

APPENDIX B

Regional Alliance Calculation
Maddaus Water Management Analysis
Regional Alliance Letter

MEMORANDUM

To: File

November 8, 2010

From: Chris DeGabriele, General Manager

Subject: NMWD Calculation for Baseline and Compliance Urban Per Capita Water Use for Consistent Implementation of the SB 7X-7 Water Conservation Act of 2009

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California Department of Water Resources has released guidance in the report *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR Guidance) dated October 1, 2010 which proscribes the calculation to be used for the 20% reduction in per capita water use by year 2020 pursuant to SB X7-7, the Water Conservation Act of 2009. In this calculation, the NMWD Novato distribution system area includes customers served outside the NMWD Novato service territory. Thus, the Census Block Maps used to determine Census Tract Blocks for determining population include not only those blocks within our service territory, but blocks in the South Petaluma Boulevard industrial area and Windhaven area residential development adjacent to US 101 in Sonoma County.

Pursuant to the DWR Guidance, population data for each block within the distribution system area has been extracted from Census 2000, Summary File 1 and as shown on Attachment 1. The population residing in single family dwelling units and multi-family dwelling units is identified by Block Group from census data segregated by structure type in Census 2000 Summary File 3. A percentage is calculated for each Block Group and Tract within the distribution area determining the population percent in single family dwelling units and multi-family dwelling units and shown on Attachment 2. Those percentages are then applied to every block within each tract to determine a population in single family dwelling units and multi-family dwelling units within the distribution area and shown on Attachment 3. Page 13 of Attachment 3 calculates a unit density per dwelling unit and unit density per active connection to extend the population projection back-cast to 1995 and forecast to 2010.

It's noted for North Marin that in Census Year 2000, the Hamilton Field area was served by Marin Municipal Water District. North Marin service to Hamilton Field began in 2002. Thus, a unit density ratio with and without Hamilton Field has been developed. The number of dwelling units and active connections is from statistics provided NMWD Auditor-Controller David Bentley and shown as Attachment 4.

Finally, the total population within the distribution area back-cast to 1995 and forecast to 2010 is shown on Attachment 5. The forecast from year 2002 forward uses the unit density ratio with Hamilton Field to determine population. Total population is also shown on Table 5 in 5-year

increments to 2035 based on an average of the ABAG projections 2005, 2007 and 2009 for the NMWD Service Territory. Attachment 5 also shows water production for years 1995 to 2010 and per capita use based on the forecast and back-cast population.

SB 7X-7 enables a ten year average per capita water use as the baseline for determining the 20% x 2020 target. For North Marin, the ten year average per capita water use of 178 gallons per person per day provides the best baseline for determining a 20% reduction target by 2020 equal to 143 gallons (178 x 80%) per person per day.

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Pursuant to the DWR Guidance, population data for each block within the distribution system area has been extracted from Census 2000, Summary File 1 and as shown on Attachment 1. The population residing in single family dwelling units and multi-family dwelling units is identified by Block Group from census data segregated by structure type in Census 2000 Summary File 3. A percentage is calculated for each Block Group and Tract within the distribution area determining the population percent in single family dwelling units and multi-family dwelling units and shown on Attachment 2. Those percentages are then applied to every block within each tract to determine a population in single family dwelling units and multi-family dwelling units within the distribution area and shown on Attachment 3. Page 13 of Attachment 3 calculates a unit density per dwelling unit and unit density per active connection to extend the population projection back-cast to 1995 and forecast to 2010.

It's noted for North Marin that in Census Year 2000, the Hamilton Field area was served by Marin Municipal Water District. North Marin service to Hamilton Field began in 2002. Thus, a unit density ratio with and without Hamilton Field has been developed. The number of dwelling units and active connections is from statistics provided NMWD Auditor-Controller David Bentley and shown as Attachment 4.

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increments to 2035 based on an average of the ABAG projections 2005, 2007 and 2009 for the NMWD Service Territory. Attachment 5 also shows water production for years 1995 to 2010 and per capita use based on the forecast and back-cast population.

SB 7X-7 enables a ten year average per capita water use as the baseline for determining the 20% x 2020 target. For North Marin, the ten year average per capita water use of 178 gallons per person per day provides the best baseline for determining a 20% reduction target by 2020 equal to 143 gallons (178 x 80%) per person per day.

GEO_NAME	P001001	P037001
Geography	Total population: Total	Population in group quarters: Total
Block 1000, Block Group 1, Census Tract 1011, Marin County, California		7
Block 1001, Block Group 1, Census Tract 1011, Marin County, California		21
Block 1002, Block Group 1, Census Tract 1011, Marin County, California		
Block 1003, Block Group 1, Census Tract 1011, Marin County, California		
Block 1004, Block Group 1, Census Tract 1011, Marin County, California		
Block 1005, Block Group 1, Census Tract 1011, Marin County, California		
Block 1006, Block Group 1, Census Tract 1011, Marin County, California		
Block 1007, Block Group 1, Census Tract 1011, Marin County, California		
Block 1008, Block Group 1, Census Tract 1011, Marin County, California		
Block 1009, Block Group 1, Census Tract 1011, Marin County, California		
Block 1010, Block Group 1, Census Tract 1011, Marin County, California		
Block 1011, Block Group 1, Census Tract 1011, Marin County, California		
Block 1012, Block Group 1, Census Tract 1011, Marin County, California		
Block 1013, Block Group 1, Census Tract 1011, Marin County, California		
Block 1014, Block Group 1, Census Tract 1011, Marin County, California		266
Block 1015, Block Group 1, Census Tract 1011, Marin County, California		190
Block 1016, Block Group 1, Census Tract 1011, Marin County, California		
Block 1017, Block Group 1, Census Tract 1011, Marin County, California		1
Block 1018, Block Group 1, Census Tract 1011, Marin County, California		261
Block 1019, Block Group 1, Census Tract 1011, Marin County, California		53
Block 1020, Block Group 1, Census Tract 1011, Marin County, California		429
Block 1021, Block Group 1, Census Tract 1011, Marin County, California		27
Block 1022, Block Group 1, Census Tract 1011, Marin County, California		206
Block 1023, Block Group 1, Census Tract 1011, Marin County, California		18
Block 1024, Block Group 1, Census Tract 1011, Marin County, California		37
Block 1025, Block Group 1, Census Tract 1011, Marin County, California		23
Block 1026, Block Group 1, Census Tract 1011, Marin County, California		
Block 1027, Block Group 1, Census Tract 1011, Marin County, California		386
Block 1028, Block Group 1, Census Tract 1011, Marin County, California		36
Block 1029, Block Group 1, Census Tract 1011, Marin County, California		
Block 1030, Block Group 1, Census Tract 1011, Marin County, California		
Block 1031, Block Group 1, Census Tract 1011, Marin County, California		12
Block 1032, Block Group 1, Census Tract 1011, Marin County, California		69
Block 1033, Block Group 1, Census Tract 1011, Marin County, California		1
Block 1034, Block Group 1, Census Tract 1011, Marin County, California		

ATTACHMENT 1

Block 1035, Block Group 1, Census Tract 1011, Marin County, California	20
Block 1036, Block Group 1, Census Tract 1011, Marin County, California	26
Block 1037, Block Group 1, Census Tract 1011, Marin County, California	48
Block 1038, Block Group 1, Census Tract 1011, Marin County, California	5
Block 1039, Block Group 1, Census Tract 1011, Marin County, California	35
Block 1040, Block Group 1, Census Tract 1011, Marin County, California	4
Block 1041, Block Group 1, Census Tract 1011, Marin County, California	12
Block 1042, Block Group 1, Census Tract 1011, Marin County, California	
Block 1043, Block Group 1, Census Tract 1011, Marin County, California	62
Block 1044, Block Group 1, Census Tract 1011, Marin County, California	15
Block 1045, Block Group 1, Census Tract 1011, Marin County, California	19
Block 1046, Block Group 1, Census Tract 1011, Marin County, California	33
Block 1047, Block Group 1, Census Tract 1011, Marin County, California	18
Block 1048, Block Group 1, Census Tract 1011, Marin County, California	14
Block 1049, Block Group 1, Census Tract 1011, Marin County, California	17
Block 1050, Block Group 1, Census Tract 1011, Marin County, California	
Block 1051, Block Group 1, Census Tract 1011, Marin County, California	
Block 1052, Block Group 1, Census Tract 1011, Marin County, California	
Block 1053, Block Group 1, Census Tract 1011, Marin County, California	
Block 1054, Block Group 1, Census Tract 1011, Marin County, California	
Block 1055, Block Group 1, Census Tract 1011, Marin County, California	21
Block 1056, Block Group 1, Census Tract 1011, Marin County, California	129
Block 1057, Block Group 1, Census Tract 1011, Marin County, California	
Block 1058, Block Group 1, Census Tract 1011, Marin County, California	18
Block 1996, Block Group 1, Census Tract 1011, Marin County, California	
Block 1997, Block Group 1, Census Tract 1011, Marin County, California	
Block 1998, Block Group 1, Census Tract 1011, Marin County, California	
Block 1999, Block Group 1, Census Tract 1011, Marin County, California	
Block 1000, Block Group 1, Census Tract 1012, Marin County, California	
Block 1001, Block Group 1, Census Tract 1012, Marin County, California	1
Block 1002, Block Group 1, Census Tract 1012, Marin County, California	53
Block 1003, Block Group 1, Census Tract 1012, Marin County, California	927
Block 1004, Block Group 1, Census Tract 1012, Marin County, California	18
Block 1005, Block Group 1, Census Tract 1012, Marin County, California	36
Block 1006, Block Group 1, Census Tract 1012, Marin County, California	298
Block 1007, Block Group 1, Census Tract 1012, Marin County, California	189
Block 1008, Block Group 1, Census Tract 1012, Marin County, California	

Block 1009, Block Group 1, Census Tract 1012, Marin County, California	136	
Block 1010, Block Group 1, Census Tract 1012, Marin County, California		
Block 1011, Block Group 1, Census Tract 1012, Marin County, California	70	
Block 1012, Block Group 1, Census Tract 1012, Marin County, California	46	
Block 1013, Block Group 1, Census Tract 1012, Marin County, California	497	
Block 1014, Block Group 1, Census Tract 1012, Marin County, California	3	
Block 1015, Block Group 1, Census Tract 1012, Marin County, California		
Block 1016, Block Group 1, Census Tract 1012, Marin County, California	68	
Block 1017, Block Group 1, Census Tract 1012, Marin County, California	65	
Block 1018, Block Group 1, Census Tract 1012, Marin County, California	67	
Block 1019, Block Group 1, Census Tract 1012, Marin County, California	56	
Block 1020, Block Group 1, Census Tract 1012, Marin County, California	23	
Block 1021, Block Group 1, Census Tract 1012, Marin County, California	12	
Block 1022, Block Group 1, Census Tract 1012, Marin County, California		
Block 1023, Block Group 1, Census Tract 1012, Marin County, California		
Block 1024, Block Group 1, Census Tract 1012, Marin County, California		
Block 1025, Block Group 1, Census Tract 1012, Marin County, California		
Block 1026, Block Group 1, Census Tract 1012, Marin County, California		
Block 1027, Block Group 1, Census Tract 1012, Marin County, California	13	
Block 1028, Block Group 1, Census Tract 1012, Marin County, California	6	
Block 1000, Block Group 1, Census Tract 1021, Marin County, California	743	
Block 1001, Block Group 1, Census Tract 1021, Marin County, California	69	
Block 1002, Block Group 1, Census Tract 1021, Marin County, California	34	
Block 1003, Block Group 1, Census Tract 1021, Marin County, California	100	
Block 2000, Block Group 2, Census Tract 1021, Marin County, California	469	
Block 2001, Block Group 2, Census Tract 1021, Marin County, California	100	
Block 3000, Block Group 3, Census Tract 1021, Marin County, California	551	2
Block 3001, Block Group 3, Census Tract 1021, Marin County, California		
Block 3002, Block Group 3, Census Tract 1021, Marin County, California		
Block 3003, Block Group 3, Census Tract 1021, Marin County, California	79	
Block 3004, Block Group 3, Census Tract 1021, Marin County, California	77	
Block 3005, Block Group 3, Census Tract 1021, Marin County, California	62	
Block 3006, Block Group 3, Census Tract 1021, Marin County, California		
Block 3007, Block Group 3, Census Tract 1021, Marin County, California	63	
Block 3008, Block Group 3, Census Tract 1021, Marin County, California		
Block 1000, Block Group 1, Census Tract 1022.01, Marin County, California	46	
Block 1001, Block Group 1, Census Tract 1022.01, Marin County, California	1	

Block 1002, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1003, Block Group 1, Census Tract 1022.01, Marin County, California	11	
Block 1004, Block Group 1, Census Tract 1022.01, Marin County, California	39	
Block 1005, Block Group 1, Census Tract 1022.01, Marin County, California	36	
Block 1006, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1007, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1008, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1009, Block Group 1, Census Tract 1022.01, Marin County, California	85	12
Block 1010, Block Group 1, Census Tract 1022.01, Marin County, California	110	
Block 1011, Block Group 1, Census Tract 1022.01, Marin County, California	74	
Block 1012, Block Group 1, Census Tract 1022.01, Marin County, California	523	12
Block 1013, Block Group 1, Census Tract 1022.01, Marin County, California	113	
Block 1014, Block Group 1, Census Tract 1022.01, Marin County, California	67	
Block 1015, Block Group 1, Census Tract 1022.01, Marin County, California	68	1
Block 1016, Block Group 1, Census Tract 1022.01, Marin County, California	101	
Block 1017, Block Group 1, Census Tract 1022.01, Marin County, California	121	
Block 1018, Block Group 1, Census Tract 1022.01, Marin County, California	150	
Block 1019, Block Group 1, Census Tract 1022.01, Marin County, California	97	
Block 1020, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1021, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1022, Block Group 1, Census Tract 1022.01, Marin County, California	1	
Block 1023, Block Group 1, Census Tract 1022.01, Marin County, California	2	
Block 1024, Block Group 1, Census Tract 1022.01, Marin County, California	33	
Block 1025, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1026, Block Group 1, Census Tract 1022.01, Marin County, California	5	
Block 1027, Block Group 1, Census Tract 1022.01, Marin County, California	3	
Block 1028, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1029, Block Group 1, Census Tract 1022.01, Marin County, California	84	4
Block 1030, Block Group 1, Census Tract 1022.01, Marin County, California	67	
Block 1031, Block Group 1, Census Tract 1022.01, Marin County, California		
Block 1032, Block Group 1, Census Tract 1022.01, Marin County, California	5	
Block 2000, Block Group 2, Census Tract 1022.01, Marin County, California	9	
Block 2001, Block Group 2, Census Tract 1022.01, Marin County, California	5	
Block 2002, Block Group 2, Census Tract 1022.01, Marin County, California		
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Block 2004, Block Group 2, Census Tract 1022.01, Marin County, California		
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Block 2006, Block Group 2, Census Tract 1022.01, Marin County, California	2	
Block 2007, Block Group 2, Census Tract 1022.01, Marin County, California	3	
Block 2008, Block Group 2, Census Tract 1022.01, Marin County, California	18	
Block 2009, Block Group 2, Census Tract 1022.01, Marin County, California	257	7
Block 2010, Block Group 2, Census Tract 1022.01, Marin County, California	42	
Block 2011, Block Group 2, Census Tract 1022.01, Marin County, California	465	
Block 2012, Block Group 2, Census Tract 1022.01, Marin County, California	19	
Block 2013, Block Group 2, Census Tract 1022.01, Marin County, California	60	
Block 2014, Block Group 2, Census Tract 1022.01, Marin County, California	33	
Block 2015, Block Group 2, Census Tract 1022.01, Marin County, California	39	
Block 2016, Block Group 2, Census Tract 1022.01, Marin County, California	40	
Block 2017, Block Group 2, Census Tract 1022.01, Marin County, California	65	
Block 2018, Block Group 2, Census Tract 1022.01, Marin County, California	34	
Block 2019, Block Group 2, Census Tract 1022.01, Marin County, California		
Block 2020, Block Group 2, Census Tract 1022.01, Marin County, California		
Block 2021, Block Group 2, Census Tract 1022.01, Marin County, California	22	
Block 2022, Block Group 2, Census Tract 1022.01, Marin County, California	20	
Block 2023, Block Group 2, Census Tract 1022.01, Marin County, California	126	
Block 2024, Block Group 2, Census Tract 1022.01, Marin County, California	2	
Block 2025, Block Group 2, Census Tract 1022.01, Marin County, California	1	
Block 2026, Block Group 2, Census Tract 1022.01, Marin County, California		
Block 2027, Block Group 2, Census Tract 1022.01, Marin County, California		
Block 2028, Block Group 2, Census Tract 1022.01, Marin County, California	141	
Block 2029, Block Group 2, Census Tract 1022.01, Marin County, California	60	
Block 2030, Block Group 2, Census Tract 1022.01, Marin County, California	378	19
Block 3000, Block Group 3, Census Tract 1022.01, Marin County, California	824	
Block 3001, Block Group 3, Census Tract 1022.01, Marin County, California	94	
Block 3002, Block Group 3, Census Tract 1022.01, Marin County, California	516	6
Block 3003, Block Group 3, Census Tract 1022.01, Marin County, California	68	
Block 3004, Block Group 3, Census Tract 1022.01, Marin County, California	47	
Block 3005, Block Group 3, Census Tract 1022.01, Marin County, California	27	
Block 3006, Block Group 3, Census Tract 1022.01, Marin County, California	283	
Block 3007, Block Group 3, Census Tract 1022.01, Marin County, California	23	
Block 3008, Block Group 3, Census Tract 1022.01, Marin County, California	90	
Block 3009, Block Group 3, Census Tract 1022.01, Marin County, California	130	
Block 3010, Block Group 3, Census Tract 1022.01, Marin County, California	220	
Block 3011, Block Group 3, Census Tract 1022.01, Marin County, California	101	

Block 3012, Block Group 3, Census Tract 1022.01, Marin County, California	298	
Block 3013, Block Group 3, Census Tract 1022.01, Marin County, California	163	
Block 3014, Block Group 3, Census Tract 1022.01, Marin County, California	70	6
Block 3015, Block Group 3, Census Tract 1022.01, Marin County, California	96	
Block 3016, Block Group 3, Census Tract 1022.01, Marin County, California	206	
Block 4000, Block Group 4, Census Tract 1022.01, Marin County, California	1001	
Block 4001, Block Group 4, Census Tract 1022.01, Marin County, California	29	
Block 4002, Block Group 4, Census Tract 1022.01, Marin County, California	447	21
Block 4003, Block Group 4, Census Tract 1022.01, Marin County, California	49	
Block 4004, Block Group 4, Census Tract 1022.01, Marin County, California	104	
Block 4005, Block Group 4, Census Tract 1022.01, Marin County, California	71	
Block 4006, Block Group 4, Census Tract 1022.01, Marin County, California	17	
Block 4007, Block Group 4, Census Tract 1022.01, Marin County, California	87	
Block 4008, Block Group 4, Census Tract 1022.01, Marin County, California	103	
Block 4009, Block Group 4, Census Tract 1022.01, Marin County, California	167	24
Block 5000, Block Group 5, Census Tract 1022.01, Marin County, California	669	
Block 5001, Block Group 5, Census Tract 1022.01, Marin County, California	21	
Block 5002, Block Group 5, Census Tract 1022.01, Marin County, California	138	
Block 5003, Block Group 5, Census Tract 1022.01, Marin County, California	32	
Block 5004, Block Group 5, Census Tract 1022.01, Marin County, California	61	
Block 1000, Block Group 1, Census Tract 1031, Marin County, California	32	
Block 1001, Block Group 1, Census Tract 1031, Marin County, California	49	
Block 1002, Block Group 1, Census Tract 1031, Marin County, California	84	
Block 1003, Block Group 1, Census Tract 1031, Marin County, California	324	
Block 1004, Block Group 1, Census Tract 1031, Marin County, California	310	5
Block 1005, Block Group 1, Census Tract 1031, Marin County, California	196	11
Block 1006, Block Group 1, Census Tract 1031, Marin County, California	300	
Block 1007, Block Group 1, Census Tract 1031, Marin County, California	684	12
Block 1008, Block Group 1, Census Tract 1031, Marin County, California	26	
Block 1009, Block Group 1, Census Tract 1031, Marin County, California	227	
Block 1010, Block Group 1, Census Tract 1031, Marin County, California	226	9
Block 1011, Block Group 1, Census Tract 1031, Marin County, California	71	
Block 1012, Block Group 1, Census Tract 1031, Marin County, California	140	
Block 1013, Block Group 1, Census Tract 1031, Marin County, California	24	
Block 1014, Block Group 1, Census Tract 1031, Marin County, California	24	
Block 1015, Block Group 1, Census Tract 1031, Marin County, California	35	
Block 1016, Block Group 1, Census Tract 1031, Marin County, California	73	

Block 1017, Block Group 1, Census Tract 1031, Marin County, California	84	
Block 1018, Block Group 1, Census Tract 1031, Marin County, California	205	
Block 1019, Block Group 1, Census Tract 1031, Marin County, California	368	13
Block 1020, Block Group 1, Census Tract 1031, Marin County, California	142	
Block 1021, Block Group 1, Census Tract 1031, Marin County, California	92	
Block 2000, Block Group 2, Census Tract 1031, Marin County, California	21	
Block 2001, Block Group 2, Census Tract 1031, Marin County, California	5	
Block 2002, Block Group 2, Census Tract 1031, Marin County, California		
Block 2003, Block Group 2, Census Tract 1031, Marin County, California	38	
Block 2004, Block Group 2, Census Tract 1031, Marin County, California		
Block 2005, Block Group 2, Census Tract 1031, Marin County, California		
Block 2006, Block Group 2, Census Tract 1031, Marin County, California	5	
Block 2007, Block Group 2, Census Tract 1031, Marin County, California		
Block 2008, Block Group 2, Census Tract 1031, Marin County, California		
Block 2009, Block Group 2, Census Tract 1031, Marin County, California	13	
Block 2010, Block Group 2, Census Tract 1031, Marin County, California	4	
Block 2011, Block Group 2, Census Tract 1031, Marin County, California		
Block 2012, Block Group 2, Census Tract 1031, Marin County, California		
Block 2013, Block Group 2, Census Tract 1031, Marin County, California		
Block 2014, Block Group 2, Census Tract 1031, Marin County, California		
Block 2015, Block Group 2, Census Tract 1031, Marin County, California	89	
Block 2016, Block Group 2, Census Tract 1031, Marin County, California	497	
Block 2017, Block Group 2, Census Tract 1031, Marin County, California	24	
Block 2018, Block Group 2, Census Tract 1031, Marin County, California	44	
Block 2019, Block Group 2, Census Tract 1031, Marin County, California	177	6
Block 2020, Block Group 2, Census Tract 1031, Marin County, California	32	
Block 2021, Block Group 2, Census Tract 1031, Marin County, California	188	
Block 2022, Block Group 2, Census Tract 1031, Marin County, California	42	
Block 2023, Block Group 2, Census Tract 1031, Marin County, California	102	
Block 2024, Block Group 2, Census Tract 1031, Marin County, California	205	
Block 2025, Block Group 2, Census Tract 1031, Marin County, California	74	
Block 2026, Block Group 2, Census Tract 1031, Marin County, California	141	
Block 2027, Block Group 2, Census Tract 1031, Marin County, California	35	
Block 2028, Block Group 2, Census Tract 1031, Marin County, California		
Block 2029, Block Group 2, Census Tract 1031, Marin County, California		
Block 2030, Block Group 2, Census Tract 1031, Marin County, California		
Block 2031, Block Group 2, Census Tract 1031, Marin County, California		

Block 2032, Block Group 2, Census Tract 1031, Marin County, California	4	
Block 2033, Block Group 2, Census Tract 1031, Marin County, California		
Block 2034, Block Group 2, Census Tract 1031, Marin County, California	22	
Block 2035, Block Group 2, Census Tract 1031, Marin County, California	19	
Block 2999, Block Group 2, Census Tract 1031, Marin County, California		
Block 3000, Block Group 3, Census Tract 1031, Marin County, California	628	
Block 3001, Block Group 3, Census Tract 1031, Marin County, California	295	
Block 3002, Block Group 3, Census Tract 1031, Marin County, California	841	
Block 3003, Block Group 3, Census Tract 1031, Marin County, California	62	
Block 3004, Block Group 3, Census Tract 1031, Marin County, California	196	
Block 3005, Block Group 3, Census Tract 1031, Marin County, California	163	
Block 1000, Block Group 1, Census Tract 1032, Marin County, California	417	
Block 1001, Block Group 1, Census Tract 1032, Marin County, California	862	
Block 1002, Block Group 1, Census Tract 1032, Marin County, California	1148	160
Block 1003, Block Group 1, Census Tract 1032, Marin County, California	291	6
Block 1004, Block Group 1, Census Tract 1032, Marin County, California	568	22
Block 1005, Block Group 1, Census Tract 1032, Marin County, California	713	10
Block 1006, Block Group 1, Census Tract 1032, Marin County, California	497	
Block 1007, Block Group 1, Census Tract 1032, Marin County, California	518	
Block 1008, Block Group 1, Census Tract 1032, Marin County, California	237	
Block 1009, Block Group 1, Census Tract 1032, Marin County, California	718	425
Block 1010, Block Group 1, Census Tract 1032, Marin County, California	74	
Block 1011, Block Group 1, Census Tract 1032, Marin County, California	315	
Block 1012, Block Group 1, Census Tract 1032, Marin County, California	90	
Block 1013, Block Group 1, Census Tract 1032, Marin County, California	46	
Block 1014, Block Group 1, Census Tract 1032, Marin County, California	18	
Block 1015, Block Group 1, Census Tract 1032, Marin County, California	16	
Block 1016, Block Group 1, Census Tract 1032, Marin County, California	62	
Block 1000, Block Group 1, Census Tract 1041.01, Marin County, California	364	
Block 1001, Block Group 1, Census Tract 1041.01, Marin County, California	632	
Block 1002, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1003, Block Group 1, Census Tract 1041.01, Marin County, California	180	
Block 1004, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1005, Block Group 1, Census Tract 1041.01, Marin County, California	185	
Block 1006, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1007, Block Group 1, Census Tract 1041.01, Marin County, California	9	

Block 1008, Block Group 1, Census Tract 1041.01, Marin County, California	51	
Block 1009, Block Group 1, Census Tract 1041.01, Marin County, California	18	
Block 1010, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1011, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1012, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1013, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1014, Block Group 1, Census Tract 1041.01, Marin County, California	310	2
Block 1015, Block Group 1, Census Tract 1041.01, Marin County, California	67	
Block 1016, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1017, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1018, Block Group 1, Census Tract 1041.01, Marin County, California	428	
Block 1019, Block Group 1, Census Tract 1041.01, Marin County, California		
Block 1020, Block Group 1, Census Tract 1041.01, Marin County, California	22	
Block 1021, Block Group 1, Census Tract 1041.01, Marin County, California	41	
Block 1022, Block Group 1, Census Tract 1041.01, Marin County, California	128	
Block 1023, Block Group 1, Census Tract 1041.01, Marin County, California	193	
Block 1024, Block Group 1, Census Tract 1041.01, Marin County, California	92	
Block 1025, Block Group 1, Census Tract 1041.01, Marin County, California	516	3
Block 1026, Block Group 1, Census Tract 1041.01, Marin County, California	136	
Block 1027, Block Group 1, Census Tract 1041.01, Marin County, California	93	
Block 2000, Block Group 2, Census Tract 1041.01, Marin County, California	166	
Block 2001, Block Group 2, Census Tract 1041.01, Marin County, California	299	
Block 2002, Block Group 2, Census Tract 1041.01, Marin County, California	337	
Block 2003, Block Group 2, Census Tract 1041.01, Marin County, California	94	
Block 2004, Block Group 2, Census Tract 1041.01, Marin County, California	89	6
Block 2005, Block Group 2, Census Tract 1041.01, Marin County, California	91	
Block 2006, Block Group 2, Census Tract 1041.01, Marin County, California	139	8
Block 2007, Block Group 2, Census Tract 1041.01, Marin County, California	49	
Block 2008, Block Group 2, Census Tract 1041.01, Marin County, California	86	
Block 2009, Block Group 2, Census Tract 1041.01, Marin County, California	102	
Block 2010, Block Group 2, Census Tract 1041.01, Marin County, California	168	
Block 2011, Block Group 2, Census Tract 1041.01, Marin County, California	28	
Block 2012, Block Group 2, Census Tract 1041.01, Marin County, California	1210	11
Block 2013, Block Group 2, Census Tract 1041.01, Marin County, California	92	
Block 2014, Block Group 2, Census Tract 1041.01, Marin County, California	54	
Block 2015, Block Group 2, Census Tract 1041.01, Marin County, California	64	
Block 2016, Block Group 2, Census Tract 1041.01, Marin County, California	56	

Block 2017, Block Group 2, Census Tract 1041.01, Marin County, California	77	
Block 1000, Block Group 1, Census Tract 1041.02, Marin County, California		
Block 1001, Block Group 1, Census Tract 1041.02, Marin County, California	869	7
Block 1002, Block Group 1, Census Tract 1041.02, Marin County, California	30	
Block 1003, Block Group 1, Census Tract 1041.02, Marin County, California		
Block 1004, Block Group 1, Census Tract 1041.02, Marin County, California	129	
Block 1005, Block Group 1, Census Tract 1041.02, Marin County, California	139	
Block 1006, Block Group 1, Census Tract 1041.02, Marin County, California	1732	15
Block 1007, Block Group 1, Census Tract 1041.02, Marin County, California	55	
Block 1008, Block Group 1, Census Tract 1041.02, Marin County, California	63	
Block 1009, Block Group 1, Census Tract 1041.02, Marin County, California	145	
Block 1010, Block Group 1, Census Tract 1041.02, Marin County, California	30	
Block 1011, Block Group 1, Census Tract 1041.02, Marin County, California	54	
Block 1012, Block Group 1, Census Tract 1041.02, Marin County, California	51	
Block 1013, Block Group 1, Census Tract 1041.02, Marin County, California	20	
Block 1014, Block Group 1, Census Tract 1041.02, Marin County, California	56	
Block 1015, Block Group 1, Census Tract 1041.02, Marin County, California	29	
Block 1016, Block Group 1, Census Tract 1041.02, Marin County, California	61	
Block 1017, Block Group 1, Census Tract 1041.02, Marin County, California	329	
Block 1018, Block Group 1, Census Tract 1041.02, Marin County, California	60	
Block 1019, Block Group 1, Census Tract 1041.02, Marin County, California	99	
Block 1020, Block Group 1, Census Tract 1041.02, Marin County, California	6	
Block 1021, Block Group 1, Census Tract 1041.02, Marin County, California	136	
Block 1022, Block Group 1, Census Tract 1041.02, Marin County, California	16	
Block 1023, Block Group 1, Census Tract 1041.02, Marin County, California	9	
Block 1024, Block Group 1, Census Tract 1041.02, Marin County, California	753	
Block 1025, Block Group 1, Census Tract 1041.02, Marin County, California	30	
Block 1026, Block Group 1, Census Tract 1041.02, Marin County, California		
Block 1027, Block Group 1, Census Tract 1041.02, Marin County, California	28	
Block 1028, Block Group 1, Census Tract 1041.02, Marin County, California	30	
Block 1000, Block Group 1, Census Tract 1042, Marin County, California		
Block 1001, Block Group 1, Census Tract 1042, Marin County, California	541	
Block 1002, Block Group 1, Census Tract 1042, Marin County, California	138	
Block 1003, Block Group 1, Census Tract 1042, Marin County, California	144	
Block 1004, Block Group 1, Census Tract 1042, Marin County, California	115	
Block 1005, Block Group 1, Census Tract 1042, Marin County, California	88	
Block 1006, Block Group 1, Census Tract 1042, Marin County, California	30	

Block 1007, Block Group 1, Census Tract 1042, Marin County, California	42	6
Block 1008, Block Group 1, Census Tract 1042, Marin County, California	135	
Block 1009, Block Group 1, Census Tract 1042, Marin County, California		
Block 1010, Block Group 1, Census Tract 1042, Marin County, California		
Block 1011, Block Group 1, Census Tract 1042, Marin County, California	79	
Block 1012, Block Group 1, Census Tract 1042, Marin County, California	50	
Block 1013, Block Group 1, Census Tract 1042, Marin County, California	45	
Block 1014, Block Group 1, Census Tract 1042, Marin County, California		
Block 1015, Block Group 1, Census Tract 1042, Marin County, California	535	
Block 1016, Block Group 1, Census Tract 1042, Marin County, California		
Block 1017, Block Group 1, Census Tract 1042, Marin County, California	1686	12
Block 1018, Block Group 1, Census Tract 1042, Marin County, California	74	
Block 1019, Block Group 1, Census Tract 1042, Marin County, California	20	
Block 1020, Block Group 1, Census Tract 1042, Marin County, California	44	
Block 1021, Block Group 1, Census Tract 1042, Marin County, California	36	4
Block 1022, Block Group 1, Census Tract 1042, Marin County, California	18	
Block 1023, Block Group 1, Census Tract 1042, Marin County, California		
Block 1024, Block Group 1, Census Tract 1042, Marin County, California		
Block 1025, Block Group 1, Census Tract 1042, Marin County, California		
Block 1026, Block Group 1, Census Tract 1042, Marin County, California		
Block 1027, Block Group 1, Census Tract 1042, Marin County, California		
Block 1028, Block Group 1, Census Tract 1042, Marin County, California		
Block 1029, Block Group 1, Census Tract 1042, Marin County, California	536	
Block 1030, Block Group 1, Census Tract 1042, Marin County, California		
Block 1031, Block Group 1, Census Tract 1042, Marin County, California	31	
Block 1032, Block Group 1, Census Tract 1042, Marin County, California	65	
Block 1033, Block Group 1, Census Tract 1042, Marin County, California	88	
Block 1034, Block Group 1, Census Tract 1042, Marin County, California	268	
Block 1035, Block Group 1, Census Tract 1042, Marin County, California	168	
Block 1036, Block Group 1, Census Tract 1042, Marin County, California		
Block 1037, Block Group 1, Census Tract 1042, Marin County, California	49	
Block 1038, Block Group 1, Census Tract 1042, Marin County, California	49	
Block 1039, Block Group 1, Census Tract 1042, Marin County, California	67	
Block 1040, Block Group 1, Census Tract 1042, Marin County, California	6	
Block 1041, Block Group 1, Census Tract 1042, Marin County, California		
Block 1042, Block Group 1, Census Tract 1042, Marin County, California		
Block 1043, Block Group 1, Census Tract 1042, Marin County, California	11	

Block 1044, Block Group 1, Census Tract 1042, Marin County, California	18
Block 1045, Block Group 1, Census Tract 1042, Marin County, California	9
Block 1046, Block Group 1, Census Tract 1042, Marin County, California	296
Block 1047, Block Group 1, Census Tract 1042, Marin County, California	
Block 1048, Block Group 1, Census Tract 1042, Marin County, California	22
Block 1049, Block Group 1, Census Tract 1042, Marin County, California	40
Block 1050, Block Group 1, Census Tract 1042, Marin County, California	14
Block 1051, Block Group 1, Census Tract 1042, Marin County, California	19
Block 1052, Block Group 1, Census Tract 1042, Marin County, California	27
Block 1053, Block Group 1, Census Tract 1042, Marin County, California	45
Block 1054, Block Group 1, Census Tract 1042, Marin County, California	
Block 1055, Block Group 1, Census Tract 1042, Marin County, California	13
Block 1056, Block Group 1, Census Tract 1042, Marin County, California	61
Block 1057, Block Group 1, Census Tract 1042, Marin County, California	
Block 1000, Block Group 1, Census Tract 1043, Marin County, California	675
Block 1001, Block Group 1, Census Tract 1043, Marin County, California	198
Block 1002, Block Group 1, Census Tract 1043, Marin County, California	278
Block 1003, Block Group 1, Census Tract 1043, Marin County, California	206
Block 1004, Block Group 1, Census Tract 1043, Marin County, California	
Block 1005, Block Group 1, Census Tract 1043, Marin County, California	57
Block 1006, Block Group 1, Census Tract 1043, Marin County, California	158
Block 1007, Block Group 1, Census Tract 1043, Marin County, California	82
Block 1008, Block Group 1, Census Tract 1043, Marin County, California	11
Block 1009, Block Group 1, Census Tract 1043, Marin County, California	
Block 1010, Block Group 1, Census Tract 1043, Marin County, California	
Block 1011, Block Group 1, Census Tract 1043, Marin County, California	
Block 1012, Block Group 1, Census Tract 1043, Marin County, California	
Block 1013, Block Group 1, Census Tract 1043, Marin County, California	
Block 1014, Block Group 1, Census Tract 1043, Marin County, California	
Block 1015, Block Group 1, Census Tract 1043, Marin County, California	
Block 1016, Block Group 1, Census Tract 1043, Marin County, California	
Block 1017, Block Group 1, Census Tract 1043, Marin County, California	
Block 1018, Block Group 1, Census Tract 1043, Marin County, California	
Block 1019, Block Group 1, Census Tract 1043, Marin County, California	
Block 1020, Block Group 1, Census Tract 1043, Marin County, California	
Block 1021, Block Group 1, Census Tract 1043, Marin County, California	
Block 1996, Block Group 1, Census Tract 1043, Marin County, California	

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Block 1997, Block Group 1, Census Tract 1043, Marin County, California		
Block 1998, Block Group 1, Census Tract 1043, Marin County, California		
Block 1999, Block Group 1, Census Tract 1043, Marin County, California		
Block 9000, Block Group 9, Census Tract 1050, Marin County, California	1047	91
Block 9001, Block Group 9, Census Tract 1050, Marin County, California		
Block 9002, Block Group 9, Census Tract 1050, Marin County, California		
Block 9003, Block Group 9, Census Tract 1050, Marin County, California		
Block 9004, Block Group 9, Census Tract 1050, Marin County, California	47	21
Block 9005, Block Group 9, Census Tract 1050, Marin County, California		
Block 9006, Block Group 9, Census Tract 1050, Marin County, California		
Block 9007, Block Group 9, Census Tract 1050, Marin County, California	200	
Block 9008, Block Group 9, Census Tract 1050, Marin County, California	327	
Block 9009, Block Group 9, Census Tract 1050, Marin County, California	424	
Block 9010, Block Group 9, Census Tract 1050, Marin County, California	47	
Block 9011, Block Group 9, Census Tract 1050, Marin County, California	23	
Block 9012, Block Group 9, Census Tract 1050, Marin County, California	19	
Block 9013, Block Group 9, Census Tract 1050, Marin County, California	1637	
Block 9014, Block Group 9, Census Tract 1050, Marin County, California		
Block 9999, Block Group 9, Census Tract 1050, Marin County, California		
Block 5000, Block Group 5, Census Tract 1330, Marin County, California	2	2
Block 5001, Block Group 5, Census Tract 1330, Marin County, California		
Block 5002, Block Group 5, Census Tract 1330, Marin County, California		
Block 5003, Block Group 5, Census Tract 1330, Marin County, California		
Block 5004, Block Group 5, Census Tract 1330, Marin County, California		
Block 5005, Block Group 5, Census Tract 1330, Marin County, California		
Block 5006, Block Group 5, Census Tract 1330, Marin County, California		
Block 5008, Block Group 5, Census Tract 1330, Marin County, California		
Block 5009, Block Group 5, Census Tract 1330, Marin County, California	17	
Block 5010, Block Group 5, Census Tract 1330, Marin County, California		
Block 5013, Block Group 5, Census Tract 1330, Marin County, California	41	23
Block 5014, Block Group 5, Census Tract 1330, Marin County, California		
Block 5015, Block Group 5, Census Tract 1330, Marin County, California		
Block 5016, Block Group 5, Census Tract 1330, Marin County, California		
Block 5017, Block Group 5, Census Tract 1330, Marin County, California		
Block 5018, Block Group 5, Census Tract 1330, Marin County, California		
Block 1000, Block Group 1, Census Tract 1507.02, Sonoma County, California	236	
Block 1012, Block Group 1, Census Tract 1507.02, Sonoma County, California		

Block 1013, Block Group 1, Census Tract 1507.02, Sonoma County, California		
Block 1014, Block Group 1, Census Tract 1507.02, Sonoma County, California	2	
Block 1016, Block Group 1, Census Tract 1507.02, Sonoma County, California	3	
Block 2015, Block Group 2, Census Tract 1506.06, Sonoma County, California	8	
Block 2016, Block Group 2, Census Tract 1506.06, Sonoma County, California	9	
Block 2052, Block Group 2, Census Tract 1506.06, Sonoma County, California	3	
Block 2053, Block Group 2, Census Tract 1506.06, Sonoma County, California	3	
Block 2054, Block Group 2, Census Tract 1506.06, Sonoma County, California		
Block 2055, Block Group 2, Census Tract 1506.06, Sonoma County, California		
Block 2056, Block Group 2, Census Tract 1506.06, Sonoma County, California	17	
Block 2058, Block Group 2, Census Tract 1506.06, Sonoma County, California		
Block 2059, Block Group 2, Census Tract 1506.06, Sonoma County, California		
Block 2060, Block Group 2, Census Tract 1506.06, Sonoma County, California		
Block 2066, Block Group 2, Census Tract 1506.06, Sonoma County, California		
Total Sonoma County	281	0
Total Marin County	54566	1012
Total Marin & Sonoma County	54847	
Total Served by MMWD 2000 to 2002	2731	112
Net Served by NMWD 2000 to 2002	52116	
ABAG Projections Total Marin County for Reconciliation	54506	60 people difference

Per Hing Wong (ABAG) Group Quarters is included in Total Population

Geography	Total population: Total	Single Family DU Population	Multi Family DU Population	Percent of Population in SF DU	Percent of Population in MF DU
Block Group 1, Census Tract 1011, Marin County, California	2574	2468	106	95.88%	4.12%
Block Group 1, Census Tract 1012, Marin County, California	2549	2321	228	91.06%	8.94%
Block Group 1, Census Tract 1021, Marin County, California	934	571	363	61.13%	38.87%
Block Group 2, Census Tract 1021, Marin County, California	553	418	135	75.59%	24.41%
Block Group 3, Census Tract 1021, Marin County, California	860	631	229	73.37%	26.63%
Block Group 1, Census Tract 1022.01, Marin County, California	1802	408	1394	22.64%	77.36%
Block Group 2, Census Tract 1022.01, Marin County, California	1927	955	972	49.56%	50.44%
Block Group 3, Census Tract 1022.01, Marin County, California	3362	3162	200	94.05%	5.95%
Block Group 4, Census Tract 1022.01, Marin County, California	2043	1457	586	71.32%	28.68%
Block Group 5, Census Tract 1022.01, Marin County, California	847	357	490	42.15%	57.85%
Block Group 1, Census Tract 1031, Marin County, California	3731	3665	66	98.23%	1.77%
Block Group 2, Census Tract 1031, Marin County, California	1747	1614	133	92.39%	7.61%
Block Group 3, Census Tract 1031, Marin County, California	2204	2186	18	99.18%	0.82%
Block Group 1, Census Tract 1032, Marin County, California	6590	3804	2786	57.72%	42.28%
Block Group 1, Census Tract 1041.01, Marin County, California	3465	1922	1543	55.47%	44.53%
Block Group 2, Census Tract 1041.01, Marin County, California	3201	3052	149	95.35%	4.65%
Block Group 1, Census Tract 1041.02, Marin County, California	4959	1269	3690	25.59%	74.41%
Block Group 1, Census Tract 1042, Marin County, California	5722	2908	2814	50.82%	49.18%
Block Group 1, Census Tract 1043, Marin County, California	1650	1607	43	97.39%	2.61%
Block Group 9, Census Tract 1050, Marin County, California	3771	1108	2663	29.38%	70.62%
Block Group 1, Census Tract 1330, Marin County, California	596	578	18	96.98%	3.02%
Block Group 2, Census Tract 1330, Marin County, California	503	350	153	69.58%	30.42%
Block Group 3, Census Tract 1330, Marin County, California	343	257	86	74.93%	25.07%
Block Group 4, Census Tract 1330, Marin County, California	773	586	187	75.81%	24.19%
Block Group 5, Census Tract 1330, Marin County, California	1005	793	212	78.91%	21.09%
Block Group 2, Census Tract 1506.06, Sonoma County, California	2789	1614	1175	57.87%	42.13%
Block Group 1, Census Tract 1507.02, Sonoma County, California	1065	1056	9	99.15%	0.85%
Total Marin County Population	57711	38447	19264		
Total Sonoma County Population	3854	1056	9		
Grand Total Marin & Sonoma County Population	61565	39503	19273		

GEO_NAME	P001001	P037001		Percent of Population in SF DU	Percent of Population in MF DU	
	Total population: Total	Population in group quarters: Total	SF DU Population			MF DU Population
Geography						
Block 1000, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1001, Block Group 1, Census Tract 1011, Marin County, California	7		7	0	95.88%	4.12%
Block 1002, Block Group 1, Census Tract 1011, Marin County, California	21		20	1	95.88%	4.12%
Block 1003, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1004, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1005, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1006, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1007, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1008, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1009, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1010, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1011, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1012, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1013, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1014, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1015, Block Group 1, Census Tract 1011, Marin County, California	266		255	11	95.88%	4.12%
Block 1016, Block Group 1, Census Tract 1011, Marin County, California	190		182	8	95.88%	4.12%
Block 1017, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1018, Block Group 1, Census Tract 1011, Marin County, California	1		1	0	95.88%	4.12%
Block 1019, Block Group 1, Census Tract 1011, Marin County, California	261		250	11	95.88%	4.12%
Block 1020, Block Group 1, Census Tract 1011, Marin County, California	53		51	2	95.88%	4.12%
Block 1021, Block Group 1, Census Tract 1011, Marin County, California	429		411	18	95.88%	4.12%
Block 1022, Block Group 1, Census Tract 1011, Marin County, California	27		26	1	95.88%	4.12%
Block 1023, Block Group 1, Census Tract 1011, Marin County, California	206		198	8	95.88%	4.12%
Block 1024, Block Group 1, Census Tract 1011, Marin County, California	18		17	1	95.88%	4.12%
Block 1025, Block Group 1, Census Tract 1011, Marin County, California	37		35	2	95.88%	4.12%
Block 1026, Block Group 1, Census Tract 1011, Marin County, California	23		22	1	95.88%	4.12%
Block 1027, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1028, Block Group 1, Census Tract 1011, Marin County, California	386		370	16	95.88%	4.12%
Block 1029, Block Group 1, Census Tract 1011, Marin County, California	36		35	1	95.88%	4.12%
Block 1030, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1031, Block Group 1, Census Tract 1011, Marin County, California			0	0	95.88%	4.12%
Block 1032, Block Group 1, Census Tract 1011, Marin County, California	12		12	0	95.88%	4.12%
Block 1033, Block Group 1, Census Tract 1011, Marin County, California	69		66	3	95.88%	4.12%
Block 1034, Block Group 1, Census Tract 1011, Marin County, California	1		1	0	95.88%	4.12%
Block 1035, Block Group 1, Census Tract 1011, Marin County, California	20		19	1	95.88%	4.12%

ATTACHMENT 3

Block 1036, Block Group 1, Census Tract 1011, Marin County, California	26	25	1	95.88%	4.12%
Block 1037, Block Group 1, Census Tract 1011, Marin County, California	48	46	2	95.88%	4.12%
Block 1038, Block Group 1, Census Tract 1011, Marin County, California	5	5	0	95.88%	4.12%
Block 1039, Block Group 1, Census Tract 1011, Marin County, California	35	34	1	95.88%	4.12%
Block 1040, Block Group 1, Census Tract 1011, Marin County, California	4	4	0	95.88%	4.12%
Block 1041, Block Group 1, Census Tract 1011, Marin County, California	12	12	0	95.88%	4.12%
Block 1042, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1043, Block Group 1, Census Tract 1011, Marin County, California	62	59	3	95.88%	4.12%
Block 1044, Block Group 1, Census Tract 1011, Marin County, California	15	14	1	95.88%	4.12%
Block 1045, Block Group 1, Census Tract 1011, Marin County, California	19	18	1	95.88%	4.12%
Block 1046, Block Group 1, Census Tract 1011, Marin County, California	33	32	1	95.88%	4.12%
Block 1047, Block Group 1, Census Tract 1011, Marin County, California	18	17	1	95.88%	4.12%
Block 1048, Block Group 1, Census Tract 1011, Marin County, California	14	13	1	95.88%	4.12%
Block 1049, Block Group 1, Census Tract 1011, Marin County, California	17	16	1	95.88%	4.12%
Block 1050, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1051, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1052, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1053, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1054, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1055, Block Group 1, Census Tract 1011, Marin County, California	21	20	1	95.88%	4.12%
Block 1056, Block Group 1, Census Tract 1011, Marin County, California	129	124	5	95.88%	4.12%
Block 1057, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1058, Block Group 1, Census Tract 1011, Marin County, California	18	17	1	95.88%	4.12%
Block 1996, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1997, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1998, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1999, Block Group 1, Census Tract 1011, Marin County, California		0	0	95.88%	4.12%
Block 1000, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%
Block 1001, Block Group 1, Census Tract 1012, Marin County, California	1	1	0	91.06%	8.94%
Block 1002, Block Group 1, Census Tract 1012, Marin County, California	53	48	5	91.06%	8.94%
Block 1003, Block Group 1, Census Tract 1012, Marin County, California	927	844	83	91.06%	8.94%
Block 1004, Block Group 1, Census Tract 1012, Marin County, California	18	16	2	91.06%	8.94%
Block 1005, Block Group 1, Census Tract 1012, Marin County, California	36	33	3	91.06%	8.94%
Block 1006, Block Group 1, Census Tract 1012, Marin County, California	298	271	27	91.06%	8.94%
Block 1007, Block Group 1, Census Tract 1012, Marin County, California	189	172	17	91.06%	8.94%
Block 1008, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%
Block 1009, Block Group 1, Census Tract 1012, Marin County, California	136	124	12	91.06%	8.94%
Block 1010, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%
Block 1011, Block Group 1, Census Tract 1012, Marin County, California	70	64	6	91.06%	8.94%
Block 1012, Block Group 1, Census Tract 1012, Marin County, California	46	42	4	91.06%	8.94%
Block 1013, Block Group 1, Census Tract 1012, Marin County, California	497	453	44	91.06%	8.94%

Block 1014, Block Group 1, Census Tract 1012, Marin County, California	3	3	0	91.06%	8.94%	
Block 1015, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%	
Block 1016, Block Group 1, Census Tract 1012, Marin County, California	68	62	6	91.06%	8.94%	
Block 1017, Block Group 1, Census Tract 1012, Marin County, California	65	59	6	91.06%	8.94%	
Block 1018, Block Group 1, Census Tract 1012, Marin County, California	67	61	6	91.06%	8.94%	
Block 1019, Block Group 1, Census Tract 1012, Marin County, California	56	51	5	91.06%	8.94%	
Block 1020, Block Group 1, Census Tract 1012, Marin County, California	23	21	2	91.06%	8.94%	
Block 1021, Block Group 1, Census Tract 1012, Marin County, California	12	11	1	91.06%	8.94%	
Block 1022, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%	
Block 1023, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%	
Block 1024, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%	
Block 1025, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%	
Block 1026, Block Group 1, Census Tract 1012, Marin County, California		0	0	91.06%	8.94%	
Block 1027, Block Group 1, Census Tract 1012, Marin County, California	13	12	1	91.06%	8.94%	
Block 1028, Block Group 1, Census Tract 1012, Marin County, California	6	5	1	91.06%	8.94%	
Block 1000, Block Group 1, Census Tract 1021, Marin County, California	743	454	289	61.13%	38.87%	
Block 1001, Block Group 1, Census Tract 1021, Marin County, California	69	42	27	61.13%	38.87%	
Block 1002, Block Group 1, Census Tract 1021, Marin County, California	34	21	13	61.13%	38.87%	
Block 1003, Block Group 1, Census Tract 1021, Marin County, California	100	61	39	61.13%	38.87%	
Block 2000, Block Group 2, Census Tract 1021, Marin County, California	469	355	114	75.59%	24.41%	
Block 2001, Block Group 2, Census Tract 1021, Marin County, California	100	76	24	75.59%	24.41%	
Block 3000, Block Group 3, Census Tract 1021, Marin County, California	551	2	404	147	73.37%	26.63%
Block 3001, Block Group 3, Census Tract 1021, Marin County, California		0	0	73.37%	26.63%	
Block 3002, Block Group 3, Census Tract 1021, Marin County, California		0	0	73.37%	26.63%	
Block 3003, Block Group 3, Census Tract 1021, Marin County, California	79	58	21	73.37%	26.63%	
Block 3004, Block Group 3, Census Tract 1021, Marin County, California	77	56	21	73.37%	26.63%	
Block 3005, Block Group 3, Census Tract 1021, Marin County, California	62	45	17	73.37%	26.63%	
Block 3006, Block Group 3, Census Tract 1021, Marin County, California		0	0	73.37%	26.63%	
Block 3007, Block Group 3, Census Tract 1021, Marin County, California	63	46	17	73.37%	26.63%	
Block 3008, Block Group 3, Census Tract 1021, Marin County, California		0	0	73.37%	26.63%	
Block 1000, Block Group 1, Census Tract 1022.01, Marin County, California	46	10	36	22.64%	77.36%	
Block 1001, Block Group 1, Census Tract 1022.01, Marin County, California	1	0	1	22.64%	77.36%	
Block 1002, Block Group 1, Census Tract 1022.01, Marin County, California		0	0	22.64%	77.36%	
Block 1003, Block Group 1, Census Tract 1022.01, Marin County, California	11	2	9	22.64%	77.36%	
Block 1004, Block Group 1, Census Tract 1022.01, Marin County, California	39	9	30	22.64%	77.36%	
Block 1005, Block Group 1, Census Tract 1022.01, Marin County, California	36	8	28	22.64%	77.36%	
Block 1006, Block Group 1, Census Tract 1022.01, Marin County, California		0	0	22.64%	77.36%	
Block 1007, Block Group 1, Census Tract 1022.01, Marin County, California		0	0	22.64%	77.36%	
Block 1008, Block Group 1, Census Tract 1022.01, Marin County, California		0	0	22.64%	77.36%	
Block 1009, Block Group 1, Census Tract 1022.01, Marin County, California	85	12	19	66	22.64%	77.36%
Block 1010, Block Group 1, Census Tract 1022.01, Marin County, California	110	25	85	22.64%	77.36%	

Block 1011, Block Group 1, Census Tract 1022.01, Marin County, California	74		17	57	22.64%	77.36%
Block 1012, Block Group 1, Census Tract 1022.01, Marin County, California	523	12	118	405	22.64%	77.36%
Block 1013, Block Group 1, Census Tract 1022.01, Marin County, California	113		26	87	22.64%	77.36%
Block 1014, Block Group 1, Census Tract 1022.01, Marin County, California	67		15	52	22.64%	77.36%
Block 1015, Block Group 1, Census Tract 1022.01, Marin County, California	68	1	15	53	22.64%	77.36%
Block 1016, Block Group 1, Census Tract 1022.01, Marin County, California	101		23	78	22.64%	77.36%
Block 1017, Block Group 1, Census Tract 1022.01, Marin County, California	121		27	94	22.64%	77.36%
Block 1018, Block Group 1, Census Tract 1022.01, Marin County, California	150		34	116	22.64%	77.36%
Block 1019, Block Group 1, Census Tract 1022.01, Marin County, California	97		22	75	22.64%	77.36%
Block 1020, Block Group 1, Census Tract 1022.01, Marin County, California			0	0	22.64%	77.36%
Block 1021, Block Group 1, Census Tract 1022.01, Marin County, California			0	0	22.64%	77.36%
Block 1022, Block Group 1, Census Tract 1022.01, Marin County, California	1		0	1	22.64%	77.36%
Block 1023, Block Group 1, Census Tract 1022.01, Marin County, California	2		0	2	22.64%	77.36%
Block 1024, Block Group 1, Census Tract 1022.01, Marin County, California	33		7	26	22.64%	77.36%
Block 1025, Block Group 1, Census Tract 1022.01, Marin County, California			0	0	22.64%	77.36%
Block 1026, Block Group 1, Census Tract 1022.01, Marin County, California	5		1	4	22.64%	77.36%
Block 1027, Block Group 1, Census Tract 1022.01, Marin County, California	3		1	2	22.64%	77.36%
Block 1028, Block Group 1, Census Tract 1022.01, Marin County, California			0	0	22.64%	77.36%
Block 1029, Block Group 1, Census Tract 1022.01, Marin County, California	84	4	19	65	22.64%	77.36%
Block 1030, Block Group 1, Census Tract 1022.01, Marin County, California	67		15	52	22.64%	77.36%
Block 1031, Block Group 1, Census Tract 1022.01, Marin County, California			0	0	22.64%	77.36%
Block 1032, Block Group 1, Census Tract 1022.01, Marin County, California	5		1	4	22.64%	77.36%
Block 2000, Block Group 2, Census Tract 1022.01, Marin County, California	9		4	5	49.56%	50.44%
Block 2001, Block Group 2, Census Tract 1022.01, Marin County, California	5		2	3	49.56%	50.44%
Block 2002, Block Group 2, Census Tract 1022.01, Marin County, California			0	0	49.56%	50.44%
Block 2003, Block Group 2, Census Tract 1022.01, Marin County, California	1		0	1	49.56%	50.44%
Block 2004, Block Group 2, Census Tract 1022.01, Marin County, California			0	0	49.56%	50.44%
Block 2005, Block Group 2, Census Tract 1022.01, Marin County, California	45	3	22	23	49.56%	50.44%
Block 2006, Block Group 2, Census Tract 1022.01, Marin County, California	2		1	1	49.56%	50.44%
Block 2007, Block Group 2, Census Tract 1022.01, Marin County, California	3		1	2	49.56%	50.44%
Block 2008, Block Group 2, Census Tract 1022.01, Marin County, California	18		9	9	49.56%	50.44%
Block 2009, Block Group 2, Census Tract 1022.01, Marin County, California	257	7	127	130	49.56%	50.44%
Block 2010, Block Group 2, Census Tract 1022.01, Marin County, California	42		21	21	49.56%	50.44%
Block 2011, Block Group 2, Census Tract 1022.01, Marin County, California	465		230	235	49.56%	50.44%
Block 2012, Block Group 2, Census Tract 1022.01, Marin County, California	19		9	10	49.56%	50.44%
Block 2013, Block Group 2, Census Tract 1022.01, Marin County, California	60		30	30	49.56%	50.44%
Block 2014, Block Group 2, Census Tract 1022.01, Marin County, California	33		16	17	49.56%	50.44%
Block 2015, Block Group 2, Census Tract 1022.01, Marin County, California	39		19	20	49.56%	50.44%
Block 2016, Block Group 2, Census Tract 1022.01, Marin County, California	40		20	20	49.56%	50.44%
Block 2017, Block Group 2, Census Tract 1022.01, Marin County, California	65		32	33	49.56%	50.44%
Block 2018, Block Group 2, Census Tract 1022.01, Marin County, California	34		17	17	49.56%	50.44%

Block 2019, Block Group 2, Census Tract 1022.01, Marin County, California			0	0	49.56%	50.44%
Block 2020, Block Group 2, Census Tract 1022.01, Marin County, California			0	0	49.56%	50.44%
Block 2021, Block Group 2, Census Tract 1022.01, Marin County, California	22		11	11	49.56%	50.44%
Block 2022, Block Group 2, Census Tract 1022.01, Marin County, California	20		10	10	49.56%	50.44%
Block 2023, Block Group 2, Census Tract 1022.01, Marin County, California	126		62	64	49.56%	50.44%
Block 2024, Block Group 2, Census Tract 1022.01, Marin County, California	2		1	1	49.56%	50.44%
Block 2025, Block Group 2, Census Tract 1022.01, Marin County, California	1		0	1	49.56%	50.44%
Block 2026, Block Group 2, Census Tract 1022.01, Marin County, California			0	0	49.56%	50.44%
Block 2027, Block Group 2, Census Tract 1022.01, Marin County, California			0	0	49.56%	50.44%
Block 2028, Block Group 2, Census Tract 1022.01, Marin County, California	141		70	71	49.56%	50.44%
Block 2029, Block Group 2, Census Tract 1022.01, Marin County, California	60		30	30	49.56%	50.44%
Block 2030, Block Group 2, Census Tract 1022.01, Marin County, California	378	19	187	191	49.56%	50.44%
Block 3000, Block Group 3, Census Tract 1022.01, Marin County, California	824		775	49	94.05%	5.95%
Block 3001, Block Group 3, Census Tract 1022.01, Marin County, California	94		88	6	94.05%	5.95%
Block 3002, Block Group 3, Census Tract 1022.01, Marin County, California	516	6	485	31	94.05%	5.95%
Block 3003, Block Group 3, Census Tract 1022.01, Marin County, California	68		64	4	94.05%	5.95%
Block 3004, Block Group 3, Census Tract 1022.01, Marin County, California	47		44	3	94.05%	5.95%
Block 3005, Block Group 3, Census Tract 1022.01, Marin County, California	27		25	2	94.05%	5.95%
Block 3006, Block Group 3, Census Tract 1022.01, Marin County, California	283		266	17	94.05%	5.95%
Block 3007, Block Group 3, Census Tract 1022.01, Marin County, California	23		22	1	94.05%	5.95%
Block 3008, Block Group 3, Census Tract 1022.01, Marin County, California	90		85	5	94.05%	5.95%
Block 3009, Block Group 3, Census Tract 1022.01, Marin County, California	130		122	8	94.05%	5.95%
Block 3010, Block Group 3, Census Tract 1022.01, Marin County, California	220		207	13	94.05%	5.95%
Block 3011, Block Group 3, Census Tract 1022.01, Marin County, California	101		95	6	94.05%	5.95%
Block 3012, Block Group 3, Census Tract 1022.01, Marin County, California	298		280	18	94.05%	5.95%
Block 3013, Block Group 3, Census Tract 1022.01, Marin County, California	163		153	10	94.05%	5.95%
Block 3014, Block Group 3, Census Tract 1022.01, Marin County, California	70	6	66	4	94.05%	5.95%
Block 3015, Block Group 3, Census Tract 1022.01, Marin County, California	96		90	6	94.05%	5.95%
Block 3016, Block Group 3, Census Tract 1022.01, Marin County, California	206		194	12	94.05%	5.95%
Block 4000, Block Group 4, Census Tract 1022.01, Marin County, California	1001		714	287	71.32%	28.68%
Block 4001, Block Group 4, Census Tract 1022.01, Marin County, California	29		21	8	71.32%	28.68%
Block 4002, Block Group 4, Census Tract 1022.01, Marin County, California	447	21	319	128	71.32%	28.68%
Block 4003, Block Group 4, Census Tract 1022.01, Marin County, California	49		35	14	71.32%	28.68%
Block 4004, Block Group 4, Census Tract 1022.01, Marin County, California	104		74	30	71.32%	28.68%
Block 4005, Block Group 4, Census Tract 1022.01, Marin County, California	71		51	20	71.32%	28.68%
Block 4006, Block Group 4, Census Tract 1022.01, Marin County, California	17		12	5	71.32%	28.68%
Block 4007, Block Group 4, Census Tract 1022.01, Marin County, California	87		62	25	71.32%	28.68%
Block 4008, Block Group 4, Census Tract 1022.01, Marin County, California	103		73	30	71.32%	28.68%
Block 4009, Block Group 4, Census Tract 1022.01, Marin County, California	167	24	119	48	71.32%	28.68%
Block 5000, Block Group 5, Census Tract 1022.01, Marin County, California	669		282	387	42.15%	57.85%
Block 5001, Block Group 5, Census Tract 1022.01, Marin County, California	21		9	12	42.15%	57.85%

Block 5002, Block Group 5, Census Tract 1022.01, Marin County, California	138		58	80	42.15%	57.85%
Block 5003, Block Group 5, Census Tract 1022.01, Marin County, California	32		13	19	42.15%	57.85%
Block 5004, Block Group 5, Census Tract 1022.01, Marin County, California	61		26	35	42.15%	57.85%
Block 1000, Block Group 1, Census Tract 1031, Marin County, California	32		31	1	98.23%	1.77%
Block 1001, Block Group 1, Census Tract 1031, Marin County, California	49		48	1	98.23%	1.77%
Block 1002, Block Group 1, Census Tract 1031, Marin County, California	84		83	1	98.23%	1.77%
Block 1003, Block Group 1, Census Tract 1031, Marin County, California	324		318	6	98.23%	1.77%
Block 1004, Block Group 1, Census Tract 1031, Marin County, California	310	5	305	5	98.23%	1.77%
Block 1005, Block Group 1, Census Tract 1031, Marin County, California	196	11	193	3	98.23%	1.77%
Block 1006, Block Group 1, Census Tract 1031, Marin County, California	300		295	5	98.23%	1.77%
Block 1007, Block Group 1, Census Tract 1031, Marin County, California	684	12	672	12	98.23%	1.77%
Block 1008, Block Group 1, Census Tract 1031, Marin County, California	26		26	0	98.23%	1.77%
Block 1009, Block Group 1, Census Tract 1031, Marin County, California	227		223	4	98.23%	1.77%
Block 1010, Block Group 1, Census Tract 1031, Marin County, California	226	9	222	4	98.23%	1.77%
Block 1011, Block Group 1, Census Tract 1031, Marin County, California	71		70	1	98.23%	1.77%
Block 1012, Block Group 1, Census Tract 1031, Marin County, California	140		138	2	98.23%	1.77%
Block 1013, Block Group 1, Census Tract 1031, Marin County, California	24		24	0	98.23%	1.77%
Block 1014, Block Group 1, Census Tract 1031, Marin County, California	24		24	0	98.23%	1.77%
Block 1015, Block Group 1, Census Tract 1031, Marin County, California	35		34	1	98.23%	1.77%
Block 1016, Block Group 1, Census Tract 1031, Marin County, California	73		72	1	98.23%	1.77%
Block 1017, Block Group 1, Census Tract 1031, Marin County, California	84		83	1	98.23%	1.77%
Block 1018, Block Group 1, Census Tract 1031, Marin County, California	205		201	4	98.23%	1.77%
Block 1019, Block Group 1, Census Tract 1031, Marin County, California	368	13	361	7	98.23%	1.77%
Block 1020, Block Group 1, Census Tract 1031, Marin County, California	142		139	3	98.23%	1.77%
Block 1021, Block Group 1, Census Tract 1031, Marin County, California	92		90	2	98.23%	1.77%
Block 2000, Block Group 2, Census Tract 1031, Marin County, California	21		19	2	92.39%	7.61%
Block 2001, Block Group 2, Census Tract 1031, Marin County, California	5		5	0	92.39%	7.61%
Block 2002, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2003, Block Group 2, Census Tract 1031, Marin County, California	38		35	3	92.39%	7.61%
Block 2004, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2005, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2006, Block Group 2, Census Tract 1031, Marin County, California	5		5	0	92.39%	7.61%
Block 2007, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2008, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2009, Block Group 2, Census Tract 1031, Marin County, California	13		12	1	92.39%	7.61%
Block 2010, Block Group 2, Census Tract 1031, Marin County, California	4		4	0	92.39%	7.61%
Block 2011, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2012, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2013, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2014, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2015, Block Group 2, Census Tract 1031, Marin County, California	89		82	7	92.39%	7.61%

Block 2016, Block Group 2, Census Tract 1031, Marin County, California	497		459	38	92.39%	7.61%
Block 2017, Block Group 2, Census Tract 1031, Marin County, California	24		22	2	92.39%	7.61%
Block 2018, Block Group 2, Census Tract 1031, Marin County, California	44		41	3	92.39%	7.61%
Block 2019, Block Group 2, Census Tract 1031, Marin County, California	177	6	164	13	92.39%	7.61%
Block 2020, Block Group 2, Census Tract 1031, Marin County, California	32		30	2	92.39%	7.61%
Block 2021, Block Group 2, Census Tract 1031, Marin County, California	188		174	14	92.39%	7.61%
Block 2022, Block Group 2, Census Tract 1031, Marin County, California	42		39	3	92.39%	7.61%
Block 2023, Block Group 2, Census Tract 1031, Marin County, California	102		94	8	92.39%	7.61%
Block 2024, Block Group 2, Census Tract 1031, Marin County, California	205		189	16	92.39%	7.61%
Block 2025, Block Group 2, Census Tract 1031, Marin County, California	74		68	6	92.39%	7.61%
Block 2026, Block Group 2, Census Tract 1031, Marin County, California	141		130	11	92.39%	7.61%
Block 2027, Block Group 2, Census Tract 1031, Marin County, California	35		32	3	92.39%	7.61%
Block 2028, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2029, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2030, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2031, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2032, Block Group 2, Census Tract 1031, Marin County, California	4		4	0	92.39%	7.61%
Block 2033, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 2034, Block Group 2, Census Tract 1031, Marin County, California	22		20	2	92.39%	7.61%
Block 2035, Block Group 2, Census Tract 1031, Marin County, California	19		18	1	92.39%	7.61%
Block 2999, Block Group 2, Census Tract 1031, Marin County, California			0	0	92.39%	7.61%
Block 3000, Block Group 3, Census Tract 1031, Marin County, California	628		623	5	99.18%	0.82%
Block 3001, Block Group 3, Census Tract 1031, Marin County, California	295		293	2	99.18%	0.82%
Block 3002, Block Group 3, Census Tract 1031, Marin County, California	841		834	7	99.18%	0.82%
Block 3003, Block Group 3, Census Tract 1031, Marin County, California	62		61	1	99.18%	0.82%
Block 3004, Block Group 3, Census Tract 1031, Marin County, California	196		194	2	99.18%	0.82%
Block 3005, Block Group 3, Census Tract 1031, Marin County, California	163		162	1	99.18%	0.82%
Block 3006, Block Group 3, Census Tract 1031, Marin County, California			0	0	99.18%	0.82%
Block 1000, Block Group 1, Census Tract 1032, Marin County, California	417		241	176	57.72%	42.28%
Block 1001, Block Group 1, Census Tract 1032, Marin County, California	862		498	364	57.72%	42.28%
Block 1002, Block Group 1, Census Tract 1032, Marin County, California	1148	160	663	485	57.72%	42.28%
Block 1003, Block Group 1, Census Tract 1032, Marin County, California	291	6	168	123	57.72%	42.28%
Block 1004, Block Group 1, Census Tract 1032, Marin County, California	568	22	328	240	57.72%	42.28%
Block 1005, Block Group 1, Census Tract 1032, Marin County, California	713	10	412	301	57.72%	42.28%
Block 1006, Block Group 1, Census Tract 1032, Marin County, California	497		287	210	57.72%	42.28%
Block 1007, Block Group 1, Census Tract 1032, Marin County, California	518		299	219	57.72%	42.28%
Block 1008, Block Group 1, Census Tract 1032, Marin County, California	237		137	100	57.72%	42.28%
Block 1009, Block Group 1, Census Tract 1032, Marin County, California	718	425	414	304	57.72%	42.28%
Block 1010, Block Group 1, Census Tract 1032, Marin County, California	74		43	31	57.72%	42.28%
Block 1011, Block Group 1, Census Tract 1032, Marin County, California	315		182	133	57.72%	42.28%
Block 1012, Block Group 1, Census Tract 1032, Marin County, California	90		52	38	57.72%	42.28%

Block 1013, Block Group 1, Census Tract 1032, Marin County, California	46		27	19	57.72%	42.28%
Block 1014, Block Group 1, Census Tract 1032, Marin County, California	18		10	8	57.72%	42.28%
Block 1015, Block Group 1, Census Tract 1032, Marin County, California	16		9	7	57.72%	42.28%
Block 1016, Block Group 1, Census Tract 1032, Marin County, California	62		36	26	57.72%	42.28%
Block 1000, Block Group 1, Census Tract 1041.01, Marin County, California	364		202	162	55.47%	44.53%
Block 1001, Block Group 1, Census Tract 1041.01, Marin County, California	632		351	281	55.47%	44.53%
Block 1002, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1003, Block Group 1, Census Tract 1041.01, Marin County, California	180		100	80	55.47%	44.53%
Block 1004, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1005, Block Group 1, Census Tract 1041.01, Marin County, California	185		103	82	55.47%	44.53%
Block 1006, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1007, Block Group 1, Census Tract 1041.01, Marin County, California	9		5	4	55.47%	44.53%
Block 1008, Block Group 1, Census Tract 1041.01, Marin County, California	51		28	23	55.47%	44.53%
Block 1009, Block Group 1, Census Tract 1041.01, Marin County, California	18		10	8	55.47%	44.53%
Block 1010, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1011, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1012, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1013, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1014, Block Group 1, Census Tract 1041.01, Marin County, California	310	2	172	138	55.47%	44.53%
Block 1015, Block Group 1, Census Tract 1041.01, Marin County, California	67		37	30	55.47%	44.53%
Block 1016, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1017, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1018, Block Group 1, Census Tract 1041.01, Marin County, California	428		237	191	55.47%	44.53%
Block 1019, Block Group 1, Census Tract 1041.01, Marin County, California			0	0	55.47%	44.53%
Block 1020, Block Group 1, Census Tract 1041.01, Marin County, California	22		12	10	55.47%	44.53%
Block 1021, Block Group 1, Census Tract 1041.01, Marin County, California	41		23	18	55.47%	44.53%
Block 1022, Block Group 1, Census Tract 1041.01, Marin County, California	128		71	57	55.47%	44.53%
Block 1023, Block Group 1, Census Tract 1041.01, Marin County, California	193		107	86	55.47%	44.53%
Block 1024, Block Group 1, Census Tract 1041.01, Marin County, California	92		51	41	55.47%	44.53%
Block 1025, Block Group 1, Census Tract 1041.01, Marin County, California	516	3	286	230	55.47%	44.53%
Block 1026, Block Group 1, Census Tract 1041.01, Marin County, California	136		75	61	55.47%	44.53%
Block 1027, Block Group 1, Census Tract 1041.01, Marin County, California	93		52	41	55.47%	44.53%
Block 2000, Block Group 2, Census Tract 1041.01, Marin County, California	166		158	8	95.35%	4.65%
Block 2001, Block Group 2, Census Tract 1041.01, Marin County, California	299		285	14	95.35%	4.65%
Block 2002, Block Group 2, Census Tract 1041.01, Marin County, California	337		321	16	95.35%	4.65%
Block 2003, Block Group 2, Census Tract 1041.01, Marin County, California	94		90	4	95.35%	4.65%
Block 2004, Block Group 2, Census Tract 1041.01, Marin County, California	89	6	85	4	95.35%	4.65%
Block 2005, Block Group 2, Census Tract 1041.01, Marin County, California	91		87	4	95.35%	4.65%
Block 2006, Block Group 2, Census Tract 1041.01, Marin County, California	139	8	133	6	95.35%	4.65%
Block 2007, Block Group 2, Census Tract 1041.01, Marin County, California	49		47	2	95.35%	4.65%
Block 2008, Block Group 2, Census Tract 1041.01, Marin County, California	86		82	4	95.35%	4.65%

Block 2009, Block Group 2, Census Tract 1041.01, Marin County, California	102		97	5	95.35%	4.65%
Block 2010, Block Group 2, Census Tract 1041.01, Marin County, California	168		160	8	95.35%	4.65%
Block 2011, Block Group 2, Census Tract 1041.01, Marin County, California	28		27	1	95.35%	4.65%
Block 2012, Block Group 2, Census Tract 1041.01, Marin County, California	1210	11	1154	56	95.35%	4.65%
Block 2013, Block Group 2, Census Tract 1041.01, Marin County, California	92		88	4	95.35%	4.65%
Block 2014, Block Group 2, Census Tract 1041.01, Marin County, California	54		51	3	95.35%	4.65%
Block 2015, Block Group 2, Census Tract 1041.01, Marin County, California	64		61	3	95.35%	4.65%
Block 2016, Block Group 2, Census Tract 1041.01, Marin County, California	56		53	3	95.35%	4.65%
Block 2017, Block Group 2, Census Tract 1041.01, Marin County, California	77		73	4	95.35%	4.65%
Block 1000, Block Group 1, Census Tract 1041.02, Marin County, California			0	0	25.59%	74.41%
Block 1001, Block Group 1, Census Tract 1041.02, Marin County, California	869	7	222	647	25.59%	74.41%
Block 1002, Block Group 1, Census Tract 1041.02, Marin County, California	30		8	22	25.59%	74.41%
Block 1003, Block Group 1, Census Tract 1041.02, Marin County, California			0	0	25.59%	74.41%
Block 1004, Block Group 1, Census Tract 1041.02, Marin County, California	129		33	96	25.59%	74.41%
Block 1005, Block Group 1, Census Tract 1041.02, Marin County, California	139		36	103	25.59%	74.41%
Block 1006, Block Group 1, Census Tract 1041.02, Marin County, California	1732	15	443	1289	25.59%	74.41%
Block 1007, Block Group 1, Census Tract 1041.02, Marin County, California	55		14	41	25.59%	74.41%
Block 1008, Block Group 1, Census Tract 1041.02, Marin County, California	63		16	47	25.59%	74.41%
Block 1009, Block Group 1, Census Tract 1041.02, Marin County, California	145		37	108	25.59%	74.41%
Block 1010, Block Group 1, Census Tract 1041.02, Marin County, California	30		8	22	25.59%	74.41%
Block 1011, Block Group 1, Census Tract 1041.02, Marin County, California	54		14	40	25.59%	74.41%
Block 1012, Block Group 1, Census Tract 1041.02, Marin County, California	51		13	38	25.59%	74.41%
Block 1013, Block Group 1, Census Tract 1041.02, Marin County, California	20		5	15	25.59%	74.41%
Block 1014, Block Group 1, Census Tract 1041.02, Marin County, California	56		14	42	25.59%	74.41%
Block 1015, Block Group 1, Census Tract 1041.02, Marin County, California	29		7	22	25.59%	74.41%
Block 1016, Block Group 1, Census Tract 1041.02, Marin County, California	61		16	45	25.59%	74.41%
Block 1017, Block Group 1, Census Tract 1041.02, Marin County, California	329		84	245	25.59%	74.41%
Block 1018, Block Group 1, Census Tract 1041.02, Marin County, California	60		15	45	25.59%	74.41%
Block 1019, Block Group 1, Census Tract 1041.02, Marin County, California	99		25	74	25.59%	74.41%
Block 1020, Block Group 1, Census Tract 1041.02, Marin County, California	6		2	4	25.59%	74.41%
Block 1021, Block Group 1, Census Tract 1041.02, Marin County, California	136		35	101	25.59%	74.41%
Block 1022, Block Group 1, Census Tract 1041.02, Marin County, California	16		4	12	25.59%	74.41%
Block 1023, Block Group 1, Census Tract 1041.02, Marin County, California	9		2	7	25.59%	74.41%
Block 1024, Block Group 1, Census Tract 1041.02, Marin County, California	753		193	560	25.59%	74.41%
Block 1025, Block Group 1, Census Tract 1041.02, Marin County, California	30		8	22	25.59%	74.41%
Block 1026, Block Group 1, Census Tract 1041.02, Marin County, California			0	0	25.59%	74.41%
Block 1027, Block Group 1, Census Tract 1041.02, Marin County, California	28		7	21	25.59%	74.41%
Block 1028, Block Group 1, Census Tract 1041.02, Marin County, California	30		8	22	25.59%	74.41%
Block 1000, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1001, Block Group 1, Census Tract 1042, Marin County, California	541		275	266	50.82%	49.18%
Block 1002, Block Group 1, Census Tract 1042, Marin County, California	138		70	68	50.82%	49.18%

Block 1003, Block Group 1, Census Tract 1042, Marin County, California	144		73	71	50.82%	49.18%
Block 1004, Block Group 1, Census Tract 1042, Marin County, California	115		58	57	50.82%	49.18%
Block 1005, Block Group 1, Census Tract 1042, Marin County, California	88		45	43	50.82%	49.18%
Block 1006, Block Group 1, Census Tract 1042, Marin County, California	30		15	15	50.82%	49.18%
Block 1007, Block Group 1, Census Tract 1042, Marin County, California	42	6	21	21	50.82%	49.18%
Block 1008, Block Group 1, Census Tract 1042, Marin County, California	135		69	66	50.82%	49.18%
Block 1009, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1010, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1011, Block Group 1, Census Tract 1042, Marin County, California	79		40	39	50.82%	49.18%
Block 1012, Block Group 1, Census Tract 1042, Marin County, California	50		25	25	50.82%	49.18%
Block 1013, Block Group 1, Census Tract 1042, Marin County, California	45		23	22	50.82%	49.18%
Block 1014, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1015, Block Group 1, Census Tract 1042, Marin County, California	535		272	263	50.82%	49.18%
Block 1016, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1017, Block Group 1, Census Tract 1042, Marin County, California	1686	12	857	829	50.82%	49.18%
Block 1018, Block Group 1, Census Tract 1042, Marin County, California	74		38	36	50.82%	49.18%
Block 1019, Block Group 1, Census Tract 1042, Marin County, California	20		10	10	50.82%	49.18%
Block 1020, Block Group 1, Census Tract 1042, Marin County, California	44		22	22	50.82%	49.18%
Block 1021, Block Group 1, Census Tract 1042, Marin County, California	36	4	18	18	50.82%	49.18%
Block 1022, Block Group 1, Census Tract 1042, Marin County, California	18		9	9	50.82%	49.18%
Block 1023, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1024, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1025, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1026, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1027, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1028, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1029, Block Group 1, Census Tract 1042, Marin County, California	536		272	264	50.82%	49.18%
Block 1030, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1031, Block Group 1, Census Tract 1042, Marin County, California	31		16	15	50.82%	49.18%
Block 1032, Block Group 1, Census Tract 1042, Marin County, California	65		33	32	50.82%	49.18%
Block 1033, Block Group 1, Census Tract 1042, Marin County, California	88		45	43	50.82%	49.18%
Block 1034, Block Group 1, Census Tract 1042, Marin County, California	268		136	132	50.82%	49.18%
Block 1035, Block Group 1, Census Tract 1042, Marin County, California	168		85	83	50.82%	49.18%
Block 1036, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1037, Block Group 1, Census Tract 1042, Marin County, California	49		25	24	50.82%	49.18%
Block 1038, Block Group 1, Census Tract 1042, Marin County, California	49		25	24	50.82%	49.18%
Block 1039, Block Group 1, Census Tract 1042, Marin County, California	67		34	33	50.82%	49.18%
Block 1040, Block Group 1, Census Tract 1042, Marin County, California	6		3	3	50.82%	49.18%
Block 1041, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1042, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1043, Block Group 1, Census Tract 1042, Marin County, California	11		6	5	50.82%	49.18%

Block 1044, Block Group 1, Census Tract 1042, Marin County, California	18		9	9	50.82%	49.18%
Block 1045, Block Group 1, Census Tract 1042, Marin County, California	9		5	4	50.82%	49.18%
Block 1046, Block Group 1, Census Tract 1042, Marin County, California	296		150	146	50.82%	49.18%
Block 1047, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1048, Block Group 1, Census Tract 1042, Marin County, California	22		11	11	50.82%	49.18%
Block 1049, Block Group 1, Census Tract 1042, Marin County, California	40		20	20	50.82%	49.18%
Block 1050, Block Group 1, Census Tract 1042, Marin County, California	14		7	7	50.82%	49.18%
Block 1051, Block Group 1, Census Tract 1042, Marin County, California	19		10	9	50.82%	49.18%
Block 1052, Block Group 1, Census Tract 1042, Marin County, California	27		14	13	50.82%	49.18%
Block 1053, Block Group 1, Census Tract 1042, Marin County, California	45		23	22	50.82%	49.18%
Block 1054, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1055, Block Group 1, Census Tract 1042, Marin County, California	13		7	6	50.82%	49.18%
Block 1056, Block Group 1, Census Tract 1042, Marin County, California	61		31	30	50.82%	49.18%
Block 1057, Block Group 1, Census Tract 1042, Marin County, California			0	0	50.82%	49.18%
Block 1000, Block Group 1, Census Tract 1043, Marin County, California	675		657	18	97.39%	2.61%
Block 1001, Block Group 1, Census Tract 1043, Marin County, California	198		193	5	97.39%	2.61%
Block 1002, Block Group 1, Census Tract 1043, Marin County, California	278		271	7	97.39%	2.61%
Block 1003, Block Group 1, Census Tract 1043, Marin County, California	206	5	201	5	97.39%	2.61%
Block 1004, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1005, Block Group 1, Census Tract 1043, Marin County, California	57		56	1	97.39%	2.61%
Block 1006, Block Group 1, Census Tract 1043, Marin County, California	158		154	4	97.39%	2.61%
Block 1007, Block Group 1, Census Tract 1043, Marin County, California	82		80	2	97.39%	2.61%
Block 1008, Block Group 1, Census Tract 1043, Marin County, California	11		11	0	97.39%	2.61%
Block 1009, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1010, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1011, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1012, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1013, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1014, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1015, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1016, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1017, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1018, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1019, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1020, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1021, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1996, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1997, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1998, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 1999, Block Group 1, Census Tract 1043, Marin County, California			0	0	97.39%	2.61%
Block 9000, Block Group 9, Census Tract 1050, Marin County, California	1047	91	308	739	29.38%	70.62%

Block 9001, Block Group 9, Census Tract 1050, Marin County, California			0	0	29.38%	70.62%
Block 9002, Block Group 9, Census Tract 1050, Marin County, California			0	0	29.38%	70.62%
Block 9003, Block Group 9, Census Tract 1050, Marin County, California			0	0	29.38%	70.62%
Block 9004, Block Group 9, Census Tract 1050, Marin County, California	47	21	14	33	29.38%	70.62%
Block 9005, Block Group 9, Census Tract 1050, Marin County, California			0	0	29.38%	70.62%
Block 9006, Block Group 9, Census Tract 1050, Marin County, California			0	0	29.38%	70.62%
Block 9007, Block Group 9, Census Tract 1050, Marin County, California	200		59	141	29.38%	70.62%
Block 9008, Block Group 9, Census Tract 1050, Marin County, California	327		96	231	29.38%	70.62%
Block 9009, Block Group 9, Census Tract 1050, Marin County, California	424		125	299	29.38%	70.62%
Block 9010, Block Group 9, Census Tract 1050, Marin County, California	47		14	33	29.38%	70.62%
Block 9011, Block Group 9, Census Tract 1050, Marin County, California	23		7	16	29.38%	70.62%
Block 9012, Block Group 9, Census Tract 1050, Marin County, California	19		6	13	29.38%	70.62%
Block 9013, Block Group 9, Census Tract 1050, Marin County, California	1637		481	1156	29.38%	70.62%
Block 9014, Block Group 9, Census Tract 1050, Marin County, California			0	0	29.38%	70.62%
Block 9999, Block Group 9, Census Tract 1050, Marin County, California			0	0	29.38%	70.62%
Block 5000, Block Group 5, Census Tract 1330, Marin County, California	2	2	2	0	78.91%	21.09%
Block 5001, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5002, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5003, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5004, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5005, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5006, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5008, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5009, Block Group 5, Census Tract 1330, Marin County, California	17		13	4	78.91%	21.09%
Block 5010, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5013, Block Group 5, Census Tract 1330, Marin County, California	41	23	32	9	78.91%	21.09%
Block 5014, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5015, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5016, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5017, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 5018, Block Group 5, Census Tract 1330, Marin County, California			0	0	78.91%	21.09%
Block 2016, Block Group 2, Census Tract 1506.06, Sonoma County, California	9		5	4	57.87%	42.13%
Block 2052, Block Group 2, Census Tract 1506.06, Sonoma County, California	3		2	1	57.87%	42.13%
Block 2053, Block Group 2, Census Tract 1506.06, Sonoma County, California	3		2	1	57.87%	42.13%
Block 2054, Block Group 2, Census Tract 1506.06, Sonoma County, California			0	0	57.87%	42.13%
Block 2055, Block Group 2, Census Tract 1506.06, Sonoma County, California			0	0	57.87%	42.13%
Block 2056, Block Group 2, Census Tract 1506.06, Sonoma County, California	17		10	7	57.87%	42.13%
Block 2057, Block Group 2, Census Tract 1506.06, Sonoma County, California			0	0	57.87%	42.13%
Block 2058, Block Group 2, Census Tract 1506.06, Sonoma County, California			0	0	57.87%	42.13%
Block 2059, Block Group 2, Census Tract 1506.06, Sonoma County, California			0	0	57.87%	42.13%
Block 2060, Block Group 2, Census Tract 1506.06, Sonoma County, California			0	0	57.87%	42.13%

Block 2061, Block Group 2, Census Tract 1506.06, Sonoma County, California		0	0	57.87%	42.13%
Block 2066, Block Group 2, Census Tract 1506.06, Sonoma County, California		0	0	57.87%	42.13%
Block 1000, Block Group 1, Census Tract 1507.02, Sonoma County, California	236	234	2	99.15%	0.85%
Block 1012, Block Group 1, Census Tract 1507.02, Sonoma County, California		0	0	99.15%	0.85%
Block 1013, Block Group 1, Census Tract 1507.02, Sonoma County, California		0	0	99.15%	0.85%
Block 1014, Block Group 1, Census Tract 1507.02, Sonoma County, California	2	2	0	99.15%	0.85%
Block 1016, Block Group 1, Census Tract 1507.02, Sonoma County, California	3	3	0	99.15%	0.85%
Total Sonoma County	273	0	257	16	
Grand Total - (Total Population and Group Quarters) Sonoma County	273				
Total Marin County	54566	1012	35884	18682	
Grand Total - (Total Population and Group Quarters) Marin County	55578				
Total Served by MMWD 2000 to 2002 at Hamilton Field	2731	112	802	1929	
Grand Total Served by MMWD 2000 to 2002 at Hamilton Field	2843				
Net Served by NMWD 2000 to 2002 (no Hamilton Field service)	52108		35339	16769	
Grand Total Served by NMWD 2000 to 2002 (no Hamilton Field service)	53008				
Year 2000 NMWD Dwelling Units		13753	7294		
Year 2000 Unit Density (People) per Dwelling Unit		2.57	2.30		
Unit Density doesn't include group quarters population					
Year 2000 NMWD Active Connections		13527	3240		
Year 2000 Unit Density (People) per Active Connection		2.61	5.18		
Year 2000 NMWD Dwelling Units assuming Hamilton Field service		14000	7445	per DLB statistics	
Year 2000 Unit Density (People) per Dwelling Unit (w/Hamilton Field service)		2.58	2.51		
Year 2000 NMWD Active Connections assuming Hamilton Field service		13530	3276		
Year 2000 Unit Density (People) per Active Connection (w/Hamilton Field service)		2.67	5.71		

StructureType	Data	Date															
		6/30/1995	6/30/1996	6/30/1997	6/30/1998	6/30/1999	6/30/2000	6/30/2001	6/30/2002	6/30/2003	6/30/2004	6/30/2005	6/30/2006	6/30/2007	6/30/2008	6/30/2009	6/30/2010
AGR	Sum of Accounts	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sum of DU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
APT	Sum of Accounts	562	570	572	577	579	579	580	578	578	584	596	610	612	614	616	614
	Sum of DU	3,319	3,420	3,431	3,473	3,519	3,516	3,520	3,643	3,646	3,689	3,711	3,930	3,932	3,965	3,967	3,965
APTC	Sum of Accounts	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
	Sum of DU	3	3	3	3	7	7	7	7	7	7	7	7	7	7	7	7
C/SF	Sum of Accounts	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2
	Sum of DU	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2
MH	Sum of Accounts	101	103	103	101	102	103	103	104	104	102	102	104	103	101	103	101
	Sum of DU	650	652	653	651	652	653	653	654	654	652	652	654	653	651	653	651
SF	Sum of Accounts	12,911	12,892	12,892	12,911	13,184	13,527	13,779	13,832	13,913	14,147	14,547	14,598	14,646	14,645	14,649	14,687
	Sum of DU	13,585	13,123	13,115	13,129	13,406	13,752	14,007	14,305	14,387	14,626	15,028	15,076	15,127	15,126	15,130	15,168
SFA	Sum of Accounts						1	1	1	2	4	4	6	7	7	8	8
	Sum of DU						1	1	1	2	4	4	6	7	7	8	8
SFR	Sum of Accounts	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sum of DU	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
THC	Sum of Accounts	2,510	2,498	2,513	2,507	2,519	2,555	2,543	2,592	2,578	2,672	2,888	3,098	3,099	3,078	3,083	3,091
	Sum of DU	2,970	2,958	3,009	3,003	3,082	3,118	3,106	3,270	3,256	3,438	3,654	3,864	3,865	3,844	3,971	3,983
Total Sum of Accounts		16,088	16,067	16,084	16,100	16,389	16,770	17,011	17,112	17,180	17,514	18,142	18,421	18,473	18,451	18,465	18,507
Total Sum of DU		20,530	20,159	20,214	20,262	20,669	21,050	21,297	21,883	21,955	22,419	23,059	23,540	23,595	23,604	23,740	23,786

Year	Residential Active Connections	SF Active Connections	MF Active Connections	SF Population	MF Population	Total Population	Population Increase per Year	2010 UWMP Selected	Delta between Total Population & 2010 UWMP Selected	Water Production AF	Per Capita Water Use GPCD	10 year average per capita	20% reduction target
1995	16085	12911	3174	33729	16428	50157				9779	174		
1996	16064	12892	3172	33680	16417	50097	-60			10328	184		
1997	16081	12892	3189	33680	16505	50185	88			10537	187		
1998	16097	12911	3186	33729	16490	50219	34			9215	164		
1999	16386	13184	3202	34443	16573	51015	796			10188	178		
2000	16767	13527	3240	35339	16769	52108	1093	54506	-2398	10784	185		
2001	17008	13779	3229	35997	16712	52709	601			10969	186		
2002	17109	13832	3277	36948	18704	55651	2942			11042	177		
2003	17177	13913	3264	37164	18629	55794	142			10651	170		
2004	17511	14147	3364	37789	19200	56989	1196			11505	180	179	143
2005	18139	14547	3592	38858	20502	59359	2370	57848	1511	10060	151	176	141
2006	18418	14598	3820	38994	21803	60797	1438			10735	158	174	139
2007	18469	14646	3823	39122	21820	60942	145			10326	151	170	136
2008	18447	14645	3802	39119	21700	60820	-123			10551	155	169	135
2009	18461	14649	3812	39130	21757	60887	68			10316	151	166	133
2010	18503	14687	3816	39232	21780	61012	124	60423	589	8452	124	160	128
2011						61283	272		-99,39548				
2012						61555	272		average delta				
2013						61827	272						
2014						62099	272						
2015						62371	272	62589	-218	11230	161		
2016						62643	272						
2017						62915	272						
2018						63186	272						
2019						63458	272						
2020						63730	272	64804	-1074	10200	143		
2021						64002	272						
2022						64274	272						
2023						64546	272						
2024						64818	272						
2025						65089	272	66272	-1183	10417	143		
2026						65361	272						
2027						65633	272						
2028						65905	272						
2029						66177	272						
2030						66449	272	67626	-1177	10635	143		
2031						66721	272						
2032						66992	272						
2033						67264	272						
2034						67536	272						
2035						67808	272	67808	0	10852	143		
						Average	724		-493,7392				
						Population Increase/yr			average delta				
						1995 to 2010							

Notes:

2010 UWMP Selected Population for Year 2000 is from ABAG Projections for Marin County Census Tracts within the NMWD Service Territory only. Census Population per Blocks within the NMWD Distribution Area is 52108 (54566 Marin County Total - 2731 served by MMWD at HAFB + 273 in Sonoma County) which mathematically matches the year 2000 Total Population calculated based on density per connection (see worksheet "2000 Population Calculation").



North Marin Water District

**NORTH MARIN
WATER DISTRICT**



**FINAL 2010 Urban Water Management Plan Water Demand
Analysis and Water Conservation Measures Update**

November 12, 2010



*MADDAUS
WATER
MANAGEMENT*

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1. EXECUTIVE SUMMARY

1.1 Introduction

The 2010 Urban Water Management Plan demand and conservation technical analysis was conducted by Maddaus Water Management (MWM) for the North Marin Water District. The purpose of the analysis was to:

1. Calculate a demand forecast for the year 2010 to 2035.
2. Calculate the range of conservation costs and savings for the year 2010 to 2035. This effort included:
 - Incorporate activity from current conservation measures for the year 2005 and 2009 into the DSS model.
 - Evaluate up to three new conservation measures that will reduce future water demand.
 - Estimate the costs and water savings of these measures.
 - Combine the measures into increasingly more aggressive programs and evaluate the costs and water savings of these programs.

1.2 Long-Term Demand and Conservation Program Analysis Results

The project for the Sonoma County Water Agency (SCWA) contractors included two main parts, (1) create a demand and conservation analysis for 2010 to 2035 and (2) evaluate conservation savings potential for the years 2010 to 2035 with a variety of different measures and conservation programs.

The first step in the analysis was to review and analyze historical water use production and billing data. For most contractors, the billing data was provided for the years 2000 to 2009 (a few contractors had data back to 1995 and one contractor has new meters, so data is only available after the year 2006). The data was graphically analyzed and discussed with the individual contractors. The historical water use along with the selected population and employment projections were used to create a demand forecast for the year 2010 to 2035.

Once the demands were completed, the conservation measures were analyzed for a total of 31 measures. The conservation analysis included all the measures from the 2005 conservation study that MWM completed for the SCWA contractors along with up to three new measures for each contractor. The following important assumptions about the conservation measures were included in this analysis:

1. Due to increased regulations and additional research and analysis on conservation measures, conservation measures Tier 2-8 (Reduced Connection Fees), Tier 2-9 (Synthetic Turf Rebate) and Tier 2-11 (Dishwasher Rebate) were removed from all programs at the request of the contractors.
2. No modifications to costs or savings assumptions were made to any of the Tier One and Tier Two Measures. To comply with new regulations and ordinances, minimal changes were made to the New Development measures ND-1 to ND-8
3. The table of the new measures for each contractor is listed in Section 5.1. An analysis of the new state law SB 407 was included for all contractors.
4. New development ordinances were updated to reflect new local ordinances, the Model Water Efficient Landscape Ordinance, and the Cal Green building code.

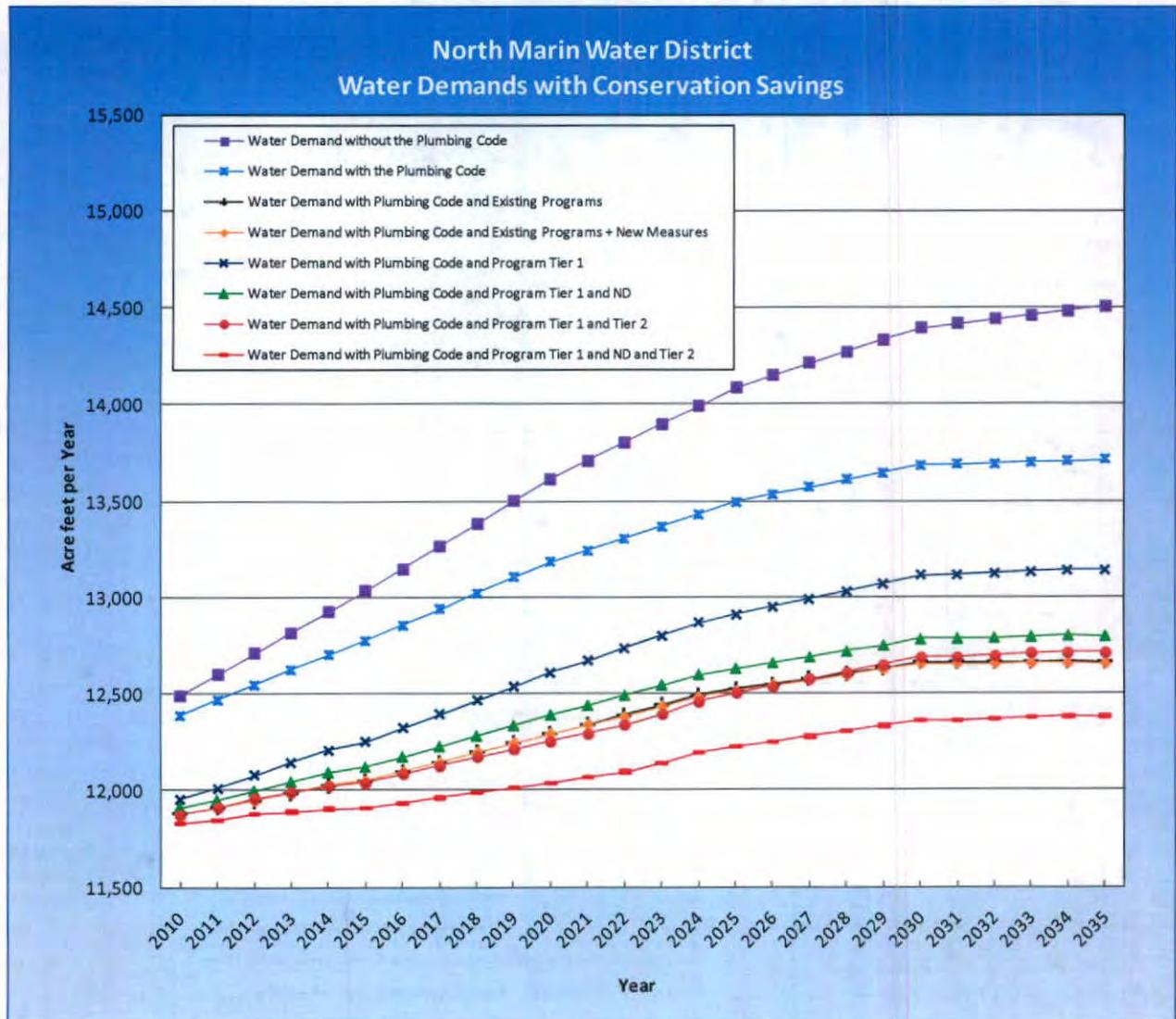
Table ES-1, ES-2 and ES-3 and Figure ES-1 show the water demands and conservation savings for the years 2010 to 2035. The Plumbing Code includes the new California State Law requiring High Efficiency Toilets and High Efficiency Urinals by 2014.

**Table ES-1
Conservation Measures**

Measure Name	Program Existing	Program Existing & New	Program Tier 1	Program Tier 1 & Tier 2	Program Tier 1 & ND	Program Tier 1 & Tier 2 & ND
CUWCC #1a - Residential Water Surveys - Interior	✓	✓	✓	✓	✓	✓
CUWCC #1b - Residential Water Surveys - Outdoor	✓	✓	✓	✓	✓	✓
CUWCC #2 - Plumbing Retrofit Kits	✓	✓	✓	✓	✓	✓
CUWCC #5a - Large Landscape Water Budgets	✓	✓	✓	✓	✓	✓
CUWCC #5b - Large Landscape Audits			✓	✓	✓	✓
CUWCC #6 - Washer Rebates	✓	✓	✓	✓	✓	✓
CUWCC #7 - Residential Public Education	✓	✓	✓	✓	✓	✓
CUWCC #9 - Commercial Water Audits	✓	✓	✓	✓	✓	✓
CUWCC #14a - RSF Toilet Replacement			✓	✓	✓	✓
CUWCC #14b - RMF Toilet Replacement			✓	✓	✓	✓
Tier 2 - 1 Rain Sensor Retrofit				✓		✓
Tier 2 - 2 Cash for Grass	✓	✓		✓		✓
Tier 2 - 3 Financial Incentives for Being Below Water Budget				✓		✓
Tier 2 - 4 Irrigation Meter Rebates				✓		✓
Tier 2 - 5a Smart Irrigation Controller Rebates - RSF				✓		✓
Tier 2 - 5b Smart Irrigation Controller Rebates - RMF, CII, IRR	✓	✓		✓		✓
Tier 2 - 6 Financial Incentives/Rebates for Irrigation Upgrades				✓		✓
Tier 2 - 7 Hotel Retrofit				✓		✓
Tier 2 - 10 High Efficiency Toilets	✓	✓		✓		✓
Tier 2 - 12 CII Rebates - Replace Inefficient Water Using Equipment				✓		✓
Tier 2 - 13 New Commercial Urinals				✓		✓
Tier 2 - ND1 Rain Sensor Retrofit	✓	✓			✓	✓
Tier 2 - ND2 Smart Irrigation Controller	✓	✓			✓	✓
Tier 2 - ND3 High Efficiency Toilets	✓	✓			✓	✓
Tier 2 - ND4 Dishwasher New Efficient	✓	✓			✓	✓
Tier 2 - ND5 Clothes Washing Machine Requirement	✓	✓			✓	✓
Tier 2 - ND6 Hot Water on Demand					✓	✓
Tier 2 - ND7 High Efficiency Faucets and Showerheads	✓	✓			✓	✓
Tier 2 - ND8 Landscape and Irrigation Requirements	✓	✓			✓	✓
SB 407 Requirements (Plumbing Retrofit on Resale or Remodel)		✓				

NOTE – Due to increased regulations and additional research and analysis, conservation measures Tier 2-8, Tier 2-9 and Tier 2-11 are out of date and were removed from analysis at the request of all the contractors.

**Figure ES-1
Long Term Demands with Conservation Programs**



**Table ES-2
Water Demand Projections**

North Marin Water District Water Demand with Conservation Program Savings						
Water Demand with Plumbing Code and Conservation Program Savings (AFY)	2010	2015	2020	2025	2030	2035
Water Demand without the Plumbing Code	12,493	13,031	13,614	14,084	14,392	14,507
Water Demand with the Plumbing Code	12,390	12,774	13,184	13,496	13,686	13,713
Water Demand with Plumbing Code and Existing Programs	11,880	12,050	12,290	12,521	12,660	12,665
Water Demand with Plumbing Code and Existing Programs + New Measures	11,880	12,050	12,289	12,514	12,654	12,659
Water Demand with Plumbing Code and Program Tier 1	11,953	12,251	12,608	12,911	13,111	13,138
Water Demand with Plumbing Code and Program Tier 1 and ND	11,908	12,118	12,388	12,630	12,781	12,800
Water Demand with Plumbing Code and Program Tier 1 and Tier 2	11,875	12,040	12,254	12,502	12,687	12,714
Water Demand with Plumbing Code and Program Tier 1 and ND and Tier 2	11,830	11,907	12,036	12,224	12,360	12,379

**Table ES-3
Economic Analysis of Alternative Programs**

North Marin Water District Comparison of Conservation Program Costs and Savings									
Conservation Program	Water Utility Benefit-Cost Ratio	Community Benefit-Cost Ratio	2035 Water Savings (AFY)	2035 Indoor Water Savings (AFY)	2035 Outdoor Water Savings (AFY)	Total Water Savings as a % of Total Production in 2035	30 Year		
							Present Value of Water Utility Costs (\$1,000s)	Total Utility Cost for Five Years (\$1000)	Cost of Water Saved (\$/AF)
Existing Program	4.19	1.81	1,053	367	686	7.68%	\$5,094	\$1,947	\$209
Existing Program + New Measures	4.18	1.78	1,060	373	686	7.73%	\$5,129	\$1,957	\$210
Tier One	3.73	3.28	576	244	332	4.20%	\$3,903	\$980	\$245
Tier One + Tier Two	2.93	1.72	999	267	732	7.29%	\$7,369	\$2,765	\$300
Tier One + New Development	4.70	1.94	916	397	519	6.68%	\$4,129	\$1,065	\$188
Tier One + Tier Two + New Development	3.48	1.45	1,336	420	916	9.74%	\$7,596	\$2,850	\$249

2. INTRODUCTION AND PURPOSE

The purpose of this report is to present an overview of the demand and conservation evaluation process which has been completed for the North Marin Water District (District). The goal was to develop forecasts of demand and conservation savings for the 2010 Urban Water Management Plan.

The North Marin Water District has a current water conservation program. This report evaluates whether expanding existing efforts is a cost-effective way to meet future water needs.

The conservation measures and programs were analyzed using the Least Cost Planning Water Demand Management Decision Support System (DSS Model). In this report demand management and water conservation are used interchangeably. The evaluation includes measures directed at existing accounts as well as new development measures to make new residential and business customers more water efficient. Six programs were provided to help evaluate the net effect of running multiple measures together over time. Assumptions and results for each of the 31 individual measures and six programs will be described in detail in this report.

2.1 Contents

This report provides a general overview for the methodology, assumptions, and results for the demand forecast and conservation analysis. The following information is included in this report and is discussed in individual sections below:

- Overview of evaluation process
- Baseline water demands with and without the plumbing code
- Comparison of individual conservation measures
- Results of the conservation analysis
- Conclusions
- Appendix A: Assumptions for the Conservation Measures Evaluated
- Appendix B: Water Production and Billing Data Graphs for all Customer Categories

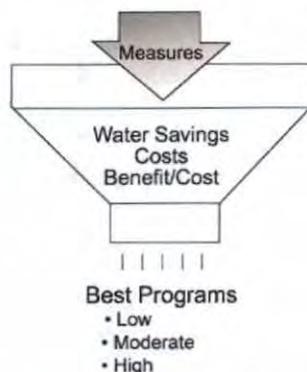
3. OVERVIEW OF EVALUATION PROCESS

Long Term Demand and Conservation Evaluation Process

During the evaluation process, water demand and savings were estimated. Benefits and costs were compared in a formal present value analysis and conclusions were drawn about which measures produce cost-effective water savings. The measure costs were previously developed by MWM and the contractors as part of the 2005 conservation study MWM completed for the SCWA contractors. This process can be thought of as an economic screening process, shown in Figure 1. Packaging the best measures into alternative programs allows North Marin Water District to consider what level of conservation implementation is appropriate.

Figure 1

Evaluation Process



Benefit-cost analysis has been used by many water agencies to evaluate and help select a water conservation measure best suited to local conditions. This analysis requires a locale-specific set of data, such as historical water consumption patterns by customer class, population projections, age of housing stock, and prior conservation efforts.

The following ten steps were used to implement the methodology by expanding upon the same DSS Model used to prepare the demand projections.

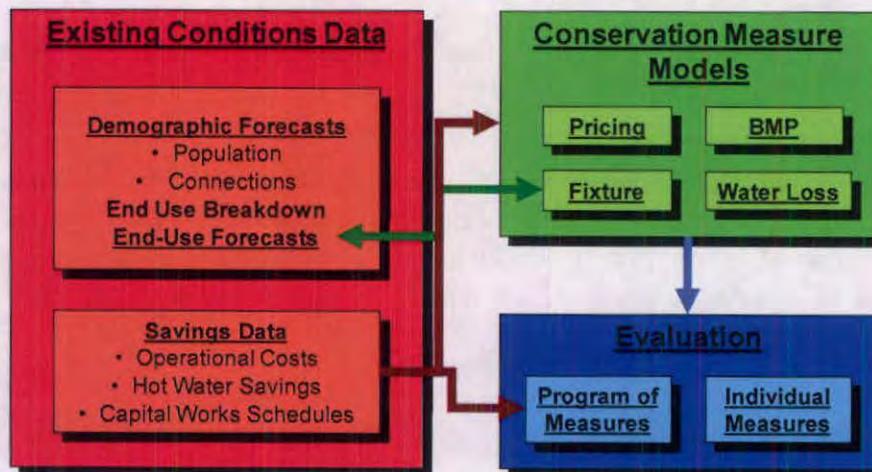
1. **Generate water use projections with and without the state and national plumbing code.** Projections cover each key customer category and are broken down into indoor and outdoor end uses. Evaluate the impact of the plumbing code changes arising from the 1992 and 2005 Federal Energy Policy Act. The plumbing code also includes fixture changes that will result from the State of California plumbing code which requires only high efficiency toilets and high efficiency urinals be sold in the state after the year 2014.
2. **Evaluate previous conservation measures and up to three new measures** to identify those that are applicable to the service area. Develop appropriate unit water savings and costs for each measure.
3. **Estimate the affected customers (or number of accounts) for each conservation measure** by dividing the measure's projected customers (or accounts) that implement the measure by the total service area customers (accounts). This factor is called the market penetration or installation rate.
4. **Estimate total annual average day water savings.** The water savings are computed by multiplying unit water savings, per measure, by the market saturation or installation rate (i.e. 10% to 90% of accounts), and then multiplying by the number of units in the service area (such as

dwelling units) targeted by a particular measure. The indoor and outdoor water savings were also calculated.

5. **Identify benefits to NMWD** including potential reduced water purchases from SCWA, calculated as the wholesale water rate and delivery cost per acre-foot for each contractor with an escalator based on historical water rates and Consumer Price Index (CPI).
6. **Quantify total benefits for each year** in the planning period by multiplying average water savings for each measure by the computed value of the benefits.
7. **Determine initial and annual costs to implement the measures** based upon current conservation program data, local experience, and the costs of goods, services, and labor in the community. This is multiplied by the number of units participating each year and then added to overall administration and promotion costs to arrive at a total measure cost, which may be spread over a number of years. For this project the costs for all measures were used from the 2005 study, except for the three new measures selected by each contractor which had all new parameters developed.
8. **Compare costs of measures** by computing the present value of costs and costs of water saved over the planning period.
9. **Compile six programmatic packages** or programs containing various new and existing measures.
10. **Evaluate the six programs for water savings and cost-effectiveness** and identify the point of diminishing returns from further investments in conservation.

For conservation measure evaluation, the DSS Model performs economic analysis by using net present value and benefit-to-cost ratio as economic indicators. The benefit cost analysis is performed from various perspectives including the utility and community (community perspective equates to the utility plus customer). Figure 2 shows the structure of the model. Results are presented in subsequent sections.

Figure 2
Structure of the DSS Model



4. WATER DEMANDS WITH AND WITHOUT PLUMBING CODE

4.1 Future Population and Employment Projections

Description of Population and Employment Forecasts

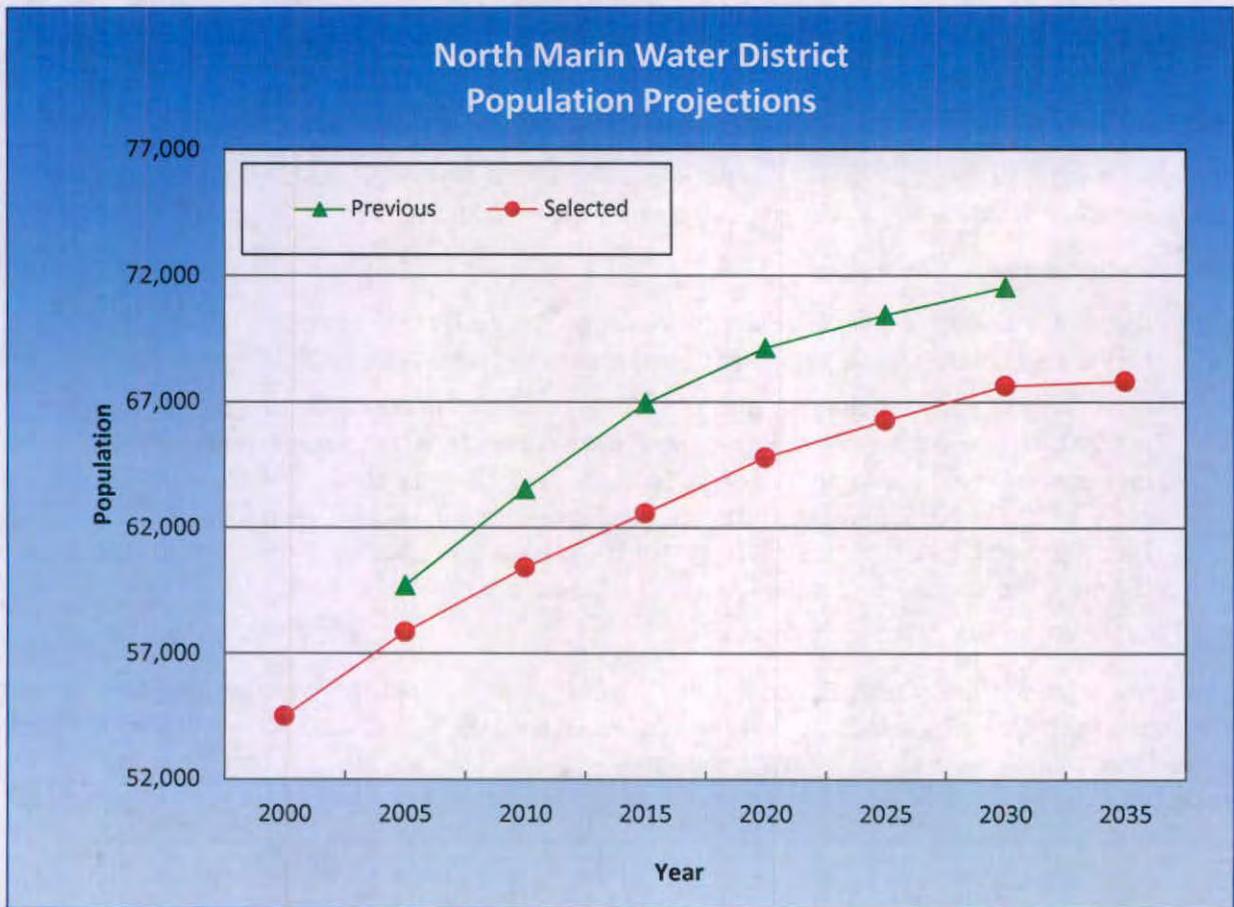
There are generally three main sources of population and employment projections used to generate future water demands for the 2010 Urban Water Management Plans.

Available Demographic Projections

- *Local General Plan (population and employment)* – Typically these plans, depending upon when they were published, have a population and jobs forecast for 2030 and build out.
- *Association of Bay Area Governments (ABAG) (population and employment)* - ABAG recently published a new projections report in 2009 that includes population and employment estimates for each city in the Bay Area. This report provides estimates for 2000, 2005, 2010, 2015, 2020, 2025, 2030 and 2035. ABAG publishes demand projections every two years. The previous DSS Model projections and ABAG Projections for 2005, 2007, and 2009 were reviewed to determine the most appropriate data set to use in this DSS Model update.
- *Other Water Supply Planning Reports*

At the North Marin Water District's request, the population and employment projections were based on the average of the data by census tract from ABAG Projections 2005, 2007 and 2009 as shown in Figure 3, 4 and Table 1 and 2. The values shown in the "Selected" column were used to create the water demand projections.

**Figure 3
Population Projections**



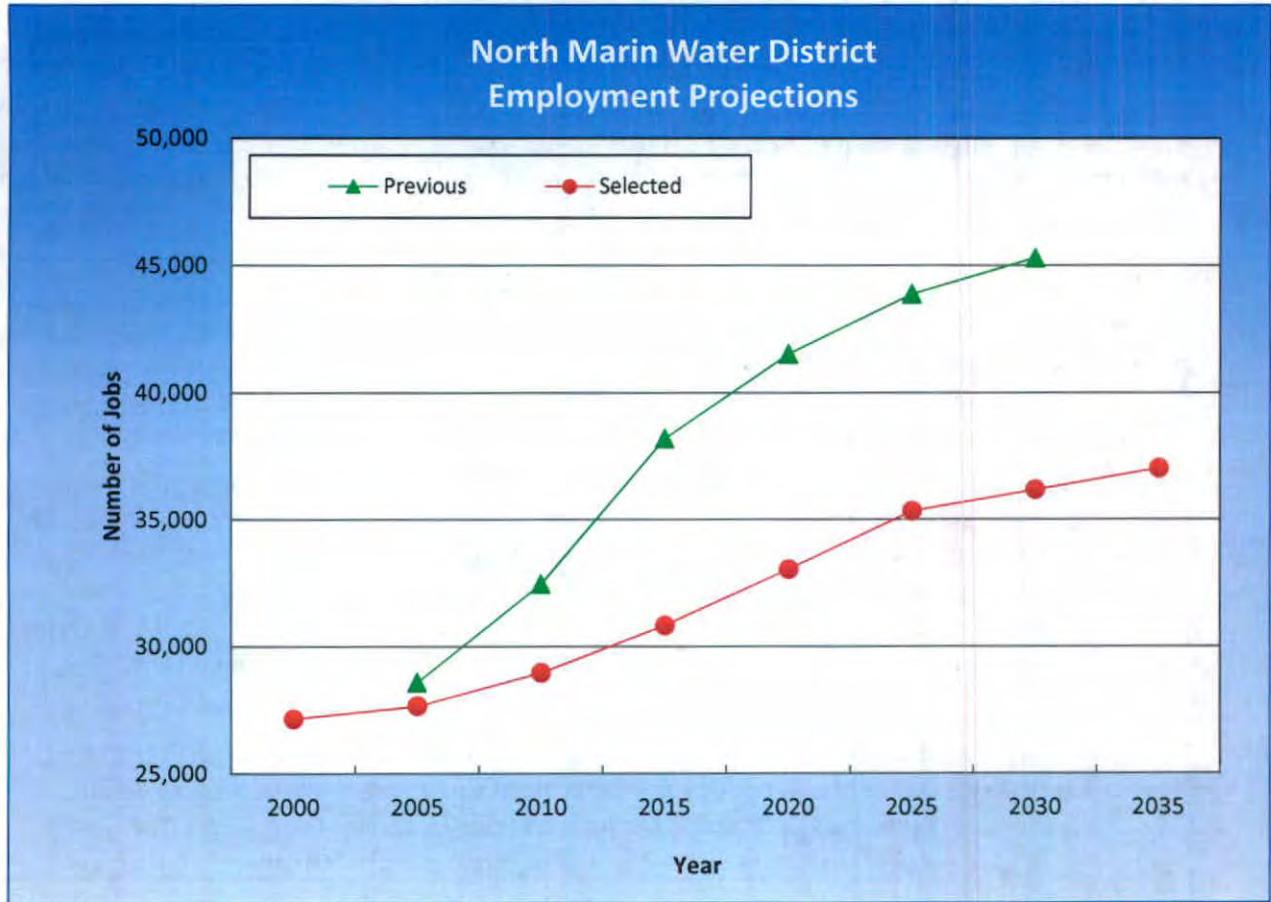
**Table 1
Table of Population Projections**

North Marin Water District Population Projections		
Year	Previous ¹	Selected ²
2000		54,506
2005	59,690	57,848
2010	63,548	60,423
2015	66,946	62,589
2020	69,145	64,804
2025	70,443	66,272
2030	71,543	67,626
2035		67,808

Notes:

- 1) DSS Model data based on the 2005 Draft North Marin County General Plan
- 2) Based on Average ABAG data by census tract from years 2005, 2007 and 2009

**Figure 4
Employment Projections**



**Table 2
Table of Employment Projections**

North Marin Water District Employment Projections		
Year	Previous ¹	Selected ²
2000		27,147
2005	28,588	27,664
2010	32,459	28,966
2015	38,204	30,820
2020	41,503	33,030
2025	43,867	35,330
2030	45,295	36,177
2035		37,025

Notes:

- 1) DSS Model data based on the 2005 Draft North Marin County General Plan
- 2) Based on Average ABAG data by census tract from years 2005, 2007 and 2009

4.2 Water Use and Demographic Data Inputs to the Model

Description of "Water Use Data Input Sheet"

Figure 5 is a two-page print out of an Excel spreadsheet. The purpose of this "Water Use Data Input Sheet" is to gather and document basic information about the individual service area. The data shown on the "Water Use Data Input Sheet" can be broken into two main categories, (a) current water use data and (b) demographic data. Each area is broken out below and helps to provide some basic definitions and assumptions.

(a) Water Use Data

- *Model Start Year* – This is the starting year for the analysis. For this project, the start year for the model is 2005. The selection of 2005 as a model start year allowed the historical conservation efforts to be included for the past 5 years (2005 to 2009). The DSS Model includes 30 years of data projecting information until the year 2035.
- *Base Year for Future Water Factors* - Based on an analysis of historical water billing data, each contractor selected a year or average of multiple years that is representative of current water use and used as a base year demand factor for developing future water use projections. The year(s) was chosen by the contractors for the following reasons:
 1. The selected years shows less of an effect of the recession. For all contractors the years 2008 and 2009 show a dip in water demand in many areas due to reduction in economic activity.
 2. The years selected had relatively "normal" climate conditions – i.e. not a drought or excessively wet year, so no significant weather adjustments were necessary. For all contractors the years 2008 and 2009 were affected by drought conditions. The water billing or production data was not weather normalized for this analysis.
 3. Many contractors elected to average a few years of data for the analysis. Some contractors selected an individual year as they felt it was representative in terms of weather, vacancy, and customer water use for demand projection purposes.
 4. No additional adjustment factors were added other than the "new single family home category" for three of the contractors (City of Santa Rosa, Valley of the Moon and North Marin Water District). The adjustment was made based on analysis of actual data which showed an increase in water use for homes built since 2000.
- *Average gal/day/acct*- This is the amount of water in gallons that is used per day, per account.
- *Indoor/outdoor water use* – This is the amount of water per account split into the percent that is used indoors and outdoors.
- *Consumption by customer class*- This shows the annual amount of water used for an entire calendar year, broken down by customer class (Single Family, Multi Family, Commercial, Irrigation, etc)
- *Provision for New Single Family Account Use*– For selected agencies, and upon their specific request, a new category was created to model water use of new single family homes. This value is held constant in the baseline projection and not subject to plumbing codes. All new homes include the plumbing code change in the State of California that requires HETs in 2014. The new homes will also be affected by Cal Green building code after July 1, 2011 and required to install efficient fixtures for the toilets, low flow shower heads and faucets. The effects from Cal Green were run as a conservation measure as they were not in effect at the time of this analysis.

- *Unaccounted for water (UFW) also known as Non Revenue Water* – This is the sum of all water input to system that is not billed (metered and unmetered) water consumption, including apparent (metering accuracy) and real losses. The values were calculated by taking the difference between the amount of water produced and the amount of water that was sold. Data provided by the water contractor was used, if provided, unless UFW was less than 7 percent, in which case 7 percent was used.
- *Water Produced*– This is the total amount of potable water produced. The water can come from multiple sources including amount purchased from SCWA, purchased from other agencies, local surface water, or obtained from groundwater. This does not include recycled water.
- *Peak day factor* – The ratio of water produced on the maximum day of the year to that produced on the average day.

(b) Demographic Data

- *Census 2000* – The 2000 Census data was used as a general reference when determining population and household sizes for each individual city (and/or unincorporated area) serviced by the water agencies.
- *2005 North Marin Water District Service Area Population*- The 2005 total population for the North Marin Water District was taken directly from the 2005 selected population source discussed earlier in this report.
- *Single and multi family dwelling units*- The 2005 single family dwelling units is equal to the number of single family accounts for 2005. The 2005 multi family dwelling unit estimate was calculated by applying a growth factor to the 2000 data as noted on the water use data sheet in Figure 5.
- *Procedure for service areas not contiguous with city boundaries* – When a service area serves outside a city boundary, estimates were generated either from census tract data when available for the unincorporated areas, Department of Finance data, ABAG Projections, DWR reported data, General Plan or by the local water district if known. If none of the six sources were available, then the modeling team worked with the local water district to make reasonable estimates.
- *Employment data*– The employment figures were obtained from the selected source as discussed earlier in this report.

In summary, the key features of this sheet include the existing 2005 level of water use, 2005 baseline accounts in each customer category, and 2005 baseline forecasts for population and employment.

Figure 5 Water Use Data Input Sheet

North Marin WD Water Service Area ¹										
DSS Input Sheet										
November 12, 2010										
Base Year Average Use and Indoor Percentages by Billing Category for DSS Model²										
	Single family		Apartments		Condo		Commercial		Irrigation	
Year	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor
1997 - 2006	412	55%	1,179	88%	192	98%	1,337	71%	2,590	0%
Bimonthly billing Apartments are 5 or more units Includes 1, 2, 3 and 4 units										
Indoor % based on 10 year average for the months of February and March (lowest two consecutive months) for all categories that have indoor use. Excludes Irrigation, Pook and Misc.										
	Government		Miscellaneous		Pools		Mobile Homes		New Single Family	
	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor	Average, gpd/a	Indoor
	2640	32%	160	0%	1150	0%	2525	71%	414	42%
										New Single Family factor based on 2000 to 2009 new home water use
										New SF Indoor %
										Computed from Existing SF use, 2035
Data for DSS Model -- Start Year: 2005										
Category	Number of Accounts in Start Year ³	Water Use in Base Year(s) gpd/a ²	Water Use mgd	Use Profile Percent	Water Use gpd	Indoor Water Use gpd				
Single family	14,503	412	5.977	60.28%	148	81				
Apartments	595	1,179	0.701	7.07%	88	77				
Condo	2,914	192	0.559	5.64%	87	85				
Commercial	792	1,337	1.059	10.68%						
Irrigation	366	2,590	0.948	9.56%						
Government	95	2,640	0.250	2.52%						
Miscellaneous	379	160	0.061	0.61%						
Pools	88	1,150	0.101	1.02%						
Mobile Homes	103	2,525	0.259	2.61%						
New Single Family	1	414	0.000	0.00%	149	62				
Total Billed	19,836	12,599	9.916	100.00%						
Projected UFW for DSS Model⁵			7.0%	Percent	7% if actual is < 7%, otherwise = agreed upon by agency for 30 year forecast					
Water Produced for use in DSS Model⁴			10.662	MGD	Add UFW % to Total Billed Water Use					
					Water Produced = Billed / (1 - Projected UFW for DSS Model) = 10.662					
Peaking Factor			1.77		Provided by Agency or Water Master Plan (or NA)					
Peaking Factor for DSS Model⁶			1.77		IFNA use default value of 1.6.					
- Blue cells are entered by modeler										
- Yellow cells are input to DSS Model										
NOTES										
1 - Communities served (includes all or portions of) Novato and surrounding County areas										
2 - Average gpd/a is based on a 12-month moving average through December 2009. Indoor use is based on average of 2 lowest consecutive months in the winter if meters read bimonthly, or single lowest month if meters read monthly.										
3 - Number of accounts is from data provided by water contractor for this project (see worksheet with account data in this file)										
4 - Total water produced is calculated from the total billed water use and the projected UFW										
5 - Unaccounted for Water (UFW) is the percent difference between the total water purchased and the total billed water use. If a value for UFW of less than 7% was calculated, a value of 7% was used for planning purposes.										
6 - For reference see additional population estimates provided in population and employment estimates corresponding to service area table.										
7 - Initial estimate based on census data for renter occupied units. For reference see table below that has 2000 census data for corresponding water service area city or cities.										
8 - Group Quarters Population includes Institutionalized and non-institutionalized and assumes their water use is in the Commercial sector										
Definitions / Abbreviations										
ABAG	Association of Bay Area Governments		HHS	household size						
DOF	Department of Finance		NA	not available						
DSS	Decision Support System Model		MF	multi family						
du	dwelling unit		MGD	million gallons per day						
FY	Fiscal Year		No.	number						
gpd	gallons per capita / per day		Pop	population						
gpd/a	gallons per day / per account		Res	residential						
gpd	gallons per day		SF	single family						
			UFW	unaccounted for water						
Data Prepared :	1-May-05		By:	M. Maddaus						
Revised:	11-Sep-10		By:	C. Matyas						
	23-Jul-10		By:	W. Maddaus						
	24-Jul-10		By:	C. Matyas						
	12-Nov-10		By:	M. Maddaus						

Water Use Data Input Sheet (Page 2)

North Marin WD Water Service Area ¹					
Reconcile agency account billing data and census data					
Total Dwelling Units in Census 2000 for North Marin Water District by Census Tract					
	2000 Census Units	No. Meters	Service Area Billing Accounts - Year 2000 ³	Difference between billing and census data	Data Sources / Notes
Single family					
1-detached	12,817	12,817			
Subtotal Single Family	12,817	12,817	13,538	721	When difference is positive some of the "1" unit attached dwellings listed as Condos in table below, must have been categorized by the District as Single Family
Condo					
1-attached	2,584	2,584		0	Single family billing must be detached plus some attached units
2-units	289	289			
3-4 units	886	886			
Subtotal Condo	3,759	3,759	2,536	-502	When this number is negative some of the attached units classified by District as Single Family Condo billing must be some of the 1,2,3,4 unit buildings but not all
Apartments					
5 to 9 units	1,176	235			Assumes average of 7 units per building (midpoint of 5 to 9 units)
10 to 19 units	732	73			Assumes average of 15 units per building (midpoint of 10 to 19 units)
20 to 49 more units	579	29			Assumes average of 35 units per building (midpoint of 20 to 49 units)
50 or more units	941	19			Assumes average of 50 units per building
Subtotal Apartments	3,428	356	587	231	Must be more than one meter on an Apartment building
Mobile Homes					
mobile homes	706	94			Some large accounts must have more than one meter
Subtotal mobile homes	706	94	102	-8	Meter for mobile home parks, assume 7.5 units per master metered park, Although some mobile homes may be separately metered
Apartment Average =	9.6	units/building	5.8	units/account	This is a typical value of DUs/account for apartments
Occupied SF+Condo+Apartment+MHome units =	20,710				
Vacant Units =	532				Equates to a 4.7% vacancy rate
Total Units =	21,242				Total units in 2000 according to census tract data City of Novato + surrounding County areas
2000 Group Quarters Census Data			2000 Census Data		
Institutionalized	618	Average household size	2.45		
Non-Institutionalized	364	Average household size of a owner occupied unit	2.65		
Mobile home population	1,875	Average household size of a renter occupied unit	2.20		
Total	2,857	Homeowner vacancy rate (percent)	0.90		For City of Novato
		Rental vacancy rate (percent)	2.50		For City of Novato
Population and Household Size in Census 2000 for North Marin Water District					
	Service Area 2000	Estimated Population 2005	Estimated Service Area Residential Population 2005		Data Sources / Notes
Total Population from Census data ⁶ =	53,364	57,848			Based on Average ABAG data by census tract from years 2003, 2007 and 2009
Subtract Institutionalized, Mobile Home Population =	2,857	3,032			Estimated employment growth from 2000 to 2005 (ABAG Projections): 1.90%
Residential Population =	50,508	54,816			Water use for the institutionalized population is accounted for in nonresidential billing categories
Avg. HHS ⁷ =	2.44	2.44			Residential population shown corresponds to the city or cities represented by Census data
Apt Pop @ MF HHS ⁷ =	2.20	7,542	8,004	13.8%	Percent of 2005 Population that is Apartments
Condo Pop @ Condo HHS =	2.40	6,086	6,460	11.2%	Percent of 2005 Population that is Condo
SF Pop =		36,880	40,353	69.8%	Percent of 2005 Population that is SF
SF HHS ⁷ =		2.72	2.78	5.2%	Percent of 2005 Population in Mobile Home & Group Quarters
		Total	57,848	100.0%	Total 2005 service area Population
Estimate Service Area Dwelling Units for 2005					
SF Res	14,503	Equals No. of Single Family accounts for 2005			
MF Res	3,493	Equals No. Dwelling Units plus growth in accounts			
Condos	2,914				
Total Units w/o mobile homes	20,910				

4.3 Key Assumptions for the DSS Model

Table 3 shows the key assumptions used in the model. The assumptions having the most dramatic effect on future demands are the natural replacement rate of fixtures, how residential or commercial future use is projected, and finally the percent of estimated water losses.

Table 3
List of Baseline Demand Projection Assumptions for DSS Model

North Marin Water District	
List of Baseline Demand Projection Assumptions for DSS Model	
Parameter	Model Input Value, Assumptions, and Key References
Model Start Year	2005
Water Demand Factor Year(s)	Average of Years: 1997 - 2006
Peak Day Factor	1.77
Unaccounted for Water in the Start Year	7.0%
Population Projection Source	Average ABAG data by census tract from years 2005, 2007 and 2009
Employment Projection Source	Average ABAG data by census tract from years 2005, 2007 and 2009
Number of Water Accounts for Start Year	19836
Avoided Cost of Water \$/AF (includes escalated SCWA cost + \$27.7 / AF for pumping cost)	\$1,439.48
Distribution of Water Use Among Categories	Single Family: 60.3% Apartments: 7.1% Condo: 5.6% Commercial: 10.7% Irrigation: 9.6% Government: 2.5% Miscellaneous: 0.6% Pools: 1% Mobile Homes: 2.6% New Single Family: 0%
Indoor Water Use by Category	Single Family: 55% Apartments: 88.1% Condo: 98.1% Commercial: 70.9% Irrigation: 0% Government: 31.5% Miscellaneous: 0% Pools: 0% Mobile Homes: 70.7% New Single Family: 41.5%
Residential End Uses	AWWARF Report "Residential End Uses of Water" 1999
Non-Residential End Uses, %	AWWARF Report Commercial End Uses of Water" 1999
Efficient Residential Fixture Current Installation Rates	U.S. Census, Housing age by type of dwelling plus natural replacement plus rebate program (if any). Reference "High Efficiency Plumbing Fixtures - Toilets and Urinals" Koeller & Company July 23, 2005. Reference Consortium for Efficient Energy (www.cee1.org)
Water Savings for Fixtures, gal/capita/day	AWWARF Report "Residential End Uses of Water" 1999, CUWCC Cost and Savings Study April 28, 2005, Agency supplied data on costs and savings, professional judgement where no published data available
Non-Residential Fixture Efficiency Current Installation Rates	U.S. Census, assume commercial establishments built at same rate as housing, plus natural replacement
Residential Frequency of Use Data, Toilets, Showers, Washers, Uses/user/day	Falls within ranges in AWWARF Report "Residential End Uses of Water" 1999
Non-Residential Frequency of Use Data, Toilets and Urinals, Uses/user/day	Estimated based using AWWARF Report "Commercial and Institutional End Uses of Water" 1999
Natural Replacement Rate of Fixtures	Residential Toilets 3% (1.28 gpf toilets), 4% (1.6 gpf and higher toilets) Commercial Toilets 3% (1.28 gpf toilets), 4% (1.6 gpf and higher toilets) Residential Showers 4% Residential Clothes washers 6.7% A 3% replacement rate corresponds to 33 year life of a new fixture. A 6.67% replacement rate corresponds to 15 year washer life based on "Bern Clothes Washer Study, Final Report, Energy Division, Oak Ridge National Laboratory, for U.S. Department of Energy, March 1998, Internet address: www.energystar.gov
Future Residential Water Use	Increases Based on Population Growth
Future Non-Residential Water Use	Increases Based on Employment Growth

4.4 Water Demand Projections With and Without the Plumbing Code

Development of the Water Demand Projections Table and Graph

Water demand projections were developed to the year 2035 using the Demand Side Management Least Cost Planning Decision Support System (DSS) model. This model incorporates information from the:

- "Water Use Data Sheet" and the "Key Assumptions"
- Questions asked of agencies
- Contractor provided data
- 2000 Census data and 2006-08 American Community Survey 3 year estimates
- Local General Plans
- Association of Bay Area Governments Projections

Water demand projections were input for 30 years using the DSS Model. This model incorporates information from the:

- Contractor selected population and employment forecasts.
- Data provided by North Marin Water District staff including estimates for value of water saved, historical water use, past conservation efforts, and water system facilities.

Table 4 shows the projected demands with and without plumbing codes and appliance standards. This page includes both a table and a graph. Each will be described below.

National Plumbing Code

The Federal Energy Policy Act of 1992, as amended in 2005 requires only fixtures meeting the following standards can be installed in new buildings:

- Toilet – 1.6 gal/flush maximum
- Urinals – 1.0 gal/flush maximum
- Showerhead - 2.5 gal/min at 80 psi
- Residential Faucets – 2.2 gal/min at 60 psi
- Public Restroom Faucets - 0.5 gal/min at 60 psi
- Dishwashing pre-rinse spray valves – 1.6 gal/min at 60 psi

Replacement of fixtures in existing buildings is also governed by the Federal Energy Policy Act that requires only devices with the specified level of efficiency (shown above) can be sold today (2010). The net result of the plumbing code is that new buildings will have more efficient fixtures and old inefficient fixtures will slowly be replaced with new more efficient models. The national plumbing code is an important piece of legislation and must be carefully taken into consideration when analyzing the overall water efficiency of a service area.

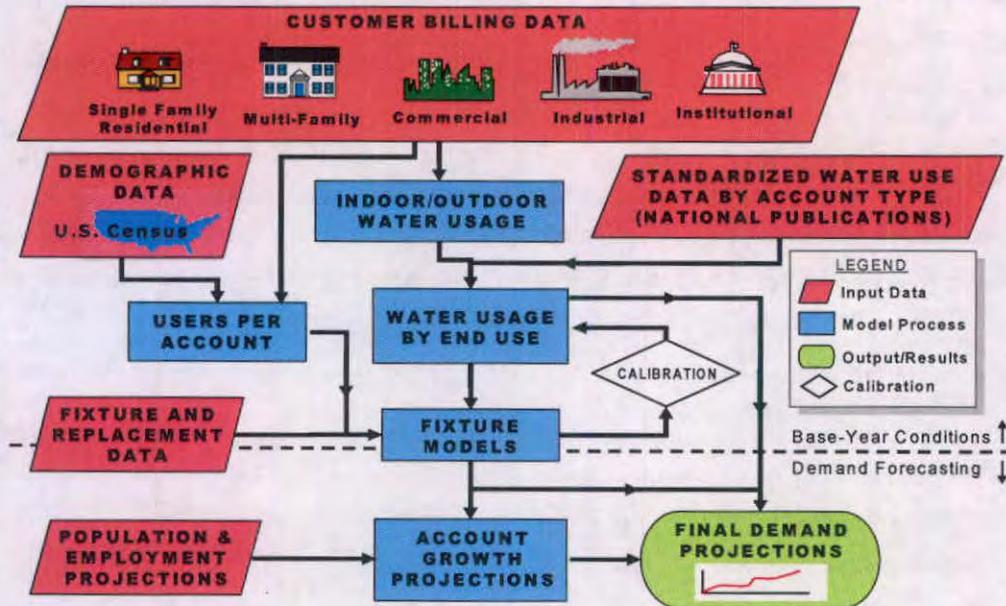
In addition to the plumbing code the US Department of Energy regulates appliances such as residential clothes washers. Regulations to make these appliances more energy efficient has driven manufacturers to dramatically reduce the amount of water these efficient machines use. Generally horizontal axis washing machines use 30-50 percent less water than conventional models (which are still available). In the analysis for North Marin Water District, the DSS Model forecasts a gradual transition to high efficiency clothes washers (using 19 gallons or less) so that by the year 2020 this will be the only type of machines purchased. In addition to the industry becoming more efficient, rebate programs for washers

have been successful in encouraging customers to buy more water efficient models. Given that machines last about 15 years eventually all machines in the North Marin Water District area will be of this type.

State Plumbing Code

The Plumbing Code includes the new California State Law requiring High Efficiency Toilets and High Efficiency Urinals be exclusively sold in the state by 2014. Figure 6 below describes conceptually how the above listed items are incorporated into the flow of information in the DSS Model.

Figure 6
DSS Model Overview Used to Make Potable Water Demand Projection
“With the Plumbing Code”



Graph of projected demands (Figure 7)

Figure 7 shows the potable water demand projection at five-year increments. The graph shows projections for demand with and without the plumbing code through 2035.

Table of water demand projections (Table 4)

The table of water demands projections includes:

1. The water demand projections shown in Table 4 are based on the future population and employment projections provided in Table 1 and Table 2.
2. Projections were made *with and without* the plumbing codes.
3. Projections are for potable water only. It does not include recycled water use. Recycled water use and projections are included in a separate Chapter of the UWMP.

Dry Year Demands

The demand projections reflect average weather conditions and **do not** reflect drier and hotter drought conditions. Climate change, which might alter weather patterns, either increased or decreased rainfall, and possibly increased irrigation demand in the spring and fall due to a warmer climate have also not been addressed in this analysis.

Figure 7
Potable Water Use Projections for North Marin Water District

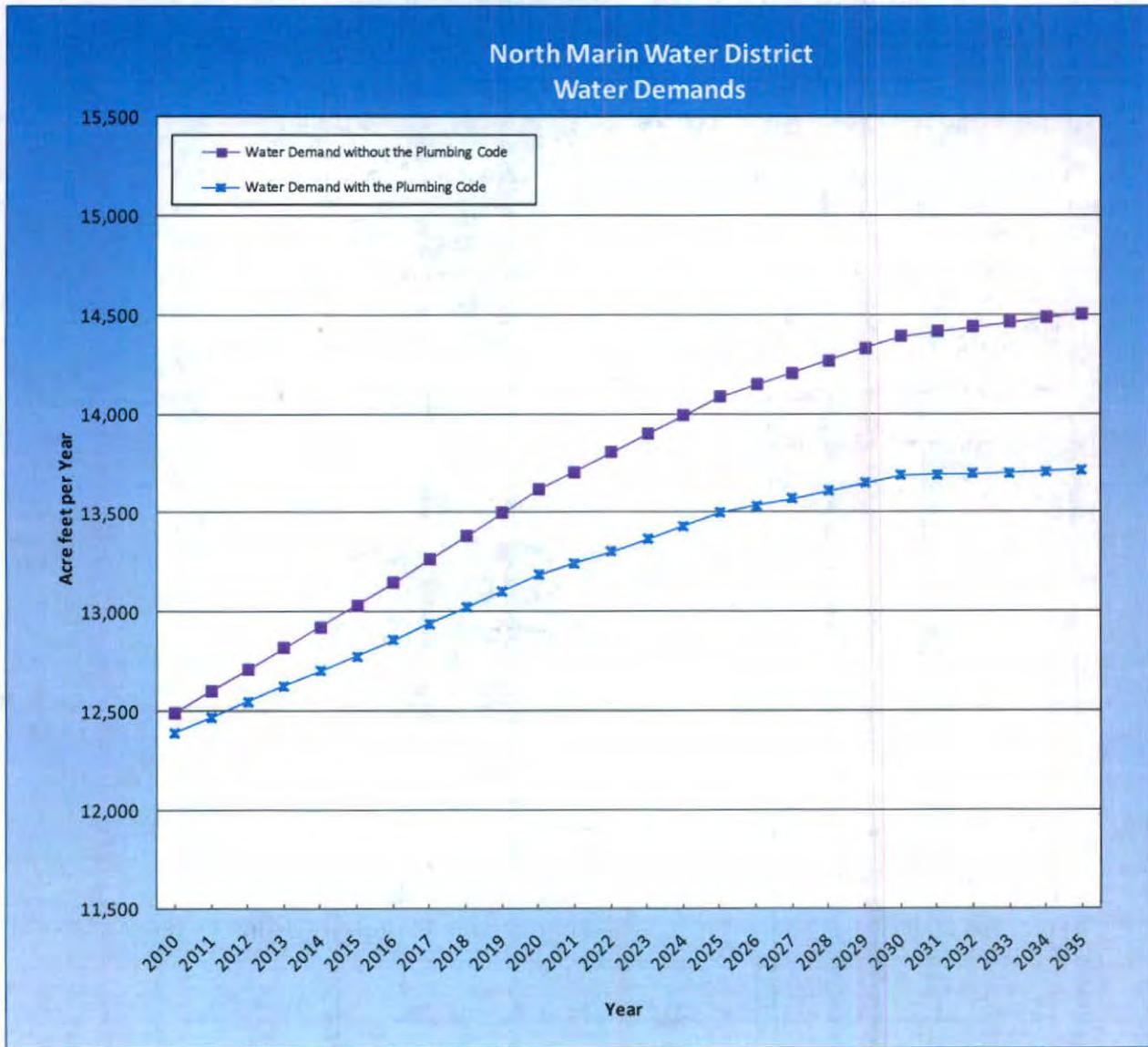


Table 4
Potable Water Use Projections for North Marin Water District

North Marin Water District Water Demands						
Water Demand (AFY)	2010	2015	2020	2025	2030	2035
Water Demand without the Plumbing Code	12,493	13,031	13,614	14,084	14,392	14,507
Water Demand with the Plumbing Code	12,390	12,774	13,184	13,496	13,686	13,713

*Data is not weather normalized. Total Water use is potable only. Does not include recycled water use. Recycled water use and projection are in a separate section in the UWMP.

4.5 Water Demand Projections – 2005 Urban Water Management Plan (UWMP) Format

The 2010 Urban Water Management Plan Guidance Document from the California Department of Water Resources is not planned to be released until after December 2010. Without the guidance document, the exact formatting of the tables for the 2010 UWMP are not known. Therefore, it was elected to place the demand data into the 2005 UWMP format.

Conversion of the Water Demand Projections Table and Graph to 2005 UWMP Format

The 2005 Urban Water Management Plan Guidance Document from the California Department of Water Resources (Ca DWR) requests that future demand information be in a specific format. Provided below are the five tables relating to future average day demands they requested. The demand projection shown is the “with Plumbing Code” demands and is otherwise the same as Table 4 and Figure 7. The demand projections in the Urban Water Management Plan appeared in the required DWR tables 2, 12, 13, 14, and 15 (2005 Plan requirement table numbers).

Urban Water Management Plan Tables for of 2005 UWMP

Table 5 below provides population projections for North Marin Water District service area.

Table 5 (DWR Table 2) Population – Current and Projected

North Marin Water District Current and Projected Population	
Year	Population
2010	60,423
2015	62,589
2020	64,804
2025	66,272
2030	67,626
2035	67,808

Current and Future Water Use by Customer Type

The current and projected number of connections and deliveries to the North Marin Water District’s water distribution system, by sector are identified below on Table 6.

Table 6 (DWR Table 12) Current and Projected Water Deliveries

Year		Demands and Accounts By Customer Category (Based on Demand with Plumbing Code, excluding UFW)										Total
		Single Family	Apartments	Condo	Commercial	Irrigation	Government	Miscellaneous	Pools	Mobile Homes	New Single Family	
2010	Number of Accounts	14,503	621	3,044	829	383	99	397	92	103	694	20,766
	Deliveries AF/Y	6,651	801	644	1,218	1,112	293	71	119	290	322	11,521
2015	# of accounts	14,503	644	3,153	882	408	105	422	95	103	1,278	21,593
	Deliveries AF/Y	6,574	807	651	1,271	1,183	312	76	123	290	593	11,879
2020	# of accounts	14,503	666	3,264	946	437	113	453	99	103	1,875	22,458
	Deliveries AF/Y	6,485	811	656	1,338	1,268	334	81	127	290	869	12,260
2025	# of accounts	14,503	681	3,338	1,011	467	121	484	101	103	2,271	23,081
	Deliveries AF/Y	6,403	808	656	1,412	1,356	358	87	130	290	1,053	12,552
2030	# of accounts	14,503	695	3,407	1,036	479	124	496	103	103	2,635	23,580
	Deliveries AF/Y	6,340	809	657	1,433	1,388	366	89	133	290	1,222	12,727
2035	# of accounts	14,503	697	3,416	1,060	490	127	507	103	103	2,685	23,691
	Deliveries AF/Y	6,292	800	651	1,455	1,421	375	91	133	290	1,245	12,753

Water Sales to Other Agencies

The North Marin Water District does not currently sell water to any other agency. According to North Marin Water District, all "outside sales" are local businesses and residents, and not to another agency.

Table 7 (DWR Table 13) Sales to Other Agencies

North Marin Water District Sales to Other Agencies						
	2010	2015	2020	2025	2030	2035
Water Distributed (AFY)	N/A	N/A	N/A	N/A	N/A	N/A

Unaccounted-for Water and Additional Water Use

For this project unaccounted for water is defined to be the difference between water produced and water sold to customers. Unaccounted-for water use normally includes unmetered water use such as for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, meter inaccuracy, and unauthorized connections. Unaccounted-for water can also result from meter inaccuracies.

Table 8 (DWR Table 14) Additional Water Uses and Losses, AF/yr

North Marin Water District Unaccounted for Water						
	2010	2015	2020	2025	2030	2035
Unaccounted-for system losses (AFY)	869	895	923	944	959	960

Total Water Use

The total current and future water use for the system is shown in the table below.

Table 9 (DWR Table 15) Total Potable Water Use, AF/yr*

North Marin Water District Total Demand with Plumbing Code						
	2010	2015	2020	2025	2030	2035
Total Demand with Plumbing Code and UFW (AFY)	12,390	12,774	13,184	13,496	13,686	13,713

*Total Water use is potable only. Does not include recycled water use. Recycled water use and projection are in another section of the UWMP.

5. COMPARISON OF INDIVIDUAL CONSERVATION MEASURES

5.1 Selecting Conservation Measures to be Evaluated (Conservation Measure Screening)

An important step in updating the water conservation program is the review and screening of new water conservation measures. In 2005, a list of 75 potential conservation measures was developed by Maddaus Water Management from known technology that included devices or programs (e.g., such as a high efficiency toilet) that would save water if installed by a water retailer, contractor, or customer. These measures are considered to be beyond the Tier One measures. A description of the potential conservation measure was developed that addressed the methods through which the device or program

will be implemented, including the distribution method, or mechanism, that would be used to activate the device or program.

A screening process was undertaken to reduce the number of measures to a more manageable number and to eliminate those measures that are not as well suited to the Marin-Sonoma County area as other potential measures. Each potential measure was screened based on four qualitative criteria (below), scored on a scale of 1 to 5, with 5 being the most acceptable, and 20 being the maximum possible number of points for all criteria. The screening was completed by local conservation professionals, in a one day meeting in July 2005, facilitated by Maddaus Water Management.

Qualitative Criteria

The rating group used the following criteria to evaluate the measures:

- **Technology/Market Maturity** – Refers to whether the technology needed to implement the conservation measure, such as an irrigation control device, is commercially available and supported by the local service industry. A measure was scored low if the technology was not commercially available or high if the technology was widely available in the service area. A device may be screened out if it is not yet commercially available in the region.
- **Service Area Match** – Refers to whether the measure or related technology is appropriate for the area's climate, building stock, or lifestyle. For example, promoting Xeriscape gardens for multi-family or commercial sites may not be appropriate where water use analysis indicates little outdoor irrigation. Thus, a measure scored low in this category if it was not well suited for the area's characteristics and could not save water. A measure scored high in this criterion if it was well suited for the area and could save water.
- **Customer Acceptance/Equity** – Refers to whether retail customers within the wholesale customer service area would be willing to implement and accept the conservation measures. For example, would retail customers attend homeowner irrigation classes and implement lessons learned from these classes? If not, then the water savings associated with this measure would not be achieved and a measure with this characteristic would score low for this criterion. This criterion also refers to retail customer equitability (i.e., one category of retail customers receives benefit while another pays the costs without receiving benefits). Retail customer acceptance may be based on:
 - Convenience
 - Economics
 - Perceived fairness
 - Aesthetics
- **Relative Effectiveness of Measure Available** – Refers to the selection of the most effective measure if alternate conservation measures address the same end use (example – irrigation for single family customers). If the measures are equally effective the most appropriate was selected (e.g., the measure that was easier or less expensive to implement).

Measures with low scores were eliminated from further consideration, while those with high scores passed into the next evaluation phase (cost-effectiveness analysis using the DSS Model). To reduce the list to a more manageable number, normally a score of 17 or more was necessary to pass. The process reduced the measures to be evaluated further down to 22 new measures in addition to the 10 Tier One measures.

Upon inspection of the overall list of new measures it became apparent that some measures could be combined and others could be separated into two categories as follows:

- Measures that were voluntary and incentive based
- Measures that were regulatory and applied to new development only

This division was used to create two lists of measures that could be evaluated separately. Tier Two targets various types of customers and offers a range of incentives to enhance participation. New Development measures were originally targeted at single family homes (including town homes and condos), as this category represents the largest category of new development with the most water savings potential.

The following table presents the measure descriptions that were originally analyzed as part of the 2005 study for "Tier 2" and "New Development" (ND) as well as the new measures that the contractors selected for this analysis. We have not modified the Tier 2 and New Development measure descriptions from their original description other than to add information for Cal Green, SB 407, and the Model Water Efficient Landscape Ordinance. The Tier 1 measures follow the definition of the CUWCC BMPs.

Cal Green (New Development Building Code): MWM added the Cal Green requirements that effect all new development in the State of California after January 1, 2011. MWM modeled water savings from the Cal Green building code by adding Multifamily and Commercial customer categories as appropriate to the following six measures: Tier 2 – 13 (Urinals), ND 1 (Rain Sensors), ND 2 (Smart Controllers), ND 3 (HETs), ND 7 (High Efficiency Faucets and Showerheads) and ND 8 (Landscape Requirements). As this is a new development law and based on discussions with contractors it was assumed actual water savings seen by the contractor would begin to occur in the year 2012. The new development ordinances for each contractor are listed in Table 10.

SB 407 (Plumbing Fixture Retrofit on Resale or Remodel): MWM included the new California Law SB 407 to the measure description table and in all of the contractors' models as a new measure. In the model MWM worked carefully such that SB 407 takes into account the overlap with the plumbing code (natural replacement), Cal Green and rebate programs (such as through Tier 2-10 Toilets). SB 407 begins from the year 2017 in residential and 2019 in commercial properties. SB 407 program length continues until all the older high flush toilets have been replaced in each service area.

Tables 11, 12, 13 and 14 summarize the new measures selected for each contractor. Note that measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from this program at the request of all the contractors on August 2, 2010 for the following reasons:

- Measure Tier 2-8 was removed because new development regulations have changed significantly since this measure was analyzed in 2005 and the regulations require higher efficiency fixtures than this measure.
- Measure Tier 2-9 was removed as rebates for installing synthetic turf are incorporated into Measure Tier 2-2, Cash for Grass.
- Measure Tier 2-11 was removed because this measure is not cost-effective.

The removed measures are included in Table 13 for reference purposes only, but were not included in any of the DSS Model or any of the quantitative water saving calculations.

**Table 10
New Development Ordinances**

New Development Ordinances								
ND Measure	City of			City of Santa	Town of	City of	Valley of the	Draft Cal
	NMWD	Rohnert Park ¹	City of Cotati ²	Rosa	Windsor	Sonoma	Moon WD	Green Requirement
Applicability (Customer Classes)	All	All	All	All	All	All	All	All
ND1-Rain Sensor Retrofit	2005	No	No	2010	2010 (SF>4 lots) & >2,500 sq ft/lot	No	2010, SF>5,000 sq ft	No
ND2-Smart Irrigation Controller	2005	No	2010	2010	2010 (SF>4 lots) & >2,500 sq ft/lot	No	2010, SF>5,000 sq ft	Yes
ND3- High Efficiency Toilets	2005	No	2009	2011	No	No	No	Yes
ND4- Dishwasher New Efficient	2005	No	2009	No	No	No	No	No
ND5-Clothes Washing Machine Requirement	2000	No	2009	No	No	No	No	No
ND6-Hot Water on Demand	No	No	No	No	No	No	No	No
ND7-High Efficiency Faucets and Showerheads	2006	No	2009	2011	No	No	No	Yes
ND8-Landscape and Irrigation Requirements	2004	2010 (State ordinance)	2010	SF since 2007. All other since 1993	2011 for landscapes > 2,500 sq ft (applies to all but SF<5 lots)	2010 (adopted ordinance planned to be adopted September 1, 2010, budgets w/ 60% ET	2010 for All except SF<5,000 sq. ft. and turf<600 sq ft	Yes
Urinals	2008	No	No	2011	No	2009	No	Yes
Source	NMWD Reg 15	Use Build it Green Checklist (Mandatory)	Use Build it Green Checklist (Mandatory)	Adopting Cal Green 2010	Adopting Landscape ordinance June 2010	Use Build it Green Checklist (Mandatory)	County ordinance effective Jan 1, 2010	State Reqmt; May take effect 2012

¹City of Rohnert Park has extensive green building ordinance requiring developers to select from a set of green building measures including some of the listed measures.

²City of Cotati ND-3 confirmed to start in 2009 based on July 27, 2010 with City of Cotati at the request of Damien O'Bid. Build It Green Checklist mandatory, beginning in the year 2004. The year 2009 was selected as a start date for 100% deployment of measures, as the measures can be selectively deployed providing the overall point minimum is achieved.

**Table 11
Cal Green Building Code**

Cal Green Building Code						
Building Class	Component	Effective Date[i]	Indoor Fixtures Included	Indoor Requirement	Landscaping & Irrigation Requirements	Are the Requirements Mandatory?
Residential	Indoor	1/1/2011	Toilets, Showers, Lavatory & Kitchen Faucets, Urinals	Achieve 20% savings overall below baseline		Yes
	Outdoor	1/1/2011			Provide weather adjusting controllers	Yes
Non Residential	Indoor	1/1/2011	Submeter leased spaces	Only if building >50,000 sq. ft. & if leased space use >100 gpd		Yes
			Toilets, Showers, Lavatory & Kitchen Faucets, Wash Fountains, Metering Faucets, Urinals	Achieve 20% savings overall below baseline		Yes
	Outdoor	1/1/2011			Provide water budget	> 1,000 sq ft. landscaped area
					Separate meter	As per Local or DWR ordinance
					Prescriptive landscaping requirements	> 1,000 sq ft. landscaped area
					Weather adjusting irrigation controller	Yes

[i] Effective date is 7/1/2011 for toilets

Table 12
Tier One Conservation Measures Evaluated in the DSS Model

Measure Number	Original CA BMP Number	Target Customer Category	Measure	Description
1	1	RSF, RMF	Residential Water Surveys - Indoor	This is the <u>indoor</u> component of indoor and outdoor water surveys for existing single-family and multi family residential customers. Normally those with high water use are targeted and provided customized report to homeowner.
2	1	RSF, RMF	Residential Water Surveys - Outdoor	This is the <u>outdoor</u> component of indoor and outdoor water surveys for existing single-family and multi family residential customers. Normally those with high water use are targeted and provided customized report to homeowner.
3	2	RSF, RMF	Residential Retrofit	Provide owners of pre-1992 homes with retrofit kits that contain easy-to-install low flow showerheads, faucet aerators, and toilet tank retrofit devices, until saturation reaches 75%.
4	5a	IRR	Water Budgets	90% of all irrigators of landscapes with separate irrigation accounts would receive a monthly or bi-monthly irrigation water use budget.
5	5b	IND	Large Landscape Conservation Audits	All public and private irrigators of landscapes larger than one acre would be eligible for free landscape water audits upon request.
6	6	RSF	Clothes Washer Rebate	Homeowners would be eligible to receive a rebate on a new water efficient clothes washer.
7	7	RSF, NRSF	Public Information Program	Public education would be used to raise awareness of other conservation measures available to customers. Programs could include poster contests, speakers to community groups, radio and television time, and printed educational material such as bill inserts, etc.
8	9	COM	Commercial Water Audits	High water use accounts would be offered a free water audit that would evaluate ways for the business to save water and money.
9	14	RSF	Single Family Residential ULF Toilet Rebate	Homeowners would be eligible to receive a rebate to replace an existing high volume toilet with a new water efficient toilet.
10	14	RMF	Multi family Residential ULF Toilet Rebate	Homeowners would be eligible to receive a rebate to replace an existing high volume toilet with a new water efficient toilet.

Notes:

RSF = Residential Single Family

RMF = Residential Multi Family

NRSF = New Residential Single Family

COM = Business

INS = Institutional

IND = Industrial

Table 13
Tier Two and New Development Conservation Measures Evaluated in the DSS Model

Measure Number	Name of Measure	Target Customer Category	Description
Tier 2-1	Rain-sensor (shut off device) retrofit on irrigation controllers	Existing Customers SF	Agency pays for the rain sensor, homeowner pays for the optional installation (\$35).
Tier 2-2	Cash for Grass (turf removal program)	Existing Customers SF, MF, CII	Provide a rebate for customers who remove irrigated turf grass and replace it with low water using plants. The rebate would require that an appropriate irrigation system be installed for the replacement landscaping. Limited to \$500 rebate at \$1.00 per square foot.
Tier 2-3	Financial Incentives for Being Below Water Budget	All Dedicated Irrigation Meter customers	For dedicated irrigation customers, link a landscape water budget to a retail water agency's rate schedule so that the dedicated irrigation meter customer pays less when their water use is at or under their water budget.
Tier 2-4	Financial Rebates for Irrigation Meters	Existing CII Customers with mixed water use (indoor and outdoor)	Provide financial incentives/rebates for selected permits and equipment to convert mixed use meters to a separate dedicated irrigation meter. Model implementation program after City of Santa Rosa's Service Split program. Utility will provide a water budget for the new irrigation meter.
Tier 2-5	Smart Irrigation Controller Rebates	Existing Customers SF, MF, CII, IRR	Provide an up to \$450 rebate for the purchase of a SMART irrigation controller and associated signal fees (up to \$150). Assume one controller for RSF and two for others. Minimum participant requirements: at least 500 sq ft of well maintained turf irrigated with an automatic irrigation control system.
Tier 2-6	Financial Incentives/ Rebates for Irrigation Upgrades	Existing Customers MF, CII, IRR, and SF for some contractors if requested as a new measure	For MF & CII customers with landscape provide rebates for selected types of irrigation equipment upgrade including rain sensors, rain harvesting, and grey water. Each contractor can include any equipment desired and allow the customers to select the items they prefer up to the maximum rebate value per customer. Water savings assumes a mixture of many different irrigation technologies. Model program after water agencies such as EBMUD or Contra Costa Water District or Santa Rosa.
Tier 2-7	Hotel retrofit (w/financial assistance) - CII Existing	Existing Customers: CII	Following a free water audit, offer the hotel a rebate for equipment identified that would save water. Provide a rebate schedule for certain efficient equipment such as air-cooled ice machines, steamers, washers, cooling towers, and spray rinse valves.
Tier 2-8 MEASURE REMOVED FROM 2010 ANALYSIS	Offer new accounts reduced connection fees for installing efficient process equipment for selected businesses (restaurants, laundry mat, food/groceries and hospital)	New Customers: CII	Offer reduced water and sewer connection fees to new facilities to install water efficient equipment in new facilities that goes above and beyond the building code requirements. Model program after Santa Rosa's BAT program.

Measure Number	Name of Measure	Target Customer Category	Description
Tier 2-9 MEASURE REMOVED FROM 2010 ANALYSIS	Synthetic Turf Rebate	Existing Customers: SF (North Marin only) , IRR	Provide a rebate for replacing existing turf with synthetic turf. Market program to all irrigation customers and single family for North Marin only.
Tier 2-10	High Efficiency Toilet (HET)	Existing Customers: SF & MF	Provide a rebate or voucher for the installation of a high efficiency toilet (HET). HET are defined as any toilet to flush 20% less than an ULFT and include dual flush technology. Rebate amounts would reflect the incremental purchase cost.
Tier 2-11 MEASURE REMOVED FROM 2010 ANALYSIS	Dishwasher New Efficient	Existing Customers: SF	Provide a rebate to encourage homeowners to replace old inefficient dishwashers with new efficient dishwashers (meeting certain water efficiency standards, such as gallons/load).
Tier 2-12	CII Rebates - replace inefficient water using equipment	Existing Customers: CII	Provide a rebate for a standard list of water efficient equipment. Included would be x-ray machines, icemakers, air-cooled ice machines, steamers, washers, spray valves, efficient dishwashers, replace once through cooling, add conductivity meters on cooling towers, etc.
Tier 2-13	0.5 gal/flush urinals in new buildings	New Customers: CII	Require that new buildings be fitted with 0.5 gpf or less urinals rather than the current standard of 1.0-gal/flush models.
ND1	Rain-sensor shut off device on irrigation controllers	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require-sensor or rain shut off devices with all new automatic irrigation system installations on new homes.
ND2	Smart Irrigation Controller	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require developers to provide the latest state of the art SMART irrigation controllers. These SMART controllers have on-site temperature sensors or rely on a signal from a central weather station that modifies irrigation times at least weekly.
ND3	High Efficiency Toilet (HET)	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require new single family and multifamily residents to install a high efficiency toilet (HET). HET are defined as any toilet to flush 20% less than an ULFT and include dual flush technology.
ND4	Dishwasher New Efficient	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require new single-family residents to install an efficient dishwasher (meeting certain water efficiency standards, such as gallons/load).
ND5	Clothes washing machines requirement for new residential	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Building departments would be responsible to ensure that an efficient washer was installed before new home occupancy.

Measure Number	Name of Measure	Target Customer Category	Description
ND6	Hot Water on Demand	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require developers to equip new homes with a hot water on demand system or tankless hot water heaters, such as those made by Metland Systems and others. These systems use a pump placed under the sink to recycle water sitting in the hot water pipes to the water heater.
ND7	High efficiency faucets and showerheads	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Require developers to install Lavatory faucets that flow at no more than 1.5 gpm, kitchen faucets at 2.2 gpm, showerheads at 2.0 gpm
ND8	Landscape and irrigation requirements	New Customers: SF, MF and CII depending upon local ordinances and contractor request of new measures	Enforce a regulation that specifies that homes be landscaped according to Xeriscape principals and the Model Water Efficient Landscape Ordinance, with appropriate irrigation systems. (Combines with Smart Controller listed above). Goal is overall 25% reduction in irrigation water use.
New Measure	SB 407	Existing: SF, MF and CII	Measure will start in the year 2017 for SF accounts and 2019 for MF and CII accounts to coincide with the California State Law SB 407. The law includes working with the real estate industry to require a certificate of compliance be submitted to the City stating that, when a property is sold, information on whether or not indoor water fixtures are efficient was disclosed to the buyer.
Potential New Measure Selected by One or More Contractors	Rainwater harvesting	New Customers SF; Existing SF, MF	Provide a rebate (\$100 RSF and \$200 RMF) to assist a certain percentage of single family homeowners per year with installation of rain barrels or cisterns.
Potential New Measure Selected by One or More Contractors	Grey Water System Rebate	New Customers SF; Existing SF	Provide a rebate (up to \$500) to assist a certain percentage of single family homeowners per year to install gray water systems. Parts cost approx \$200, installation is approx \$400-\$500
Potential New Measure Selected by One or More Contractors	Tiered Water Rates	Existing Customers: SF, MF, CII	Change Rate Structure to an inclining block rate and increase prices significantly periodically to maintain savings, such as every ten years.
Potential New Measure Selected by One or More Contractors	Submetering and Consumption Billing of Apartments and Mobile Homes	New Customers: MF	Require installation of submeters on all new MF and mobile home accounts unless the building has a central, circulating hot water system (which precludes a meter on all water going to each unit).

RSF = Residential Single Family

RMF = Residential Multi Family

NRSF = New Residential Single Family

COM = Business

INS = Institutional

IND = Industrial

Table 14
Conservation Measures Evaluated in the DSS Model

New Conservation Measures for Analysis (New for the 2010 analysis)							
Measure	North Marin			Valley of the			
	City of Cotati	Water District	City of Rohnert Park	City of Santa Rosa	City of Sonoma	Moon Water District	Town of Windsor
Rainwater Harvesting Rebate				✓			
Grey Water System Rebate				✓		✓	
Tiered Water Rates (Conservation Pricing)	✓				✓		
Submetering and Consumption Billing of Apartments and Mobile Homes - New and Existing			✓				
Add CII to New Development Requirements	✓	✓					✓
SB407 - Retrofit of High Efficiency Fixtures	✓	✓	✓	✓	✓	✓	✓
Add SF Residential to Irrigation System Upgrades (T2-6)		✓			✓	✓	✓

5.2 Perspectives on Benefits and Costs

The determination of the economic feasibility of water conservation programs depends on comparing the costs of the programs to the benefits provided. The analysis was performed using the DSS Model. The DSS Model calculates savings at the end-use level; for example, the model determines the amount of water a toilet rebate program saves in daily toilet use for each single family account.

Present value analysis using constant 2010 dollars and a real discount rate of 3% is used to discount costs and benefits to the base year. From this analysis, benefit-cost ratios of each measure are computed. When measures are put together in programs, the model is set up to avoid double counting savings from multiple measures that act on the same end use of water. For example, multiple measures in a program may target toilet replacements. The model includes assumptions to apportion water savings between multiple measures.

Economic analysis can be performed from several different perspectives, based on which party is affected. For planning water conservation programs for utilities, the perspectives most commonly used for benefit-cost analyses include the utility and the community. The "utility" benefit-cost analysis is based on the benefits and costs to the water provider. The "community" benefit-cost analysis includes the utility benefit and costs together with account owner/customer benefits and costs. These include customer energy and other capital or operating cost benefits plus costs of implementing the measure, beyond what the utility pays.

The utility perspective offers two advantages for this analysis. First, it considers only the program costs that will be directly borne by the utility. This enables the utility to fairly compare potential investments for saving and supplying water. Second, because revenue shifts are treated as transfer payments, the analysis is not complicated with uncertainties associated with long-term rate projections and retail rate design assumptions. Because it is the water provider's role in developing a conservation plan that is paramount in this study, the utility perspective was primarily used to evaluate elements of the plan.

The community perspective is defined to include the utility and the customer costs and benefits. Costs incurred by customers striving to save water while participating in conservation programs are considered, as well as the benefits received in terms of reduced energy bills (from water heating costs) and wastewater savings, among others. Other factors external to the utility, such as environmental effects and climate change, are not included in the benefit-cost analysis. Because these external factors are often difficult to quantify and are not necessarily under the control of the utility, they are therefore frequently excluded from economic analyses, including this one.

5.3 Present Value Parameters

The time value of money is explicitly considered. The value of all future costs and benefits is discounted to 2005 (the model start year) at the real interest rate of 3.0%. The DSS Model calculates this real interest rate, adjusting the current nominal interest rate (assumed to be approximately 6.1%) by the assumed rate of inflation (3.0%). Cash flows discounted in this manner are herein referred to as "Present Value" sums.

5.4 Assumptions about Measure Costs

Costs were determined for each of the measures based on industry knowledge, past experience and data provided by the North Marin Water District. Costs may include incentive costs, usually determined on a per-participant basis; fixed costs, such as marketing; variable costs, such as the costs to staff the measures and to obtain and maintain equipment; and a one-time set-up cost. The set-up cost is for measure design by staff or consultants, any required pilot testing, and preparation of materials that will be used in marketing the measure. Measure costs were estimated for 30 years, (each year between 2005 and 2035). Costs were spread over the time period depending on the length of the implementation period for the measure and estimated voluntary customer participation levels.

Lost revenue due to reduced water sales is not included as a cost because the conservation measures evaluated herein generally take effect over a span of time that is sufficient to enable timely rate adjustments, if necessary, to meet fixed cost obligations.

5.5 Assumptions about Measure Savings

Data necessary to forecast water savings of measures include specific data on water use, demographics, market penetration, and unit water savings. Savings normally develop at a measured and predetermined pace, reaching full maturity after full market penetration is achieved. This may occur three to ten years after the start of implementation, depending upon the implementation schedule.

5.6 Assumptions about Avoided Costs

The most expensive source of water for almost all of the contractors, and in some cases the only source of water is the SCWA Russian River Supply. The price of the water to the contractors is set by SCWA every year and varies by contractor location, depending upon which aqueduct they draw from. Since 1990 the annual price of water has increased significantly. The annual rate of increase for 1989/1990 to 2010/11 has varied from 4.5 to 5.1% per year depending upon the aqueduct.

Since 1990 the annual rate of inflation has increased 2.64% per year in the San Francisco Bay Area, as measured by the Consumer Price Index (CPI). Based on this data the price of SCWA water has increased faster than the CPI.

Therefore in evaluating the benefit cost ratio of conservation measures and programs it is appropriate to consider the net increase in benefits (i.e., the net increase in the avoided cost of water). Other costs, such as the cost of conservation will increase presumably at the CPI rate. Also the cost of conservation programs will be paid for with inflated dollars.

For this evaluation the avoided costs were escalated from the 2010/11 value to a projected 2025/26 value (15 years). The cost escalated was the 2010/11 current price plus a distribution cost of \$27.70 per acre-foot taken from pumping costs documented by North Marin Water District, which was the only contractor that had pumping costs readily available, and used for all contractors.

The net increase and the avoided costs used in this evaluation are listed below:

- Santa Rosa aqueduct contractors - 1.86% per year escalation or \$ 832 per acre-foot
- Petaluma aqueduct contractors - 1.81% per year escalation or \$ 827 per acre-foot
- Sonoma aqueduct contractors - 2.43% per year escalation or \$1,006 per acre-foot
- Windsor was escalated at the Santa Rosa aqueduct rate to \$ 991 per acre-foot
- North Marin was escalated at their own individual rate to \$1,439 per acre-foot. NOTE: NMWD Rate based on only a 12 year period for NMWD based on historical SCWA prices and CPI from the year FY 1999/00 to FY 2010/11.

This has the effect of raising the benefit-cost ratios in our evaluation by the amount that is roughly that percentage difference in the future vs. the current price of SCWA water. In our opinion this escalation represents a more realistic comparison of benefits and costs of conservation.

5.7 Measure Assumptions including Unit Costs, Water Savings, and Market Penetrations

Appendix A includes assumptions in the DSS Model for each of the following variables for all measures modeled:

- *Targeted Water User Group; End Use* – Water user group (e.g., single-family residential) and end use (e.g., indoor or outdoor water use).
- *Utility Unit Cost (for contractor)* – Cost of rebates, incentives, and contractors hired (by the utility) to implement measures.
- *Retail Customer Unit Cost* – Cost for implementing measures that is paid by retail customers (i.e., the remainder of a measure's cost that is not covered by a utility rebate or incentive).
- *Utility Administration and Marketing Cost* – The cost to the utility administering the measure, including consultant contract administration, marketing, and participant tracking. The mark-up is sufficient (in total) to cover local agency conservation staff time and general expenses and overhead.

The unit costs vary according to the type of account and implementation method being addressed. For example, a measure might cost a different amount for a residential single family account, than a residential multi-family account, and for a rebate versus a direct installation implementation method. Typically water utilities have found that there are increased costs associated with achieving higher market saturation, such as more surveys per year. Appendix A shows the unit costs used in the study. The model calculates the annual costs based on the number of participants each year. The general formulas for calculating annual costs are:

Annual Utility Cost = Annual market saturation x total accounts in category x utility unit cost per account x (1+administration and marketing markup)

Annual Customer Cost = Annual number of participants x retail customer unit cost

Annual Community Cost = Annual utility cost + annual customer cost

5.8 Comparison of Individual Measures

Table 15 presents how much water the measures would save over 30 years, how much they would cost, and what cost of water saved is *if the measures were run on a stand-alone basis (i.e. without interaction or overlap from other measures that might address the same end use(s))*. Only the net or highest water savings for overlapping conservation measures was included in each program.

Economic indicators are defined below:

- *Utility costs:* those costs that the utility would spend include measure set-up, annual administration, and payment of rebates or purchase of devices or services as specified in the measure design.
- *Customer costs:* those costs customers would spend to participate in North Marin Water District programs and maintaining its effectiveness over the life of the measure.
- *Community costs:* Community costs include utility and customer costs to implement measures.

The column headings in Table 15 are defined as follows:

- *Year 2035 Water Savings (AF/Yr) =* Water savings in 2035 (AF/Yr) where AF/Yr = acre-feet per year.
- *Present Value of Water Utility Costs =* 30 year present value of the time stream of annual costs.
- *Utility Benefit-Cost ratio =* NPV of utility costs/NPV of utility benefits over 30 years.
- *Community Benefit-Cost ratio =* (NPV of Utility Benefits plus NPV of customer energy savings)/NPV of utility plus NPV of customer costs).
- *Utility Cost of Savings per Unit Volume (\$/AF, by cost category) =* NPV of Category Costs divided by 30-year volume of water saved.
- *Total Utility Cost for Five Years 2011-2015 =* Total cost in dollars to run the program for the years 2011 to 2015 (five years). This is a five year cost often useful for short term financial budgeting purposes.

Table 15
Conservation Measure Cost and Savings

North Marin Water District Conservation Measure Cost and Savings						
Measure Name	Year 2035 Water Savings (AFY)	Present Value of Water Utility Costs	Utility Benefit Cost Ratio	Community Benefit Cost Ratio	Utility Cost of Savings per Unit Volume (\$/AF)	Total Utility Cost for Five Years 2011-2015
CUWCC #1a - Residential Water Surveys - Interior	26	\$350,879	1.99	3.06	\$462	\$87,959
CUWCC #1b - Residential Water Surveys - Outdoor	49	\$350,318	3.58	3.26	\$254	\$87,824
CUWCC #2 - Plumbing Retrofit Kits	25	\$4,738	147.19	27.41	\$6	\$0
CUWCC #5a - Large Landscape Water Budgets	216	\$232,755	22.71	22.71	\$41	\$25,345
CUWCC #5b - Large Landscape Audits	9	\$541,986	0.46	0.31	\$2,017	\$117,000
CUWCC #6 - Washer Rebates	70	\$640,253	2.55	2.71	\$340	\$285,075
CUWCC #7 - Residential Public Education	66	\$872,854	2.26	3.38	\$421	\$212,106
CUWCC #9 - Commercial Water Audits	107	\$408,892	5.33	4.11	\$161	\$165,000
CUWCC #14a - RSF Toilet Replacement	10	\$389,788	1.45	0.60	\$692	\$0
CUWCC #14b - RMF Toilet Replacement	2	\$110,189	0.80	0.33	\$1,264	\$0
Tier 2 - 1 Rain Sensor Retrofit	13	\$76,245	5.85	2.44	\$148	\$35,203
Tier 2 - 2 Cash for Grass	134	\$551,610	3.80	2.11	\$221	\$120,068
Tier 2 - 3 Financial Incentives for Being Below Water Budget	184	\$233,814	11.32	0.84	\$69	\$101,250
Tier 2 - 4 Irrigation Meter Rebates	2	\$23,536	1.97	1.09	\$435	\$21,505
Tier 2 - 5a Smart Irrigation Controller Rebates - RSF	11	\$387,234	0.78	0.67	\$1,056	\$257,578
Tier 2 - 5b Smart Irrigation Controller Rebates - RMF, CII, IRR	62	\$784,966	1.45	1.33	\$575	\$523,128
Tier 2 - 6 Financial Incentives/Rebates for Irrigation Upgrades	59	\$659,575	1.33	0.74	\$598	\$330,521
Tier 2 - 7 Hotel Retrofit	5	\$15,005	5.53	2.13	\$145	\$7,176
Tier 2 - 10 High Efficiency Toilets	15	\$690,834	0.57	0.32	\$1,553	\$364,842
Tier 2 - 12 CII Rebates - Replace Inefficient Water Using Equipment	4	\$39,013	1.40	1.30	\$570	\$18,658
Tier 2 - 13 New Commercial Urinals	1	\$4,408	4.08	0.45	\$219	\$4,345
Tier 2 - ND1 Rain Sensor Retrofit	54	\$28,793	25.56	5.11	\$31	\$10,651
Tier 2 - ND2 Smart Irrigation Controller	90	\$27,968	43.82	1.17	\$18	\$10,651
Tier 2 - ND3 High Efficiency Toilets	12	\$35,523	8.97	0.39	\$101	\$11,677
Tier 2 - ND4 Dishwasher New Efficient	14	\$27,368	6.78	1.19	\$117	\$10,651
Tier 2 - ND5 Clothes Washing Machine Requirement	52	\$27,128	27.41	2.27	\$29	\$10,564
Tier 2 - ND6 Hot Water on Demand	37	\$21,307	22.28	0.91	\$35	\$9,528
Tier 2 - ND7 High Efficiency Faucets and Showerheads	45	\$31,860	20.62	11.39	\$39	\$10,651
Tier 2 - ND8 Landscape and Irrigation Requirements	61	\$26,797	31.01	0.14	\$26	\$10,651
Tier 2 - SB 407 Requirements	6	\$6,952	10.15	0.34	\$72	\$0

Note: some measures have a \$0 Total Utility Cost from 2011 to 2015. That just indicates there are no costs in that particular 5 year period. It does not mean there is no activity before 2011 or after 2011. This column is meant to be helpful for budgeting purposes only.

6. RESULTS OF CONSERVATION PROGRAM EVALUATION

6.1 Selection of Measures for Programs

Table 16 provides a summary of which measures are included in each of the six draft alternative programs. The six packages are designed to illustrate a range of various measure combinations and resulting water savings.

These programs are not intended to be rigid programs but rather to demonstrate the range in savings that could be generated if selected measures were run together. In this step we account for a percent overlap in water savings (and benefits) and estimate combined savings and benefits from programs or packages of measures.

A description of each program evaluated follows. For most contractors Tier Two measures are modeled to commence in 2011. The only reason the measure would not start in 2011 is if an agency had submitted data showing activity in one of the Tier 2 programs from 2005 to 2009. Most agencies have shown significant activity on the Tier One measures since the model start year of 2005.

Program – Existing

Savings for the “Existing Program” include the measures that have been run during the time period of 2005 and 2009 as submitted by each individual contractor. For the North Marin Water District, the following measures were included:

Existing Program Conservation Measures:

Existing Program Conservation Measures:

- CUWCC #1 - Residential Water Surveys - Interior
- CUWCC #1 - Residential Water Surveys - Outdoor
- CUWCC #2 - Plumbing Retrofit Kits
- CUWCC #5b - Large Landscape Audits
- CUWCC #6 - Washer Rebates
- CUWCC #7 - Residential Public Education
- CUWCC #9 - Commercial Water Audits
- CUWCC #14 - RSF Toilet Replacement
- CUWCC #14 - RSF Toilet Replacement
- Tier 2 - ND1 Rain Sensor Retrofit
- Tier 2 - ND2 Smart Irrigation Controller

Program – Existing + New Measures

Savings for the “Existing Program + New Measures” include the measures that have been run during the time period of 2005 and 2009 as submitted by each individual contractor in addition to the three new measures evaluated for each contractor. The new measures for each contractor are listed in Table 14.

Program – Tier One Measures

This program was designed to be the future program with full compliance for “Tier One Measures” including all the CUWCC BMPs. Program water savings includes actual achievements for the years 2005 to 2009 and then projected participation rates starting in 2011 in accordance with those specified in the California Urban Water Conservation Council’s Memorandum Of Understanding, which may be higher (or lower) than you are currently achieving. If you continue to implement the BMPs as planned, your future demands will be reduced by the amount of savings from Tier One future measures.

Program - Tier One + New Development Measures

Savings for Tier One + New Development Measures were designed to isolate the effects of the New Development measures that would be implemented as well as the completion of Tier One measures. These eight New Development measures target new single family homes, multifamily homes, and commercial development based on the local ordinances or Cal Green as shown in Table 12 and 13.

Program – Tier One + Tier Two Measures

Savings for Tier One + Tier Two Measures includes 13 additional measures beyond the CUWCC BMPs. Tier One Future was designed to be the future program with full compliance for all the CUWCC BMPs. The participation rates starting in 2005 are in accordance with historical conservation efforts for the years 2005 to 2009. Then they proceed with the rate specified in the California Urban Water Conservation Council’s Memorandum of Understanding, which may be higher (or lower) than you are currently achieving. If you continue to implement these measures, your future water demands will be reduced by the amount of conservation savings. Descriptions of the Tier Two measures are in Table 13 and cost and saving assumptions for each individual measure can be found in Attachment A. Note that due to increased regulations and additional research and analysis on conservation measures, measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from this program at the request of all the contractors on August 2, 2010.

Program: Tier One, Tier Two, New Development

Savings for Tier One, Tier Two, and New Development includes all analyzed conservation measures except for the “new measures” because the new measures are unique to each contractor and did not go through the original measure screening process as the other measures in 2005. Also note that measures that either saved a small amount of water or were not cost-effective (Benefit-Cost ratio less than 1.0 and a high cost of water saved) were included here. Some of the Tier Two measures are small programs in that the target number of accounts is very small. So even though they appear to be relatively expensive from a measure point of view, their impact on the overall program costs and savings is relatively minor. Note that due to increased regulations and additional research and analysis on conservation measures, measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from this program at the request of all the contractors on August 2, 2010.

Table 16
Conservation Measures Selected for Programs

Measure Name	Program Existing	Program Existing & New	Program Tier 1	Program Tier 1 & Tier 2	Program Tier 1 & ND	Program Tier 1 & Tier 2 & ND
CUWCC #1a - Residential Water Surveys - Interior	✓	✓	✓	✓	✓	✓
CUWCC #1b - Residential Water Surveys - Outdoor	✓	✓	✓	✓	✓	✓
CUWCC #2 - Plumbing Retrofit Kits	✓	✓	✓	✓	✓	✓
CUWCC #5a - Large Landscape Water Budgets	✓	✓	✓	✓	✓	✓
CUWCC #5b - Large Landscape Audits			✓	✓	✓	✓
CUWCC #6 - Washer Rebates	✓	✓	✓	✓	✓	✓
CUWCC #7 - Residential Public Education	✓	✓	✓	✓	✓	✓
CUWCC #9 - Commercial Water Audits	✓	✓	✓	✓	✓	✓
CUWCC #14a - RSF Toilet Replacement			✓	✓	✓	✓
CUWCC #14b - RMF Toilet Replacement			✓	✓	✓	✓
Tier 2 - 1 Rain Sensor Retrofit				✓		✓
Tier 2 - 2 Cash for Grass	✓	✓		✓		✓
Tier 2 - 3 Financial Incentives for Being Below Water Budget				✓		✓
Tier 2 - 4 Irrigation Meter Rebates				✓		✓
Tier 2 - 5a Smart Irrigation Controller Rebates - RSF				✓		✓
Tier 2 - 5b Smart Irrigation Controller Rebates - RMF, CII, IRR	✓	✓		✓		✓
Tier 2 - 6 Financial Incentives/Rebates for Irrigation Upgrades				✓		✓
Tier 2 - 7 Hotel Retrofit				✓		✓
Tier 2 - 10 High Efficiency Toilets	✓	✓		✓		✓
Tier 2 - 12 CII Rebates - Replace Inefficient Water Using Equipment				✓		✓
Tier 2 - 13 New Commercial Urinals				✓		✓
Tier 2 - ND1 Rain Sensor Retrofit	✓	✓			✓	✓
Tier 2 - ND2 Smart Irrigation Controller	✓	✓			✓	✓
Tier 2 - ND3 High Efficiency Toilets	✓	✓			✓	✓
Tier 2 - ND4 Dishwasher New Efficient	✓	✓			✓	✓
Tier 2 - ND5 Clothes Washing Machine Requirement	✓	✓			✓	✓
Tier 2 - ND6 Hot Water on Demand					✓	✓
Tier 2 - ND7 High Efficiency Faucets and Showerheads	✓	✓			✓	✓
Tier 2 - ND8 Landscape and Irrigation Requirements	✓	✓			✓	✓
SB 407 Requirements (Plumbing Retrofit on Resale or Remodel)		✓				

NOTE – Due to increased regulations and additional research and analysis on conservation measures, Measures Tier 2-8, Tier 2-9 and Tier 2-11 were removed from analysis at the request of all the contractors

6.2 Results of Program Evaluation

Figure 8 shows annual water demand with no conservation, plumbing code only, and the six programs. Table 17 shows the savings in 5 year increments for all six programs. The savings in Table 17 are just from the conservation programs alone and do not include the plumbing code savings. The separate starting points for the demand with and without the plumbing code versus the conservation programs is directly correlated to the fact that the contractors have existing conservation programs active from 2005 and 2009 that are already saving water by the year 2010.

Figure 8
Long Term Demands with Conservation Programs

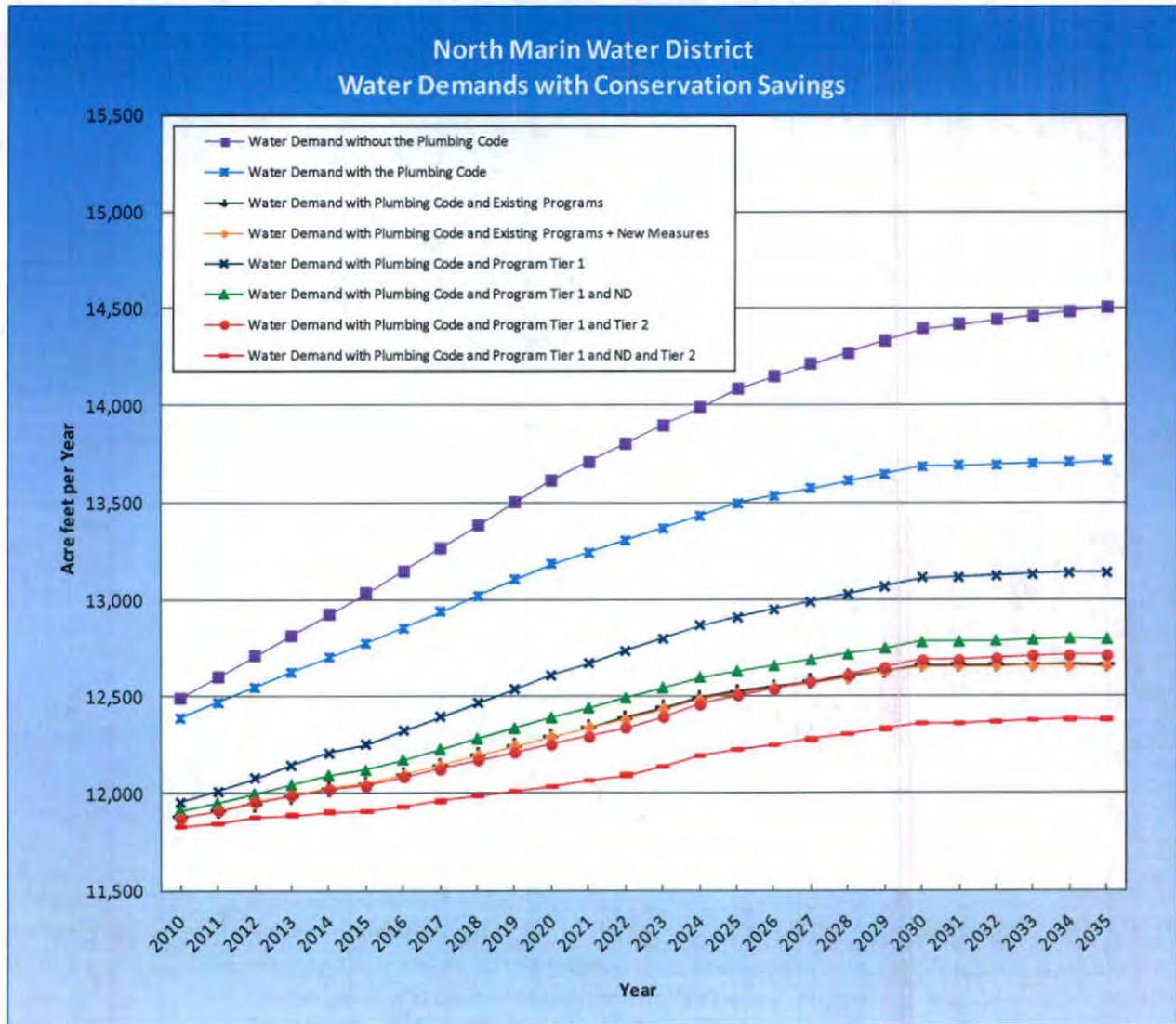


Table 17
Long Term Conservation Program Savings

Conservation Savings (AFY)	2010	2015	2020	2025	2030	2035	Benefit Cost Ratio	Benefit Cost Ratio
							Utility	Community
Existing Programs	510	724	893	975	1,026	1,053	4.2	1.8
Existing Programs + New Measures	510	724	894	982	1,033	1,060	4.2	1.8
Program Tier 1	436	522	576	585	575	576	3.7	3.3
Program Tier 1 and ND	482	656	795	866	905	916	4.7	1.7
Program Tier 1 and Tier 2	514	734	929	994	999	999	2.9	1.9
Program Tier 1 and ND and Tier 2	560	867	1,147	1,273	1,326	1,336	3.5	1.4

Figure 9 shows how marginal returns change as more money is spent to achieve savings. As the figure shows the cost versus saving curve is starting to decline after Program Tier One + New Development. This means that the added cost of going from that Program to Tier One + Tier Two will save less water per

unit expenditure. In other words there are diminishing returns when the curve starts to flatten out as Tier Two measures are added to the program. It is clear that the New Development measures are more cost-effective to the utility than Tier Two measures. It is not to say that the Tier Two measures are a poor investment. The decision on which program is appropriate for each agency is dependent on many factors. Most recently it may be impacted by the goals set forth by SB7x-7 which calls for a reduction in per capita water use by 2020, which is independent of the economic analysis.

Figure 9
Present Value of Utility Costs versus Cumulative Water Saved

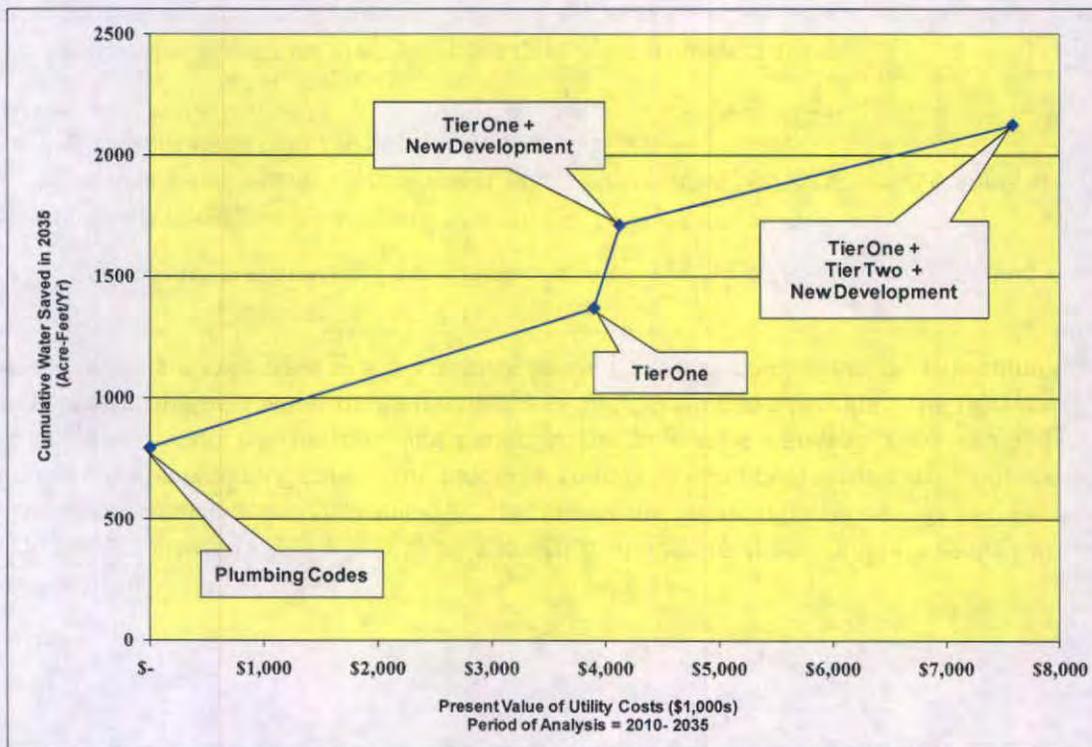


Table 18 presents key evaluation statistics compiled from the DSS Model. Assuming all measures are successfully implemented, projected water savings for 2030 in AF are shown, as are the costs of achieving this reduction. Water savings for programs have been shown for 2035 in Table 18.

The costs are expressed two ways.

1. Total present value over the analysis period,
2. The cost of water saved. Cost of water saved is presented two ways: for the utility and the total community (customer plus utility).

These cost parameters are derived from the annual time stream of utility, customer and community costs.

The water savings are expressed as a percentage of the projected 2035 demand. One column indicates the percentage of the new water demand in 2035 each program could provide. The new water needed by new customers over the full planning period is the difference between 2005 demand and 2035 demand without the plumbing code. The plumbing code is an additional savings that could be added on top of the water savings shown in Table 18. This allows the plumbing code savings percent and water savings in AF/Yr shown in Table 4 and to be additive to the conservation program savings in AF/Yr and percentages shown in Table 18.

Table 18
Comparison of Long-Term Conservation Programs – Utility Costs and Savings

North Marin Water District Comparison of Conservation Program Costs and Savings										
Conservation Program	Water Utility Benefit-Cost Ratio	Community Benefit-Cost Ratio	2015 Water Savings (AFY)	2035 Water Savings (AFY)	2035 Indoor Water Savings (AFY)	2035 Outdoor Water Savings (AFY)	Total Water Savings as a % of Total Production in 2035*	30 Year		
								Present Value of Water Utility Costs (\$1,000s)	Total Utility Cost for Five Years (\$1000)	Cost of Water Saved (\$/AF)
Existing Program	4.19	1.81	724	1,053	367	686	7.7%	\$5,094	\$1,947	\$209
Existing Program + New Measures	4.18	1.78	724	1,060	373	686	7.7%	\$5,129	\$1,957	\$210
Tier One	3.73	3.28	522	576	244	332	4.2%	\$3,903	\$980	\$245
Tier One + Tier Two	2.93	1.72	734	999	267	732	7.3%	\$7,369	\$2,765	\$300
Tier One + New Development	4.70	1.94	656	916	397	519	6.7%	\$4,129	\$1,065	\$188
Tier One + Tier Two + New Development	3.48	1.45	867	1,336	420	916	9.7%	\$7,596	\$2,850	\$249

Notes:

- Present Value is determined using an interest rate of 3%
- Cost of water saved is present value of water utility cost divided by total 30-year water savings.
- * % of water saved refers to the demand without the plumbing code
- Total water savings in 2035 as a percent of production is relative to no plumbing code production
- Conversion 1 MGD is equal to 1120 AF/Yr

7. CONCLUSIONS

7.1 Relative Savings and Cost-Effectiveness of Programs

The North Marin Water District service area has a relatively high portion of residential water use and a significant amount of outdoor water use. Consequently, residential conservation programs produce the most savings. North Marin Water District's service area is not a heavy manufacturing sector so the conservation potential in the commercial sector is relatively low. Based on the assumed avoided cost of new water, water conservation programs are cost-effective. Overall conclusions are:

- The decrease in demand for the North Marin Water District compared to the water demand projections in the 2005 Demand and Water Conservation Measure Analysis completed by MWM was due to the reduction in population and employment projections and change to lower water factors for each customer category used to project the water use for each customer category. The water factors decreased for all contractors compared to the 2005 study.
- Water savings from implementation of the Tier One, Tier Two and New Development conservation programs would reduce water needs in 2035 by about 9.7 percent (1,336 AF/Yr as shown on Table 18) when compared to the 2035 water demand without the plumbing code.
- Water savings from implementation of the Tier One conservation programs would reduce water needs in 2035 by about 4.2 percent in (576 AF/Yr) as shown on Table 18) when compared to the 2035 water demand without the plumbing code.
- For Tier One measures, more than half of the conservation potential in 2035 is in reducing outdoor use; the rest is indoor use reduction potential.
- The average cost of water saved over 30-years is lower than the current price of SCWA water. Thus measures that are cost-effective at today's water rates will be more so if SCWA rates rise in the future.
- Savings contributed by Tier Two measures alone are 423 acre-feet in 2035.
- Savings contributed by the New Development measures alone are 340 acre-feet in 2035.
- Benefit-cost ratios of program combinations range from 2.93 to 4.70 so all program combinations are cost-effective from the utility standpoint.
- The average cost of water saved for all of the programs from the utility standpoint (as shown on Table 18) is lower than the forecasted 2025 price of \$1,439 per AF.
- The cost for the new development measures is largely funded by the builders of the new homes, which tends to reduce the overall cost to the utility for all measures.

Appendix A - Assumptions for Water Conservation Measures Evaluated in the DSS Model

	BMP 1a Residential Audits	BMP 1a Residential Audits	BMP 1b Residential Audits	BMP 1b Residential Audits	BMP 2 Plumbing Retrofits
Account Category	RSF	RMF	RSF	RMF	RSF / RMF
Affected End Uses	Internal	Internal	External	External	Toilets, Faucets, Showers
Percent Reduction in Water Use	5%	5%	10%	10%	5%/5%/21%
CUWCC MOU Sign-on Year	1999	1999	1999	1999	1999
Evaluation Start Year	2005	2005	2005	2005	2005
Required Interventions Starting in 2005 (Accounts)	935	9	935	9	1309/11
Market Penetration by End Of Program,%	15	15	15	15	75
Measure Life (years)	7	7	7	7	Permanent
Initial Cost	\$ -	\$ -	\$ -	\$ -	\$ -
Utility Unit Cost, per site one time cost	\$40.00	\$80.00	\$40.00	\$50.00	\$30.00
Customer Unit Cost to achieve savings	\$10.00	\$30.00	\$5.00	\$20.00	\$0
Administration Cost, percent of unit cost	25%	25%	25%	25%	10%
Affected Units	dwelling unit	dwelling unit	dwelling unit	dwelling unit	1992 and older dwelling units
Comments	Audits are repeated every 7 years to maintain water savings				

Notes:

RSF = Residential Single Family

RMF = Residential Multi Family

BUS/COM= Commercial

IND = Industrial

IRR = Dedicated irrigation meters

INS = Institutional/Public, buildings / grounds owned by the Water Utility or City

NRSF = New Single Family Homes

GOV = Government

Measure	BMP 5a Water Budgets	BMP 5b Water Audits	BMP 6 Washer Rebates	BMP 7 Public Education	BMP 9 CII Audits	BMP 14 Toilet Rebates
Account Category	IRR	COM/GOV	RSF	RSF/RMF	COM/GOV	RSF/RMF
Affected End Uses	Irrigation	Irrigation	Laundry	All	All	Internal
Percent Reduction in Water Use	15%	15%	34%	1%	12%	60%
CUWCC MOU Sign-on Year	2001	2001	2001	2001	2001	2001
Evaluation Start Year	2004	2004	2004	2004	2004	2004
Required Interventions Starting in 2005 (Accounts)	250	21	0	17,285	45	835/80
Market Penetration by End Of Program, %	90	15	4.8	100	10	Match resale rate
Measure Life (years)	10	10	Permanent	2	Permanent	Permanent
Initial Cost	\$ -	\$ -	\$ -	\$ -	\$ -	NA
Utility Unit Cost, per site one time cost	\$400.00	\$1,500.00	\$75.00	\$2.50	\$4,000.00	\$50
Customer Unit Cost to achieve savings	\$ -	\$1,000.00	\$200.00	\$ -	\$2,000.00	\$75
Administration Cost, percent of unit cost	15%	30%	30%	25%	50%	included
Affected Units	Irrigation accounts	large landscape accounts	per dwelling unit	per dwelling unit	CII accounts	per toilet
Comments	Audits / Budgets renewed every 10 years to maintain water savings		BMP 6 complete			Complete in 2010

Notes:

RSF = Residential Single Family

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IND = Industrial

IRR = Dedicated irrigation meters

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NRSF = New Single Family Homes

GOV = Government

	T2 - 1	T2 - 2	T2 - 3	T2 - 4	T2 - 5a	T2 - 5b	T2 - 6
Measure	Rain-sensor (shut off device) retrofit on irrigation controllers	Cash for Grass (turf removal program)	Financial Incentives for Being Below Water Budget	Financial Rebates for Irrigation Meters	Smart Irrigation Controller Rebates RSF	Smart Irrigation Controller Rebates Non RSF	Financial Incentives/ Rebates for Irrigation Upgrades
Applicable Customer Classes	RSF	Existing Customers SF, MF, CII	IRR	Existing CII Customers with mixed water use (indoor and outdoor)	RSF	Existing Customers MF, CII, IRR	Existing Customers MF, CII, IRR
Applicable End Uses	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation
Market Penetration by End Of Program	10%	1%	100%	10%	5%	20%	10%
Water Use Reductions For Targeted End Uses	9%	24%	15%	15%	15%	15%	15%
Program Length, years	5	5	10	5	10	10	15
Measure Life, years	10	permanent	permanent	permanent	21	permanent	permanent
Utility Unit Cost for RSF accounts, \$/unit	\$ 20.00	\$ 500.00	\$ 25,000.00	--	\$ 450.00	\$ -	\$ -
Utility Unit Cost for RMF accounts, \$/unit	--	\$ 500.00	\$ -	--	\$ -	\$ 900.00	\$ -
Utility Unit Cost for non-Res accounts, \$/unit	--	\$ 500.00	\$ -	\$ 500.00	\$ -	\$ 900.00	\$ 500.00
Customer Unit Cost. \$/unit	\$ 35.00	\$ 500.00	\$ 10,000.00	\$ 500.00	\$ 100.00	\$ 100.00	\$ 500.00
Annual Utility Admin & Marketing Cost	25%	25%	35%	25%	30%	30%	25%

Notes:

- RSF = Residential Single Family
- RMF = Residential Multi Family
- BUS/COM= Commercial
- IND = Industrial
- IRR = Dedicated irrigation meters
- INS = Institutional/Public, buildings / grounds owned by the Water Utility or City
- NRSF = New Single Family Homes
- GOV = Government

	T2 - 7	T2 - 10	T2 - 12	T2 - 13
Measure	Hotel retrofit (w/financial assistance) - CII Existing	High Efficiency Toilet (HET)	CII Rebates - replace inefficient water using equipment	0.5 gal/flush urinals in new buildings
Applicable Customer Classes	Existing Customers: CII	RSF, RMF	CII	COM New
Applicable End Uses	Indoor uses	Toilet end use	Process end use	COM Urinal
Market Penetration by End Of Program	20%	20%	10%	100%
Water Use Reductions For Targeted End Uses	20%	45 to 55%	10%	65 to 75%
Program Length, years	15	10	15	30
Measure Life, years	permanent	permanent	permanent	permanent
Utility Unit Cost for RSF accounts, \$/unit	\$ -	\$ 150.00		\$ 50.00
Utility Unit Cost for RMF accounts, \$/unit	\$ -	\$ 150.00		
Utility Unit Cost for non-Res accounts, \$/unit	\$ 100.00		\$ 500.00	
Customer Unit Cost. \$/unit	\$ 200.00	\$ 150.00	\$ 1,000.00	\$ 500.00
Annual Utility Admin & Marketing Cost	25%	25%	30%	25%

Notes:

RSF = Residential Single Family
 RMF = Residential Multi Family
 BUS/COM= Commercial
 IND = Industrial
 IRR = Dedicated irrigation meters
 INS = Institutional/Public, buildings / grounds owned by the Water Utility or City
 NRSF = New Single Family Homes
 GOV = Government

	ND 1	ND 2	ND 3	ND 4	ND 5	ND 6	ND 7	ND 8
Measure	Rain-sensor shut off device on irrigation controllers	Smart Irrigation Controller	High Efficiency Toilet (HET)	Dishwasher New Efficient	Clothes washing machines requirement for new residential	Hot Water on Demand	High efficiency faucets and showerheads	Landscape and irrigation requirements
Applicable Customer Classes	NRSF, CII	NRSF	NRSF	NRSF	NRSF	NRSF	NRSF	NRSF
Applicable End Uses	Irrigation	Irrigation	Toilet end use	Diswasher end use	Clothes Washer end use	Faucet and shower end use	Faucet and shower end use	Irrigation
Market Penetration by End Of Program	100%	100%	100%	100%	100%	100%	100%	100%
Water Use Reductions For Targeted End Uses	9%	15%	50 to 55%	34%	50%	14.2 gpd per house	15%	10%
Program Length, years	30	30	30	30	30	30	30	30
Measure Life, years	permanent	permanent	permanent	permanent	permanent	permanent	permanent	permanent
Utility Unit Cost for RSF accounts, \$/unit	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50	\$ 12.50
Utility Unit Cost for RMF accounts, \$/unit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Utility Unit Cost for non-Res accounts, \$/unit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Customer Unit Cost, \$/unit	\$ 55.00	\$ 500.00	\$ 300.00	\$ 400.00	\$ 500.00	\$ 700.00	\$ 50.00	\$ 3,000.00
Annual Utility Admin & Marketing Cost	10%	10%	10%	10%	10%	10%	10%	10%

Notes:

RSF = Residential Single Family

RMF = Residential Multi Family

BUS/COM= Commercial

IND = Industrial

IRR = Dedicated irrigation meters

INS = Institutional/Public, buildings / grounds owned by the Water Utility or City

NRSF = New Single Family Homes

GOV = Government

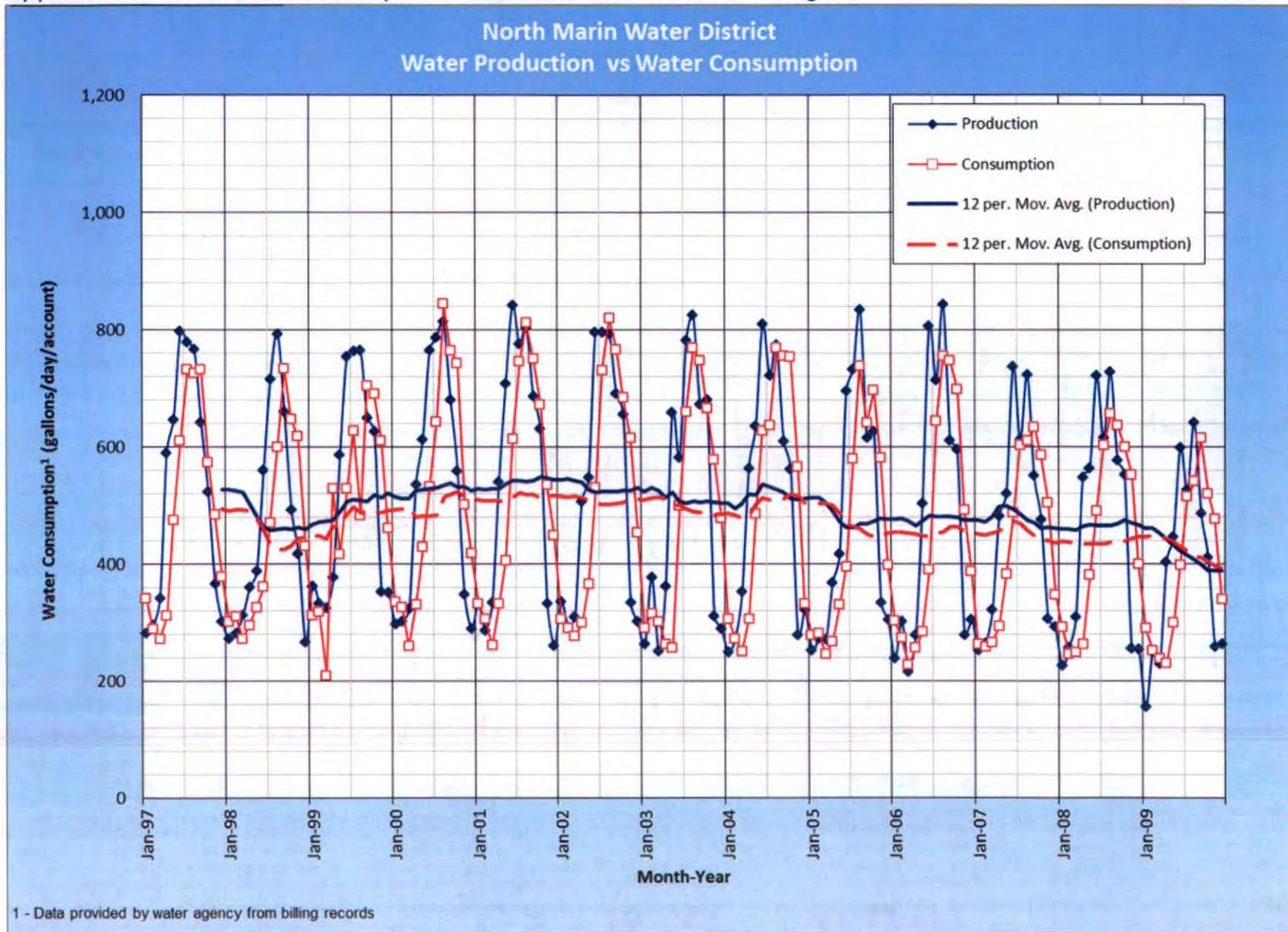
*Customer class varies depending upon local ordinances, Cal Green and contractor request of new measure or planned ordinances

Measure	Fixture Replacement SB 407
Account Category	Pre-1994 Existing Accounts
Affected End Uses	Toilet, urinal, shower, lavatory faucet
Market Penetration by End Of Program, %	4% SF, 2% MF and CII
Annual Market Penetration Rate, %	1% 2017-2020 SF, 1% 2019-2020 MF, 1% CII 2019-2020
Percent Reduction in Water Use	Varies
Measure Start Year	2014
Measure End Year	2020
Program Length	7
Measure Life (years)	Permanent
Utility unit Cost SF, \$	\$ 25
Utility unit Cost MF, \$	\$ 25
Utility Unit Cost CII, \$	\$ 25
Customer unit Cost SF, \$	Varies
Customer unit Cost MF, \$	Varies
Customer Unit Cost CII, \$	Varies
Administration Cost, percent of unit cost, %	25%
Affected Units	Dwelling unit or CII account
Comments	Measure will start in the year 2017 (SF) and 2019 (CII) to coincide with the California State Law SB 407. Work with the real estate industry to require a certificate of compliance be submitted to the City/Town that the property and efficient fixtures were either already there or were installed at the time of sale, before close of escrow. Consider allowing this certification to be made as a part of the conventional private building inspection report process.

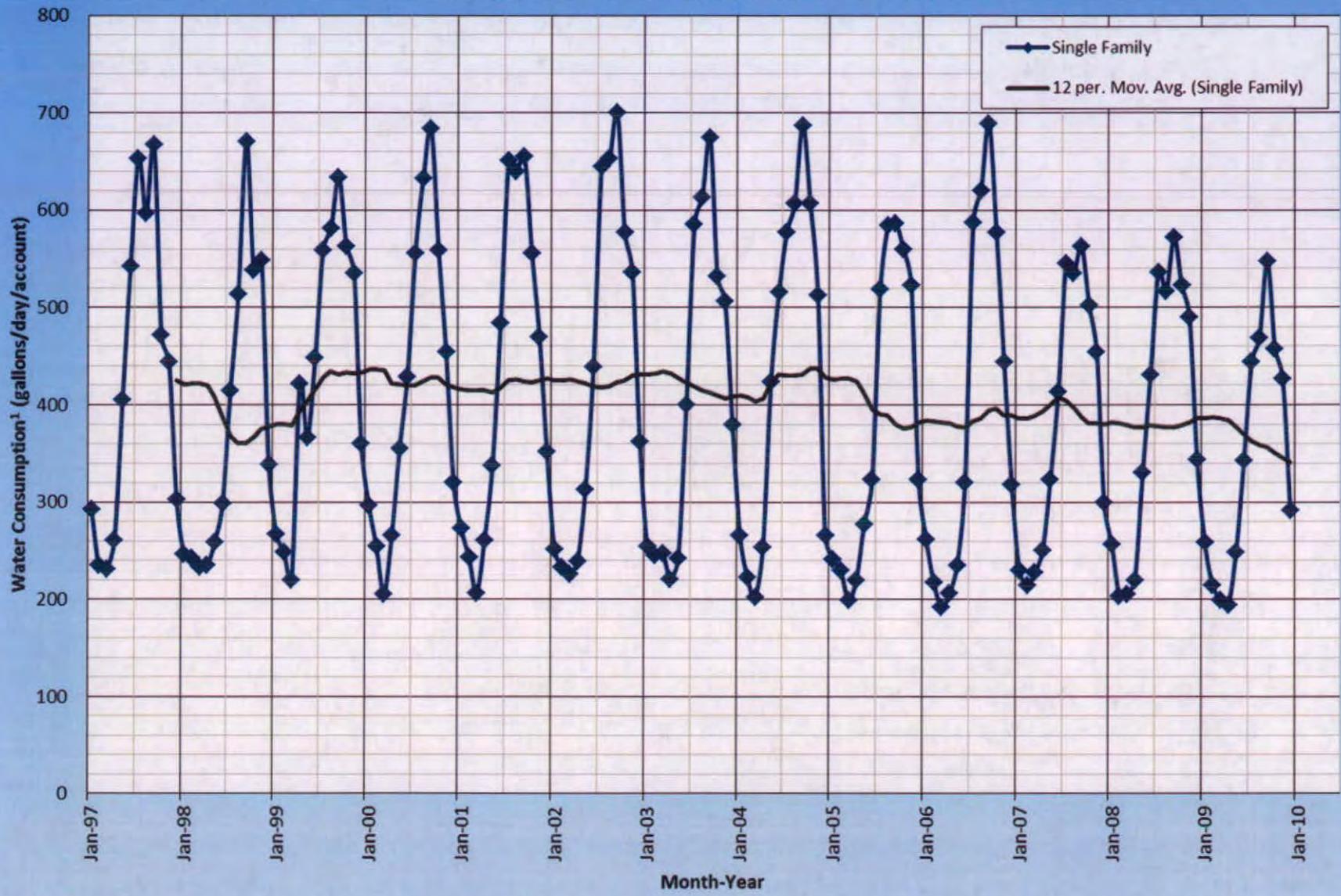
Notes:

RMF = Residential Multi Family
CII = Commercial, Industrial and Institutional

Appendix B - Water Use Data Graphs for Production and Customer Categories

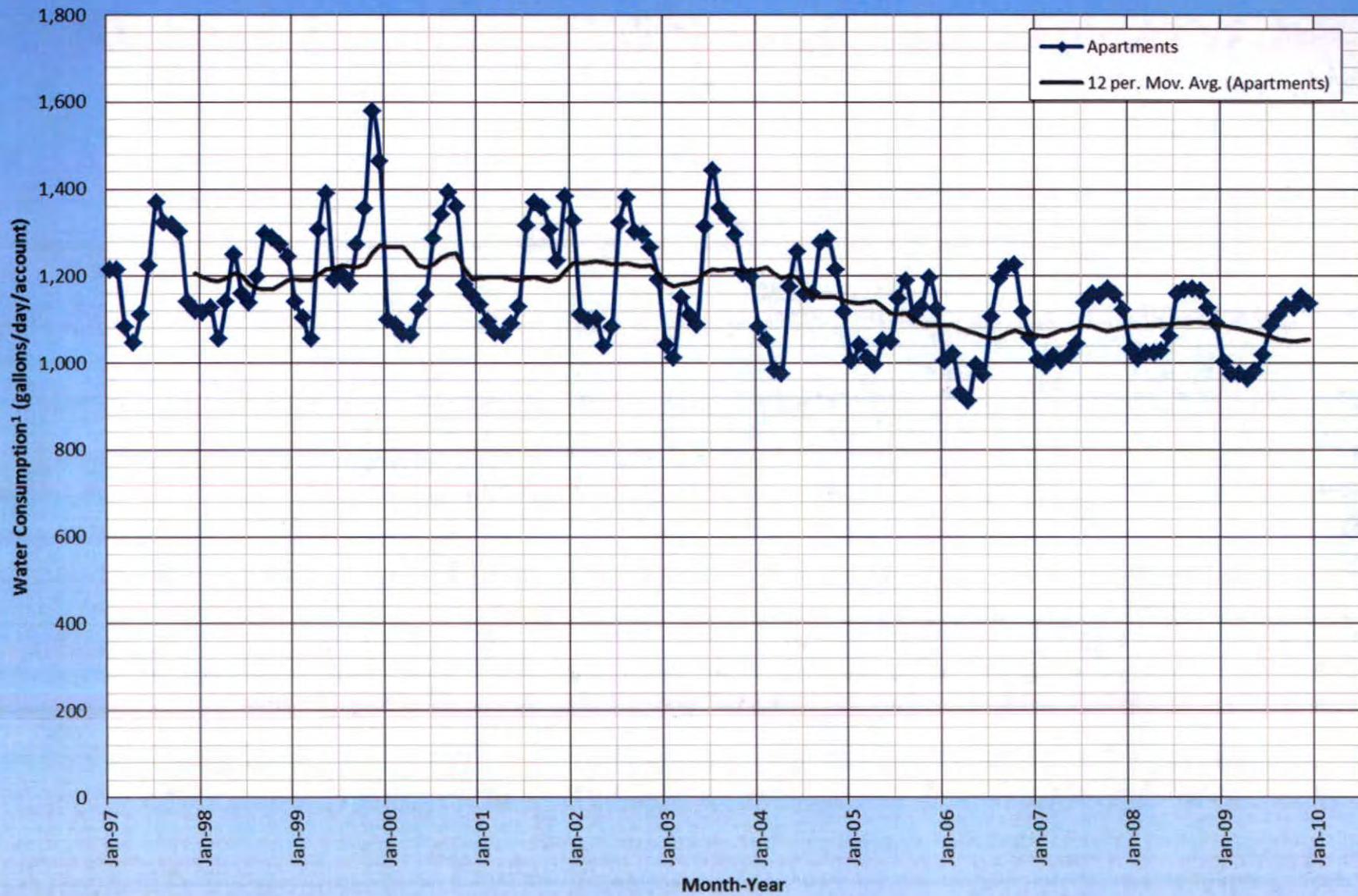


North Marin Water District Customer Category : Single Family Residential



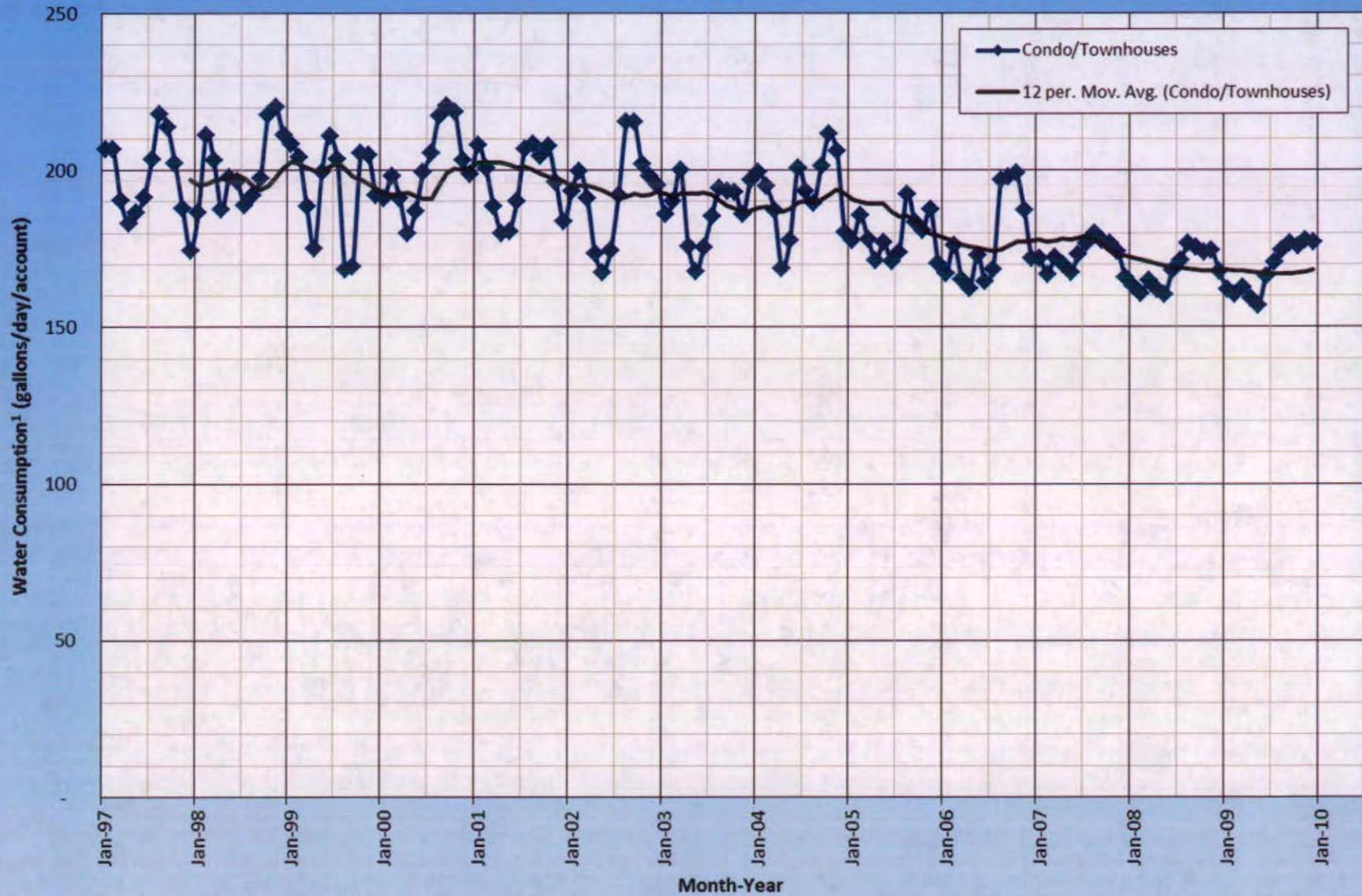
1 - Data provided by water agency from billing records

North Marin Water District Customer Category : Apartments



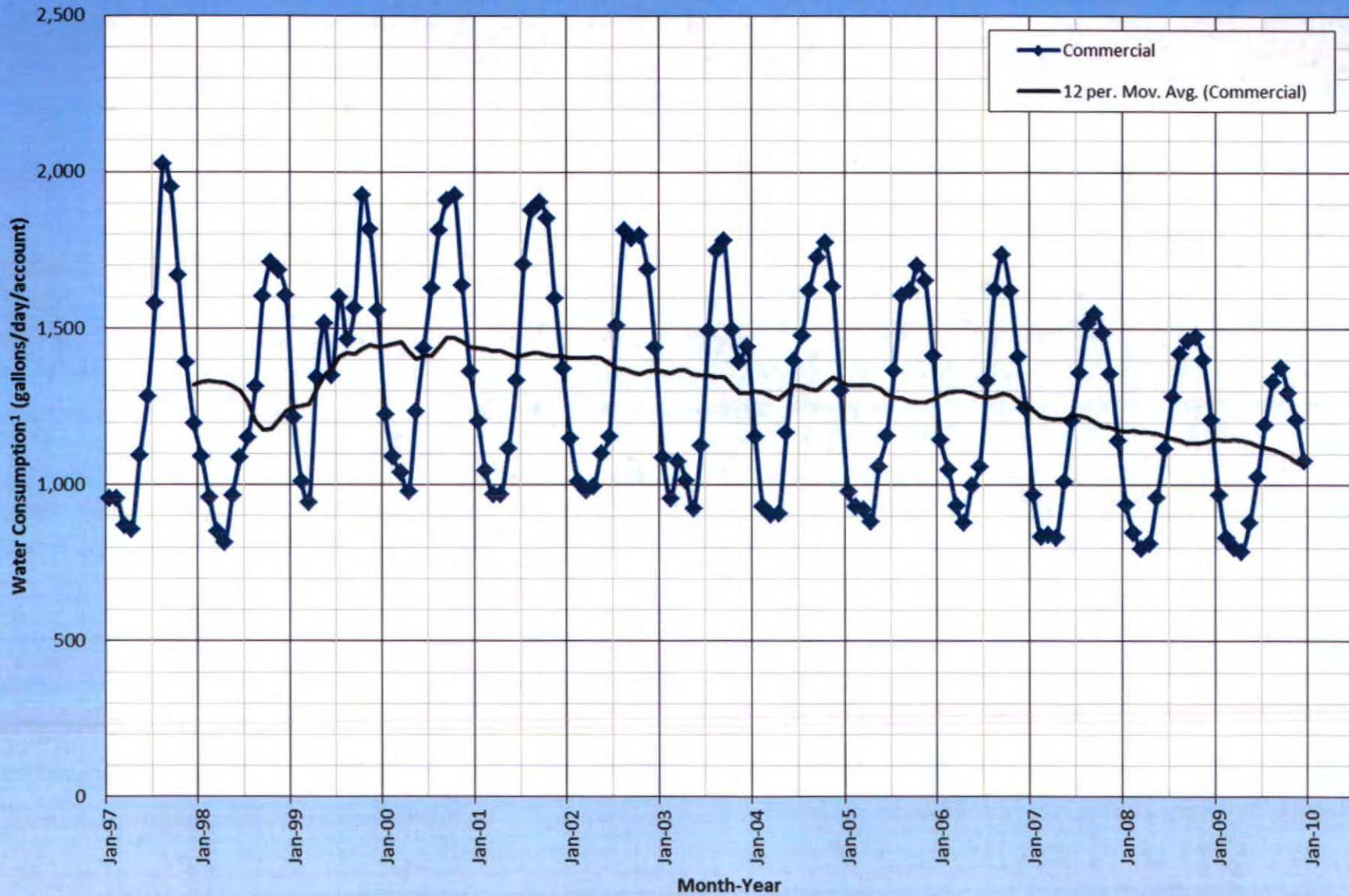
1 - Data provided by water agency from billing records

North Marin Water District
Customer Category : Condo/Townhouses



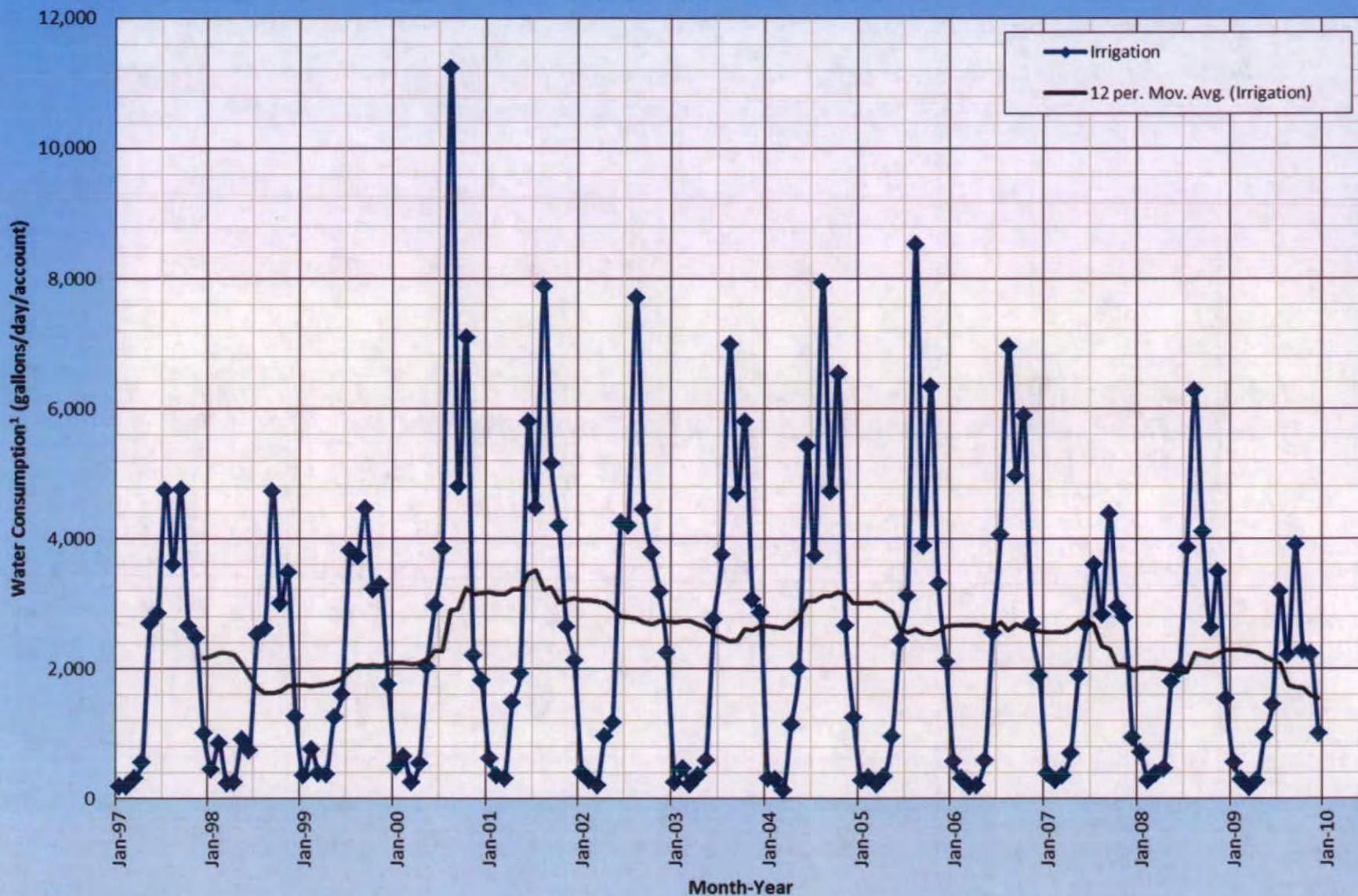
1 - Data provided by water agency from billing records

North Marin Water District Customer Category : Commercial



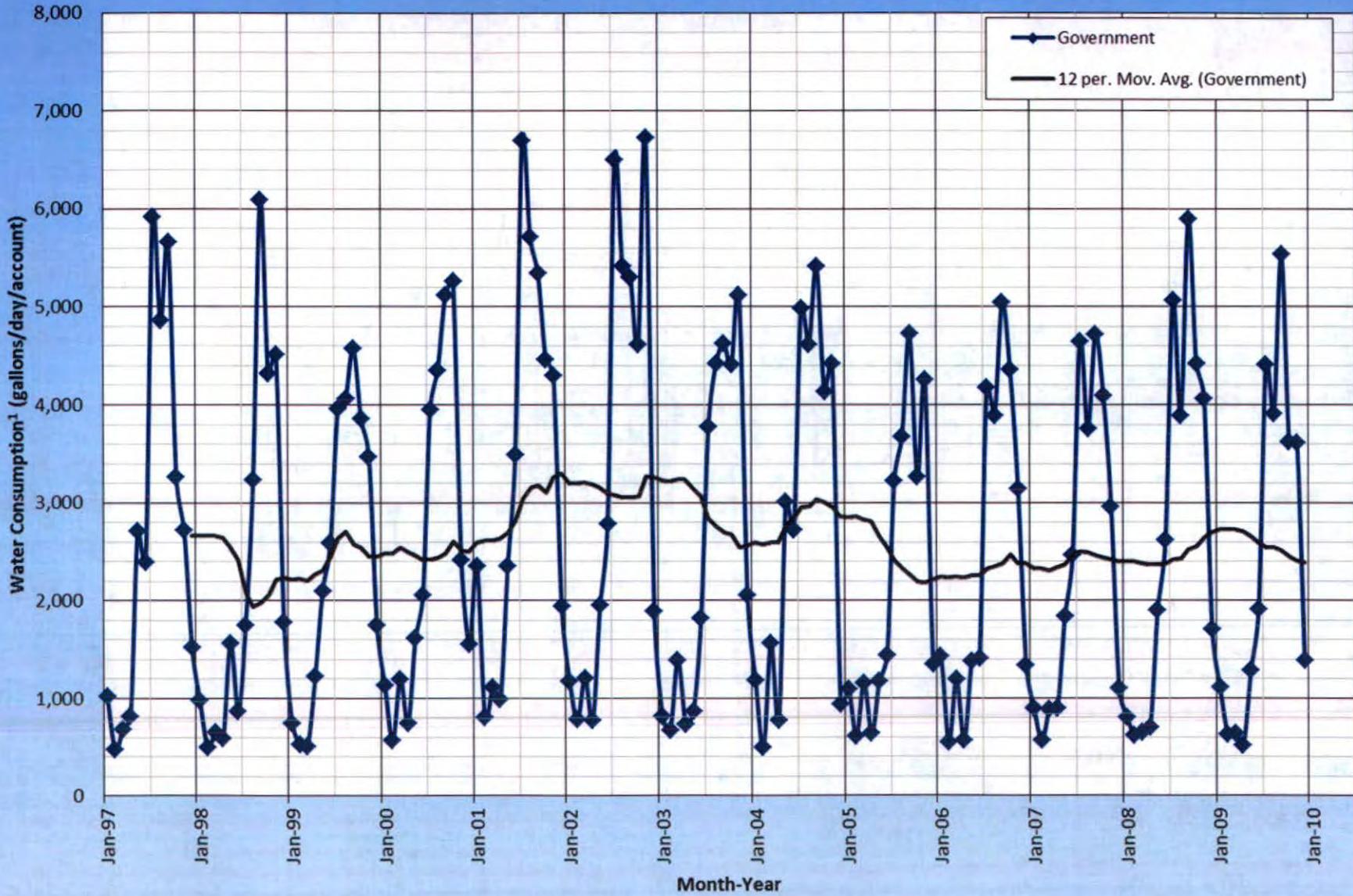
1 - Data provided by water agency from billing records

North Marin Water District Customer Category : Irrigation



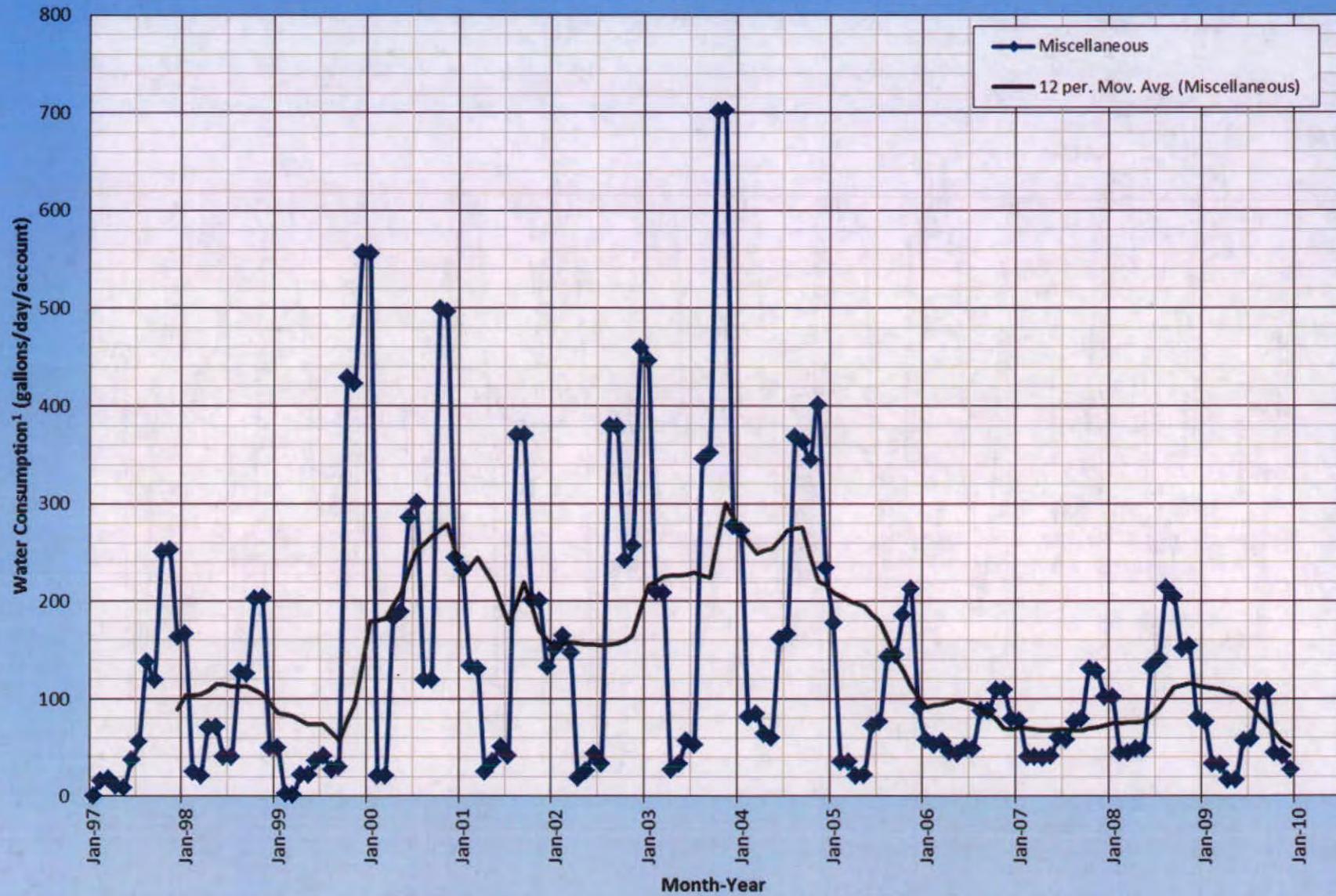
1 - Data provided by water agency from billing records

North Marin Water District
Customer Category : Government



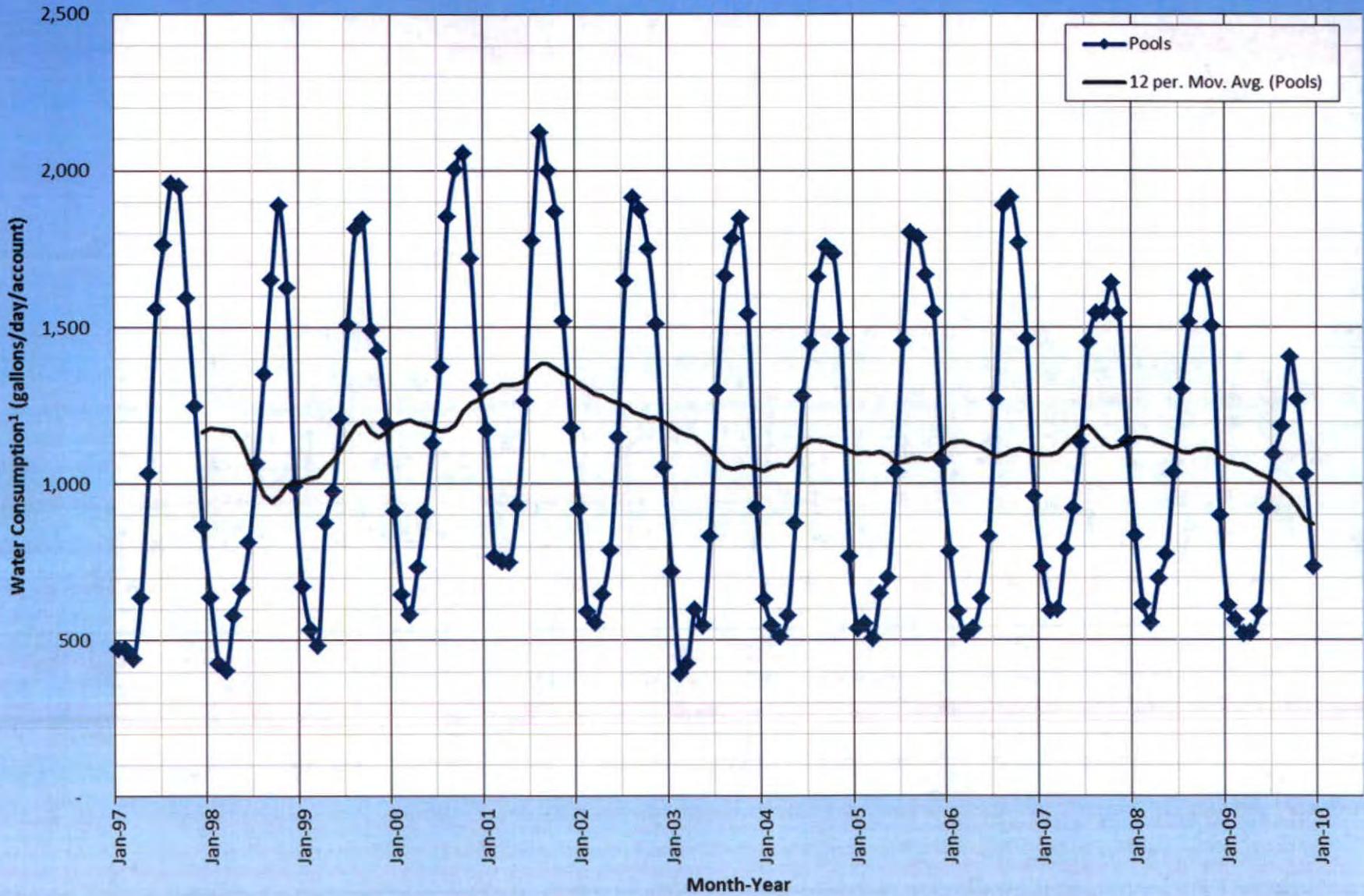
1 - Data provided by water agency from billing records

North Marin Water District Customer Category : Miscellaneous



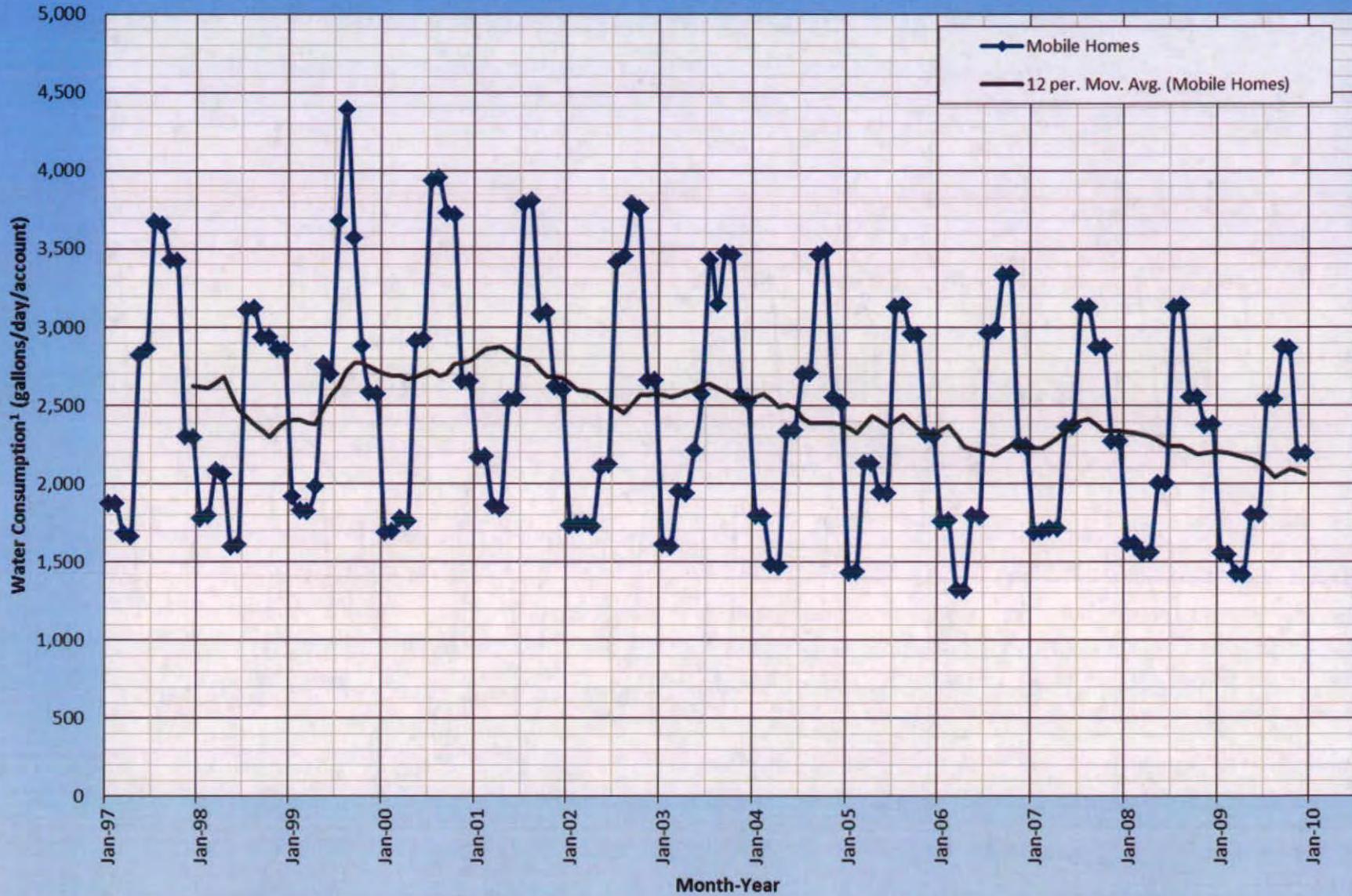
1 - Data provided by water agency from billing records

North Marin Water District Customer Category : Pools



1 - Data provided by water agency from billing records

North Marin Water District Customer Category : Mobile Homes



1 - Data provided by water agency from billing records



**NORTH MARIN
WATER DISTRICT**

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May 18, 2011

California Department of Water Resources
Division of Statewide Integrated Water Management
Water Use and Efficiency Branch
Attn: Manucher Alemi Chief
PO Box 942836
Sacramento, CA 94236

Dear Mr. Alemi

A regional alliance has been formed between and among the cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor and North Marin, Marin Municipal and Valley of the Moon Water Districts to comply with SBx7-7, the Water Conservation Act of 2009. The regional alliance has been formed pursuant to the Department of Water Resources Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use because the parties receive water from a common water wholesale supplier, the Sonoma County Water Agency. Data pertaining to the regional alliance can be collected through the individual cities and water districts urban water management plans to be submitted by July 1, 2011.

Should you have any questions regards the regional alliance, please contact me.

Sincerely,

Chris DeGabriele
General Manager
North Marin Water District

Chair, Technical Advisory Committee
to the Water Contractors receiving
wholesale supply from SCWA

cc: Miles Ferris, City of Santa Rosa
Darrin Jenkins, City of Rohnert Park
Milenka Bates, City of Sonoma
Damien O'Bid, City of Cotati
Pamela Tuft, City of Petaluma
Richard Burt, Town of Windsor
Krishna Kumar, Valley of the Moon Water District
Paul Helliker, Marin Municipal Water District

CD/rr

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Letter Agreement
Between and Among
Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor
And
North Marin Water District, Marin Municipal Water District
and Valley of the Moon Water District
For
Establishing a Regional Alliance to Comply with
SB x7-7 the Water Conservation Act of 2009

Recitals

A. The Water Conservation Act of 2009 (SB x7-7) set a goal of achieving a 20% reduction in statewide urban per capita water use by the year 2020 and requires urban water retailers to set a 2020 urban per capita water use target. SB x7-7 provides that urban water retailers may plan, comply and report on a regional basis, individual basis or both.

B. The Parties to this Letter Agreement (Cities of Santa Rosa, Rohnert Park, Sonoma, Cotati, Petaluma, Town of Windsor and North Marin, Marin Municipal and Valley of the Moon Water Districts) are eligible to form a "Regional Alliance" pursuant to the *Department of Water Resources Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR Methodologies) because the Parties receive water from a common water wholesale water supplier, the Sonoma County Water Agency (Agency). The Parties desire to establish a Regional Alliance for purposes of complying with SB x7-7.

C. The Parties and the Agency are signatories to the Sonoma-Marin Saving Water Partnership Memorandum of Understanding (S-MSWP MOU) that provides for the identification and implementation of regional water conservation programs and tasks as directed by the Water Advisory Committee (WAC). The S-MSWP MOU requires financial and reporting commitments for implementation of water conservation programs.

Agreement for Regional Alliance Target Setting and Reporting

1. Regional Alliance Formation and Target Setting

Pursuant to the DWR Methodologies, the Parties hereby form a Regional Alliance and agree to send a letter to the Department of Water Resources (DWR) prior to July 1, 2011 informing DWR that a Regional Alliance has been formed. The Parties agree that the Regional Alliance Target will be established using Option 1 (as Option 1 is described in the DWR Methodologies) and that each Party will include the Regional Alliance Target in its individual 2010 Urban Water Management Plan.

2. Regional Alliance Review

No later than December 31, 2015, the Parties agree to review and re-analyze the Regional Alliance and Regional Alliance Target as part of the preparation of the 2015 Urban Water Management Plan.

3. Regional Alliance Reporting

The Parties agree to prepare Regional Alliance Reports pursuant to the DWR Methodologies including but not limited to the following information: baseline gross water use and service area population, individual 2015 and 2020 water use targets for each Party and for the Regional Alliance, compliance year gross water use and service area population, and adjustments to gross water use in compliance year. The information will be provided by each Party and reported in the annual S-MSWP report in addition to the information required in the annual report, as outlined in the S-MSWP MOU.

4. Regional Water Supply Planning

The Parties agree to participate in discussions regarding regional water supply planning.

5. Regional Alliance Dissolution

The Parties agree that each Party can withdraw from the Regional Alliance at any time without penalty by giving written notice to all other Parties. If a Party withdraws from the Regional Alliance, the Parties agree that the Regional Target will be recalculated among remaining participating Parties as set forth in the DWR Methodologies and in Section 2 above.

6. Miscellaneous

This Letter Agreement shall be between and among those Parties that have executed this Letter Agreement by May 1, 2011. If all Parties have not executed this Letter Agreement by said date, the Parties who have executed this Letter Agreement by May 1, 2011, agree that the Regional Target will be recalculated among participating Parties as set forth in the DWR Methodologies and in Section 2 above.

7. Letter Agreement Authorization

This Letter Agreement may be signed in counterparts. By signing below, each signatory states that he or she is authorized to sign this Letter Agreement on behalf of the Party for which he or she is signing.

Miles Ferris
Name: Miles Ferris
City of Santa Rosa

4/20/11
Date

Name: _____
City of Rohnert Park

Date

Name: _____
City of Sonoma

Date

Name: _____
City of Cotati

Date

6. Miscellaneous

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7. Letter Agreement Authorization

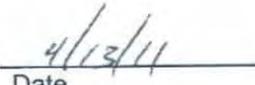
This Letter Agreement may be signed in counterparts. By signing below, each signatory states that he or she is authorized to sign this Letter Agreement on behalf of the Party for which he or she is signing.

Name: _____
City of Santa Rosa

Date



Name: Gabriel A. Gonzalez
City of Rohnert Park



Date
Per Rohnert Park City Council
Resolution No. 2011-30 adopted on
April 12, 2011

Name: _____
City of Sonoma

Date

Name: _____
City of Cotati

Date

6. Miscellaneous

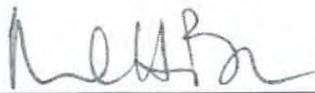
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Name: _____ Date _____
City of Santa Rosa

Name: _____ Date _____
City of Rohnert Park



Name: Milenka Bates Date 4/19/2011
City of Sonoma

Name: _____ Date _____
City of Cotati

6. Miscellaneous

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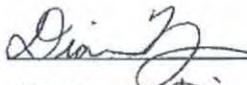
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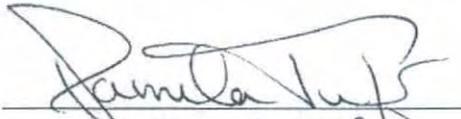
Name: _____ Date _____
City of Santa Rosa

Name: _____ Date _____
City of Rohnert Park

Name: _____ Date _____
City of Sonoma



Name: Dianne Thompson Date 5-17-11
City of Cotati


Name: PAMELA Tuft
City of Petaluma

4-11-11
Date

Name: _____
Town of Windsor

Date

Name: _____
North Marin Water District

Date

Name: _____
Marin Municipal Water District

Date

Name: _____
Valley of the Moon Water District

Date

Name: _____ Date _____
City of Petaluma

J. Matthew Mullan
Name: J. Matthew Mullan Date 4-12-11
Town of Windsor

Name: _____ Date _____
North Marin Water District

Name: _____ Date _____
Marin Municipal Water District

Name: _____ Date _____
Valley of the Moon Water District

Name: _____
City of Petaluma

Date

Name: _____
Town of Windsor

Date

Chris DeGabriele

Name: Chris DeGabriele
North Marin Water District

4/26/2011

Date

Name: _____
Marin Municipal Water District

Date

Name: _____
Valley of the Moon Water District

Date

Name: _____
City of Petaluma

Date

Name: _____
Town of Windsor

Date

Name: _____
North Marin Water District

Date

Paul Helliker
Name: Paul Helliker
Marin Municipal Water District

5/13/11
Date

Name: _____
Valley of the Moon Water District

Date

Name: _____
City of Petaluma

Date

Name: _____
Town of Windsor

Date

Name: _____
North Marin Water District

Date

Name: _____
Marin Municipal Water District

Date

Krishna Kumar
Name: KRISHNA KUMAR
Valley of the Moon Water District

April 11, 2011
Date

RECEIVED

3

Regional Alliance Baseline and Water Use Target Calculations for the Sonoma County Water Agency Water Contractors

Senate Bill x7-7, the Water Conservation Act, was signed into law in 2009. The legislation set a goal of 20% reduction in statewide urban per capita water use and requires urban water retailers that must comply with the Urban Water Management Planning Act to set a 2020 urban per capita water use target.

The legislation provides that urban water retail suppliers may plan, comply, and report on the 2020 urban per capita water use target on a regional basis, an individual basis, or both.

10608.20. (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

10608.28. (a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

- (1) Through an urban wholesale water supplier.*
- (2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31(commencing with Section 81300)).*
- (3) Through a regional water management group as defined in Section 10537.*
- (4) By an integrated regional water management funding area.*
- (5) By hydrologic region.*
- (6) Through other appropriate geographic scales for which computation methods have been developed by the department.*

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

Regional Alliance Baseline and Target Calculation

Per Department of Water Resources Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (DWR Methodologies), the Water Contractors of the Sonoma County Water Agency (Water Contractors) are eligible to form a regional alliance because we are recipients of water from a common wholesale water supplier.

Per the DWR Methodologies, there are three options for calculating a regional alliance target. The first option is for each member of the regional alliance to calculate their individual target and then weight the individual targets by each member's population. The weighted targets are then averaged to determine the regional alliance target. Current population data can be used for generating the regional target.

The second option is to sum up each member's gross water use and service area populations to develop a regional gross water use and population. A base daily per capita water use would be calculated and a target would be calculated using one of the following four methods:

1. 80% of the regional alliance's baseline per capita daily water use;

2. Performance standards of 55 gallons per capita per day for indoor water use, water efficiency equivalent to the Model Water Efficient Landscape Ordinance for landscapes irrigated through dedicated or residential meters, and a 10% reduction in Commercial, Industrial, Institutional water use;
3. 95% of the applicable state hydrologic region target as set forth in the State's 20x2020 Water Conservation Plan. If the area includes more than one hydrologic region, the area should be apportioned to each region based on population or area; or
4. Provisional Target Method 4 developed by DWR.

Alliances must have all of their members use the same baseline period.

The third option is to calculate regional gross water use or population directly for the entire regional alliance area. A base daily per capita water use would be calculated and a target would be calculated using one of the four methods listed above. As with the second option, alliances must have all of their members use the same baseline period. The regional target may not exceed 95% of the region's 5-year Base Daily Per Capita Water Use.

The data to calculate the third option is not easily available. Therefore, option 1 and option 2 were used for calculating a regional target for the Water Contractors. Upon review and evaluation, the Water Contractors are recommending option 1, below, for calculating the regional target.

Option 1 - Target

SCWA Service Area Regional 2020 Targets (DWR Methodology # 9)

SCWA Water Contractor	2015			2020		
	Current Population*	Water Contractor Staff Recommended Individual GPCD Target**	Product of Individual Population Size and GPCD Target [(1) x (2)]	Current Population	Water Contractor Staff Recommended Individual GPCD Target**	Product of Individual Population Size and GPCD Target [(1) x (2)]
	(1)	(2)	(3)	(1)	(2)	(3)
Santa Rosa	163,436	136	22,227,296	163,436	127	20,756,372
North Marin	61,012	161	9,822,932	61,012	143	8,724,716
Petaluma	58,401	153	8,935,353	58,401	136	7,942,536
Rohnert Park	43,398	140	6,075,720	43,398	119	5,164,362
VOMWD	23,478	136	3,193,008	23,478	124	2,911,272
Sonoma	11,426	194	2,216,644	11,426	173	1,976,698
Cotati	7,711	134	1,033,274	7,711	130	1,002,430
Windsor	28,134	143	4,023,162	28,134	130	3,657,420
MMWD	190,600	137	26,074,080	190,600	124	23,634,400
Total	587,596		83,601,469	587,596		75,770,206
Regional GPCD Target [Total of (3) / Total of (1)]				2015	2020	
				142	129	
* Current population from Water Contractor or from Department of Finance when not available from Water Contractor.						
** Subject to change. Target has to be set via public hearing.						

Option 1 – Compliance Daily Per Capita Water Use Calculation

SCWA Service Area Regional Compliance Daily Per Capita Water Use (DWR Methodology # 9)				
SCWA Water Contractor	2015		2020	
	Projected Population	Annual Projected Water Demand after conservation and recycled water deducts in A.F.*	Projected Population	Annual Projected Water Demand after conservation and recycled water deducts in A.F.*
	(1)	(2)	(1)	(2)
Santa Rosa	194,851	27,194	204,519	27,934
North Marin	62,589	11,471	64,804	11,376
Petaluma	64,704	11,090	67,425	10,270
Rohnert Park	46,400	5,348	47,900	5,306
VOMWD	24,174	3,465	24,873	3,445
Sonoma	12,149	2,605	12,871	2,643
Cotati	8,105	1,079	8,518	1,096
Windsor	29,515	5,019	30,715	5,173
MMWD	195,200	27,761	198,200	27,359
Total	637,687	95,032	659,825	94,602
Projected Regional GPCD [Total of (2), in gpd / Total of (1)]			2015	2020
Is the Projected Regional GPCD equal to or under Regional GPCD Target?			133	128
			YES	YES

** Water Conservation and recycled water deducts subject to change.*

Data Reporting

A regional alliance must send a letter to DWR by July 1, 2011 stating that an alliance had been formed and including a list of alliance members. Regional alliances that do not submit a regional UWMP must submit regional alliance reports, including the following information:

- A list of the individual members in the alliance
- Baseline gross water use and service area population
- Individual 2015 and 2020 Water Use Targets for each alliance member as well as the regional 2015 and 2020 Water Use Targets
- Compliance year gross water use and service area population
- Adjustments to gross water use in compliance year

The above information must also be included in each regional alliance member's individual UWMP.

Compliance Assessment

If a regional alliance meets its regional target, all members in the alliance will be deemed compliant. If a regional alliance fails to meet its regional target, individual members who meet their individual targets will be deemed compliant. If a regional alliance fails to meet its regional target and an individual member fails to meet its individual target, the individual member will be deemed non-compliant.

Public Hearing Requirement

The legislation requires the urban retail water agency to select its 2020 water use target as detailed below:

10608.26. (a) *In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:*

- (1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.*
- (2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.*
- (3) Adopt a method, pursuant to subdivision (b) of Section 10608.20 for determining its urban water use target.*

Regional Alliance Agreements and Dissolution

It is up to each regional alliance to determine the appropriate Memorandum of Understanding (MOU) or Agreement for a Regional Alliance. DWR will not review or approve MOUs or Agreements used to create a Regional Alliance, however any MOU or Agreement must be in compliance with all applicable sections of the Water Code.

Individual members can withdraw from a regional alliance. The individual member that withdraws must comply individually with the water use target and the Regional Alliance must recalculate the regional baseline and target data. The Regional Alliance may dissolve prior to 2020. If a Regional Alliance dissolves, individual members must comply individually with the water use target.