River Demand</b>		<b>2,789</b>	<b>2,716</b>	<b>2,851</b>	<b>1,250</b>	<b>1,250</b>	<b>1,250</b>	<b>392</b>	<b>459</b>	<b>456</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>4,977</b>	<b>4,966</b>	<b>5,182</b>	
Agricultural	Colorado River Demand	2,559	2,501	2,554	0	0	0	240	172	96	412	412	490	19	19	19	3,229	3,103	3,158	20
Municipal and Industrial	Colorado River Demand	35	47	54	1,250	1,250	1,250	144	279	354	0	0	0	2	5	11	1,431	1,581	1,669	
Energy	Colorado River Demand	32	96	143	0	0	0	0	0	0	5	5	5	15	8	8	53	108	156	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	115	15	25	0	0	0	8	8	6	0	0	0	0.6	0.6	0.6	124	24	32	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	92	92	
Other	Colorado River Demand	48	58	75	0	0	0	0	0	0	0	0	0	0	0	0	48	58	75	

**Notes**

- 1) No changes from Current Projected.
- 2) No changes from Current Projected.
- 3) No changes from Current Projected.
- 4) No changes from Current Projected.
- 5) No changes from Current Projected.
- 6) No changes from Current Projected.
- 7) No changes from Current Projected.
- 8) No changes from Current Projected.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12a) IID: Based on regional trends, assume 2060 population is 25 percent less than that of Current Projected.
- 12b) MWD: Population projections extrapolated from California Department of Water Resources (DWR) low growth county population projections for California Water Plan Update, 2009.
- 13a) Based on very slow reduction to satisfy the California 20X2020 statute for the IID planning area.
- 13b) No changes from Current Projected for other planning areas.
- 14) No changes from Current Projected.
- 15) No changes from Current Projected.
- 16) No changes from Current Projected.
- 17) No changes from Current Projected.
- 18) No changes from Current Projected.
- 19) MWD: Reduced from Current Projected to reflect lower demand with lower population projection. Others: no changes from Current Projected.
- 20) For MWD, all potential Colorado River demand is M&I. For IID and CVWD, distribute Colorado River demand among categories according to distribution of total Study Area demand.

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TABLE C7-4  
Total Demand within Study Area under Rapid Growth (C1) Scenario

CALIFORNIA		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter												STATE TOTAL			Notes			
Hydrologic Basin	Planning Area	IID			MWD			CVWD			PVID			Mainstem				STATE TOTAL		
	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agricultural	Irrigated Acreage [thousands]										91	91	107	4	4	4	95	95	111	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										10.29	10.29	9.34	10.29	10.29	9.34	10.29	10.29	9.34	2
	Consumptive factor [%]										44%	44%	49%	44%	44%	49%	44%	44%	49%	
	<b>Demand (Consumptive)</b>										<b>412</b>	<b>412</b>	<b>490</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>430</b>	<b>430</b>	<b>509</b>	
Municipal and Industrial (M&I)	Population [thousands]										0	0	0	7	14	28	7	14	28	3
	M&I Per Capita Use (Diversion) [gpcd]										0	0	0	442	505	522	442	505	522	4
	Consumptive factor [%]										0%	0%	0%	69%	68%	67%	69%	68%	67%	
	M&I Demand (Consumptive)										0	0	0	2	5	11	2	5	11	
	Self Served Industrial Demand (Consumptive)										0	0	0	0	0	0	0	0	0	5
	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>11</b>	<b>2</b>	<b>5</b>	<b>11</b>	
Energy	<b>Demand (Consumptive)</b>										<b>5</b>	<b>5</b>	<b>5</b>	<b>15</b>	<b>47</b>	<b>100</b>	<b>20</b>	<b>52</b>	<b>105</b>	6
Minerals	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	7
Fish, Wildlife, and Recreation	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	8
Tribal	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	9
<b>Total Hydrologic Basin</b>	<b>Demand (Consumptive)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>164</b>	<b>222</b>	<b>546</b>	<b>580</b>	<b>717</b>	
<b>Adjacent Areas</b>																				
Agricultural	Irrigated Acreage[thousands]	477	485	490	62	50	50	74	53	40							613	588	580	10
	Per-Acre Water Delivery (Diversion)[af/ac/yr]	5.38	5.17	5.23	3.57	3.57	3.57	4.04	4.04	4.04							5.04	4.94	5.00	11
	<b>Demand (Diversion)</b>	<b>2,567</b>	<b>2,510</b>	<b>2,563</b>	<b>222</b>	<b>180</b>	<b>180</b>	<b>300</b>	<b>214</b>	<b>162</b>							<b>3,089</b>	<b>2,904</b>	<b>2,905</b>	
Municipal and Industrial (M&I)	Population [thousands]	192	291	450	20,743	26,026	33,117	295	599	1,040							21,230	26,916	34,607	12a, 12b
	M&I Per Capita Use (Diversion)[gpcd]	176	174	159	172	162	144	452	425	423							176	168	153	13a, 13b
	M&I Demand (Diversion)	38	57	80	4,002	4,738	5,352	149	285	493							4,189	5,079	5,925	
	Self Served Industrial Demand (Diversion)	0	0	0	0	0	0	30	62	106							30	62	106	14
	<b>Demand (Diversion)</b>	<b>38</b>	<b>57</b>	<b>80</b>	<b>4,002</b>	<b>4,738</b>	<b>5,352</b>	<b>180</b>	<b>347</b>	<b>599</b>							<b>4,219</b>	<b>5,141</b>	<b>6,031</b>	
Energy	<b>Demand (Diversion)</b>	<b>41</b>	<b>120</b>	<b>180</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>41</b>	<b>120</b>	<b>180</b>	15
Minerals	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	16
Fish, Wildlife, and Recreation	<b>Demand (Diversion)</b>	<b>115</b>	<b>15</b>	<b>25</b>				<b>11</b>	<b>11</b>	<b>11</b>							<b>126</b>	<b>26</b>	<b>36</b>	17
Tribal	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	18
Other	<b>Demand (Diversion)</b>	<b>48</b>	<b>58</b>	<b>75</b>	<b>0</b>	<b>0</b>	<b>318</b>	<b>0</b>	<b>0</b>	<b>0</b>							<b>48</b>	<b>58</b>	<b>393</b>	
<b>Total Adjacent Areas</b>	<b>Demand (Diversion)</b>	<b>2,808</b>	<b>2,760</b>	<b>2,923</b>	<b>4,224</b>	<b>4,917</b>	<b>5,850</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7,522</b>	<b>8,248</b>	<b>9,544</b>	
<b>Total Demand in the Study Area</b>		<b>2,808</b>	<b>2,760</b>	<b>2,923</b>	<b>4,224</b>	<b>4,917</b>	<b>5,850</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>164</b>	<b>222</b>	<b>8,068</b>	<b>8,828</b>	<b>10,261</b>	
Demand that may be met by Other Sources		<b>9</b>	<b>10</b>	<b>10</b>	<b>2,974</b>	<b>3,667</b>	<b>4,600</b>	<b>98</b>	<b>112</b>	<b>315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	3,080	3,790	4,925	19
<b>Potential Colorado River Demand</b>		<b>2,800</b>	<b>2,750</b>	<b>2,913</b>	<b>1,250</b>	<b>1,250</b>	<b>1,250</b>	<b>392</b>	<b>459</b>	<b>456</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>164</b>	<b>222</b>	<b>4,987</b>	<b>5,039</b>	<b>5,336</b>	
Agricultural	Colorado River Demand	2,559	2,501	2,554	0	0	0	240	172	96	412	412	490	19	19	19	3,230	3,103	3,159	20
Municipal and Industrial	Colorado River Demand	38	57	80	1,250	1,250	1,250	144	279	354	0	0	0	2	5	11	1,433	1,591	1,695	
Energy	Colorado River Demand	41	120	179	0	0	0	0	0	0	5	5	5	15	47	100	61	171	284	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	115	15	25	0	0	0	8	8	6	0	0	0	0.6	0.6	0.6	124	24	32	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	92	92	
Other	Colorado River Demand	48	58	75	0	0	0	0	0	0	0	0	0	0	0	0	48	58	75	

**Notes**

- 1) No changes from Current Projected.
- 2) No changes from Current Projected.
- 3) No changes from Current Projected.
- 4) No changes from Current Projected.
- 5) No changes from Current Projected.
- 6) Increased demand on Mainstem from Current Projected.
- 7) No changes from Current Projected.
- 8) No changes from Current Projected.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12a) IID: Based on regional trends, assume 2060 population is 25 percent more than that of Current Projected.
- 12b) MWD: Population projections extrapolated from California DWR high growth county population projections for *California Water Plan Update*, 2009.
- 13a) Based on slow reduction to satisfy the California 20X2020 statute for the IID planning area.
- 13b) No changes from Current Projected for other planning areas.
- 14) No changes from Current Projected.
- 15) Increased demand from Current Projected based on rapid geothermal technology.
- 16) No changes from Current Projected.
- 17) IID: No reference.
- 18) No changes from Current Projected.
- 19) MWD: Increased from Current Projected to reflect higher demand with higher population projection. Others: no changes from Current Projected.
- 20) For MWD, all potential Colorado River demand is M&I. For IID and CVWD, distribute Colorado River demand among categories according to distribution of total Study Area demand.

Colorado River Basin  
Water Supply and Demand Study

TABLE C7-5  
Total Demand within Study Area under Rapid Growth (C2) Scenario

CALIFORNIA		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter																					
Units are thousand acre-feet per year, unless otherwise noted																							
Hydrologic Basin	Planning Area Year	IID			MWD			CVWD			PVID			Mainstem			STATE TOTAL			Notes			
		2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060				
Agricultural	Irrigated Acreage [thousands]																						
	Per-Acre Water Delivery (Diversion) [af/ac/yr]																						
	Consumptive factor [%]																						
	<b>Demand (Consumptive)</b>																						
Municipal and Industrial (M&I)	Population [thousands]																						
	M&I Per Capita Use (Diversion) [gpcd]																						
	Consumptive factor [%]																						
	M&I Demand (Consumptive)																						
	Self Served Industrial Demand (Consumptive)																						
	<b>Demand (Consumptive)</b>																						
Energy	<b>Demand (Consumptive)</b>																						
Minerals	<b>Demand (Consumptive)</b>																						
Fish, Wildlife, and Recreation	<b>Demand (Consumptive)</b>																						
Tribal	<b>Demand (Consumptive)</b>																						
<b>Total Hydrologic Basin</b>	<b>Demand (Consumptive)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>546</b>	<b>541</b>	<b>625</b>		
<b>Adjacent Areas</b>																							
Agricultural	Irrigated Acreage [thousands]	477	485	490	62	50	50	74	53	40													
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	5.38	5.17	5.23	3.57	3.57	3.57	4.04	4.04	4.04													
	<b>Demand (Diversion)</b>	<b>2,567</b>	<b>2,510</b>	<b>2,563</b>	<b>222</b>	<b>180</b>	<b>180</b>	<b>300</b>	<b>214</b>	<b>162</b>													
Municipal and Industrial (M&I)	Population [thousands]	192	291	450	20,743	26,026	33,117	295	599	1,040													
	M&I Per Capita Use (Diversion) [gpcd]	172	150	141	172	162	144	452	425	423													
	M&I Demand (Diversion)	37	49	71	4,002	4,738	5,352	149	285	493													
	Self Served Industrial Demand (Diversion)	0	0	0	0	0	0	30	62	106													
	<b>Demand (Diversion)</b>	<b>37</b>	<b>49</b>	<b>71</b>	<b>4,002</b>	<b>4,738</b>	<b>5,352</b>	<b>180</b>	<b>347</b>	<b>599</b>													
Energy	<b>Demand (Diversion)</b>	<b>33</b>	<b>98</b>	<b>147</b>				<b>0</b>	<b>0</b>	<b>0</b>													
Minerals	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>													
Fish, Wildlife, and Recreation	<b>Demand (Diversion)</b>	<b>115</b>	<b>16</b>	<b>27</b>				<b>11</b>	<b>11</b>	<b>11</b>													
Tribal	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>													
Other	<b>Demand (Diversion)</b>	<b>48</b>	<b>58</b>	<b>75</b>	<b>0</b>	<b>0</b>	<b>318</b>	<b>0</b>	<b>0</b>	<b>0</b>													
<b>Total Adjacent Areas</b>	<b>Demand (Diversion)</b>	<b>2,800</b>	<b>2,730</b>	<b>2,882</b>	<b>4,224</b>	<b>4,917</b>	<b>5,850</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7,514</b>	<b>8,219</b>	<b>9,504</b>			
<b>Total Demand in the Study Area</b>		<b>2,800</b>	<b>2,730</b>	<b>2,882</b>	<b>4,224</b>	<b>4,917</b>	<b>5,850</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>8,059</b>	<b>8,760</b>	<b>10,129</b>				
Demand that may be met by Other Sources		9	10	10	2,974	3,667	4,600	98	112	315	0	0	0	0	0	0	3,080	3,790	4,925				
<b>Potential Colorado River Demand</b>		<b>2,791</b>	<b>2,720</b>	<b>2,872</b>	<b>1,250</b>	<b>1,250</b>	<b>1,250</b>	<b>392</b>	<b>459</b>	<b>456</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>4,979</b>	<b>4,971</b>	<b>5,203</b>				
Agricultural	Colorado River Demand	2,559	2,501	2,554	0	0	0	240	172	96	412	412	490	19	19	19	3,230	3,103	3,159				
Municipal and Industrial	Colorado River Demand	37	49	71	1,250	1,250	1,250	144	279	354	0	0	0	2	5	11	1,433	1,583	1,685				
Energy	Colorado River Demand	33	98	146	0	0	0	0	0	0	5	5	5	15	8	8	54	110	159				
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Fish, Wildlife, and Recreation	Colorado River Demand	115	16	27	0	0	0	8	8	6	0	0	0	0.6	0.6	0.6	124	25	33				
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	92	92				
Other	Colorado River Demand	48	58	75	0	0	0	0	0	0	0	0	0	0	0	0	48	58	75				

**Notes**

- 1) No changes from Current Projected.
- 2) No changes from Current Projected.
- 3) No changes from Current Projected.
- 4) No changes from Current Projected.
- 5) No changes from Current Projected.
- 6) Increased demand from Current Projected based on efficient geothermal technology.
- 7) No changes from Current Projected.
- 8) No changes from Current Projected.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12a) IID: Based on regional trends, assume 2060 population is 25 percent more than that of Current Projected.
- 12b) MWD: Population projections extrapolated from California DWR high growth county population projections for *California Water Plan Update, 2009*.
- 13a) Based on California 20X2020 statute for 20 percent reduction in demand by 2020 for the IID planning area.
- 13b) No changes from Current Projected for other planning areas.
- 14) No changes from Current Projected.
- 15) Increased demand from Current Projected based on efficient geothermal technology.
- 16) No changes from Current Projected.
- 17) IID: No reference.
- 18) No changes from Current Projected.
- 19) MWD: Increased from Current Projected to reflect higher demand with higher population projection. Others: no changes from Current Projected.
- 20) For MWD, all potential Colorado River demand is M&I. For IID and CVWD, distribute Colorado River demand among categories according to distribution of total Study Area demand.

Colorado River Basin  
Water Supply and Demand Study

TABLE C7-6  
Total Demand within Study Area under Enhanced Environment (D1) Scenario

CALIFORNIA		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter																		
Units are thousand acre-feet per year, unless otherwise noted																				
Planning Area	Year	IID			MWD			CVWD			PVID			Mainstem			STATE TOTAL			Notes
Hydrologic Basin	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agricultural	Irrigated Acreage [thousands]										91	91	107	4	4	4	95	95	111	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										10.29	10.29	9.34	10.29	10.29	9.34	10.29	10.29	9.34	2
	Consumptive factor [%]										44%	44%	49%	44%	44%	49%	44%	44%	49%	
	<b>Demand (Consumptive)</b>										<b>412</b>	<b>412</b>	<b>490</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>430</b>	<b>430</b>	<b>509</b>	
Municipal and Industrial (M&I)	Population [thousands]										0	0	0	7	14	28	7	14	28	3
	M&I Per Capita Use (Diversion) [gpcd]										0	0	0	442	442	442	442	442	442	4
	Consumptive factor [%]										0%	0%	0%	69%	68%	67%	69%	68%	67%	
	M&I Demand (Consumptive)										0	0	0	2	5	9	2	5	9	
	Self Served Industrial Demand (Consumptive)										0	0	0	0	0	0	0	0	0	5
	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>9</b>	<b>2</b>	<b>5</b>	<b>9</b>	
Energy	<b>Demand (Consumptive)</b>										<b>5</b>	<b>5</b>	<b>5</b>	<b>15</b>	<b>8</b>	<b>7</b>	<b>20</b>	<b>12</b>	<b>12</b>	6
Minerals	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	7
Fish, Wildlife, and Recreation	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	8
Tribal	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	9
<b>Total Hydrologic Basin</b>	<b>Demand (Consumptive)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>124</b>	<b>128</b>	<b>546</b>	<b>540</b>	<b>622</b>	
<b>Adjacent Areas</b>																				
Agricultural	Irrigated Acreage [thousands]	477	485	490	62	50	50	74	53	40							613	588	580	10
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	5.38	5.17	5.23	3.57	3.57	3.57	4.04	4.04	4.04							5.04	4.94	5.00	11
	<b>Demand (Diversion)</b>	<b>2,567</b>	<b>2,510</b>	<b>2,563</b>	<b>222</b>	<b>180</b>	<b>180</b>	<b>300</b>	<b>214</b>	<b>162</b>							<b>3,089</b>	<b>2,904</b>	<b>2,905</b>	
Municipal and Industrial (M&I)	Population [thousands]	181	260	360	19,956	22,474	26,200	295	599	1,040							20,432	23,333	27,600	12a, 12b
	M&I Per Capita Use (Diversion) [gpcd]	172	150	141	172	155	133	452	423	423							176	162	144	13a, 13b
	M&I Demand (Diversion)	35	44	57	3,850	3,902	3,904	149	284	493							4,034	4,230	4,453	
	Self Served Industrial Demand (Diversion)	0	0	0	0	0	0	30	62	106							30	62	106	14
	<b>Demand (Diversion)</b>	<b>35</b>	<b>44</b>	<b>57</b>	<b>3,850</b>	<b>3,902</b>	<b>3,904</b>	<b>180</b>	<b>346</b>	<b>599</b>							<b>4,064</b>	<b>4,292</b>	<b>4,559</b>	
Energy	<b>Demand (Diversion)</b>	<b>31</b>	<b>88</b>	<b>127</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>31</b>	<b>88</b>	<b>127</b>	15
Minerals	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	16
Fish, Wildlife, and Recreation	<b>Demand (Diversion)</b>	<b>115</b>	<b>17</b>	<b>28</b>				<b>11</b>	<b>11</b>	<b>11</b>							<b>126</b>	<b>27</b>	<b>39</b>	17
Tribal	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	18
Other	<b>Demand (Diversion)</b>	<b>48</b>	<b>58</b>	<b>75</b>	<b>0</b>	<b>0</b>	<b>318</b>	<b>0</b>	<b>0</b>	<b>0</b>							<b>48</b>	<b>58</b>	<b>393</b>	
<b>Total Adjacent Areas</b>	<b>Demand (Diversion)</b>	<b>2,796</b>	<b>2,716</b>	<b>2,849</b>	<b>4,072</b>	<b>4,082</b>	<b>4,402</b>	<b>490</b>	<b>570</b>	<b>771</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7,358</b>	<b>7,368</b>	<b>8,022</b>	
<b>Total Demand in the Study Area</b>		<b>2,796</b>	<b>2,716</b>	<b>2,849</b>	<b>4,072</b>	<b>4,082</b>	<b>4,402</b>	<b>490</b>	<b>570</b>	<b>771</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>124</b>	<b>128</b>	<b>7,904</b>	<b>7,909</b>	<b>8,645</b>	
<b>Demand that may be met by Other Sources</b>		<b>9</b>	<b>10</b>	<b>10</b>	<b>2,822</b>	<b>2,832</b>	<b>3,152</b>	<b>98</b>	<b>111</b>	<b>315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,928</b>	<b>2,953</b>	<b>3,477</b>	19
<b>Potential Colorado River Demand</b>		<b>2,787</b>	<b>2,706</b>	<b>2,839</b>	<b>1,250</b>	<b>1,250</b>	<b>1,250</b>	<b>392</b>	<b>459</b>	<b>456</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>124</b>	<b>128</b>	<b>4,975</b>	<b>4,955</b>	<b>5,168</b>	
Agricultural	Colorado River Demand	2,559	2,501	2,554	0	0	0	240	172	96	412	412	490	19	19	19	3,229	3,103	3,158	20
Municipal and Industrial	Colorado River Demand	35	44	57	1,250	1,250	1,250	144	278	354	0	0	0	2	5	9	1,431	1,577	1,670	
Energy	Colorado River Demand	31	88	126	0	0	0	0	0	0	5	5	5	15	8	7	52	100	138	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	115	16	28	0	0	0	8	8	6	0	0	0	0.6	0.6	0.6	124	26	35	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	92	92	
Other	Colorado River Demand	48	58	75	0	0	0	0	0	0	0	0	0	0	0	0	48	58	75	



**Notes**

- 1) No changes from Current Projected.
- 2) No changes from Current Projected.
- 3) No changes from Current Projected.
- 4) No changes from Current Projected.
- 5) No changes from Current Projected.
- 6) Decreased demand from Current Projected based on increasingly efficient geothermal technology.
- 7) No changes from Current Projected.
- 8) No changes from Current Projected.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12a) IID: No changes from Current Projected.
- 12b) No changes from Current Projected.
- 13a) MWD: Increased federal investment in water-saving technology and conservation programs results in a further substantive decrease in per capita water use (for example, WaterSmart, EnergyStar, landscape technology).  
  
Based on California 20X2020 statute for 20 percent reduction in demand by 2020 for the IID planning area.
- 13b) No changes from Current Projected for other planning areas.
- 14) No changes from Current Projected.
- 15) Decreased demand from Current Projected based on increasingly efficient geothermal technology.
- 16) No changes from Current Projected.
- 17) IID: No reference.
- 18) No changes from Current Projected.
- 19) No changes from Current Projected.
- 20) For MWD, all potential Colorado River demand is M&I. For IID and CVWD, distribute Colorado River demand among categories according to distribution of total Study Area demand.

Colorado River Basin  
Water Supply and Demand Study

TABLE C7-7  
Total Demand within Study Area under Enhanced Environment (D2) Scenario

CALIFORNIA		LEGEND: 999 From Current Projected Data Sheet 999 Computed 999 Input Parameter																		Notes
Units are thousand acre-feet per year, unless otherwise noted		IID			MWD			CVWD			PVID			Mainstem			STATE TOTAL			
Hydrologic Basin	Planning Area	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agricultural	Irrigated Acreage [thousands]										91	91	107	4	4	4	95	95	111	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										10.29	10.29	9.34	10.29	10.29	9.34	10.29	10.29	9.34	2
	Consumptive factor [%]										44%	44%	49%	44%	44%	49%	44%	44%	49%	
	<b>Demand (Consumptive)</b>										<b>412</b>	<b>412</b>	<b>490</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>430</b>	<b>430</b>	<b>509</b>	
Municipal and Industrial (M&I)	Population [thousands]										0	0	0	7	14	28	7	14	28	3
	M&I Per Capita Use (Diversion) [gpcd]										0	0	0	442	505	522	442	505	522	4
	Consumptive factor [%]										0%	0%	0%	69%	68%	67%	69%	68%	67%	
	M&I Demand (Consumptive)										0	0	0	2	5	11	2	5	11	
	Self Served Industrial Demand (Consumptive)										0	0	0	0	0	0	0	0	0	5
	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>11</b>	<b>2</b>	<b>5</b>	<b>11</b>	
Energy	<b>Demand (Consumptive)</b>										<b>5</b>	<b>5</b>	<b>5</b>	<b>15</b>	<b>8</b>	<b>8</b>	<b>20</b>	<b>13</b>	<b>13</b>	6
Minerals	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	7
Fish, Wildlife, and Recreation	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	<b>0.6</b>	8
Tribal	<b>Demand (Consumptive)</b>										<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>92</b>	9
<b>Total Hydrologic Basin</b>	<b>Demand (Consumptive)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>546</b>	<b>541</b>	<b>625</b>	
<b>Adjacent Areas</b>																				
Agricultural	Irrigated Acreage[thousands]	477	485	490	62	50	50	74	53	40							613	588	580	10
	Per-Acre Water Delivery (Diversion)[af/ac/yr]	5.38	5.17	5.23	3.57	3.57	3.57	4.04	4.04	4.04							5.04	4.94	5.00	11
	<b>Demand (Diversion)</b>	<b>2,567</b>	<b>2,510</b>	<b>2,563</b>	<b>222</b>	<b>180</b>	<b>180</b>	<b>300</b>	<b>214</b>	<b>162</b>							<b>3,089</b>	<b>2,904</b>	<b>2,905</b>	
Municipal and Industrial (M&I)	Population [thousands]	192	291	450	20,743	26,026	33,117	295	599	1,040							21,230	26,916	34,607	12a, 12b
	M&I Per Capita Use (Diversion)[gpcd]	172	150	141	172	162	144	452	425	423							176	168	153	13a, 13b
	M&I Demand (Diversion)	37	49	71	4,002	4,738	5,352	149	285	493							4,188	5,071	5,916	
	Self Served Industrial Demand (Diversion)	0	0	0	0	0	0	30	62	106							30	62	106	14
	<b>Demand (Diversion)</b>	<b>37</b>	<b>49</b>	<b>71</b>	<b>4,002</b>	<b>4,738</b>	<b>5,352</b>	<b>180</b>	<b>347</b>	<b>599</b>							<b>4,218</b>	<b>5,133</b>	<b>6,022</b>	
Energy	<b>Demand (Diversion)</b>	<b>31</b>	<b>88</b>	<b>127</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>31</b>	<b>88</b>	<b>127</b>	15
Minerals	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	16
Fish, Wildlife, and Recreation	<b>Demand (Diversion)</b>	<b>115</b>	<b>17</b>	<b>28</b>				<b>11</b>	<b>11</b>	<b>11</b>							<b>126</b>	<b>27</b>	<b>39</b>	17
Tribal	<b>Demand (Diversion)</b>	<b>0</b>	<b>0</b>	<b>0</b>				<b>0</b>	<b>0</b>	<b>0</b>							<b>0</b>	<b>0</b>	<b>0</b>	18
Other	<b>Demand (Diversion)</b>	<b>48</b>	<b>58</b>	<b>75</b>	<b>0</b>	<b>0</b>	<b>318</b>	<b>0</b>	<b>0</b>	<b>0</b>							<b>48</b>	<b>58</b>	<b>393</b>	
<b>Total Adjacent Areas</b>	<b>Demand (Diversion)</b>	<b>2,798</b>	<b>2,722</b>	<b>2,863</b>	<b>4,224</b>	<b>4,917</b>	<b>5,850</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7,512</b>	<b>8,210</b>	<b>9,485</b>	
<b>Total Demand in the Study Area</b>		<b>2,798</b>	<b>2,722</b>	<b>2,863</b>	<b>4,224</b>	<b>4,917</b>	<b>5,850</b>	<b>490</b>	<b>571</b>	<b>771</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>8,057</b>	<b>8,751</b>	<b>10,110</b>	
Demand that may be met by Other Sources		<b>9</b>	<b>10</b>	<b>10</b>	<b>2,974</b>	<b>3,667</b>	<b>4,600</b>	<b>98</b>	<b>112</b>	<b>315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,080</b>	<b>3,790</b>	<b>4,925</b>	19
<b>Potential Colorado River Demand</b>		<b>2,789</b>	<b>2,712</b>	<b>2,853</b>	<b>1,250</b>	<b>1,250</b>	<b>1,250</b>	<b>392</b>	<b>459</b>	<b>456</b>	<b>417</b>	<b>416</b>	<b>495</b>	<b>129</b>	<b>125</b>	<b>130</b>	<b>4,977</b>	<b>4,962</b>	<b>5,184</b>	
Agricultural	Colorado River Demand	2,559	2,501	2,554	0	0	0	240	172	96	412	412	490	19	19	19	3,230	3,103	3,158	20
Municipal and Industrial	Colorado River Demand	37	49	71	1,250	1,250	1,250	144	279	354	0	0	0	2	5	11	1,433	1,583	1,685	
Energy	Colorado River Demand	31	88	126	0	0	0	0	0	0	5	5	5	15	8	8	52	101	139	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	115	16	28	0	0	0	8	8	6	0	0	0	0.6	0.6	0.6	124	25	35	
Tribal	Colorado River Demand	0	0	0	0	0	0	0	0	0	0	0	0	92	92	92	92	92	92	
Other	Colorado River Demand	48	58	75	0	0	0	0	0	0	0	0	0	48	58	75	48	58	75	

**Notes**

- 1) No changes from Current Projected.
- 2) No changes from Current Projected.
- 3) No changes from Current Projected.
- 4) No changes from Current Projected.
- 5) No changes from Current Projected.
- 6) Decreased demand from Current Projected based on increasingly efficient geothermal technology.
- 7) No changes from Current Projected.
- 8) No changes from Current Projected.
- 9) No changes from Current Projected.
- 10) No changes from Current Projected.
- 11) No changes from Current Projected.
- 12a) IID: Based on regional trends, assume 2060 population is 25 percent more than that of Current Projected.
- 12b) MWD: Population projections extrapolated from California DWR high growth county population projections for *California Water Plan Update, 2009*.
- 13a) Based on California 20X2020 statute for 20 percent reduction in demand by 2020 for the IID planning area.
- 13b) No changes from Current Projected for other planning areas.
- 14) No changes from Current Projected.
- 15) Decreased demand from Current Projected based on increasingly efficient geothermal technology.
- 16) No changes from Current Projected.
- 17) IID: No reference.
- 18) No changes from Current Projected.
- 19) MWD: Increased from Current Projected to reflect higher demand with higher population projection. Others: no changes from Current Projected.
- 20) For MWD, all potential Colorado River demand is M&I. For IID and CVWD, distribute Colorado River demand among categories according to distribution of total Study Area demand.

## 4.0 References

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