2016

IEUA FY 2015-2016 Annual Water Use Report:

Retail Agency Water Use and Five Year History

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

Table of Contents

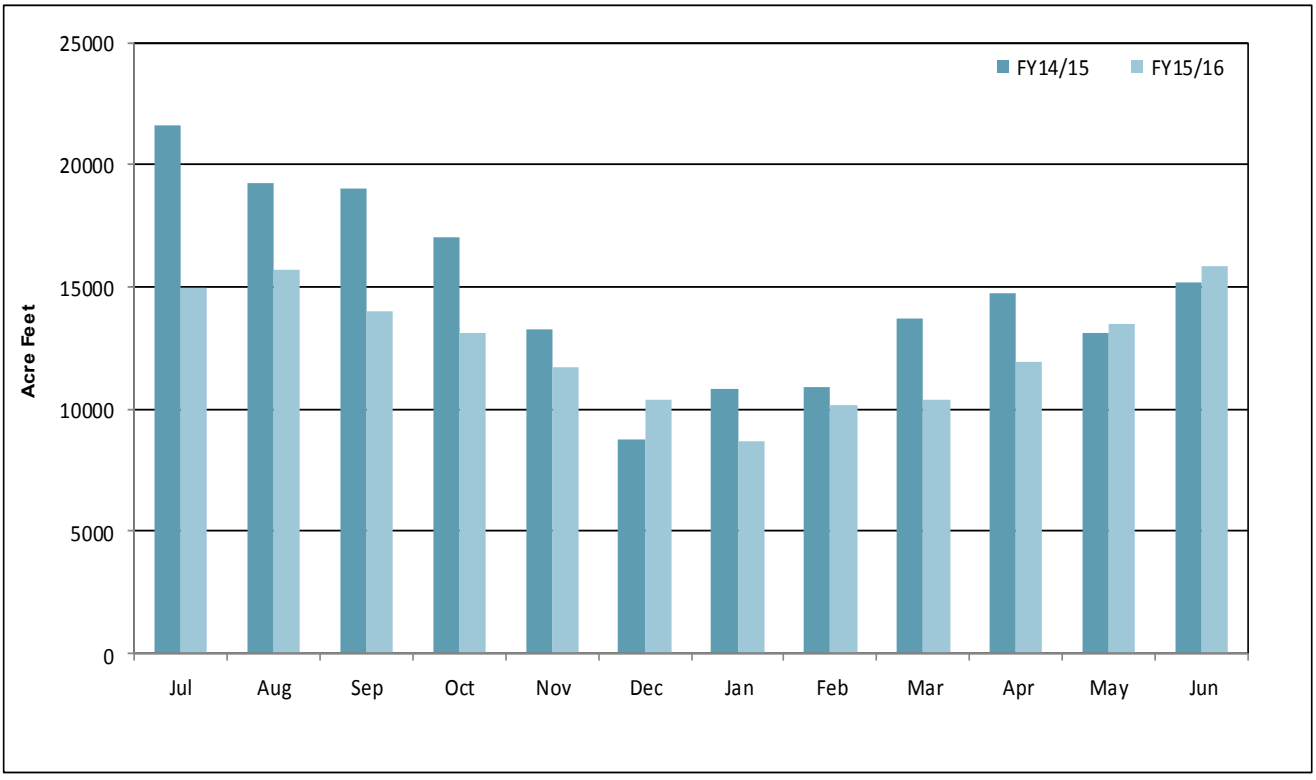
Preface

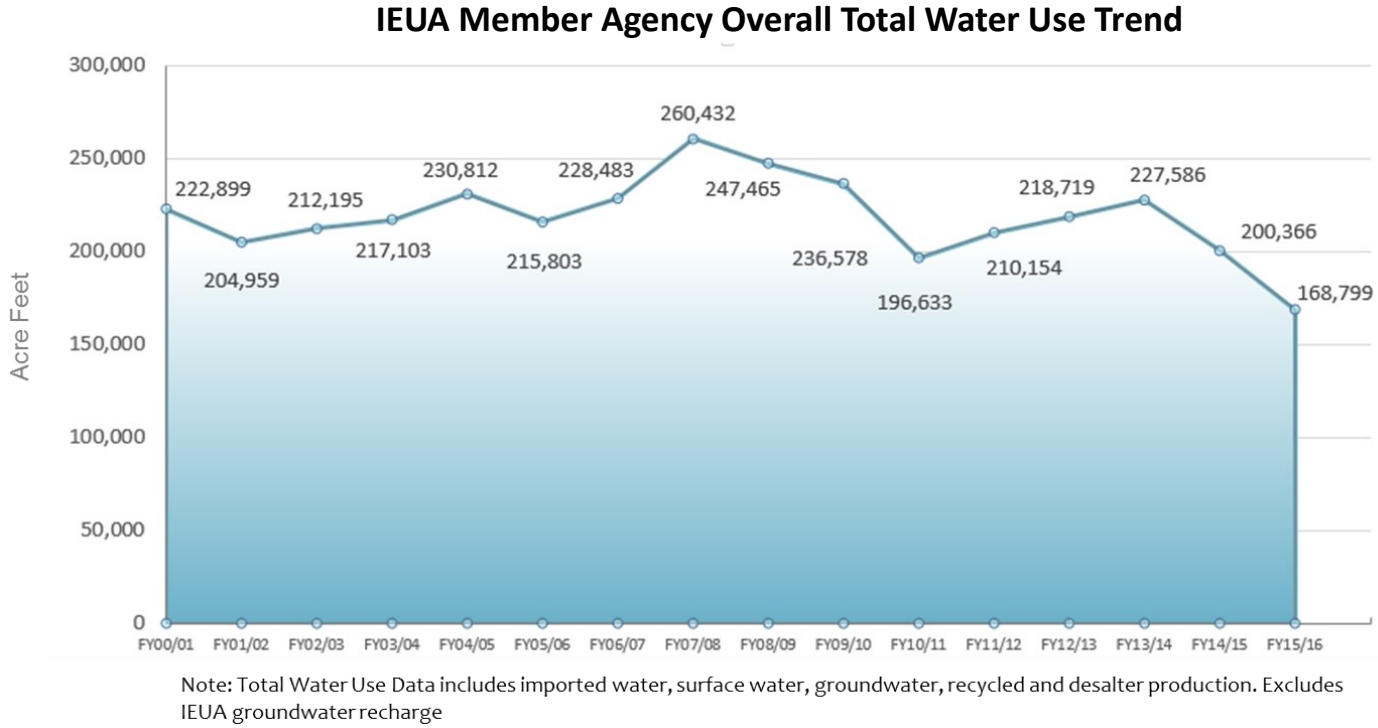
FY 2015-16 Water Use Summary Report

Inland Empire Utilities Agency (IEUA) monitors and compiles water use data from each of its retail agencies to track overall water demands and sources of supply. Each year, this data is compiled into an Annual Water Use Report. Data includes monthly water use (by member agency and by source of supply), a five-year history of water use, and retail agency water usage as a percentage of the total water used in the service area.

Although Southern California remains in a state of "exceptional drought", conditions improved enough in the northern half of the state for Governor Brown to end mandatory water restrictions in May 2016, and return authority to local agencies. Three hundred and forty-three water agencies (or 84% of the largest 411 agencies in the state) gave themselves a conservation target of zero for the rest of the year. Also in May, Governor Brown released an executive order that calls for long-term improvements to local drought preparation across the state and directs the State Water Resources Control Board to develop emergency water restrictions should the drought continue. The list includes permanent monthly water use reporting, new urban water use targets, reducing system leaks, eliminating wasteful practices, strengthening urban drought contingency plans, and improving agricultural water management plans. IEUA is monitoring State meetings on implementation of the executive order, and has developed a brief PowerPoint for the State Water Board and Department of Water Resources discussions which walk through implications and options (See Appendix D).

Regional Monthly Total Water Usage FY 15/16 Comparison to FY14/15





Note: Total Water Use Data includes imported water, surface water, groundwater, recycled and desalter production. Excludes IEUA groundwater recharge

The regional water use for FY 15/16 was 168,799 AFY, the lowest water use for the region since 1995.

Overall water consumption within the IEUA's service area decreased 15.8% (31,566 AF) from FY 2014/15. Chino Desalter Authority (CDA) production decreased by 2,603 AF and direct use recycled water decreased by 2,177 AF.

IEUA anticipates a trend of declining usage as a response to the drought in California. Although development is anticipated to continue and growth may rebound at the end of the drought, long-term demands are not expected to greatly increase. This analysis came from demand modeling conducted as part of IEUA's 2015 Integrated Resources Plan (IRP) which found that new developments in the region tend to be more water efficient due to changes in the plumbing code, higher density developments with less landscaping, and compliance with the existing model landscape ordinance requirements set forth in AB1881.

In addition, aggressive efforts are being made to diversify and maximize local resource development, expand water use efficiency programs, and assist interested member agencies with the development of budget based rate structures. These efforts have better prepared the service area to cope with future dry years and increase regional resiliency in the face of climate change.

Below is a summary and update on the region's major water supply efforts and programs:

- IEUA and its member agencies have finalized the 2015 IRP. The plan is available on the IEUA website. The IRP outlines an overall strategy for developing water supplies and meeting projected demands within the IEUA service area in a cost-effective manner. The plan developed an updated demand model based on new regional development trends of high density, efficient indoor devic-

es, and low water use outdoor plants per state legislation. Conceptual projects from the IRP will be incorporated into the IEUA Regional Programmatic Environmental Impact Report to ensure that projects are grant eligible. Project details and an implementation schedule will be developed as part of the IRP Phase II, which will begin in fall 2016.

- In June, IEUA's Board of Directors adopted the 2015 Urban Water Management Plan.
- The 2015 Water Use Efficiency Business report will be presented to the IEUA Board in October.
- IEUA completed the 2015 Recycled Water Program Strategy, which will further implement the Recycled Water Business Plan to expand its connected demand and maximize recycled water deliveries for both direct use and groundwater recharge. In FY 2015/16 member agency direct recycled water use was 18,335 AF.
- IEUA launched a Pilot Home Pressure Regulation Program in June which will reach out to 500 residential sites and correct high pressure problems by either making adjustments or installing a new regulator.
- IEUA is working with the Agricultural Pool to identify appropriate farm sites for water efficiency upgrades. This will help maintain a sustainable Chino Basin groundwater supply.
- IEUA and its member agencies are working towards completing the Phase III expansion of the Chino Desalters, which will increase capacity from 24,600 AFY to 40,000 AFY. In FY 2015/16, IEUA agency's share of the production was 11,883 AF.
- IEUA and its member agencies continue to implement the water use efficiency programs outlined in the long term Regional Water Use Efficiency Business Plan completed in September 2010. This document serves as the blueprint for the Agency's existing regional programs while providing the guidance for developing new cost-effective initiatives. The plan is also being updated as part of the IRP process. Future conservation targets are anticipated to be much more aggressive as a result of the IRP. In FY 2015/16, the regional water use efficiency programs increased savings by approximately 80% from FY14/15 reaching a record high of approximately 1,858 AF, and an estimated lifetime savings of 21,470 AF.

IEUA would like to thank its member agencies for their assistance in compiling the data contained in this report.

SECTION 1

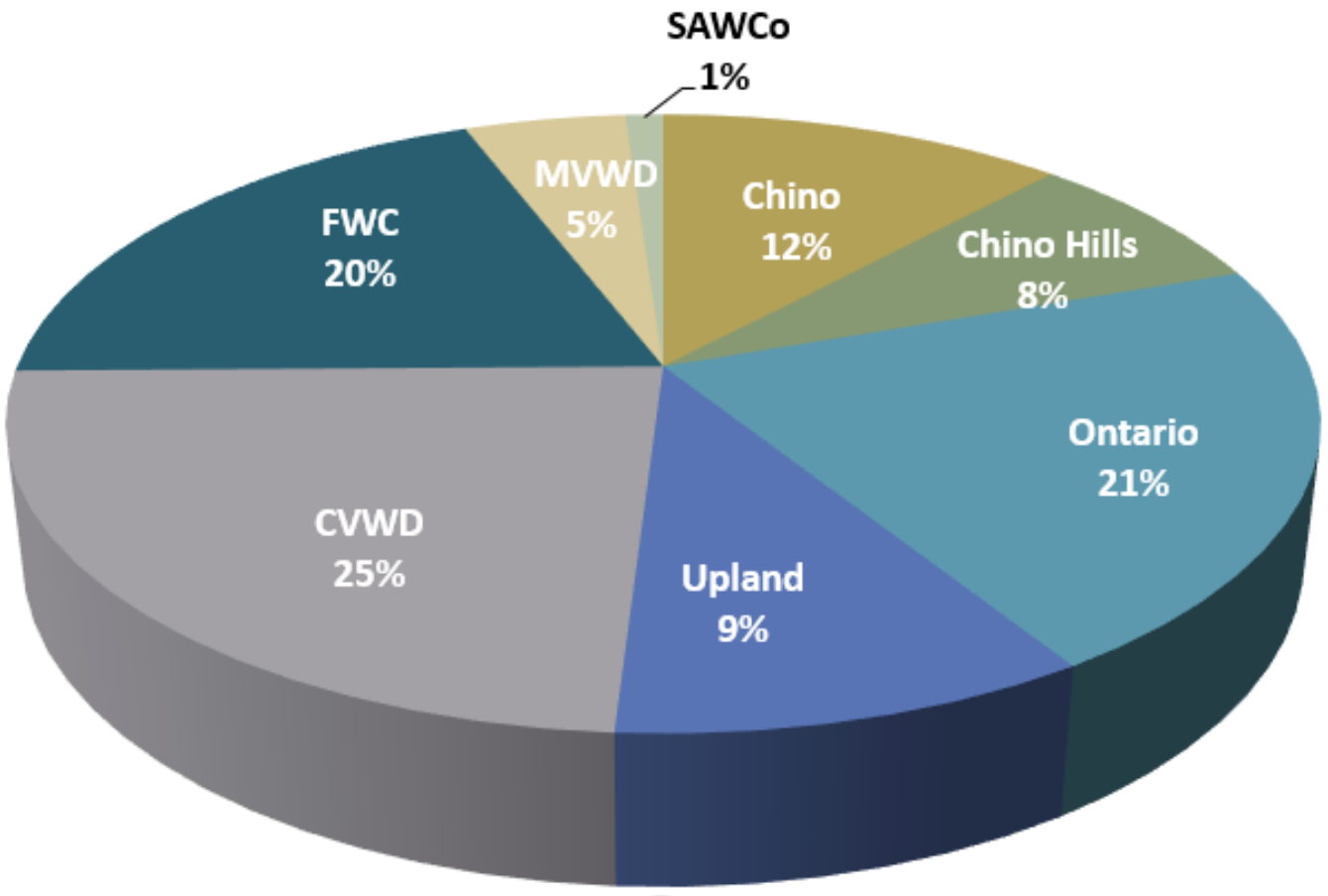
Total Water Resources Data from FY 15/16

Total IEUA Service Area Water Use For FY 15/16

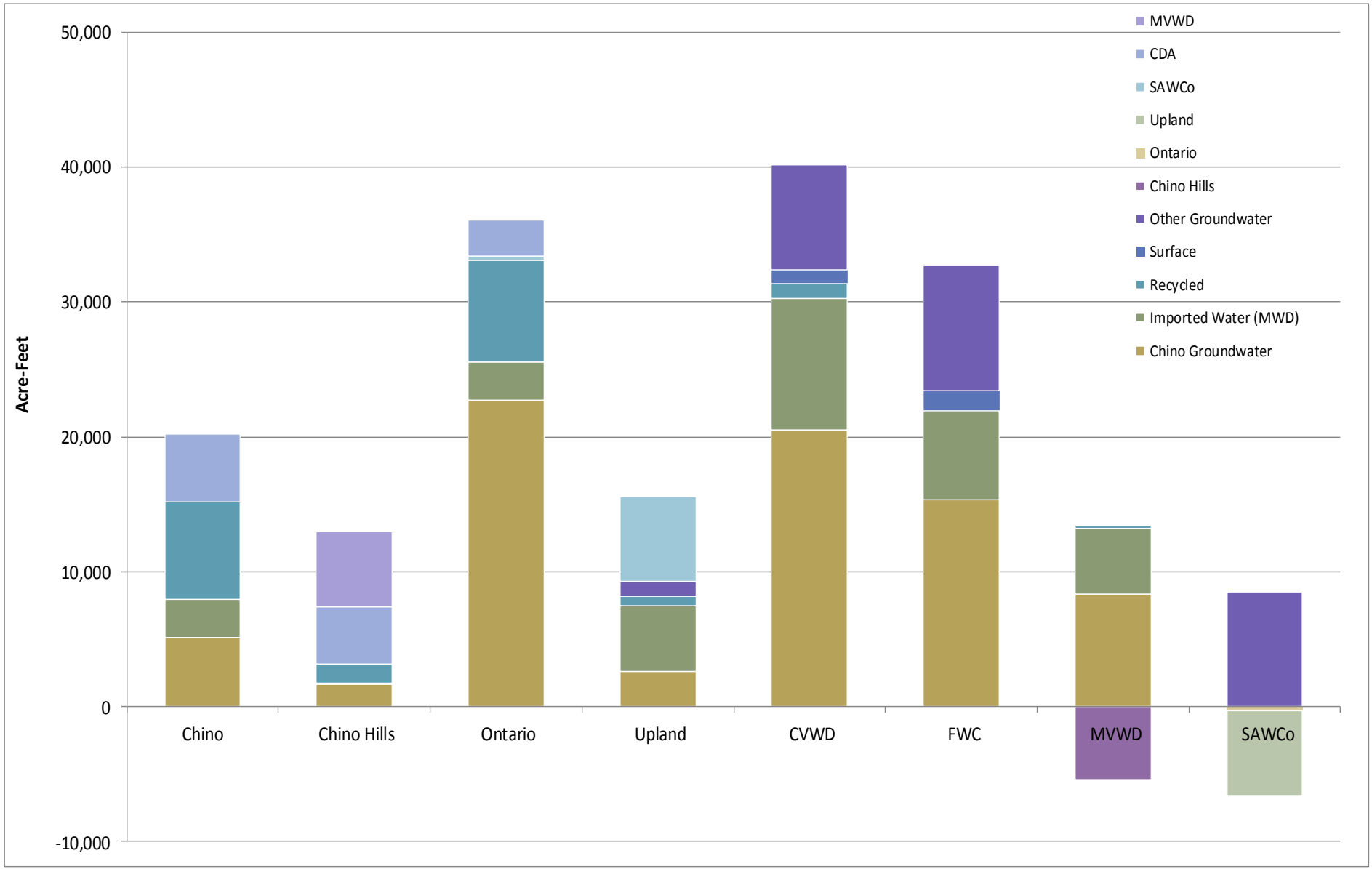
		Total IEUA Service Area Water Use by Retail Agency for FY 15-16 (AFY)								
		CHINO	CHINO HILLS	ONTARIO	UPLAND	CVWD	FWC	MVWD	SAWCo	TOTAL
Purchases from IEUA	Imported Water (MWD)	2,843	110	2,755	4,890	9,712	6,613	4,799	0	31,722
	Recycled (Direct Use)	7,217	1,410	7,566	719	1,146	0	278	0	18,336
Subtotal		**10,060**	**1,520**	**10,321**	**5,609**	**10,857**	**6,613**	**5,078**	**0**	**50,058**
Production	Chino Groundwater	5,104	1,630	22,755	2,601	20,524	15,317	8,371	0	76,302
	Other Groundwater	0	0	0	1,054	7,783	9,253	0	8,517	26,607
	Local Surface Water	0	0	0	0	1,002	1,497	0	0	2,499
Subtotal		**5,104**	**1,630**	**22,755**	**3,655**	**29,309**	**26,067**	**8,371**	**8,517**	**105,408**
Purchases from Other Agencies	CDA	5,000	4,201	2,682	0	0	0	0	0	11,883
	MVWD	0	5,642	0	0	0	0	0	0	5,642
	SAWCo Water	0	0	338	6,297	0	0	0	0	6,635
	West End	0	0	0	1,246	0	0	0	0	1,246
Subtotal		**5,000**	**9,843**	**3,020**	**7,543**	**0**	**0**	**0**	**0**	**25,406**
Sales to Other Agencies	Chino Hills	0	0	0	0	0	0	-5,437	0	-5,437
	Ontario	0	0	0	0	0	0	0	-338	-338
	Upland	0	0	0	0	0	0	0	-6,297	-6,297
Subtotal		**0**	**0**	**0**	**0**	**0**	**0**	**-5,437**	**-6,635**	**-12,072**
	Total	**20,163**	**12,993**	**36,096**	**16,807**	**40,166**	**32,681**	**8,012**	**1,882**	**168,799**

Note: an additional 541 AF of RW was used for IEUA purposes, an additional 13,222 AF of RW was used for recharge, and additional 536 AF of RW was sold to San Bernardino County. All RW numbers in this report based off IEUA operations data.

Total IEUA Service Area Water Use For FY 15/16



Total IEUA Service Area Water Use For FY 15/16

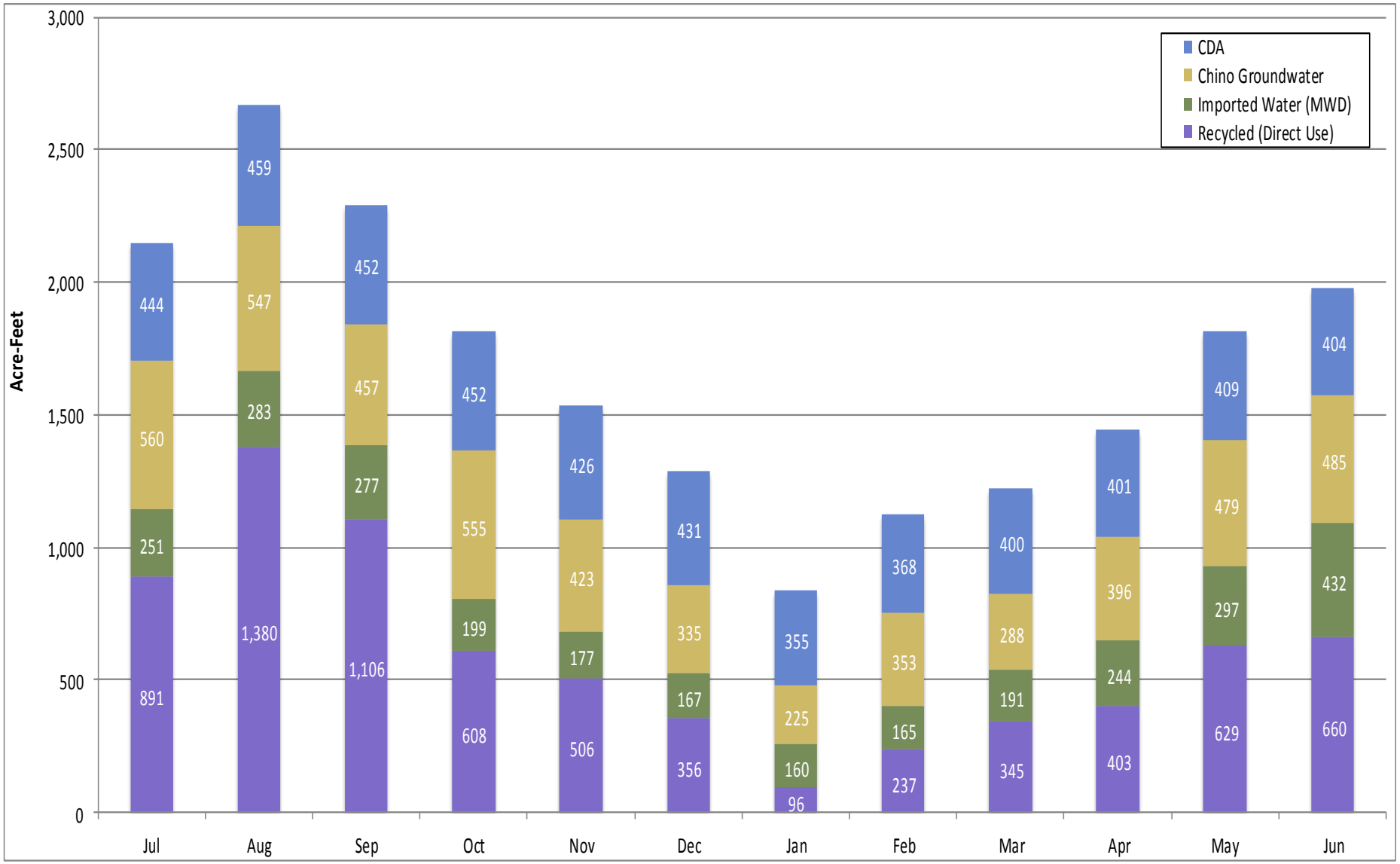


SECTION 2

Retail Water Use Data from FY 15/16 by Agency

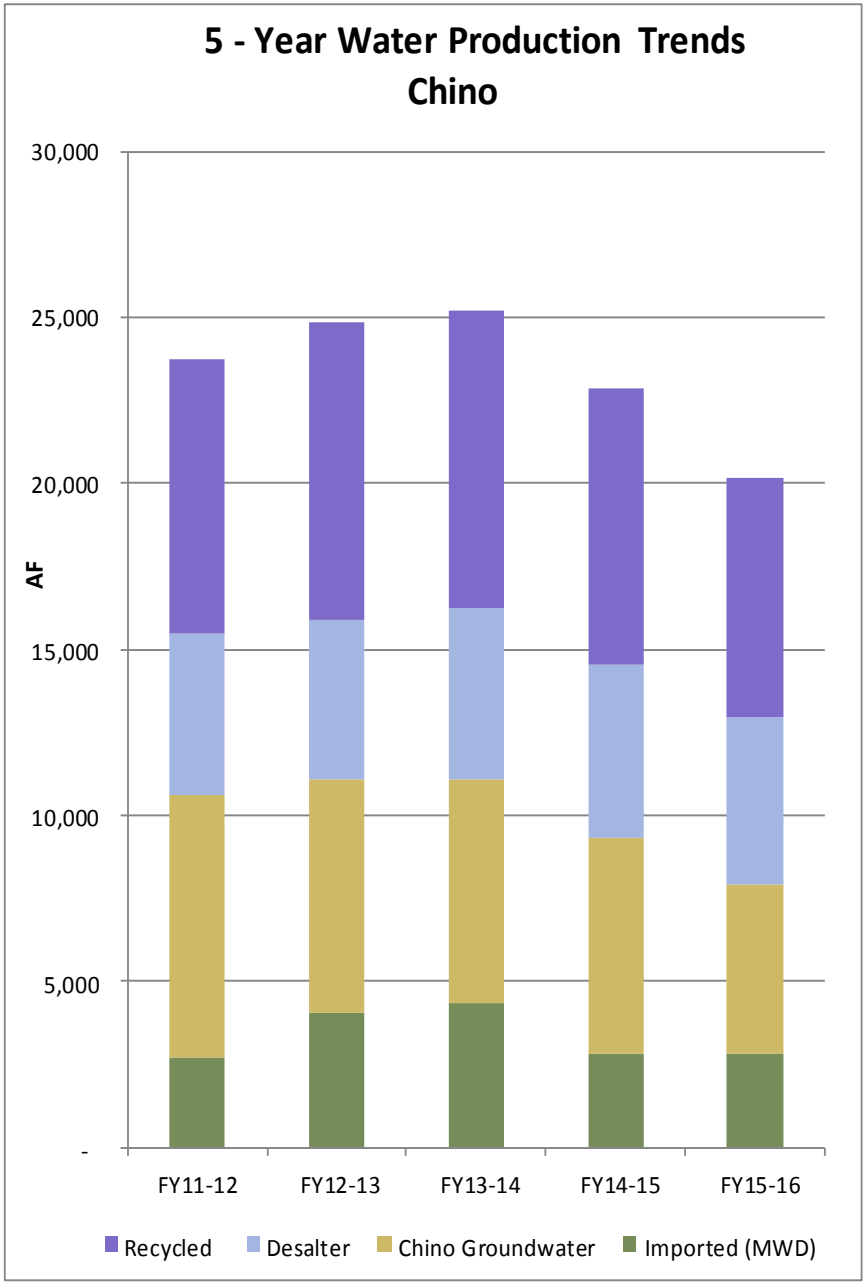
City of Chino

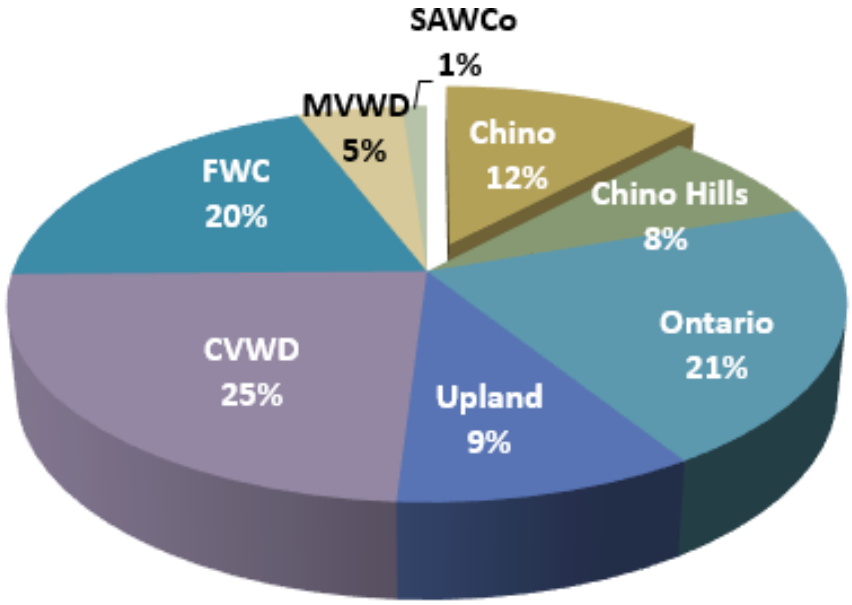
FY 2015/16 Monthly Water Usage



City of Chino

FY 2015/16 Water Use Report





In FY 2015/16, The City of Chino used 12% (20,163 AF) of 168,799 AF used in the IEUA service area.

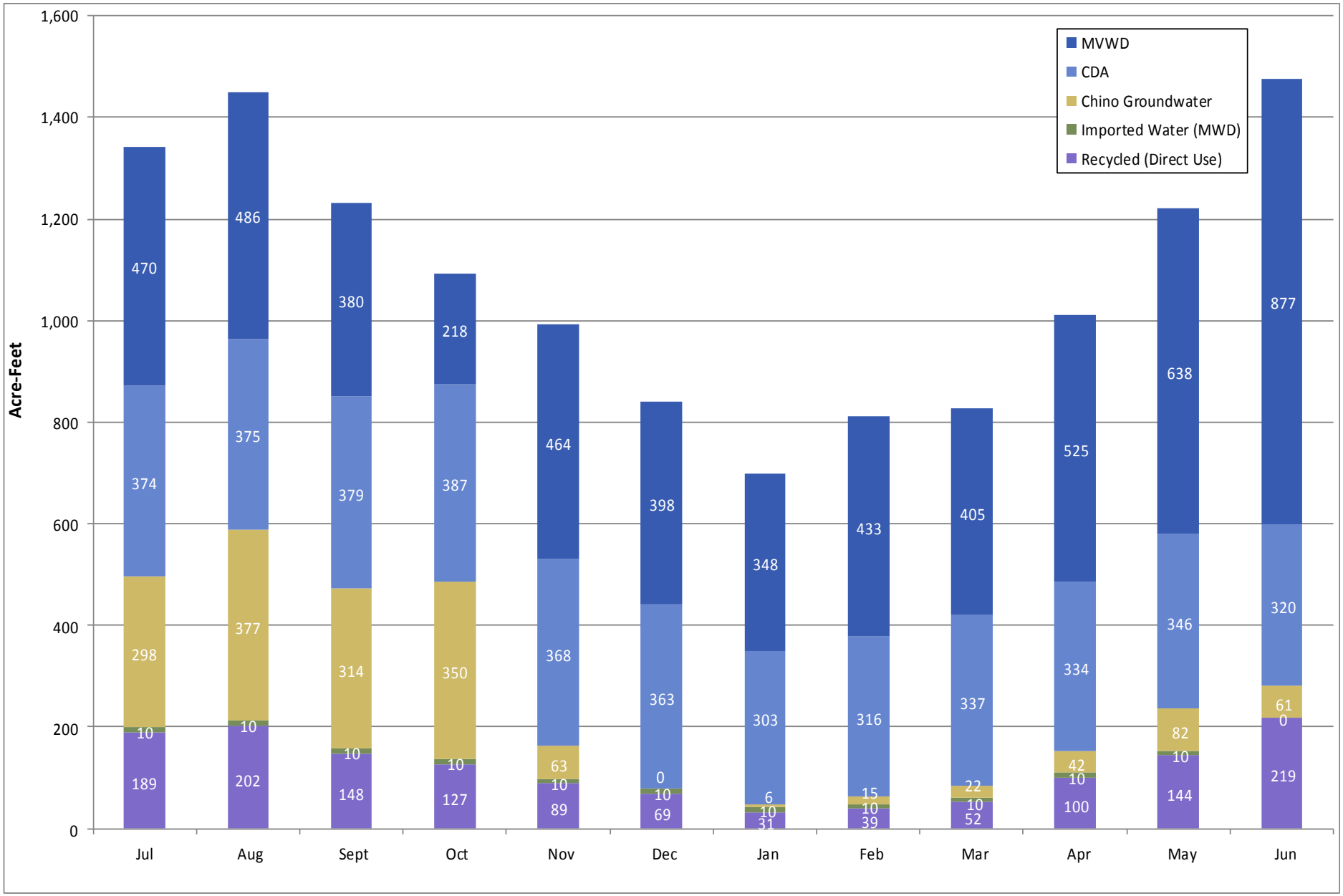
City of Chino

FY 2015/16 Monthly Water Usage

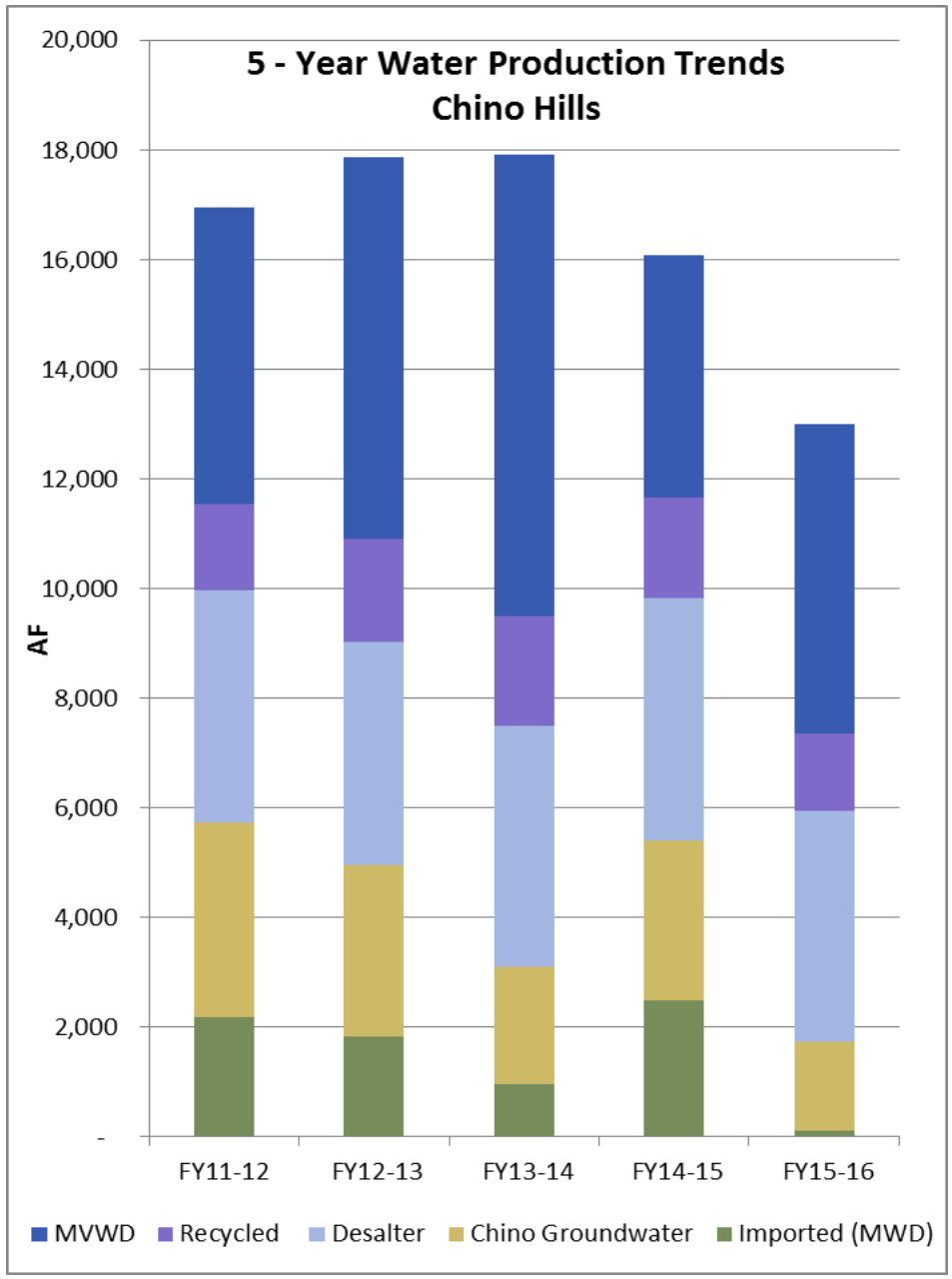
		Table 1. Total IEUA Service Area Water Use by Agency for FY15-16 (AF) - Chino												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Purchases from IEUA	Recycled (Direct use)	891	1,380	1,106	608	506	356	96	237	345	403	629	660	7,217
	Imported Water (MWD)	251	283	277	199	177	167	160	165	191	244	297	432	2,843
Subtotal		1,142	1,663	1,383	807	684	523	256	402	536	647	926	1,092	10,060
Production	Chino Groundwater	560	547	457	555	423	335	225	353	288	396	479	485	5,104
Subtotal		560	547	457	555	423	335	225	353	288	396	479	485	5,104
agencies	CDA	444	459	452	452	426	431	355	368	400	401	409	404	5,000
Subtotal		444	459	452	452	426	431	355	368	400	401	409	404	5,000
	Total	2,146	2,669	2,293	1,814	1,532	1,290	836	1,123	1,224	1,443	1,813	1,980	20,163

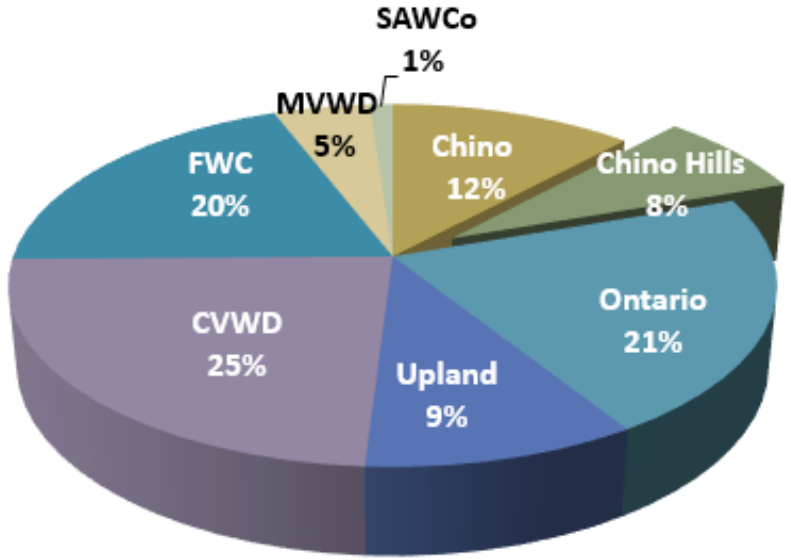
City of Chino Hills

FY 2015/16 Monthly Water Usage



City of Chino Hills
FY 2015/16 Water Use Report





In FY 2015/16, The City of Chino Hills used 8% (12,993 AF) of 168,799 AF used in the IEUA service area.

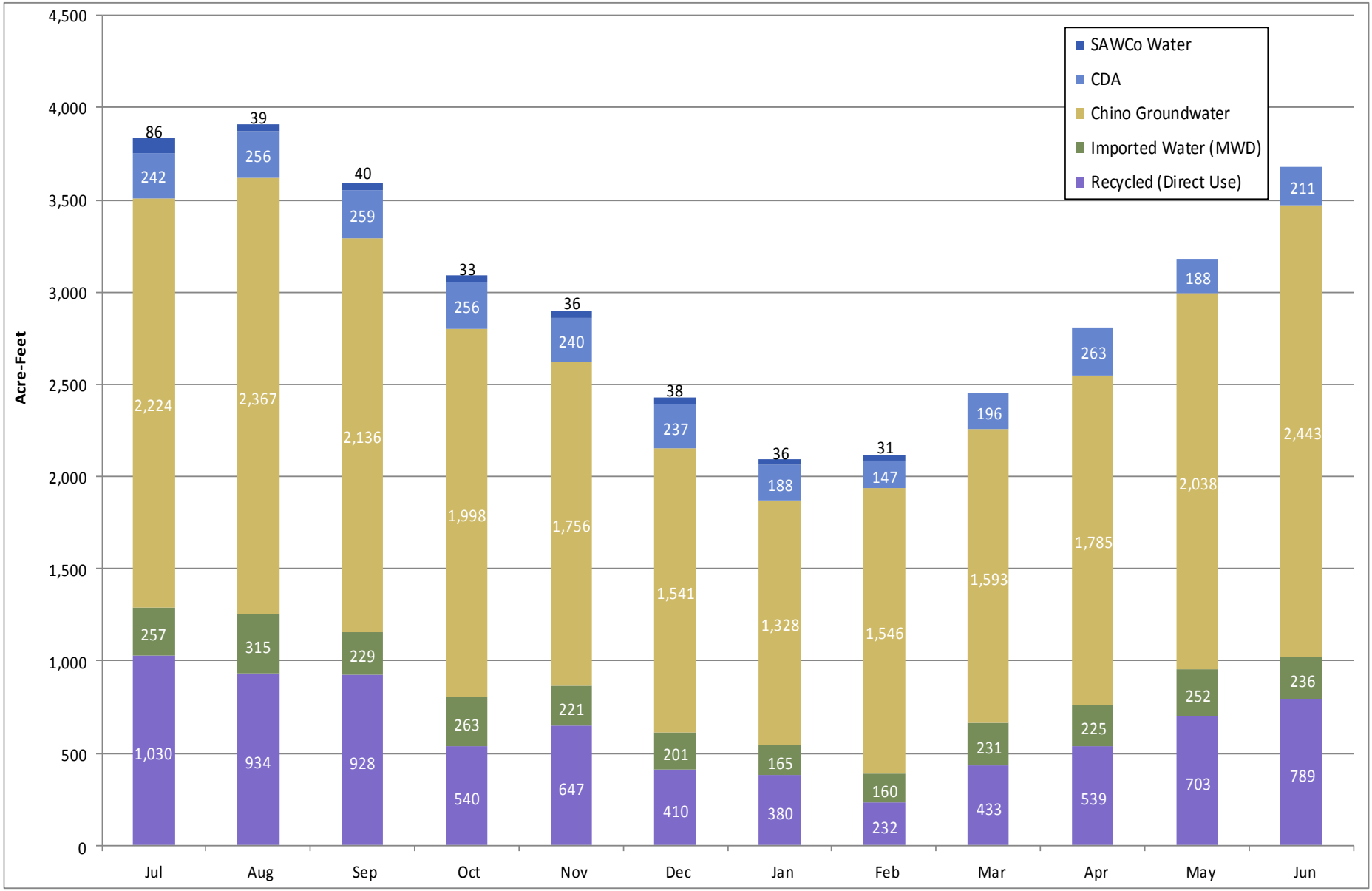
City of Chino Hills

FY 2015/16 Monthly Water Usage

		Table 1. Total IEUA Service Area Water Use by Agency for FY15-16 (AF) - Chino Hills												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Purchases from IEUA	Recycled (Direct use)	189	202	148	127	89	69	31	39	52	100	144	219	1,410
	Imported Water (MWD)	10	10	10	10	10	10	10	10	10	10	10	0	110
Subtotal		199	212	158	137	99	79	41	49	62	110	154	219	1,520
Production	Chino Groundwater	298	377	314	350	63	0	6	15	22	42	82	61	1,630
Subtotal		298	377	314	350	63	0	6	15	22	42	82	61	1,630
Purchase from other agencies	CDA	374	375	379	387	368	363	303	316	337	334	346	320	4,201
	MWD	470	486	380	218	464	398	348	433	405	525	638	877	5,642
Subtotal		844	860	759	605	832	761	652	749	742	859	984	1,197	9,843
Total		1,341	1,449	1,231	1,093	994	840	699	812	826	1,011	1,220	1,477	12,993

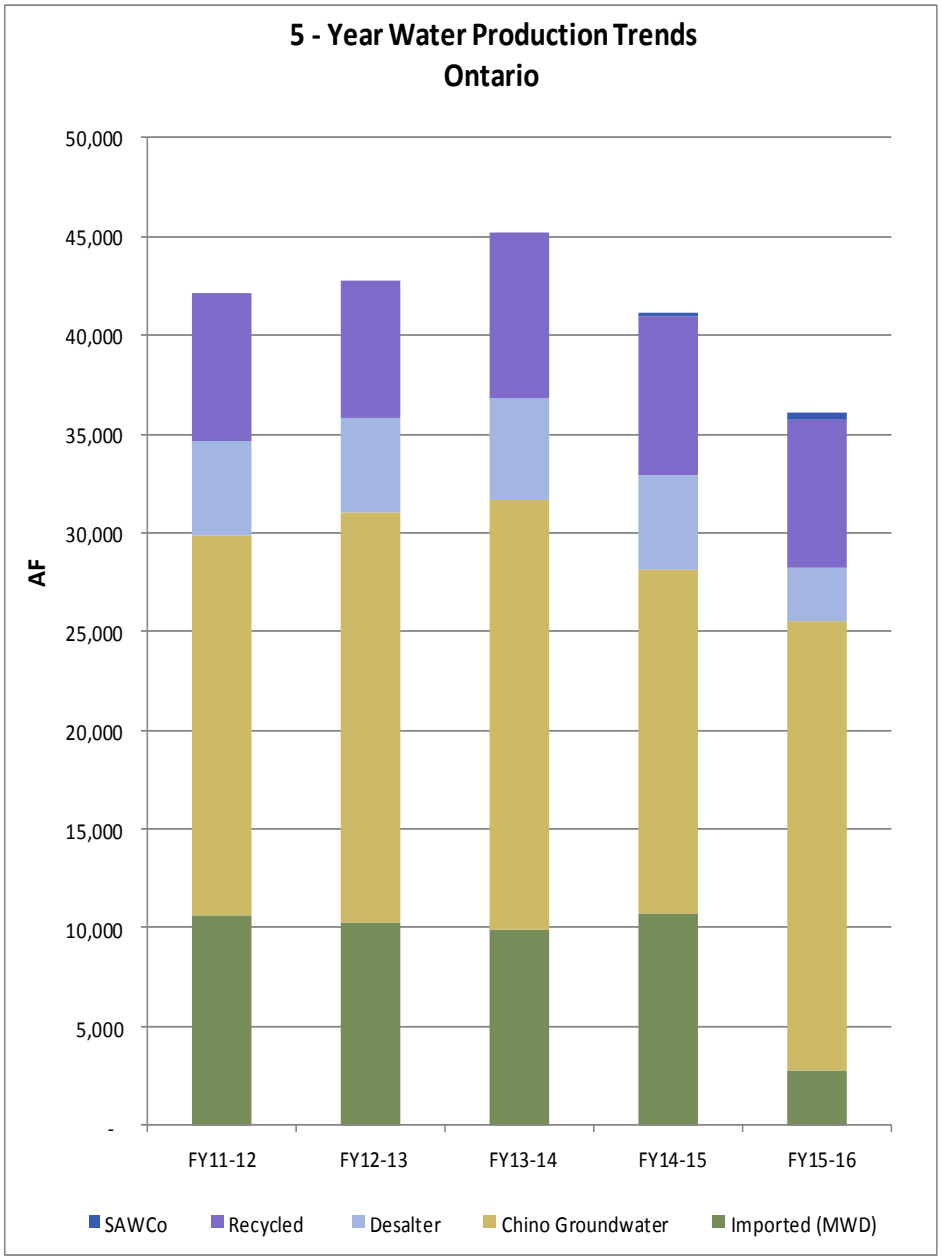
City of Ontario

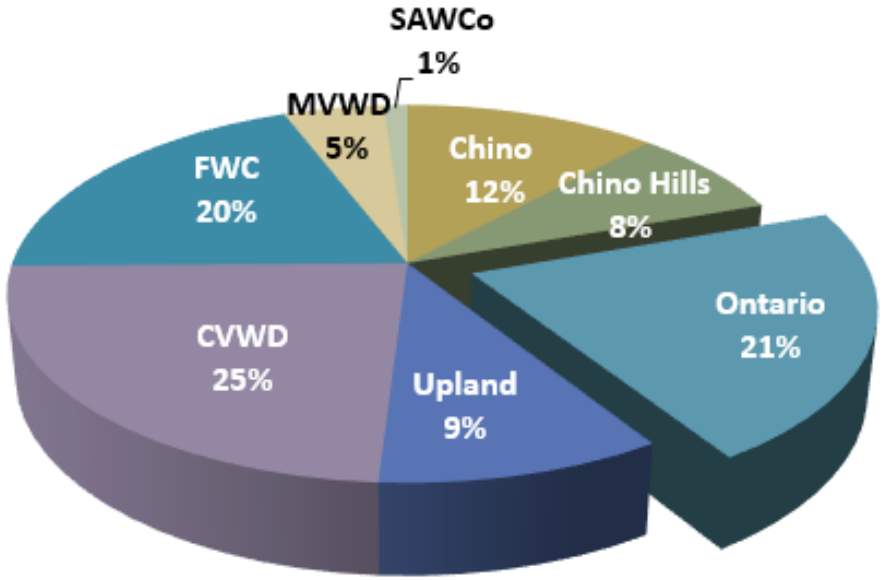
FY 2015/16 Monthly Water Usage



City of Ontario

FY 2015/16 Water Use Report





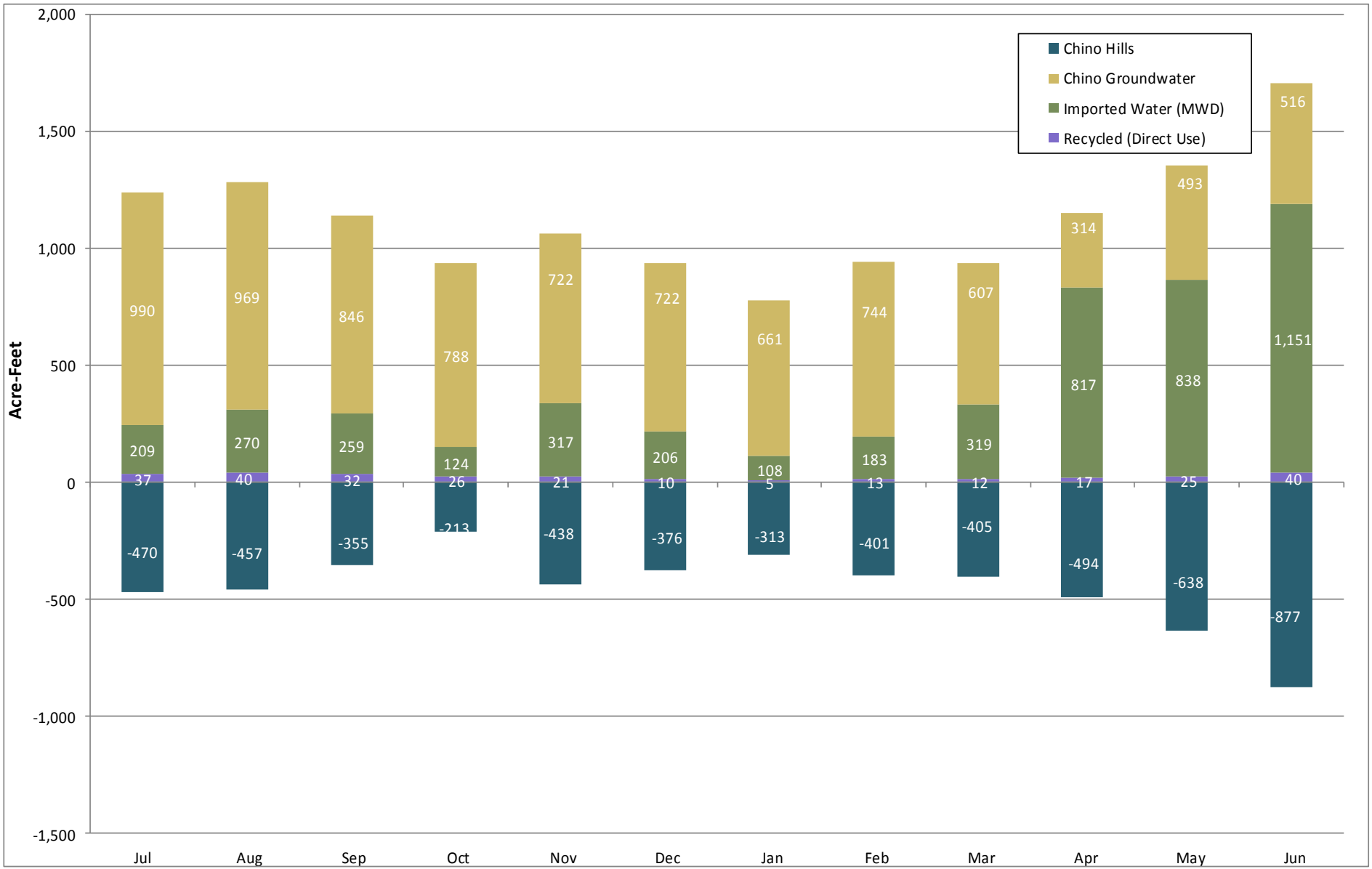
In FY 2015/16, The City of Ontario used 21% (36,096 AF) of 168,799 AF used in the IEUA service area.

City of Ontario

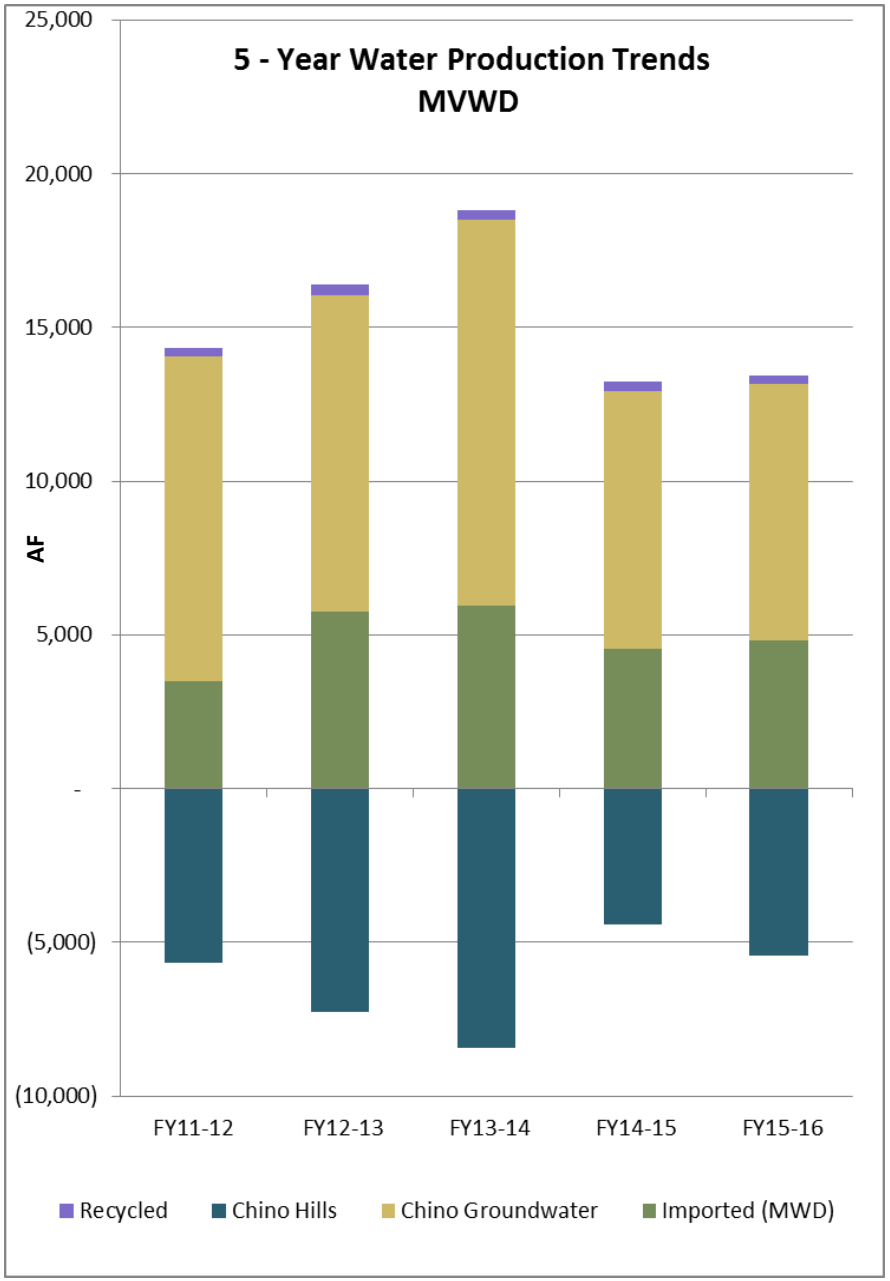
FY 2015/16 Monthly Water Usage

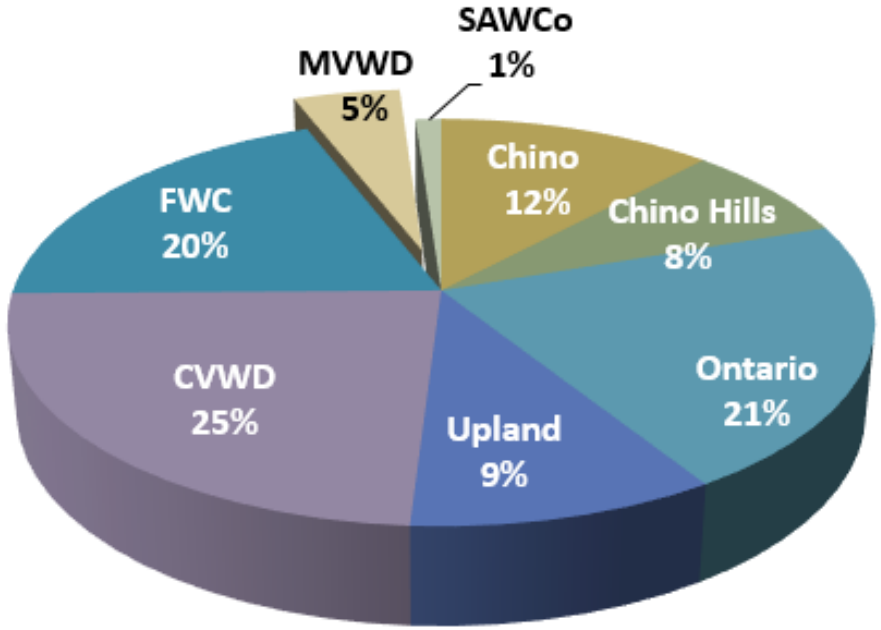
		Table 1. IEUA Service Area Water Use by Agency for FY15-16 (AF) - Ontario												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Purchases from IEUA	Recycled (Direct use)	1,030	934	928	540	647	410	380	232	433	539	703	789	7,566
	Imported Water (MWD)	257	315	229	263	221	201	165	160	231	225	252	236	2,755
Subtotal		1,287	1,250	1,157	803	867	611	546	392	664	764	955	1,025	10,321
Production	Chino Groundwater	2,224	2,367	2,136	1,998	1,756	1,541	1,328	1,546	1,593	1,785	2,038	2,443	22,755
Subtotal		2,224	2,367	2,136	1,998	1,756	1,541	1,328	1,546	1,593	1,785	2,038	2,443	22,755
Purchase from other agencies	CDA	242	256	259	256	240	237	188	147	196	263	188	211	2,682
	SAWCo Water	86	39	40	33	36	38	36	31	0	0	0	0	338
Subtotal		328	295	299	289	276	275	224	178	196	263	188	211	3,021
Total		3,839	3,911	3,592	3,090	2,899	2,427	2,098	2,116	2,453	2,812	3,181	3,678	36,097

Monte Vista Water District
FY 2015/16 Monthly Water Usage



Monte Vista Water District
FY 2015/16 Water Use Report





In FY 2015/16, Monte Vista Water District used 5% (8,012 AF) of 168,799 AF used in the IEUA service area.

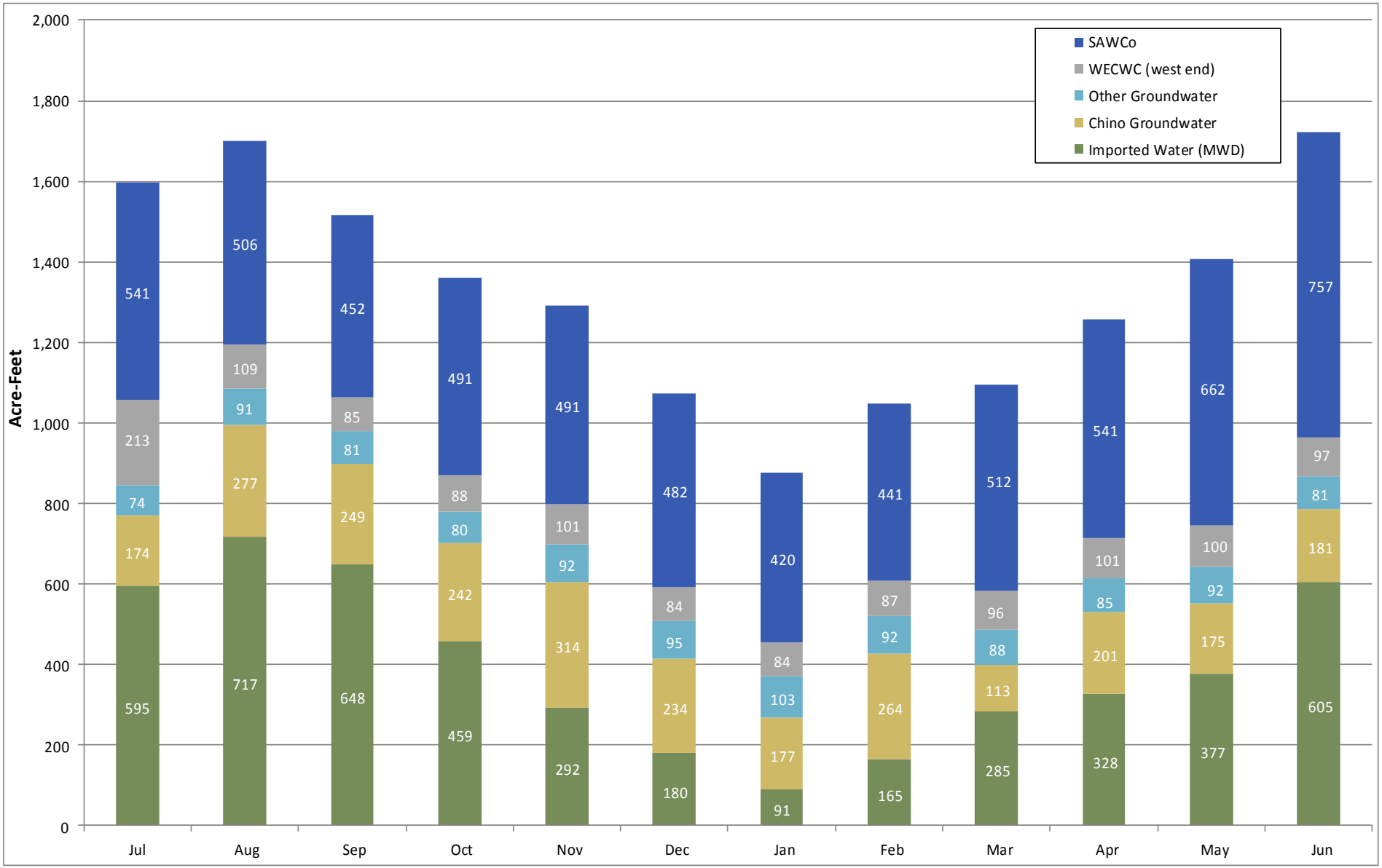
Monte Vista Water District

FY 2015/16 Monthly Water Usage

		Table 1. IEUA Service Area Water Use by Agency for FY15-16 (AF) - MVWD												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Purchases from IEUA	Recycled (Direct use)	37	40	32	26	21	10	5	13	12	17	25	40	278
	Imported Water (MWD)	209	270	259	124	317	206	108	183	319	817	838	1,151	4,799
Subtotal		246	310	291	150	338	216	113	196	331	834	862	1,191	5,078
Production	Chino Groundwater	990	969	846	788	722	722	661	744	607	314	493	516	8,371
Subtotal		990	969	846	788	722	722	661	744	607	314	493	516	8,371
Sales to other agencies	Chino Hills	-470	-457	-355	-213	-438	-376	-313	-401	-405	-494	-638	-877	-5,437
Subtotal		-470	-457	-355	-213	-438	-376	-313	-401	-405	-494	-638	-877	-5,437
Total		766	822	781	725	622	563	462	539	533	654	717	829	8,012

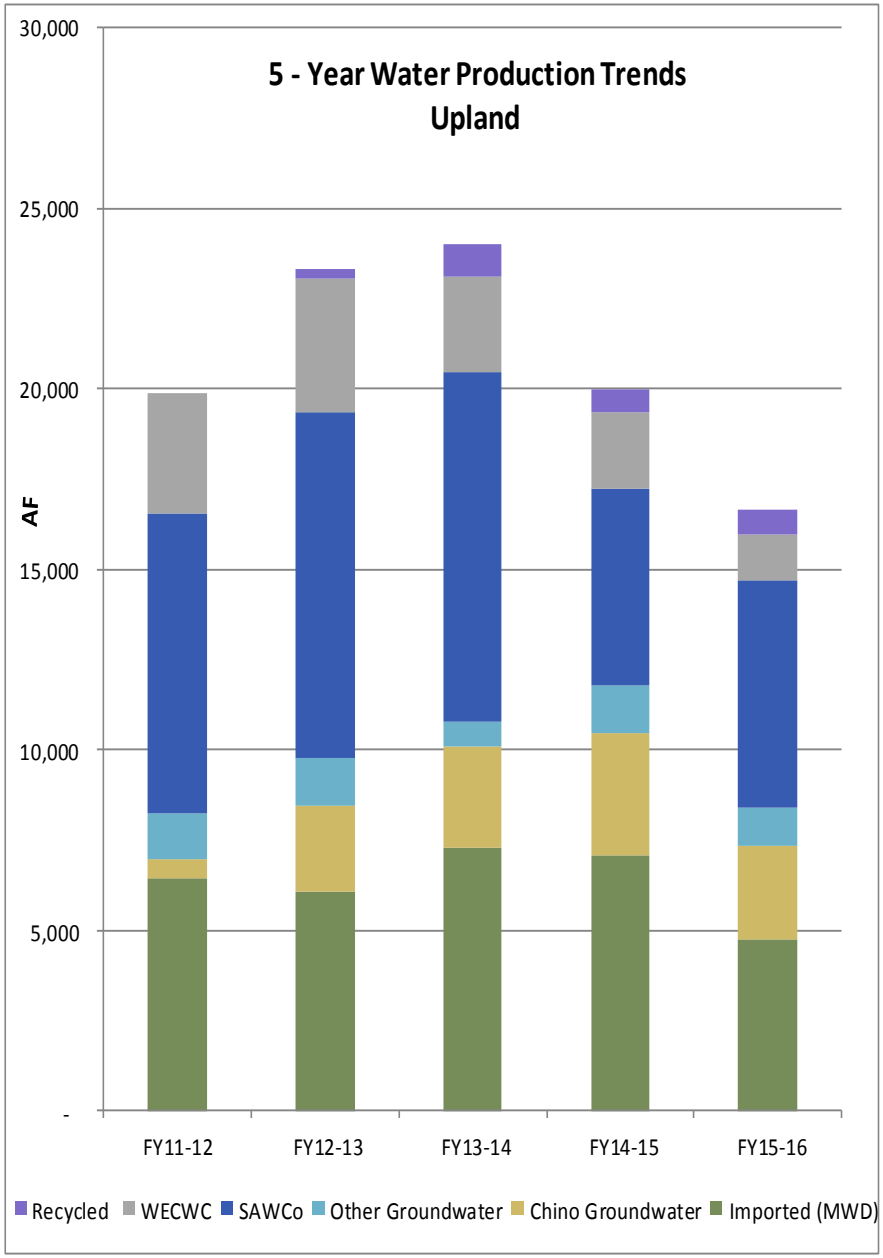
City of Upland

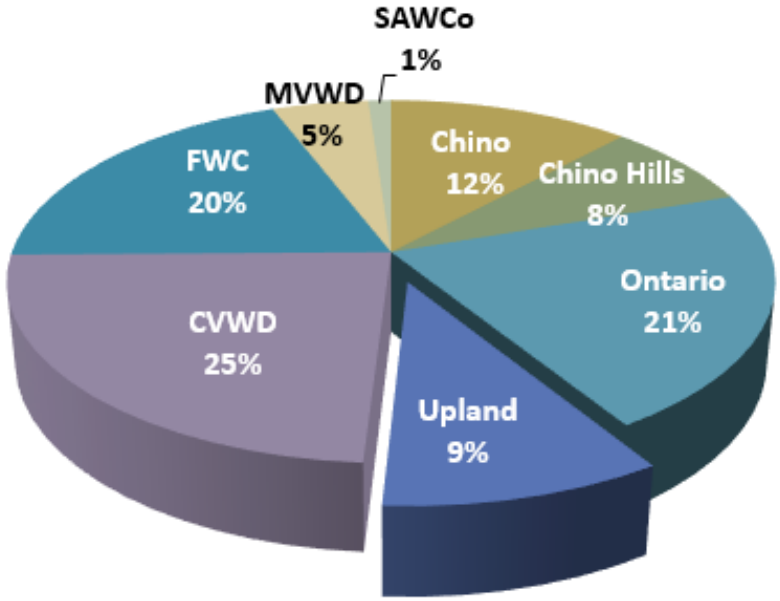
FY 2015/16 Monthly Water Usage



City of Upland

FY 2015/16 Water Use Report





In FY 2015/16, The City of Upland used 9% (16,806 AF) of 168,799 AF used in the IEUA service area.

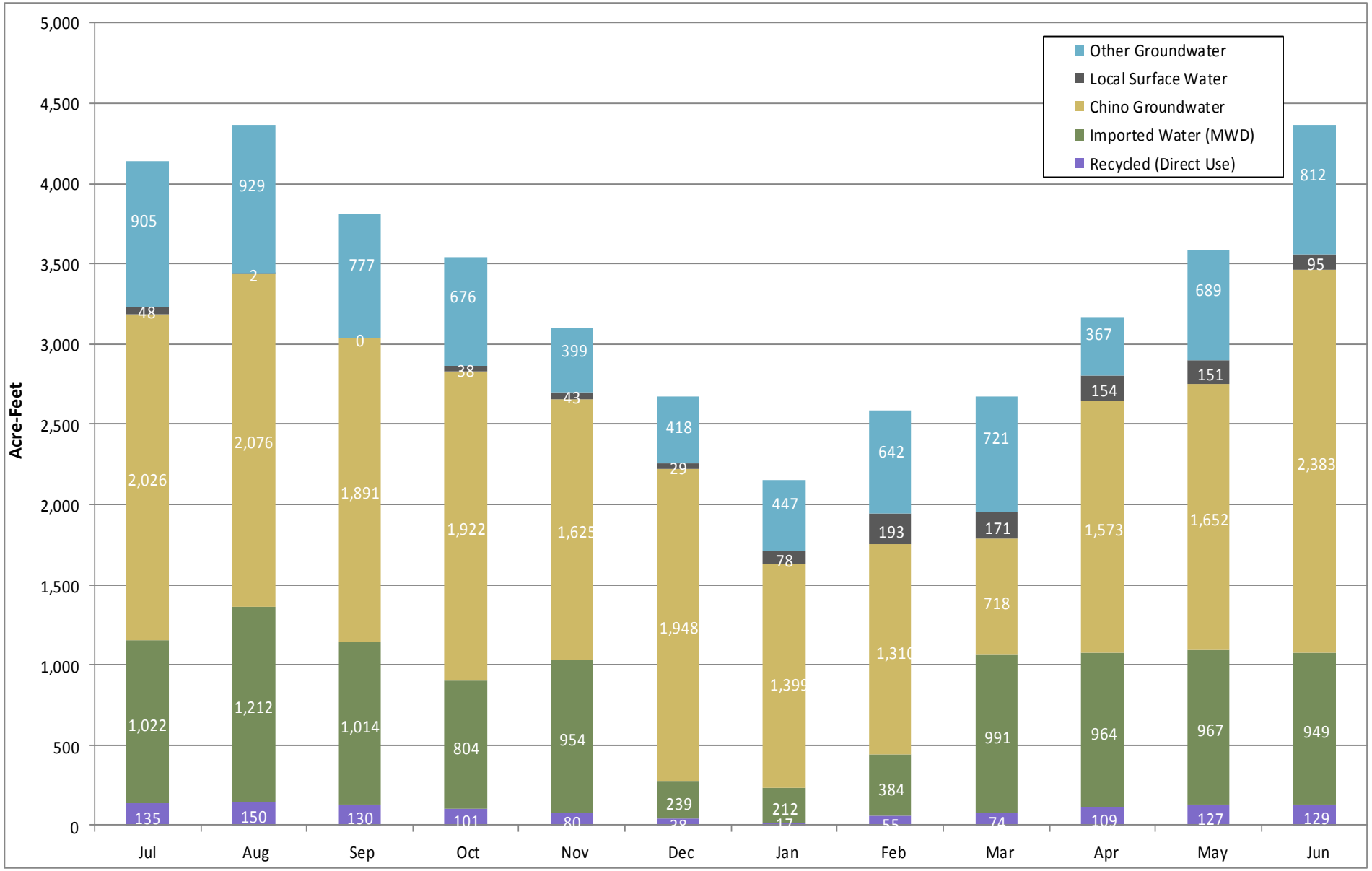
City of Upland

FY 2015/16 Monthly Water Usage

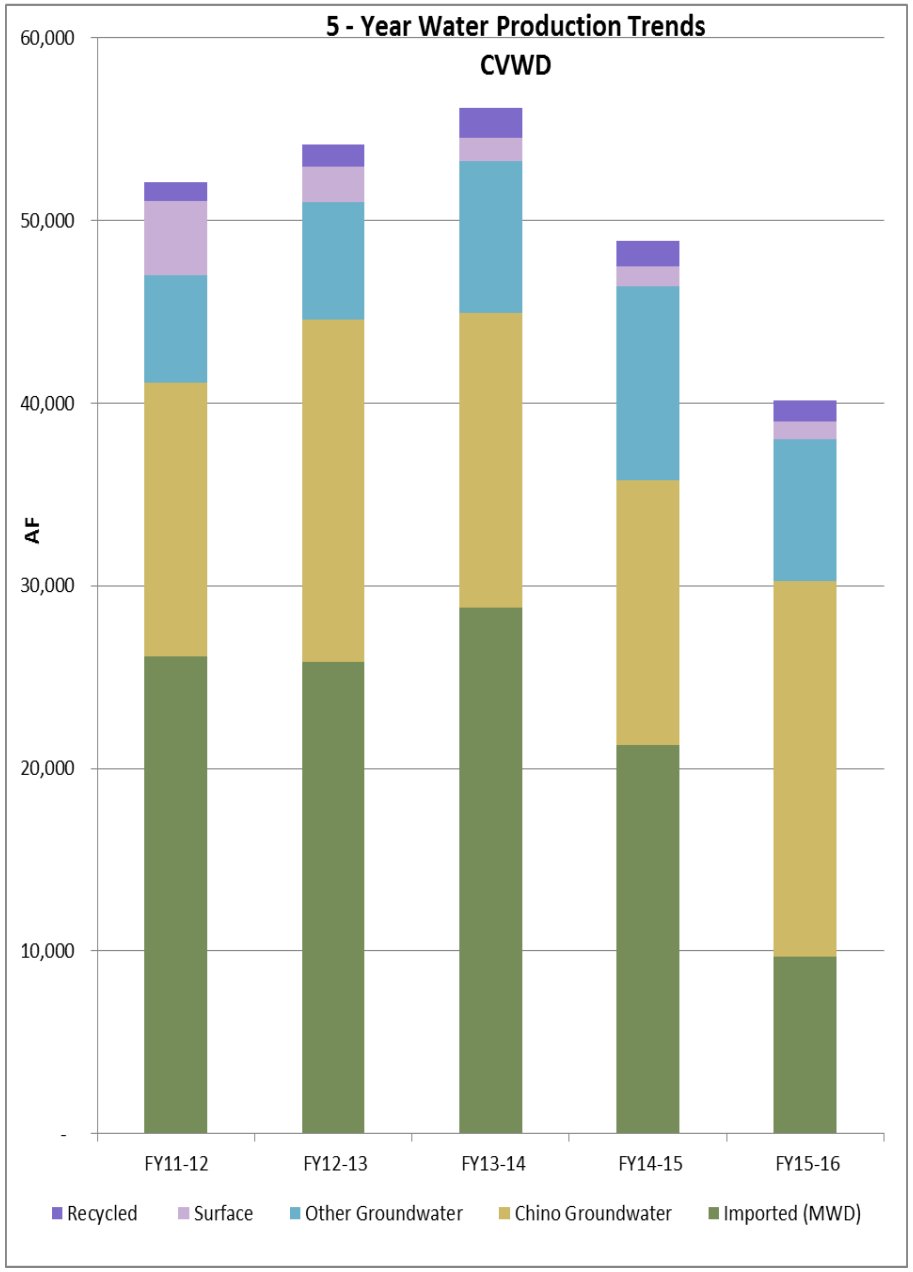
		Table 1. IEUA Service Area Water Use by Agency for FY15-16 (AF) - Upland												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Purchases from IEUA	Recycled (Direct use)	92	97	82	82	58	37	15	37	34	57	59	69	719
	Imported Water (MWD)	595	717	648	459	292	180	91	165	285	328	377	605	4,742
	Imported Water* (RAW)	0	0	0	0	0	0	23	64	24	7	23	8	148
Subtotal		687	814	730	540	350	217	129	266	344	391	459	681	5,609
Production	Chino Groundwater	174	277	249	242	314	234	177	264	113	201	175	181	2,601
	Other Groundwater	74	91	81	80	92	95	103	92	88	85	92	81	1,054
Subtotal		248	368	330	322	406	329	280	356	201	286	267	262	3,655
Purchase from other agencies	SAWCo Water	541	506	452	491	491	482	420	441	512	541	662	757	6,297
	West End	213	109	85	88	101	84	84	87	96	101	100	97	1,246
Subtotal		753	615	537	579	592	566	505	528	609	642	763	854	7,543
Total		1,689	1,796	1,597	1,442	1,348	1,112	914	1,150	1,153	1,319	1,488	1,798	16,807

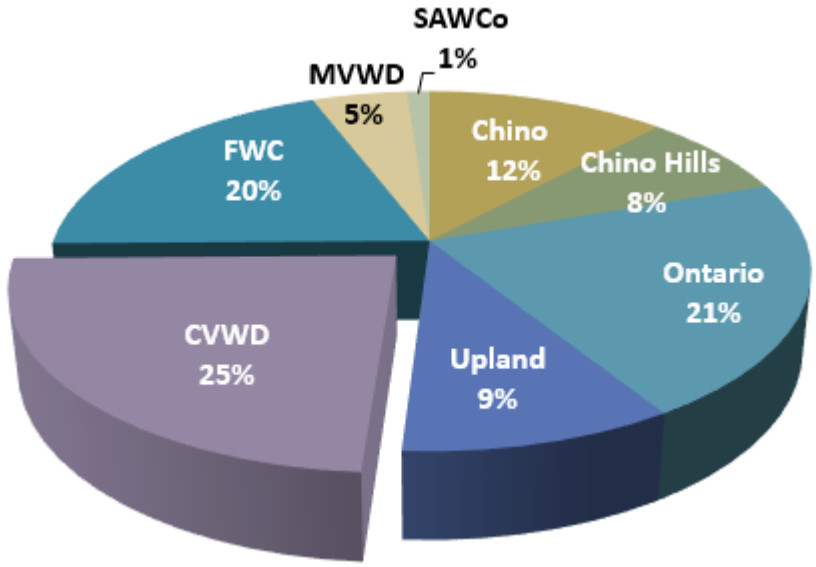
*purchased from WFA

Cucamonga Valley Water District
FY 2015/16 Monthly Water Usage



Cucamonga Valley Water District
FY 2015/16 Water Report



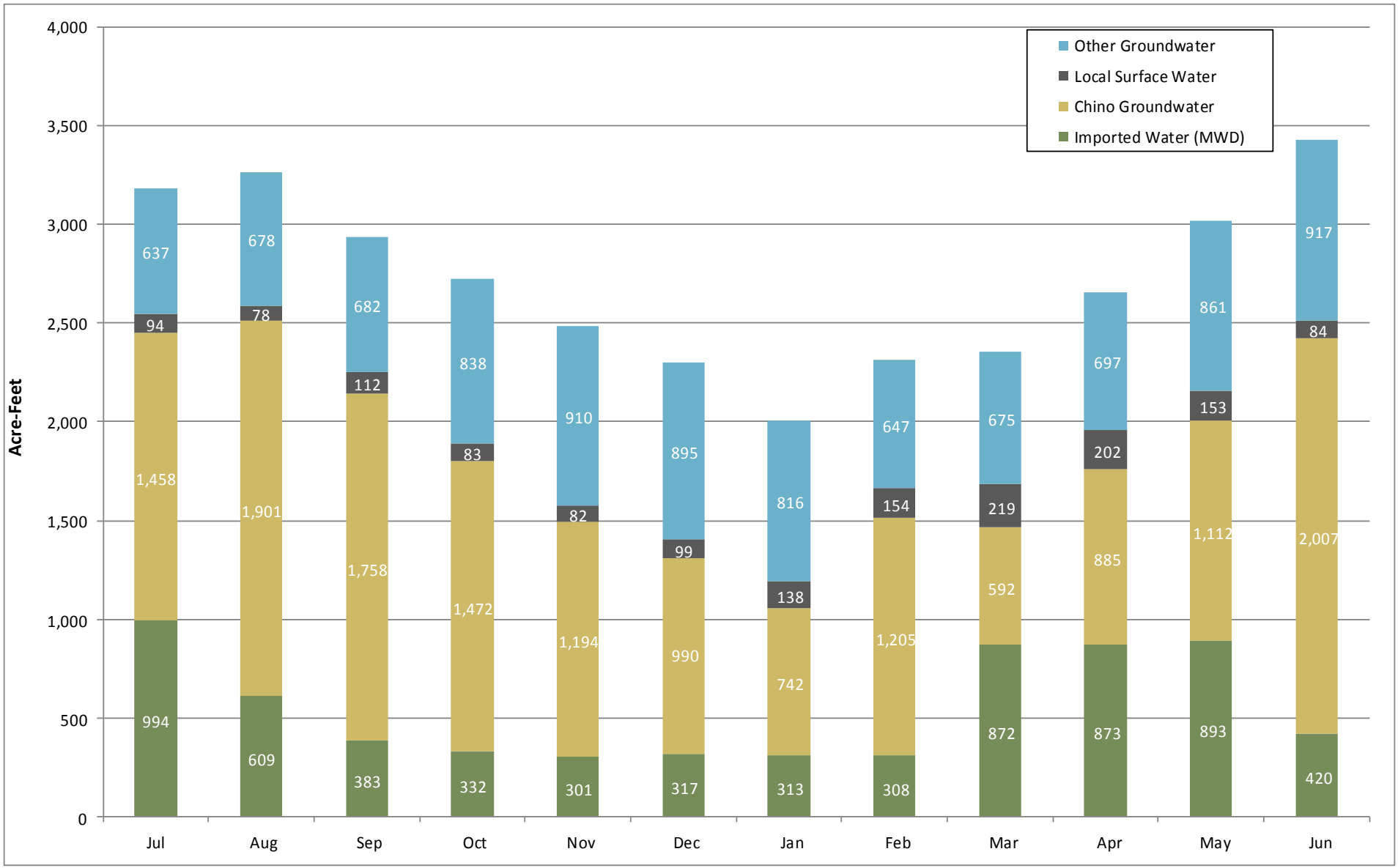


In FY 2015/16, Cucamonga Valley Water District used 25% (40,166 AF) of 168,799 AF used in the IEUA service area.

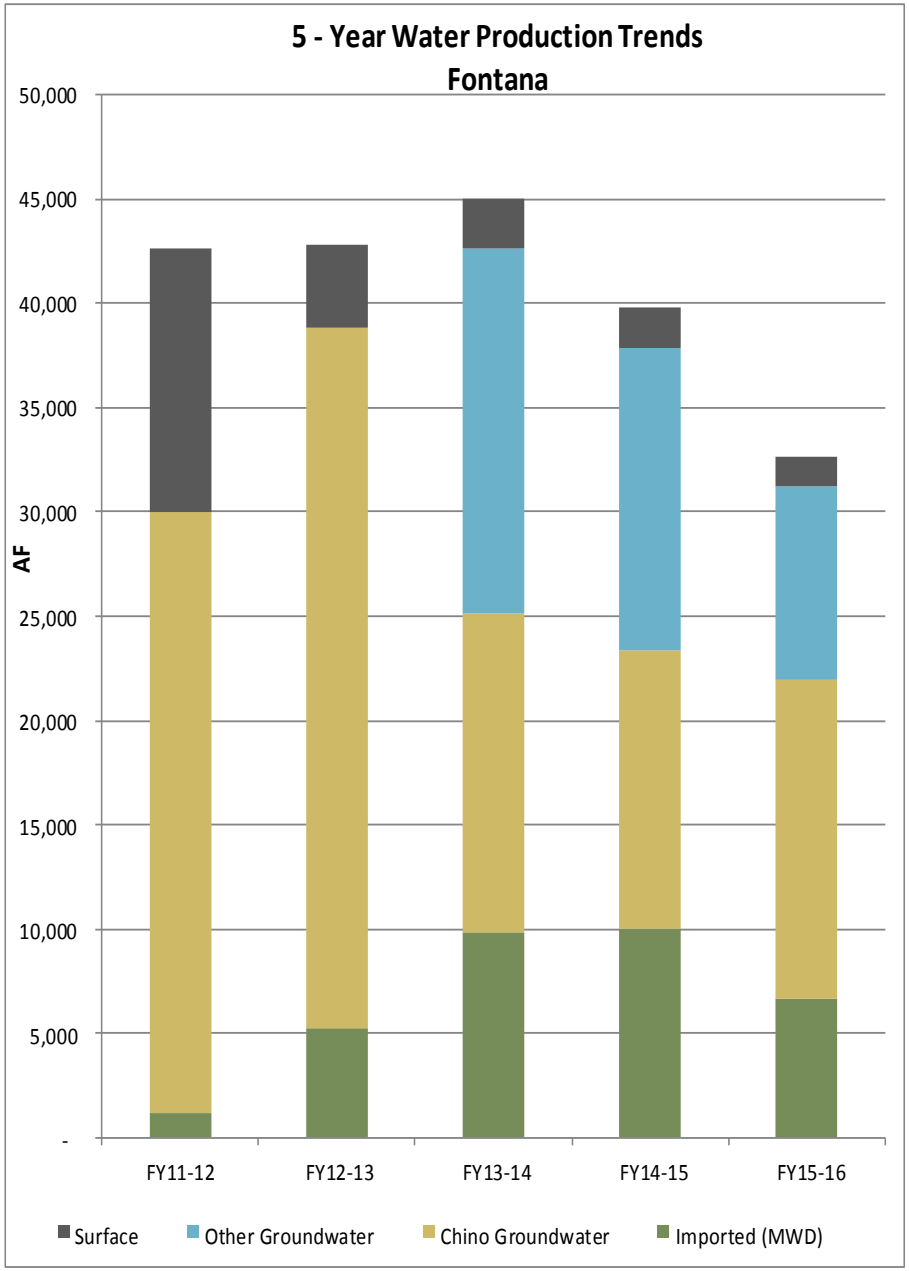
Cucamonga Valley Water District
FY 2015/16 Monthly Water Usage

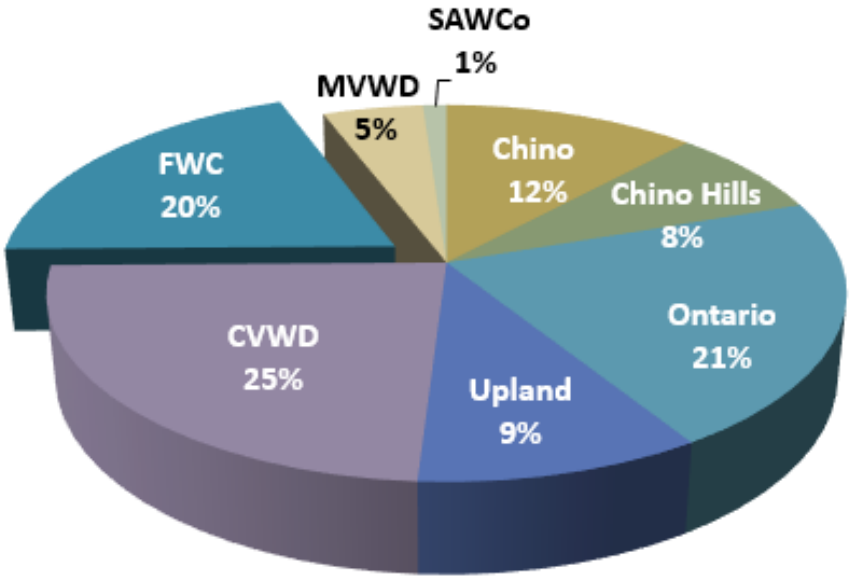
		Table 1. IEUA Service Area Water Use by Agency for FY15-16 (AF) - CVWD												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Purchases from IEUA	Recycled (Direct use)	135	150	130	101	80	38	17	55	74	109	127	129	1,146
	Imported Water (MWD)	1,022	1,212	1,014	804	954	239	212	384	991	964	967	949	9,712
Subtotal		1,157	1,362	1,144	905	1,034	277	229	439	1,065	1,073	1,095	1,078	10,857
Production	Chino Groundwater	2,026	2,076	1,891	1,922	1,625	1,948	1,399	1,310	718	1,573	1,652	2,383	20,524
	Local Surface Water	48	2	0	38	43	29	78	193	171	154	151	95	1,001
	Other Groundwater	905	929	777	676	399	418	447	642	721	367	689	812	7,783
Subtotal		2,979	3,007	2,668	2,636	2,067	2,395	1,924	2,145	1,610	2,094	2,493	3,290	29,309
Total		**4,136**	**4,369**	**3,812**	**3,541**	**3,100**	**2,672**	**2,153**	**2,584**	**2,675**	**3,167**	**3,588**	**4,368**	**40,166**

Fontana Water Company
FY 2015/16 Monthly Water Usage



Fontana Water Company
FY 2015/16 Water Use Report





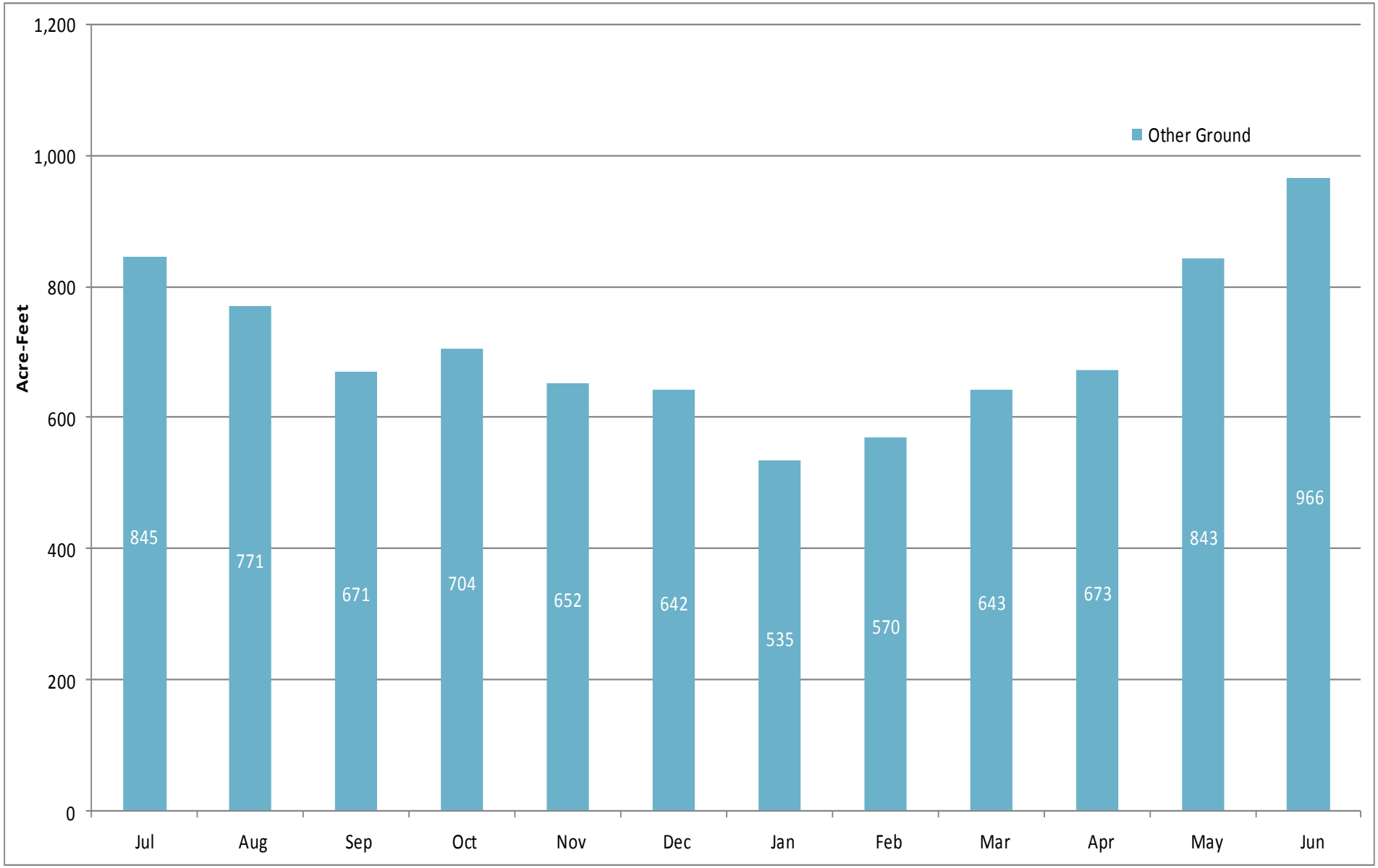
In FY 2015/16, The Fontana Water Company used 20% (32,680 AF) of 168,799 AF used in the IEUA service area.

Fontana Water Company

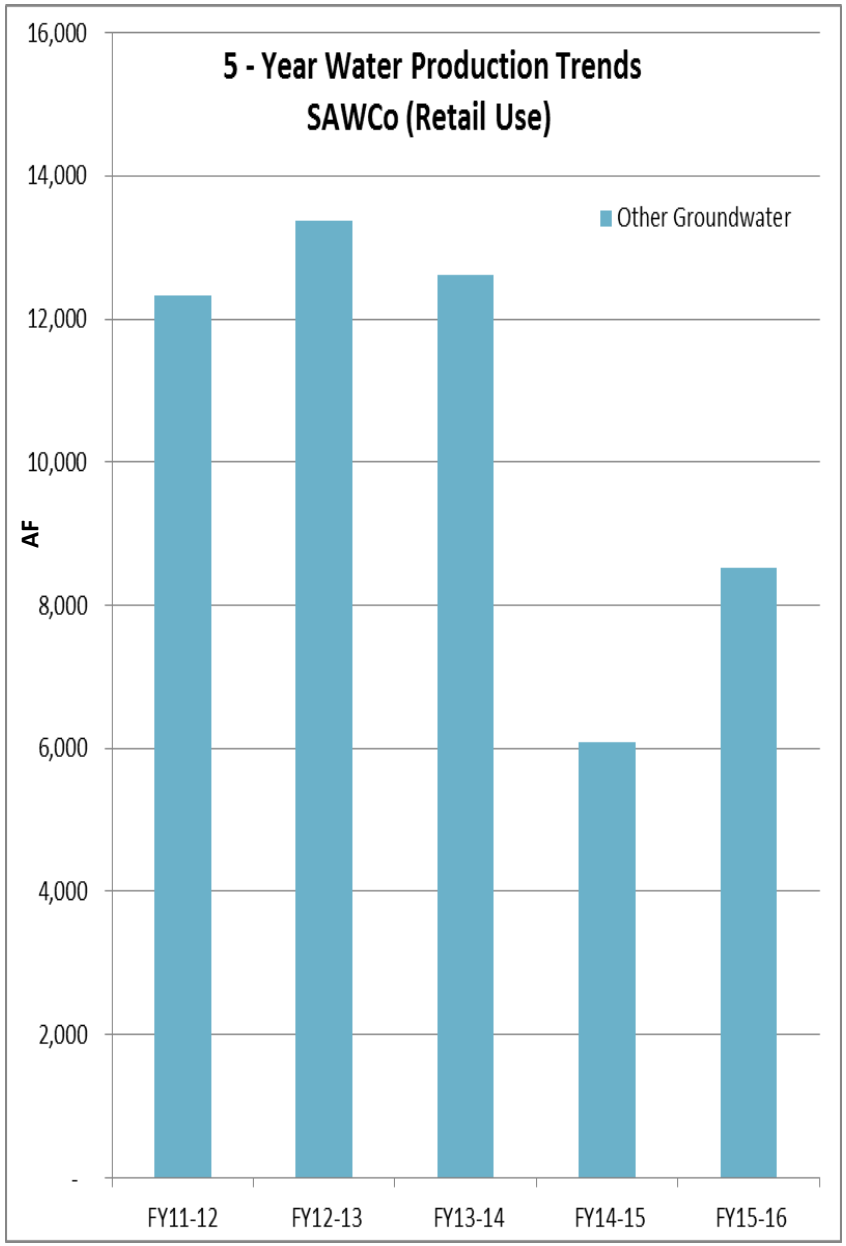
FY 2015/16 Monthly Water Usage

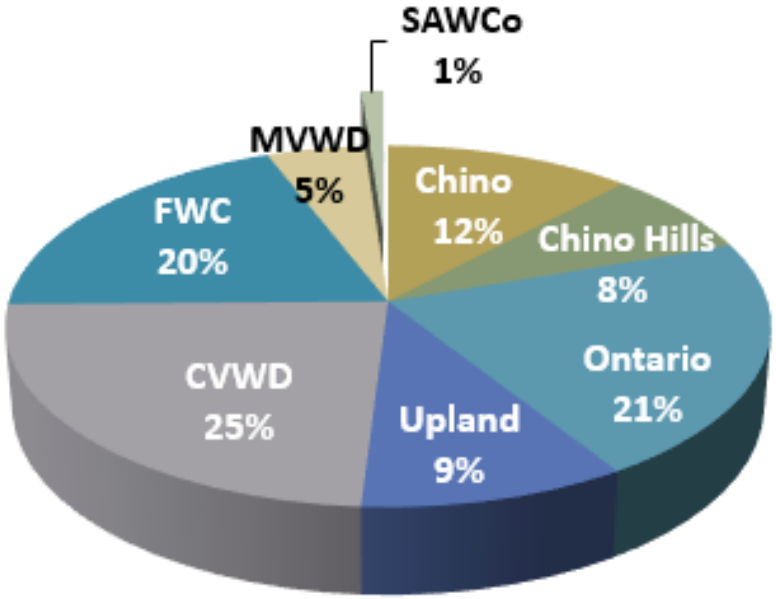
		Table 1. IEUA Service Area Water Use by Agency for FY15-16 (AF) - FWC												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Purchases from IEUA	**Imported Water (MWD)**	**994**	**609**	**383**	**332**	**301**	**317**	**313**	**308**	**872**	**873**	**893**	**420**	**6,613**
Subtotal		994	609	383	332	301	317	313	308	872	873	893	420	6,613
Production	**Chino Groundwater**	**1,458**	**1,901**	**1,758**	**1,472**	**1,194**	**990**	**742**	**1,205**	**592**	**885**	**1,112**	**2,007**	**15,317**
	Local Surface Water	**94**	**78**	**112**	**83**	**82**	**99**	**138**	**154**	**219**	**202**	**153**	**84**	**1,497**
	Other Groundwater	**637**	**678**	**682**	**838**	**910**	**895**	**816**	**647**	**675**	**697**	**861**	**917**	**9,253**
Subtotal		2,189	2,657	2,552	2,394	2,186	1,984	1,696	2,005	1,486	1,784	2,127	3,007	26,067
	Total	**3,183**	**3,266**	**2,935**	**2,726**	**2,487**	**2,301**	**2,010**	**2,313**	**2,358**	**2,657**	**3,020**	**3,427**	**32,681**

San Antonio Water Company
FY 2015/16 Monthly Water Usage



San Antonio Water Company
FY 2015/16 Water Use Report





In FY 2015/16, The San Antonio Water Company used 1% (1,881 AF) of 168,799 AF used in the IEUA service area.

San Antonio Water Company
FY 2015/16 Monthly Water Usage

		Table 1. IEUA Service Area Water Use by Agency for FY15-16 (AF) - SAWCO												
		July	August	September	October	November	December	January	February	March	April	May	June	Total
Production	**Other Groundwater**	**845**	**771**	**671**	**704**	**652**	**642**	**535**	**570**	**643**	**673**	**843**	**966**	**8,517**
Subtotal		845	771	671	704	652	642	535	570	643	673	843	966	8,517
Sales to Other Agencies	**Ontario**	**-86**	**-39**	**-40**	**-33**	**-36**	**-38**	**-36**	**-31**	**0**	**0**	**0**	**0**	**-338**
	Upland	**-541**	**-506**	**-452**	**-491**	**-491**	**-482**	**-420**	**-441**	**-512**	**-541**	**-662**	**-757**	**-6,297**
Subtotal		-627	-545	-492	-524	-527	-520	-457	-472	-512	-541	-662	-757	-6,635
Total		**218**	**226**	**180**	**181**	**126**	**123**	**78**	**98**	**131**	**132**	**180**	**209**	**1,882**

APPENDIX A

Five year Historical Data Summary

FY 15-16		Total IEUA Service Area Water Use by Retail Agency for FY 15-16 (AFY)								
		CHINO	CHINO HILLS	ONTARIO	UPLAND	CVWD	FWC	MVWD	SAWCo	TOTAL
Purchases from IEUA	Imported Water (MWD)	2,843	110	2,755	4,890	9,712	6,613	4,799	0	31,722
	Recycled (Direct Use)	7,217	1,410	7,566	719	1,146	0	278	0	18,336
Subtotal		**10,060**	**1,520**	**10,321**	**5,609**	**10,857**	**6,613**	**5,078**	**0**	**50,058**
Production	Chino Groundwater	5,104	1,630	22,755	2,601	20,524	15,317	8,371	0	76,302
	Other Groundwater	0	0	0	1,054	7,783	9,253	0	8,517	26,607
	Local Surface Water	0	0	0	0	1,002	1,497	0	0	2,499
Subtotal		**5,104**	**1,630**	**22,755**	**3,655**	**29,309**	**26,067**	**8,371**	**8,517**	**105,408**
Purchases from Other Agencies	CDA	5,000	4,201	2,682	0	0	0	0	0	11,883
	MVWD	0	5,642	0	0	0	0	0	0	5,642
	SAWCo Water	0	0	338	6,297	0	0	0	0	6,635
	West End	0	0	0	1,246	0	0	0	0	1,246
Subtotal		**5,000**	**9,843**	**3,020**	**7,543**	**0**	**0**	**0**	**0**	**25,406**
Sales to Other Agencies	Chino Hills	0	0	0	0	0	0	-5,437	0	-5,437
	Ontario	0	0	0	0	0	0	0	-338	-338
	Upland	0	0	0	0	0	0	0	-6,297	-6,297
Subtotal		**0**	**0**	**0**	**0**	**0**	**0**	**-5,437**	**-6,635**	**-12,072**
	Total	**20,163**	**12,993**	**36,096**	**16,807**	**40,166**	**32,681**	**8,012**	**1,882**	**168,799**

FY 14-15		Total IEUA Service Area Water Use by Retail Agency for FY 14-15 (AFY)								
		CHINO	CHINO HILLS	ONTARIO	UPLAND	CVWD	FWC	MVWD	SAWCo	TOTAL
Purchases from IEUA	Imported Water (MWD)	2,830	2,494	10,703	7,047	21,306	9,994	4,530	0	58,905
	Recycled (Direct Use)	8,324	1,827	8,018	636	1,400	0	308	0	20,513
Subtotal		**11,154**	**4,321**	**18,721**	**7,684**	**22,705**	**9,994**	**4,838**	**0**	**79,418**
Production	Chino Groundwater	6,497	2,904	17,426	3,416	14,490	13,344	8,407	0	66,485
	Other Groundwater	0	0	0	1,291	10,631	14,500	0	6,091	32,513
	Local Surface Water	0	0	0	0	1,076	1,969	0	0	3,044
Subtotal		**6,497**	**2,904**	**17,426**	**4,708**	**26,196**	**29,813**	**8,407**	**6,091**	**102,042**
Purchases from Other Agencies	CDA	5,232	4,426	4,827	0	0	0	0	0	14,485
	MVWD	0	4,436	0	0	0	0	0	0	4,436
	SAWCo Water	0	0	172	5,461	0	0	612	0	6,246
	West End	0	0	0	2,139	0	0	0	0	2,139
Subtotal		**5,232**	**8,862**	**5,000**	**7,601**	**0**	**0**	**612**	**0**	**27,306**
Sales to Other Agencies	Chino Hills	0	0	0	0	0	0	-4,439	0	-4,439
	MVWD	0	0	0	0	0	0	0	-612	-612
	Ontario	0	0	0	0	0	0	0	-172	-172
	Upland	0	0	0	0	0	0	0	-3,177	-3,177
Subtotal		**0**	**0**	**0**	**0**	**0**	**0**	**-4,439**	**-3,961**	**-8,400**
	Total	**22,884**	**16,087**	**41,147**	**19,992**	**48,902**	**39,807**	**9,419**	**2,129**	**200,366**

FY 13-14		Total IEUA Service Area Water Use by Retail Agency for FY 13-14 (AFY)								
		CHINO	CHINO HILLS	ONTARIO	UPLAND	CVWD	FWC	MVWD	SAWCo	TOTAL
Purchases from IEUA	Imported Water (MWD)	4,342	962	9,904	7,265	28,825	9,792	5,965	0	67,055
	Recycled (Direct Use)	8,916	2,002	8,428	869	1,652	0	339	0	22,205
Subtotal		**13,258**	**2,964**	**18,332**	**8,134**	**30,477**	**9,792**	**6,304**	**0**	**89,261**
Production	Chino Groundwater	6,725	2,138	21,723	2,822	16,122	15,378	12,522	0	77,430
	Other Groundwater	0	0	0	704	8,324	17,454	0	12,610	39,092
	Local Surface Water	0	0	0	0	1,254	2,405	0	0	3,658
Subtotal		**6,725**	**2,138**	**21,723**	**3,526**	**25,700**	**35,236**	**12,522**	**12,610**	**120,180**
Purchases from Other Agencies	CDA	5,198	4,396	5,141	0	0	0	0	0	14,735
	CVWD	0	0	0	0	0	757	0	0	757
	MVWD	0	8,427	0	0	0	0	0	0	8,427
	SAWCo Water	0	0	0	9,662	0	0	400	0	10,063
	West End	0	0	0	2,653	0	0	0	0	2,653
Subtotal		**5,198**	**12,824**	**5,141**	**12,316**	**0**	**757**	**400**	**0**	**36,636**
Sales to Other Agencies	Chino Hills	0	0	0	0	0	0	-8,428	0	-8,428
	MVWD	0	0	0	0	0	0	0	-400	-400
	Upland	0	0	0	0	0	0	0	-9,662	-9,662
Subtotal		**0**	**0**	**0**	**0**	**0**	**0**	**-8,428**	**-10,063**	**-18,490**
	Total	**25,181**	**17,926**	**45,196**	**23,975**	**56,177**	**45,785**	**10,798**	**2,547**	**227,586**

FY 12-13		Total IEUA Service Area Water Use by Retail Agency for FY 12-13 (AFY)								
		CHINO	CHINO HILLS	ONTARIO	UPLAND	CVWD	FWC	MVWD	SAWCo	TOTAL
Purchases from IEUA	Imported Water (MWD)	4,085	1,822	10,244	6,067	25,845	5,215	5,737	0	59,013
	Recycled (Direct Use)	8,957	1,890	6,894	264	1,231	0	327	0	19,562
Subtotal		**13,042**	**3,711**	**17,138**	**6,331**	**27,075**	**5,215**	**6,063**	**0**	**78,575**
Production	Chino Groundwater	7,022	3,134	20,801	2,358	18,740	33,576	10,325	0	95,956
	Other Groundwater	0	0	0	1,349	6,420	0	0	13,376	21,145
	Local Surface Water	0	0	0	0	1,921	4,059	0	0	5,980
Subtotal		**7,022**	**3,134**	**20,801**	**3,707**	**27,081**	**37,635**	**10,325**	**13,376**	**123,081**
Purchases from Other Agencies	CDA	4,805	4,075	4,792	0	0	0	0	0	13,671
	MVWD	0	6,949	0	0	0	0	0	0	6,949
	SAWCo Water	0	0	0	9,594	0	0	841	0	10,435
	West End	0	0	0	3,692	0	0	0	0	3,692
Subtotal		**4,805**	**11,024**	**4,792**	**13,286**	**0**	**0**	**841**	**0**	**34,747**
Sales to Other Agencies	Chino Hills	0	0	0	0	0	0	-7,249	0	-7,249
	MVWD	0	0	0	0	0	0	0	-841	-841
	Upland	0	0	0	0	0	0	0	-9,594	-9,594
Subtotal		**0**	**0**	**0**	**0**	**0**	**0**	**-7,249**	**-10,435**	**-17,684**
	Total	**24,868**	**17,869**	**42,731**	**23,324**	**54,157**	**42,850**	**9,980**	**2,941**	**218,719**

FY 11-12		Total IEUA Service Area Water Use by Retail Agency for FY 11-12 (AFY)								
		CHINO	CHINO HILLS	ONTARIO	UPLAND	CVWD	FWC	MVWD	SAWCo	TOTAL
Purchases from IEUA	Imported Water (MWD)	2,743	2,173	10,661	6,446	26,144	1,202	3,506	0	52,876
	Recycled (Direct Use)	8,274	1,567	7,493	0	1,019	0	288	0	18,641
Subtotal		**11,018**	**3,740**	**18,154**	**6,446**	**27,163**	**1,202**	**3,793**	**0**	**71,517**
Production	Chino Groundwater	7,856	3,566	19,164	526	14,949	28,748	10,538	0	85,346
	Other Groundwater	0	0	0	1,246	5,933	0	0	12,328	19,507
	Local Surface Water	0	0	0	0	4,070	12,674	0	0	16,744
Subtotal		**7,856**	**3,566**	**19,164**	**1,772**	**24,952**	**41,421**	**10,538**	**12,328**	**121,597**
Purchases from Other Agencies	CDA	4,887	4,236	4,838	0	0	0	0	0	13,961
	MVWD	0	5,416	0	0	0	0	0	0	5,416
	SAWCo Water	0	0	0	8,309	0	0	1,277	0	9,586
	West End	0	0	0	3,324	0	0	0	0	3,324
Subtotal		**4,887**	**9,652**	**4,838**	**11,633**	**0**	**0**	**1,277**	**0**	**32,287**
Sales to Other Agencies	Chino Hills	0	0	0	0	0	0	-5,661	0	-5,661
	MVWD	0	0	0	0	0	0	0	-1,277	-1,277
	Upland	0	0	0	0	0	0	0	-8,309	-8,309
Subtotal		**0**	**0**	**0**	**0**	**0**	**0**	**-5,661**	**-9,586**	**-15,247**
	Total	**23,761**	**16,959**	**42,156**	**19,851**	**52,115**	**42,624**	**9,947**	**2,742**	**210,154**

APPENDIX B

Definitions

Chino Basin Groundwater – Water pumped from the Chino Basin Aquifer and treated by retail water agencies for all potable uses within the IEUA service area.

Desalter Water – Water pumped from Chino Basin Desalter I owned and operated by the Chino Basin Desalter Authority (CDA). Groundwater, with high levels of dissolved solids, is treated and distributed to several retail agencies within the IEUA's service area for potable uses.

Imported Water (MWD) – Water from Northern California and supplied by the Metropolitan Water District of Southern California (MWD), and water transferred from other groundwater basins to retail water agencies operating within the IEUA service area. All Tier I and Tier II deliveries are included in this category.

Other Groundwater – Water produced from other local groundwater basins to retail water agencies operating within IEUA's service area.

Surface Water – Water collected by retail water agencies from mountain runoff and storm flows, which is collected and treated for potable use.

Recycled Water – Title 22 recycled water produced by the IEUA at its water recycling plants for distribution through separate pipelines to retail water agency customers for all non-potable uses.

WECWC– West End Consolidated Water Company supplies some water to the City of Upland.

WVWD – West Valley Water District

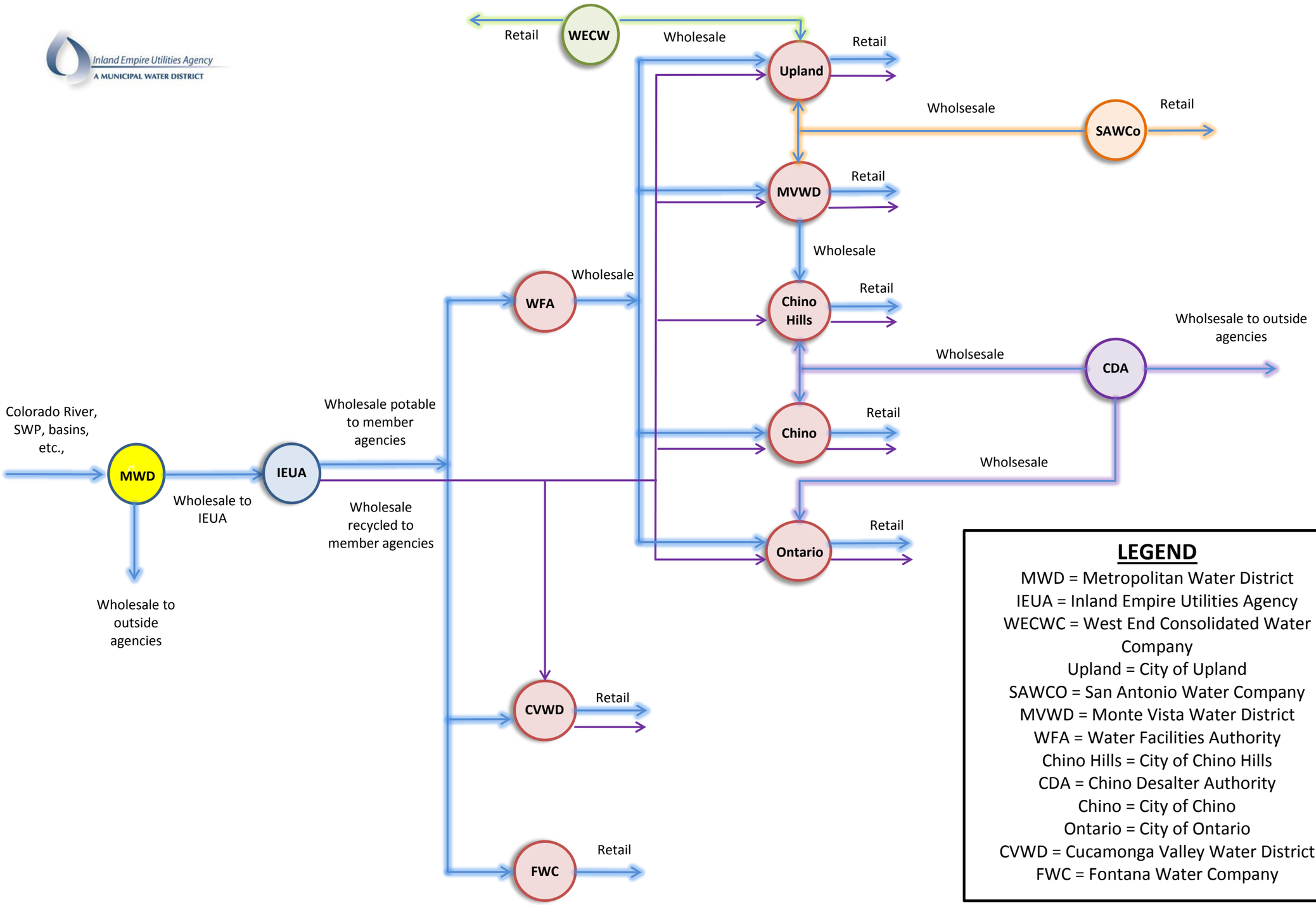
Production – Amount of water Agencies produce from their groundwater, surface water, or other water supplies that they have rights or jurisdiction over.

Use – Amount of water used within a member agency's jurisdiction, as reported by them to IUEA.

APPENDIX C

Member Agency Organizational Chart

Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT



LEGEND

MWD = Metropolitan Water District
IEUA = Inland Empire Utilities Agency
WECWC = West End Consolidated Water Company
Upland = City of Upland
SAWCO = San Antonio Water Company
MVWD = Monte Vista Water District
WFA = Water Facilities Authority
Chino Hills = City of Chino Hills
CDA = Chino Desalter Authority
Chino = City of Chino
Ontario = City of Ontario
CVWD = Cucamonga Valley Water District
FWC = Fontana Water Company

APPENDIX D

Powerpoint Presentations for Governor's Executive Order

Technical and Procedural Aspects of Implementing the EO Efficiency Standards

1. Residential Overview
    - Indoor Implementation Protocol
    - Outdoor Implementation Protocol
2. CII and Water Loss Overview
    - Technical Issues

Data for Residential Efficiency Formula

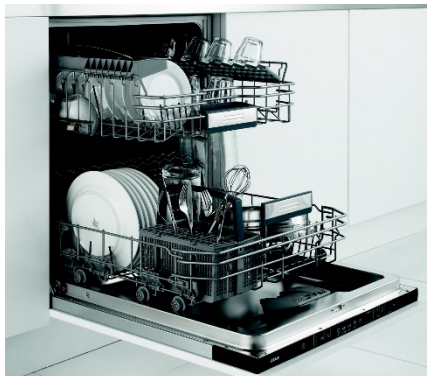
- Collect necessary data:
  - Agency by Agency Single Family Residential landscape area (Aggregated)
    - Shape files for each agency
    - Statewide aerial imagery
    - Averaged/weighted ET per service area
    - Aggregated residential / irrigation efficiency target by agency

Water Efficiency Formula

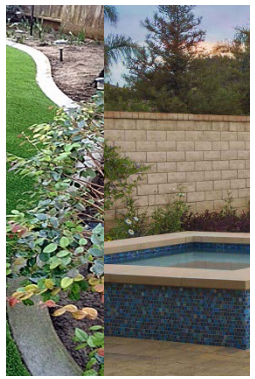
(# of Residents) (gpcd) + **(ET) (Landscape Area) (ET Factor)**

indoor

outdoor








Indoor Variables

1) Population or people per household

1. Population or People per Household

DWR Population Tool

- Many utilities used this tool to complete their 2015 UWMP

Timeline: Completed as part of UWMP	Cost: Completed as part of UWMP	Accuracy: moderate (depends on nature of growth)

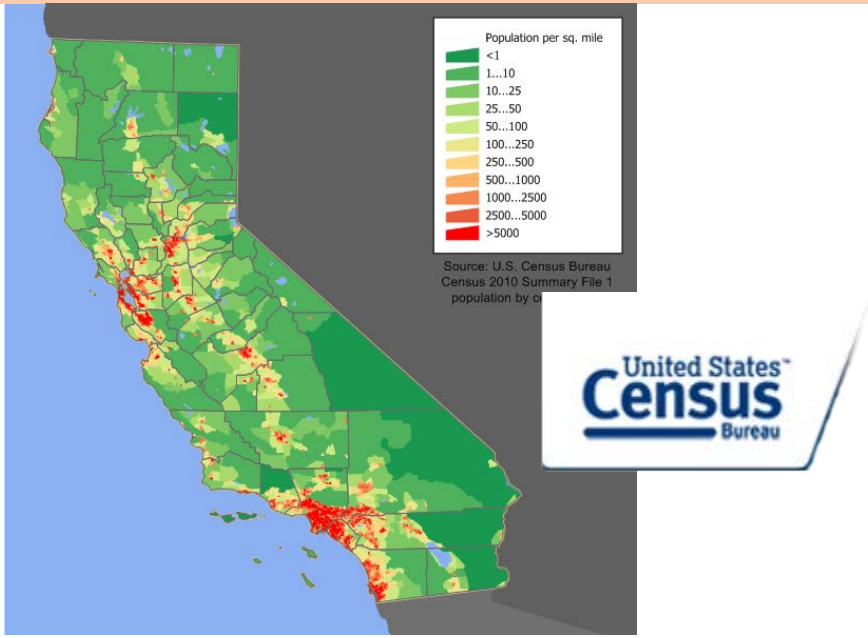
Issues: Growth in a service area

Solutions: Flexibility to update, utilizing a variance process for all agencies to DWR

1. Population or People per Household

Census + Meter Data

- Agency provides population data and/or DWR utilizes Census data.
- Verifying large households can also be done by checking meter reads for actual use



Timeline: Completed as part of UWMP

Cost: Completed as part of UWMP

Accuracy: moderate (depends on alignment of census block and utility boundaries)

Issues: Home by home occupancy is not necessary. Aggregated population within the district is sufficient for calculating an agency efficiency target.

Solutions: Use best available population data either inside the agency, from local sources or Census data. Utilize a "variance" or adjustment process for consistent updates for growth to calculate accurate agency target levels.

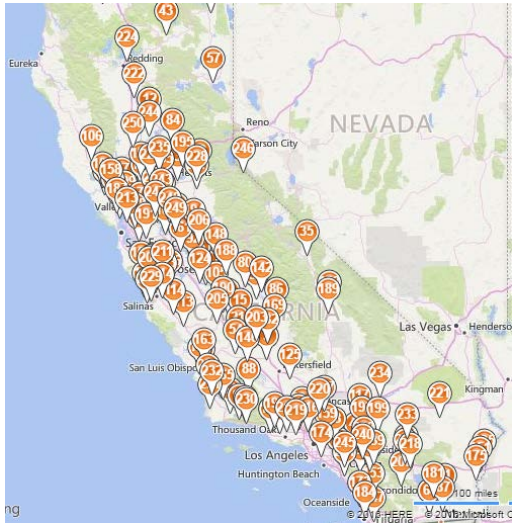
Outdoor Variables

1) ET
2) Landscape Area
3) Commercial, Industrial, Institutional

Outdoor

1. ET—CIMIS

- Free on CIMIS website
- Coverage challenges in certain urban areas
- How to address multiple micro-climate service areas will be key



Timeline: Currently available

Cost: free

Accuracy: Low (>85%)

Varies per station location and microclimates

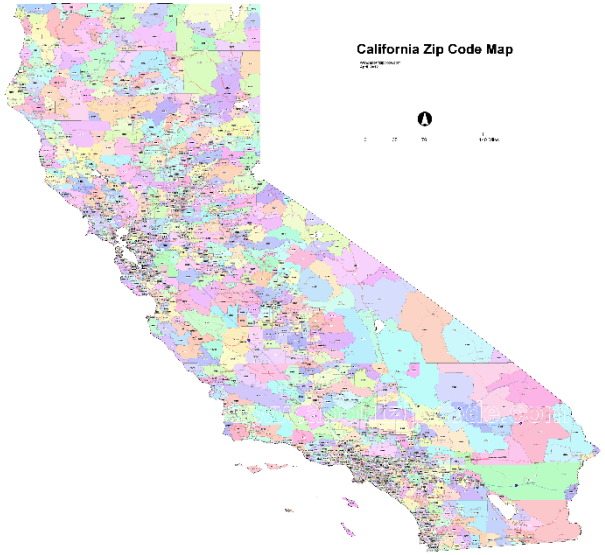
Issues: Proximity of the station to the agency service area; where customers and water use is within the service area; reliability of weather station reporting data; developing "average" ET for agencies with multiple micro-climates

Solutions: Specific to agencies, including using an agreed-to CIMIS station, using Spatial CIMIS, installing an ET station within the service area, utilizing a private sector vendor to produce local, averaged/weighted ET for the service area.

Outdoor

1. ET—Spatial CIMIS

- The ability to collect estimated ET for a time-period on a zip code basis
- A product of DWR



Timeline: Currently available (challenges with web interface)	Cost: free	Accuracy: Low (>85%) Varies per station location and microclimates

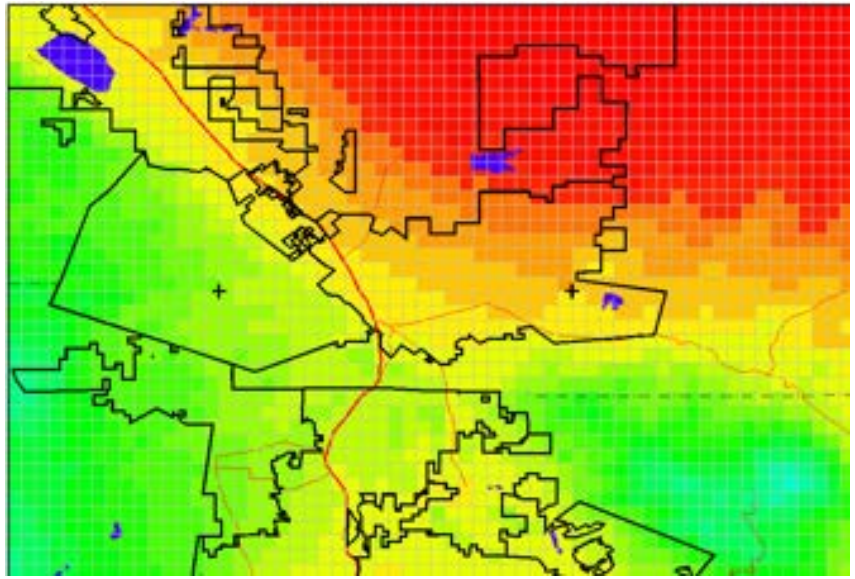
Issues: Availability of Spatial CIMIS for a given zip code. Ability to “average” ET in a large service area or in a service area with different microclimates across zip codes.

Solutions: Agencies work directly with DWR. Agencies work with private vendors to develop an appropriate ET for reporting.

Outdoor

1. ET— Private Vendors

- HydroPoint Data Systems
- Omni Earth/Weather Analytics
- Western Weather Network
- Others



Timeline: 6-9 months	Cost: $2-3M	Accuracy: Medium (85-95%)

Issues: Ability to accurately calculate a single ET value for each reporting period. Opportunity for individual vendors to use private sector ET data for a varied service area.

Solutions: Work with vendors to test the efficacy of this approach as a solution.

Outdoor

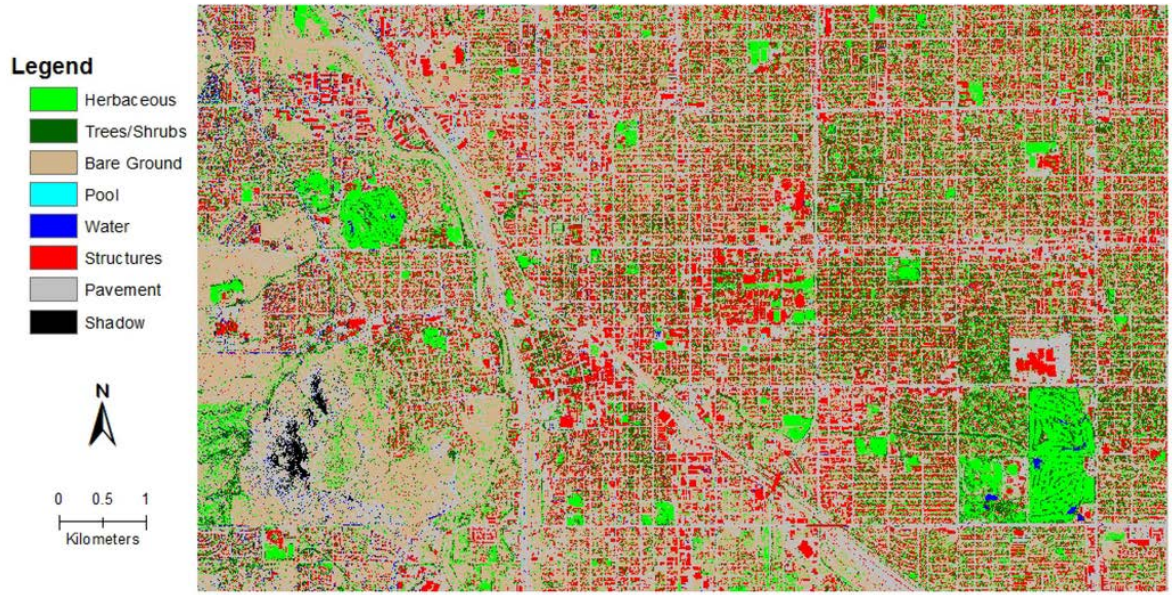
2. Land Cover Measurement---Challenges across methods

- Age of development
  - Wide variation in data quality and accessibility across county assessors
- Edge case land uses
  - Horse paddocks, Urban farming, etc.
- Drought impact on vegetation color
  - Normally irrigated areas may have gone brown during drought
- Proposed solutions
  - Start with initial conservative measurements as a starting point
  - Use variance process and iteratively refine data

Outdoor

2. Land Cover Measurement—NAIP Imagery Analysis

- National Agriculture Inventory Program (NAIP)
- Free imagery
- Updated every 2 years
- Available via the California Data Collaborative (Claremont Graduate University)



Timeline: 6 months	Cost: $1M	Accuracy: Moderate (85-95%)

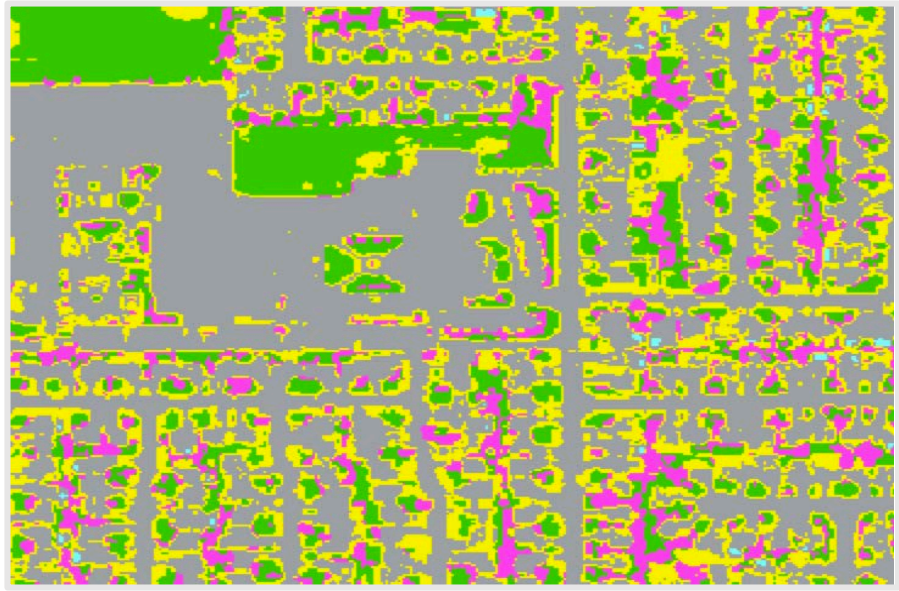
Issues: Lower resolution imagery with moderate to high accuracy depending upon the service area characteristics; free imagery every 2 years for updating land cover. Recognition of shadow and/or irrigable areas, particularly in wild-land interface areas.

Solutions: Sample ground truthing or hand GIS measurement.

Outdoor

2. Land Cover Measurement— Fully Automated Imagery

- Computerized calculation w/ learning over time (from new imagery)
- Example Vendors
  Omni Earth Inc.
  SRI



Timeline: 6 months	Cost: $2-3 M	Accuracy: Moderate (85-95%)

Issues: Recognition of shadow and/or irrigable areas, particularly in wild-land interface areas; common to any aerial imagery source.

Solutions: Sample ground truthing or hand GIS measurement

Outdoor

2. Land Cover Measurement—Automated + Manual Analysis

- Computerized calculation combined with hand and visual sample verification
- Example Vendor: Eagle Aerial Inc.

Timeline: 12 months	Cost: $3-5M	Accuracy: High (>95%)

Issues: While this method is highly accurate, the timing of aerial imagery flights, shadow areas, tree canopy and parcel data alignment (common to any methods) are consistent issues with aerial imagery.

Solutions:

Outdoor

2. Land Cover Measurement— Hand Measure

- Physical measurements on site for each parcel involved

Timeline: 24+ months	Cost: $5+ M	Accuracy: Medium (85-95%)

Issues: Labor intensive; Parcel boundaries may not align with on the ground property

Solutions: use only for edge cases. Allow agency provided data to update imagery under a variance program.

Outdoor

3. Commercial, Industrial, Institutional- Aggregated

- Use selected land cover measurement technique to total CII regardless of parcel/ water supply source

Timeline: Comparable to land cover measurement method used

Cost: Bundled in landscape measurement approach

Accuracy: Comparable to land cover measurement method used

Issues: Disentangling recycled water from potable water landscape area is challenging on an aggregate basis.

Solutions: Diving to the meter level, using a formula to estimate landscape area for recycled water CII versus potable water CII. Customer driven landscape sf method.

Outdoor

3. Commercial, Industrial, Institutional- by meter

- Input metered data by agency into CaDC to breakout indoor versus outdoor and recycled water versus potable.

Timeline: 5 years	Cost: $2-3 M	Accuracy: Dependent on method- potentially over 95%

Issues: Most accurate method to breakdown CII usage to achieve specific policy goals by water source. Some agencies do not breakout indoor versus outdoor CII.

Solutions: Develop process to transition all CII to indoor versus outdoor metering with state assistance.

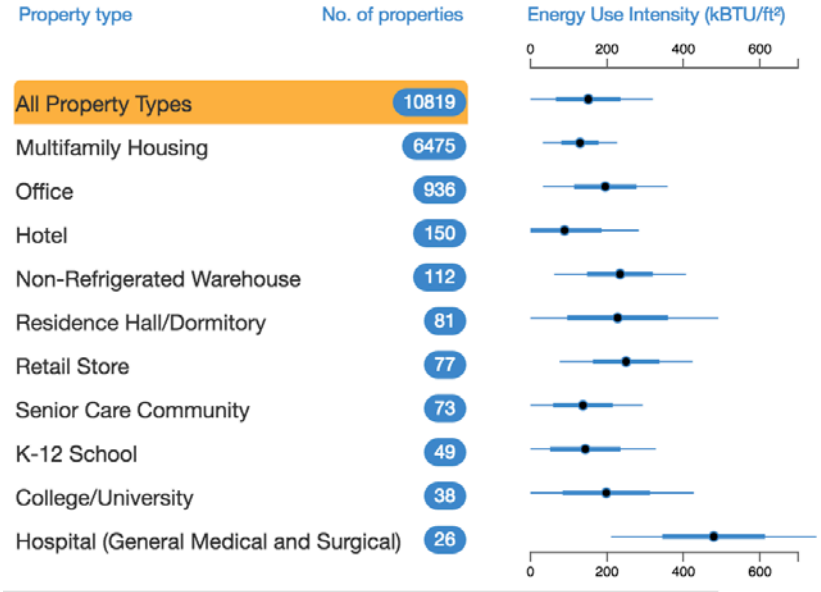
Other Efficiency Standards Issues

1) Commercial, Industrial, Institutional
2) Water Loss

Other Efficiency Standards Issues

1. Benchmarking commercial, industrial, and institutional

- Examples for improvement in energy star score and water / energy efficiency benchmarking in NYC



Timeline: TBD	Cost: Proprietary datasets to scale algorithms statewide	Accuracy: High

Issues: Warehouse, offices and restaurants have very different water use requires and thus there is a need to categorize CII customers at a finer grain. Opportunity to learn from energy benchmarking

Solutions: partnership with NYU CUSP to benchmark water efficiency for more granular customer categories.

Other Efficiency Standards Issues

2. Water loss

- Opportunity for analytics to support utility managers in achieving leak loss detection

Timeline: TBD	Cost: TBD	Accuracy: depends on approach

Issues: large variation in metering and data management practices across California 411 major urban retailers and other water systems.

Solutions: one example of the value of integrating meter level water use and flow data across districts.

Conclusion and key takeaways

- Governor's EO data requirements are **achievable**
- Data requirements are best fulfilled through an **phased approach**
- **Variance process** for agency data is integral for buy-in and building accuracy
- Integrated public/private expertise and **partnership** option available through CaDC

Executive Order Water Efficiency

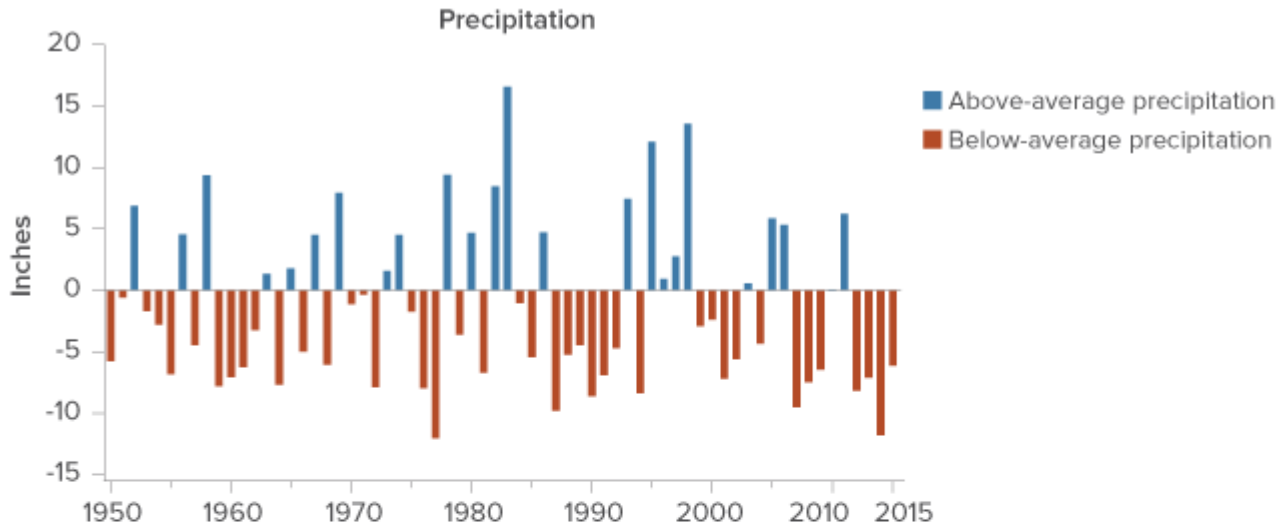
Efficiency Formula Detail

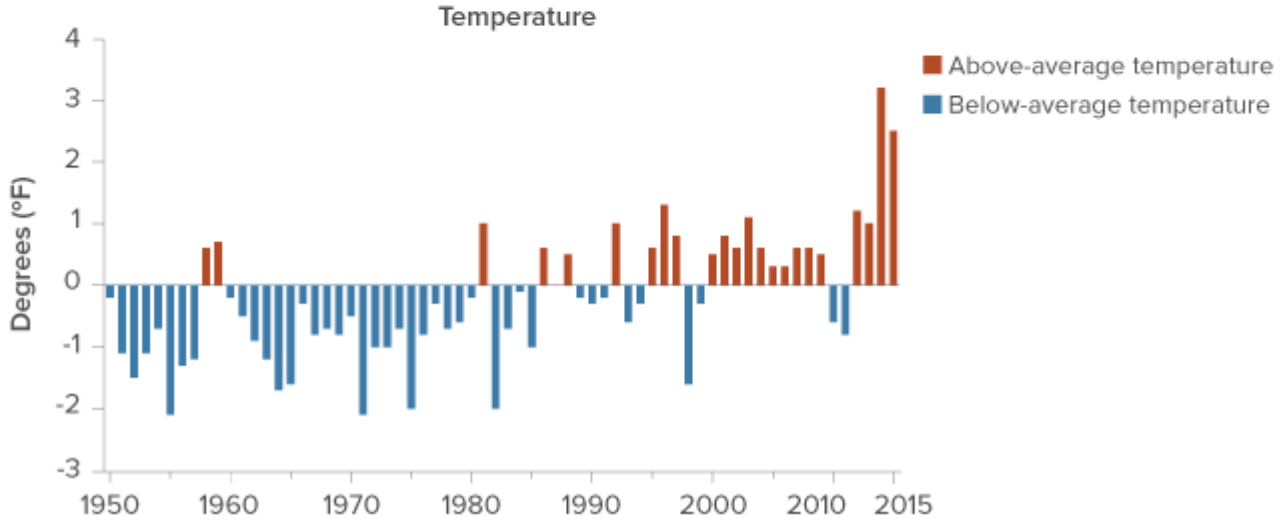
Outline

- Executive Order Context
- Existing Legislation Related to the Executive Order
- Breakdown of the Efficiency Formula and Framework

Drivers for Water Efficiency

- Precipitation is decreasing while temperatures are increasing across the State
- Drought conditions may become the “new normal”
- Future water supplies are uncertain
- Population growth
- Environmental health





Source: Public Policy Institute of California

Existing Legislation Links to the Executive Order

- State Constitution Article 10, Section 2
  "…the waste and unreasonable use of water be prohibited"
- AB 1881 – Model Water Efficient Landscape Ordinance (MWELO, 2006)
  Established efficient landscape allocation formula
- SBX7-7 – 20% Reduction by 2020 (2009)
  Established indoor and outdoor efficiency targets
- Executive Order B-37-16: Making Conservation a Way of Life (May, 2016)
  "These new water use targets shall build upon the existing state law requirements that the state achieve a 20% reduction in urban water usage by 2020."
- California Water Action Plan, 2016
  "Conservation must become a way of life"

Executive Order Requirements

- Meet **efficiency** standards
- **Equitable** across the state
- **Customized** to each agency

"These water use targets shall be ***customized to the unique conditions of each water agency,*** shall generate more statewide water conservation than existing requirements, and shall strengthen standards for:

a. Indoor residential per capita water use
SBX7-7d: (# of residents) (55 gpcd)

b. Outdoor irrigation, in a manner that incorporates landscape area, local climate and new satellite imagery data; MWELO: (ET) (Landscape area) (ETAF)

c. Commercial, Industrial, and Institutional water use, and

d. Water Loss through leaks"

Key Definitions

(# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)

Senate Bill No. 7

CHAPTER 4

[Approved by Governor November 10, 2009. Filed with Secretary of State November 10, 2009.]

" Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area**. <u>However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.</u>**

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to **<u>increase the efficiency of use</u>** of this essential resource."

What is efficiency?

Definition: *to eliminate waste/ optimize use*

What is conservation?

Definition: *to use less*

Executive Order Formula

(# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)

EXECUTIVE ORDER 8-37-16
MAKING WATER CONSERVATION A CALIFORNIA WAY OF LIFE

USE WATER MORE WISELY

- The Department of Water Resources (Department) shall work with the Water Board to develop new water use targets as part of a permanent framework for urban water agencies. These new **water use targets shall build upon the existing state law** requirements that the state achieve a 20% reduction in urban water usage by 2020. (Senate Bill No. 7 (7th Extraordinary Session, 2009-2010).) These water use targets shall be customized to the unique conditions of each water agency, shall generate more statewide water conservation than existing requirements, and shall be based on strengthened standards for:
  - Indoor residential per capita water use; (55 gpcd; SBX7-7)
  - Outdoor irrigation, in a manner that incorporates landscape area, local climate, and new satellite imagery data; (AB 1881/MWELO)
  - Commercial, industrial, and institutional water use; and (SBX7-7)
  - Water lost through leaks.

Application of the Formula:

- Applied to every agency statewide
- Every agency has an customized target
- Agency characteristics and past performance are recognized
- Target changes with weather and growth

Applying an Efficiency Formula

(# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)

Efficiency Target (one month) = (4) (55gpcd) + (7” ET) (3,000 sf) (.80) = 14 ccf (10,472 gal.)

- 4 homes
- Same lot size
- Same number of residents per household
- Same weather (ET)

Measuring Efficiency

(# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)

Use	% Target	Gallons saved ↓ / wasted ↑
• 12 CCF	(85% ↓)	(1,496 gallons ↓)
• 25 CCF	(78% ↑)	(8,228 gallons ↑)
• 39 CCF	(178% ↑)	(18,700 gallons ↑)
• 26 CCF	(85% ↑)	(8,976 gallons ↑)

Customized Targets for Statewide Efficiency

EXECUTIVE ORDER 8-37-16

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  - Indoor residential per capita water use;
  - Outdoor irrigation, in a manner that incorporates landscape area, local climate, and new satellite imagery data;

What is "customized"?

Customer level data across agency service areas:

- Land cover

- Weather (aka ET)

- Population

United States Census Bureau

Indoor Efficiency Formula Variables

(# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)

Where:

Indoor Efficiency Target (SBX7-7):

✓**# of Residents**: number of residents

✓**55 gpcd:** Current indoor efficiency factor

The Indoor Efficiency Standard is:

- Relative to agencies across the state
- Impartial to family size
- Comes from existing legislation (SBX7-7)
- Reflects customer reality (# of residents and a mix of plumbing new/old plumbing fixtures)

Outdoor Efficiency Formula Variables

(# of Residents) (55 gpcd) + **(ET) (Landscape Area) (.80)**

Outdoor Efficiency Target (MWELO):

- **ET:** reflects the actual ET averaged across the individual agency service area (DWR, MWELO, Ex. Order)
- **Landscape Area:** includes landscape area for the specific agency (SBX7-7, MWELO, Ex. Order)
- **ETAF (Evapotranspiration Adjustment Factor):** Set by the State to reflect a reasonable water allowance for a landscape (SBX7-7, MWELO, Ex. Order)

Current & New MWELO

Special Landscapes 1.00

Existing Residential .80

Existing Commercial .70

New Residential .55

New Commercial .45

ET

100%

80%

60%

40%

20%

Plant Water Needs:

Turf (cool season) 

Street Trees 

Fruit Trees 

Mediterranean plants 

Calif. Native plants 

Is Efficiency a Brown Lawn?

No.

✓The turf pictured operates at 80% of local ET as per agency allocations.

Crop coefficients (K_c) for cool-season and warm-season turfgrasses in California[1].

Month	Cool-Season[2]	Warm-Season[3]
January	0.61	0.61
February	0.64	0.54
March	0.75	0.76
April	1.04	0.72
May	0.95	0.79
June	0.88	0.68
July	0.94	0.71
August	0.86	0.71
September	0.74	0.62
October	0.75	0.54
November	0.69	0.58
December	0.60	0.55
Annual Average	***0.80***	***0.60***

Source: UC Cooperative Extension

Is Efficiency One Size Fits All?

No.

The Executive Order states, **"water use targets shall be customized to the unique conditions of each water agency…"**

(# of Residents)	**(55 gpcd)**	**+**	**(ET)**	**(Landscape Area)**	**(ETAF)**
Unique to agency	Indoor target		Local Weather	Unique to agency	Outdoor target

✓All agencies <u>are</u> <u>different</u> and are recognized in the efficiency formula framework.

Is there Local Discretion to Achieve Efficiency?

Yes.

- ✓The framework for efficiency establishes a **performance standard for reporting water use**
- ✓Each agency has **complete discretion** of how to achieve the efficiency target
- ✓**There is no stipulation** within the Executive Order to require agencies to adopt rate structures or any other specific method to meet efficiency targets

Flexibility of the Executive Order Framework

- Population changes or growth can be recognized in the framework

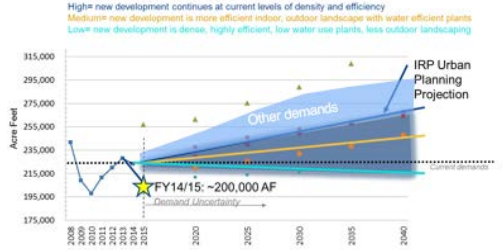
  (# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)

- Weather changes can be accommodated in the framework

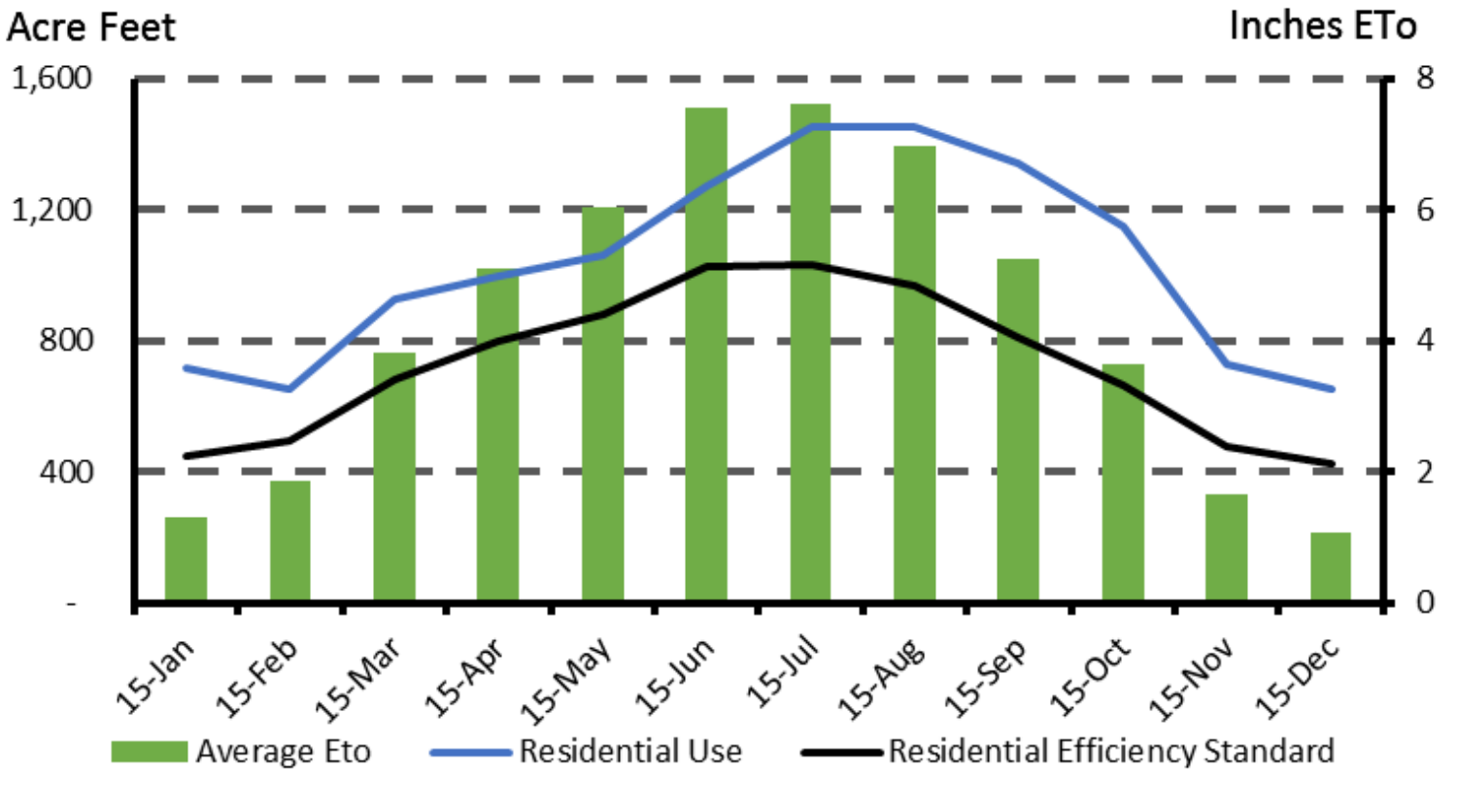
  (# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)

- Changes in landscape area, such as growth, can be adjusted as growth occurs

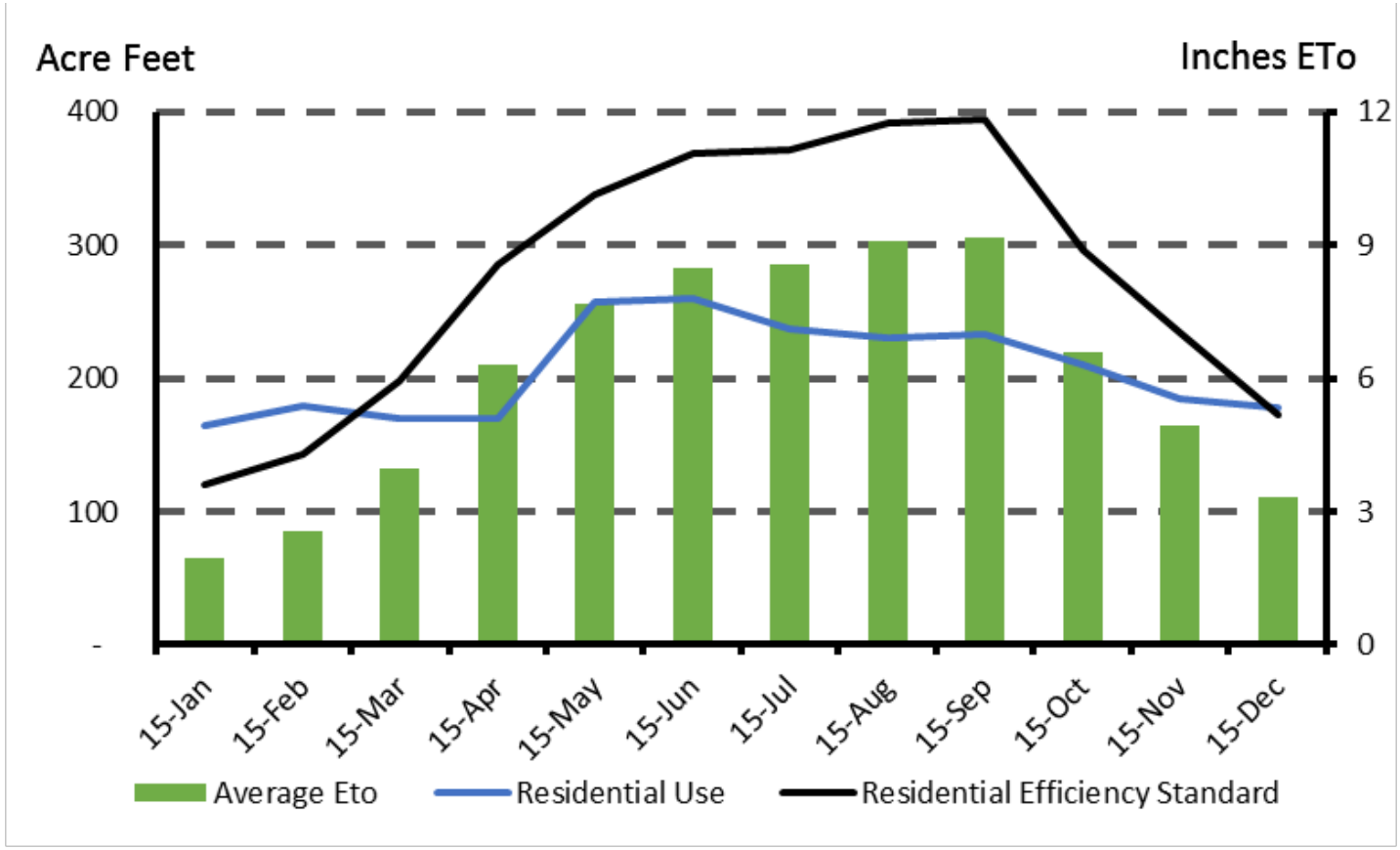
  (# of Residents) (55 gpcd) + (ET) (Landscape Area) (.80)



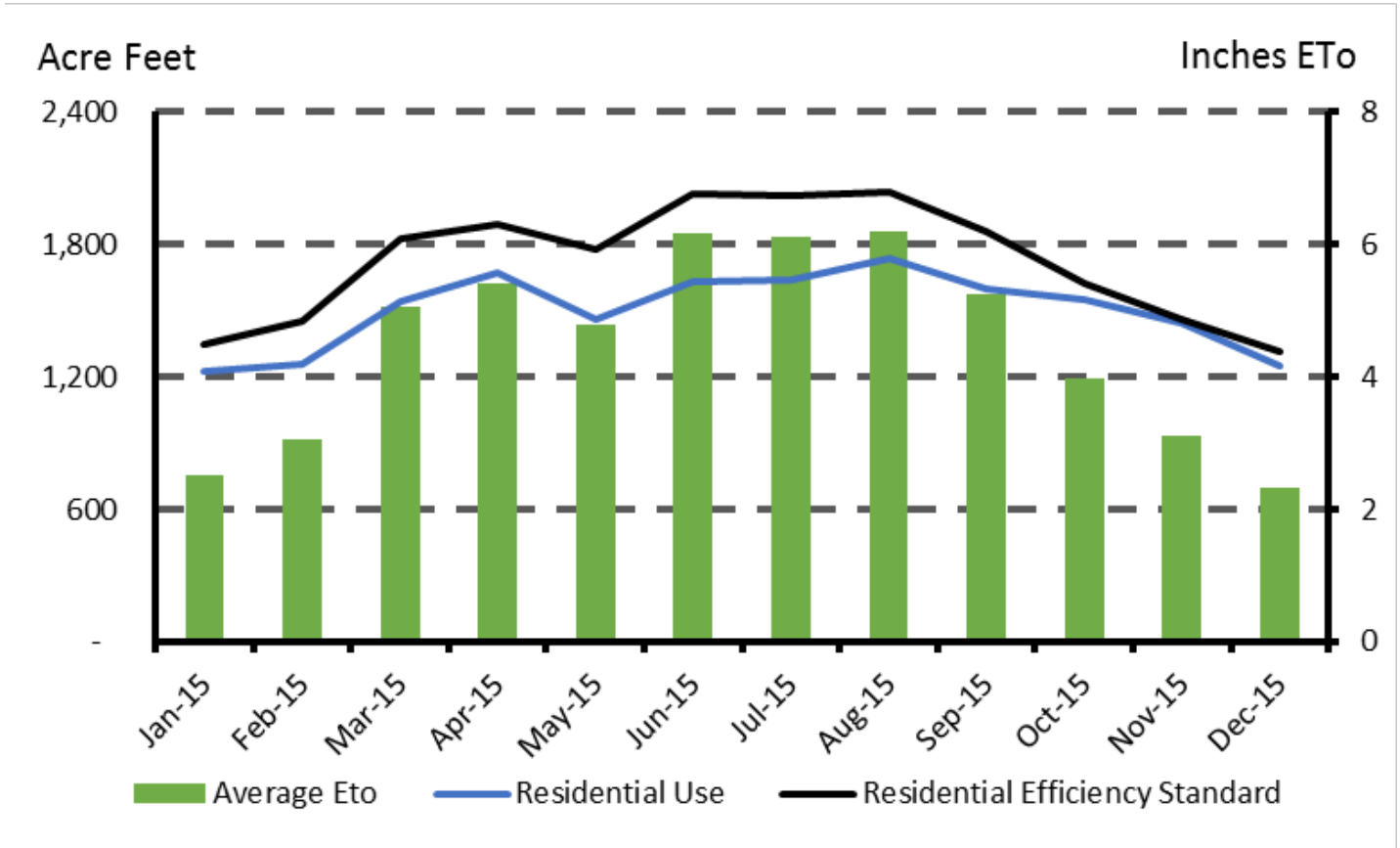
Anytown California #1 – *example community in Sacramento hydrologic region*



Anytown California #2– *sample community in Colorado River Hydrologic Region*



Anytown California #3– *sample community in South Coast hydrologic region*



Summary of Efficiency Formula Breakdown

Measuring efficiency provides a framework that can reduce water waste by:

- Establishing a **standardized** efficiency formula for agencies statewide
- Providing a formula that **customizes** efficiency targets with agency characteristics
- Calculating an efficiency target from the **aggregated** land cover (landscape area), population and weather data for an agency
- Offering **flexibility** for changes in weather, legislation, growth, etc.
- Utilizing existing efficiency standards in legislation for **equitable application** across the state