CUSTOMER CHARACTERISTICS ANALYSIS

2020 RATES AND FEES STUDY

PREPARED BY:

CASTLE ROCK WATER
BUSINESS SOLUTIONS TEAM

September 2020

TABLE OF CONTENTS

EXECUTIVE SUMMARY

As a part of the annual Rates and Fees Study, Castle Rock Water conducts an in-depth analysis of accounts in service to determine customer characteristics and consumption patterns. We start by looking at the most current billing data for FY2019. From there, we break down the number of accounts by meter size and customer class. We then compare the number of actual permits for the last several years to the number of projected permits in that same year. The Town's Development Services Department provides the number of accounts by customer class for past actuals as well as the forecasted amounts for FY2020 and FY2021.

An average consumption based on the most current three years (2017-2019) by account, meter size, customer class and winter versus summer season is calculated. This average three-year period serves as a comparison to previous three-year periods going back as far as 2012. This takes into consideration weather patterns and rainfall variances from year-to-year. We have added a section in the report showing the monthly rainfall compared to average consumption patterns as one tool to evaluate the effectiveness of water conservation.

These individual three-year average consumption calculations provide the basis for meter equivalency factors. Starting in 2010, the Town implemented meter equivalency factors in assessing the monthly service charges for water, wastewater, and water resources. The average consumption for all ¾" meters serves as the base unit with the average consumption for all larger size meters divided into this base unit to get an equivalency factor by meter size and customer class.

Customer data for the last three years (2017-2019) then determines an average representative customer for each customer class. One customer from each customer class then represents the class average and their consumption patterns calculate a typical customer's annual bill.

A new section of analysis has been added to this year's memo showing the average consumption patterns of atypical customer's consumption patterns compared to the average customer. Atypical can be defined as a customer whose consumption patterns are not typical of an average customer in that same meter size and/or customer class due to the nature of their business or varying water needs. We eliminate these from the average calculation as to not skew the average for a representative customer by meter size and customer class.

Billed usage by tier from 2012-2019 by customer class is analyzed to see if customers are staying within their budgeted tiered rate structure. The purpose of this data analysis is also to see if customers over time are conserving water and avoiding Tier 3 – Excessive usage and Surcharge (over 40,000 gallons per month).

We also look at the customers with a .67 SFE to see if their consumption patterns are meeting the intent of the program, to use one-third less water than an average ¾" residential customer's usage. Additional information such as .67 SFE accounts by irrigated area also help us to understand the larger irrigated accounts that typically consume larger amounts of water and may or may not be meeting the intent of the program. In addition to the .67 SFE accounts, we have added the new Water Efficiency Plan (WEP) accounts which started in 2019. Although

we do not have much data for this study, we will continue to analyze the consumption patterns over time to ensure these customers are meeting the spirit of intent to consume less water than a 1 SFE account.

Other areas within the study include consumption patterns based on watering schedules, consumption patterns based on water wiser designations, customer class consumption based on irrigated areas, consumption patterns for customers designated as HOA's, bulk water accounts consumption and Town accounts consumption patterns over time.

Like the water fund, we also chart the number of accounts from the latest 2019 billing data plus growth projections for customers who are receiving water resources and wastewater services. Stormwater Single Family Equivalents (SFE's) is the unit of measure for the stormwater fund, unlike accounts which are the unit of measure in the other enterprise funds.

Key information found in this report integrates into the development of rates and fees.

WATER ENTERPRISE FUND

NUMBER OF ACCOUNTS BY METER SIZE & CUSTOMER CLASS

Table 1 below shows the number of accounts by meter size and customer class using 12 months of billing data (Jan19-Dec19). This shows that 22,645 customers were receiving water service during this capture period. The FY2018 accounts based on 12 months of billing data (Jan18-Dec18) showed 21,647 customers were receiving water service. There are 998 more accounts in FY2019 than FY2018. The number of accounts by meter size are key inputs into the system development fees model. The number of accounts then convert into Single Family Equivalents (SFE's) which determine existing versus new system capacities and are then used in the calculations within the cost of service models.

TABLE 1: ACCOUNTS BY METER SIZE & CUSTOMER CLASS (FY2019)

Meter Size	Residential	Multifamily	Commercial	Bulk	Irrigation	MultiFamily Indoor Use Only	Commercial Indoor Use Only	Total
5/8"	1,425	-	-	-	3	4	9	1,441
3/4"	19,440	14	126	110	179	101	123	20,093
1"	25	25	71	-	109	94	94	418
1.5"	-	55	50	-	138	114	86	443
2"	-	15	26	-	83	42	47	213
3"	-	2	5	-	7	2	14	30
4"	-	1	-	-	2	-	2	5
6"	-	-	2	-	-	-	-	2
Total	20,890	112	280	110	521	357	375	22,645

Chart 1 below shows the growth in residential accounts from 2011-2019 and the projected growth for FY2020 and FY2021. An increase of 750 permits for 2020 and 700 for 2021 is being forecasted by the Town's Development Services Department for the residential customer class.

CHART 1: RESIDENTIAL WATER ACCOUNTS

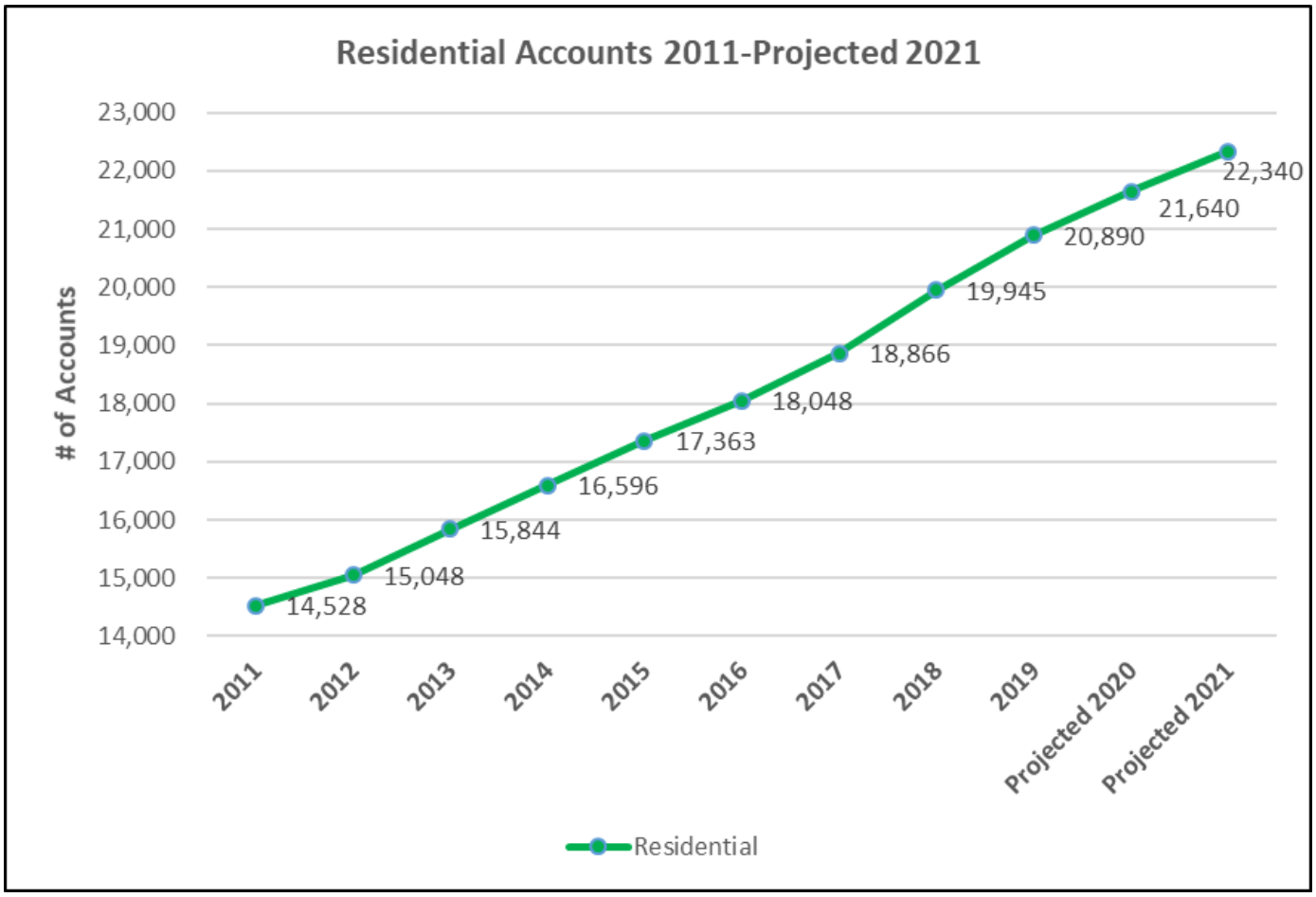
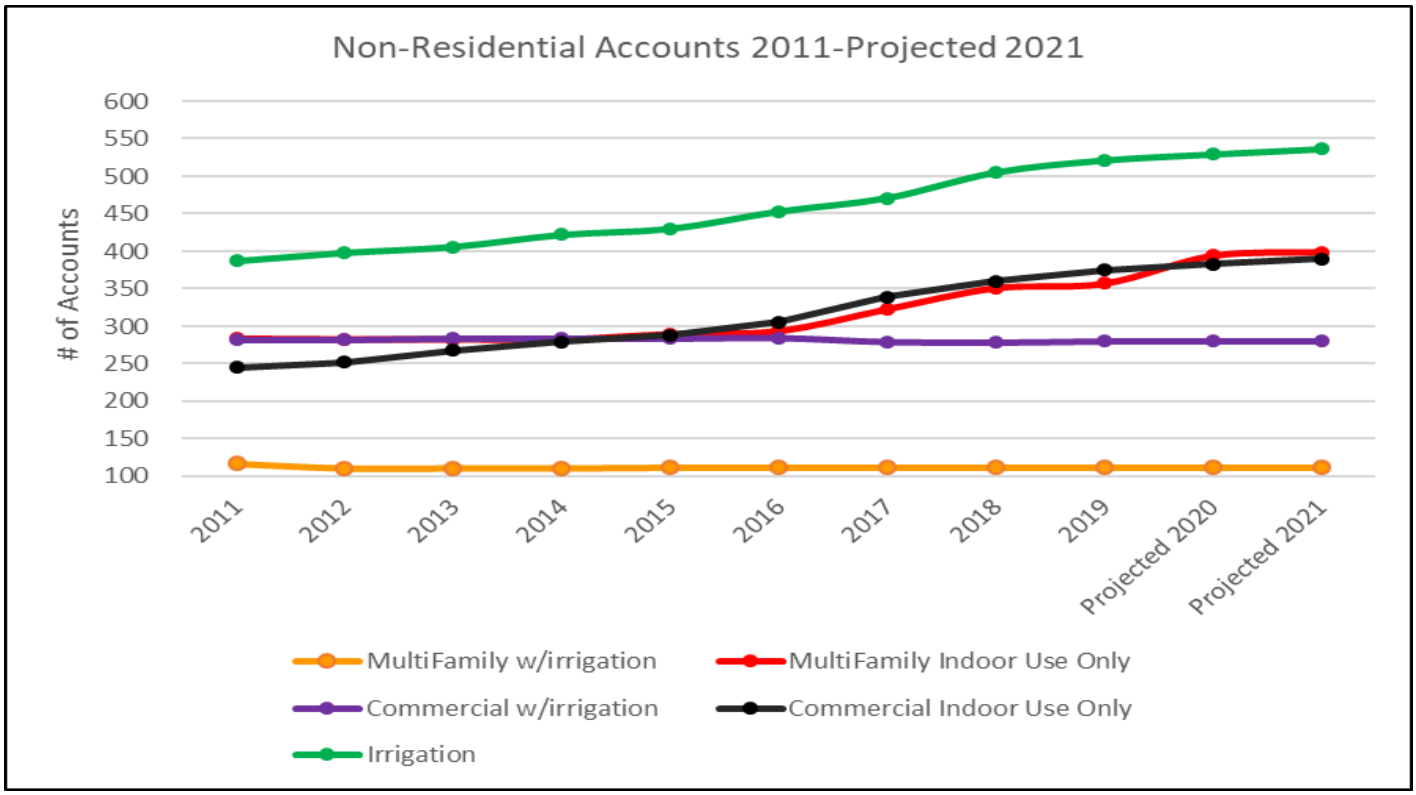


Chart 2 shows the number of non-residential accounts from 2011-2019. Over the last two years, we have started to see multifamily indoor use only actual accounts increasing. However, the projections for 2020 and 2021 are showing that curve flattening back out.

CHART 2: NON-RESIDENTIAL WATER ACCOUNTS



Castle Rock Water projects FY2021 water accounts by using FY2019 billing data plus the projected growth for FY2020 and FY2021. The FY2021 water accounts are projected to equal 24,057 (22,340 for residential and 1,717 for non-residential). Growth projections are as follows by customer class:

2020 Projected Accounts by Customer Class:

50	Residential (.67 SFE)
700	Residential (1 SFE)
37	Multi-Family
8	Commercial
8	Irrigation
803	Total

2021 Projected Accounts by Customer Class:

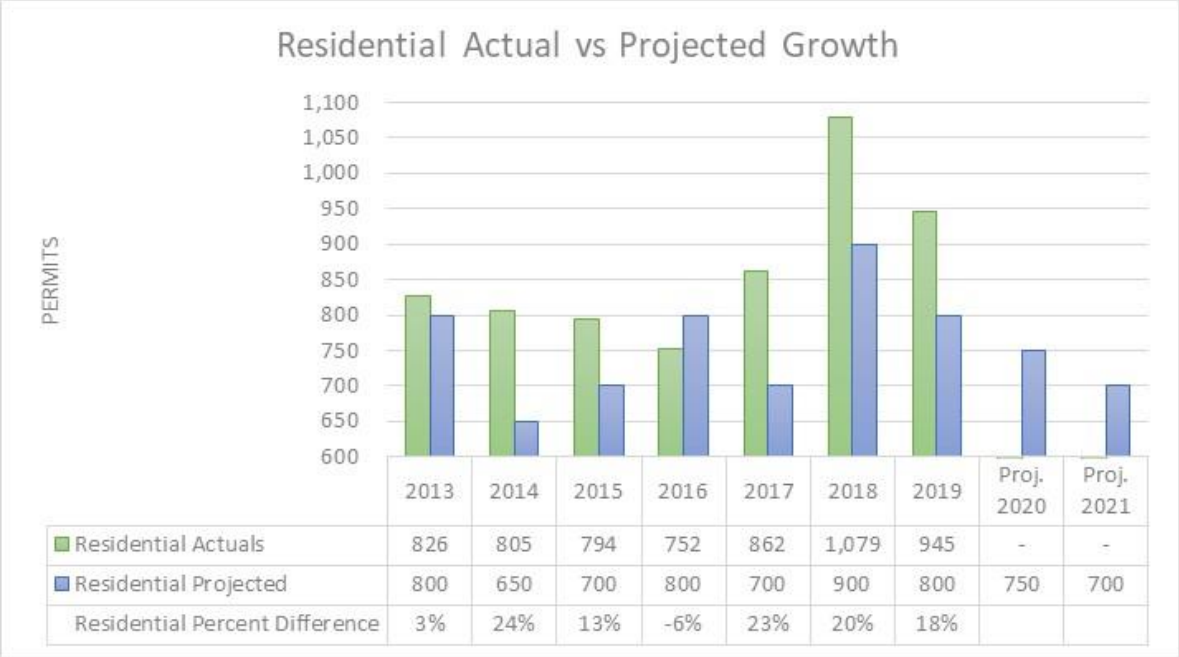
47	Residential (.67 SFE)
653	Residential (1 SFE)
5	Multi-Family
7	Commercial
7	Irrigation
719	Total

Projections are for 803 accounts for FY2020 and 719 accounts for FY2021 for a total increase through FY2021 of 1,522.

2013-2021 ACTUAL GROWTH VERSUS PROJECTED GROWTH

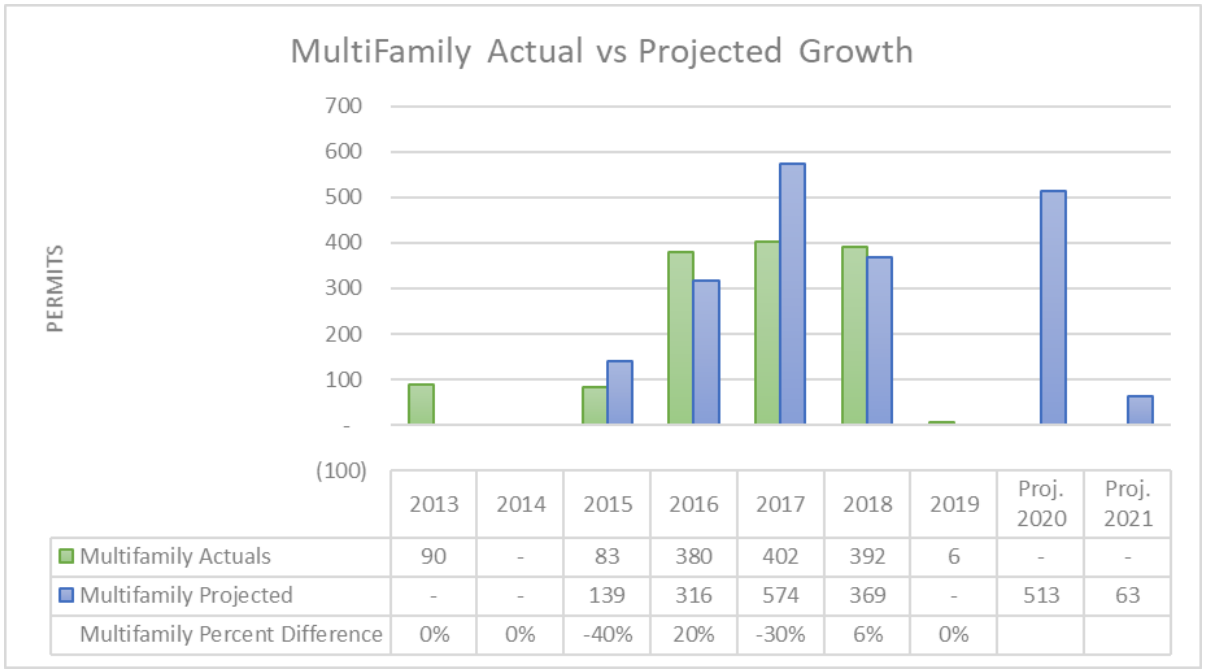
CRW has seen significant growth over the last several years. The projections received each year from Development Services are important components to the rate models and revenue projections when looking at needed rate or fee increases year over year. When looking at future projections it is also important to look at how closely the past projections have compared to the actual results each year. Charts 3-6 below show the actual number of permits compared to the projected number of permits during the same year. Charts 3-6 break out residential, multi-family, commercial and irrigation, whereas Chart 7 shows all customer classes combined. Multi-family permits shown in Chart 4 are typically master meters serving multiple units. For example, projections for 2021 shows 63 permits for multifamily in Chart 4 which equates to 5 new water service accounts shown in Chart 2 above. Based on historical trends, the average number of units per master metered accounts is 14.

CHART 3: RESIDENTIAL GROWTH



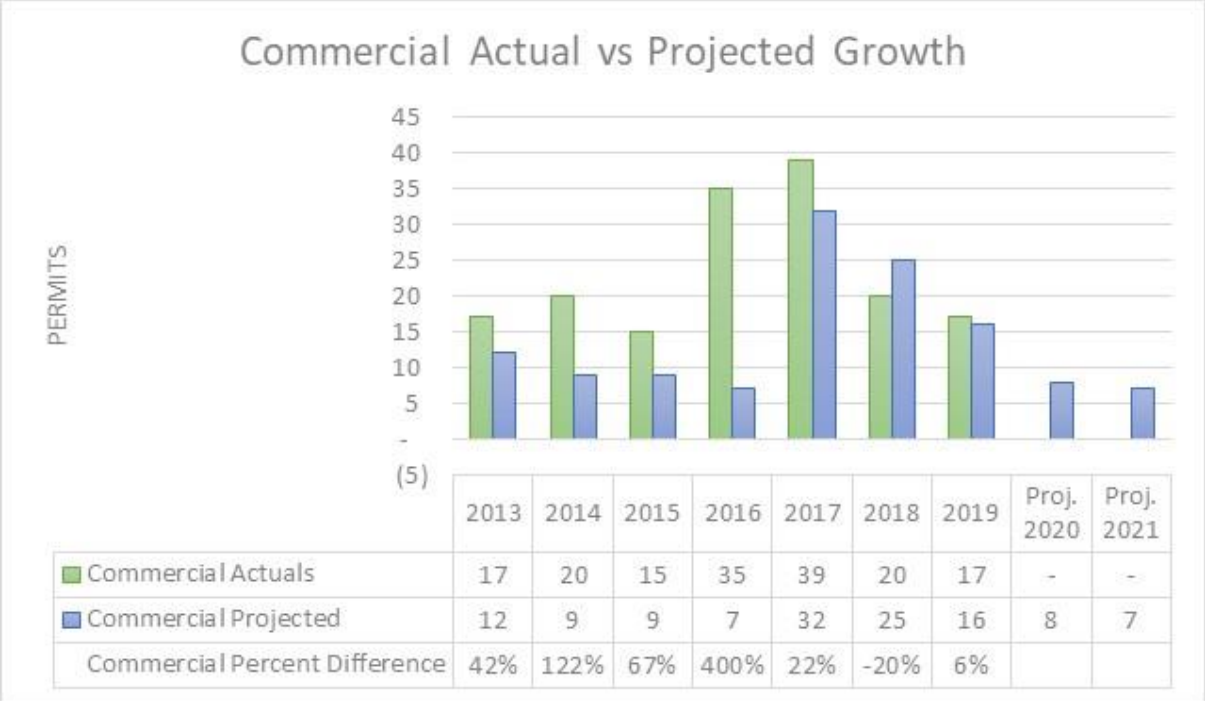
	2013	2014	2015	2016	2017	2018	2019	Proj. 2020	Proj. 2021
Residential Actuals	826	805	794	752	862	1,079	945	-	-
Residential Projected	800	650	700	800	700	900	800	750	700
Residential Percent Difference	3%	24%	13%	-6%	23%	20%	18%		

CHART 4: MULTIFAMILY GROWTH



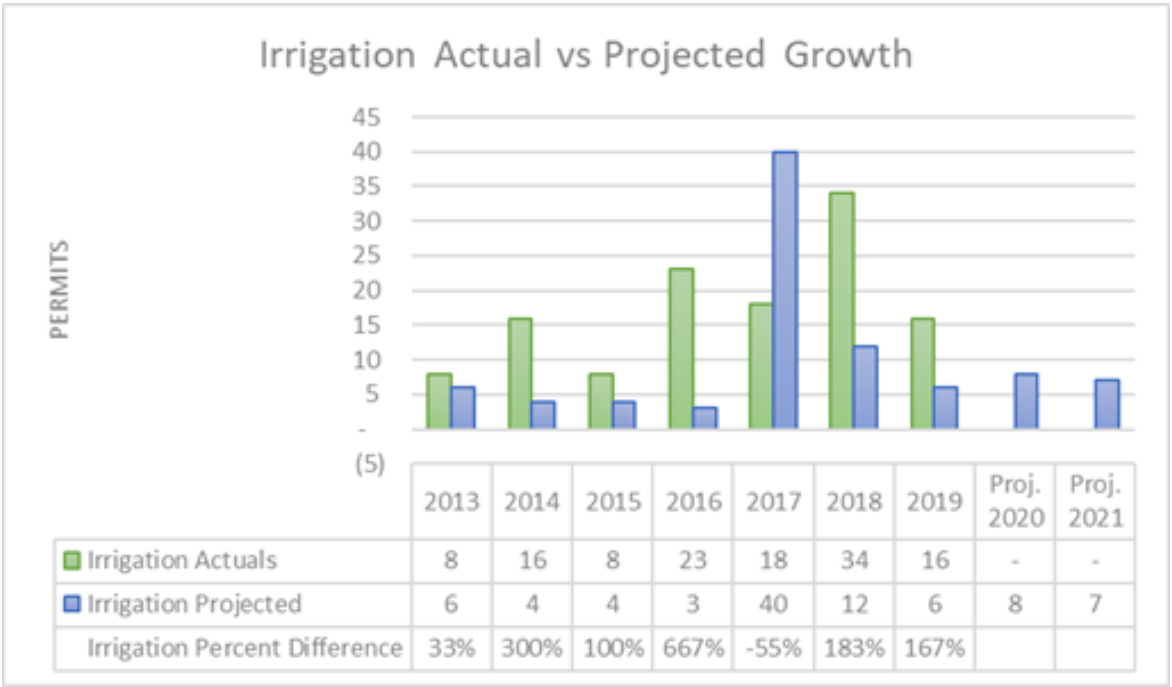
	2013	2014	2015	2016	2017	2018	2019	Proj. 2020	Proj. 2021
Multifamily Actuals	90	-	83	380	402	392	6	-	-
Multifamily Projected	-	-	139	316	574	369	-	513	63
Multifamily Percent Difference	0%	0%	-40%	20%	-30%	6%	0%		

CHART 5: COMMERCIAL GROWTH



	2013	2014	2015	2016	2017	2018	2019	Proj. 2020	Proj. 2021
Commercial Actuals	17	20	15	35	39	20	17	-	-
Commercial Projected	12	9	9	7	32	25	16	8	7
Commercial Percent Difference	42%	122%	67%	400%	22%	-20%	6%		

CHART 6: IRRIGATION GROWTH



	2013	2014	2015	2016	2017	2018	2019	Proj. 2020	Proj. 2021
Irrigation Actuals	8	16	8	23	18	34	16	-	-
Irrigation Projected	6	4	4	3	40	12	6	8	7
Irrigation Percent Difference	33%	300%	100%	667%	-55%	183%	167%		

CHART 7: All CUSTOMER CLASSES COMBINED GROWTH

3-YEAR AVERAGE CONSUMPTION BY CUSTOMER CLASS

Table 2 shows the 3-year average monthly consumption by meter size and customer class for 2017-2019 billing data. Table 2A shows the breakdown of the residential meter sizes shown in Table 2 and their individual applicable 3 year averages. Chart 8 shows the 3-year average monthly consumption for all residential meter sizes, including 5/8" through 1". Although the number of 1" residential meters is very small at 25 accounts, the impact to the overall weighted average is significant.

TABLE 2: 3-YEAR AVG MONTHLY CONSUMPTION BY CUSTOMER CLASS & METER SIZE (2017-2019)

Meter Size	Residential	Multifamily	Commercial	Irrigation	MultiFamily Indoor Use Only	Commercial Indoor Use Only
5/8"	5.26	-	-	18.92	3.23	3.38
3/4"	7.59	22.22	9.14	31.46	3.05	8.99
1"	17.48	29.54	31.22	62.57	14.36	24.02
1.5"	-	69.32	49.75	141.34	42.32	40.75
2"	-	102.35	78.24	216.40	69.74	66.49
3"	-	313.33	159.00	405.89	113.67	96.64
4"	-	374.84	-	507.26	-	1,410.86
6"	-	-	719.40	-	-	-

TABLE 2A: 3-YEAR AVG MONTHLY CONSUMPTION RESIDENTIAL METER SIZES (2017-2019)

Residential Accounts							
Meter Size	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019
5/8"	5.35	6.19	5.70	5.44	5.37	5.44	5.26
3/4"	7.21	7.70	7.30	7.30	7.48	7.68	7.59
1"	11.42	13.14	14.17	21.26	17.86	18.69	17.48
Average	7.99	9.01	9.06	11.33	10.24	10.60	10.11
Weighted Average	7.10	7.62	7.21	7.20	7.37	7.56	7.44

CHART 8: 3-YEAR AVG MONTHLY CONSUMPTION - RESIDENTIAL ACCOUNTS

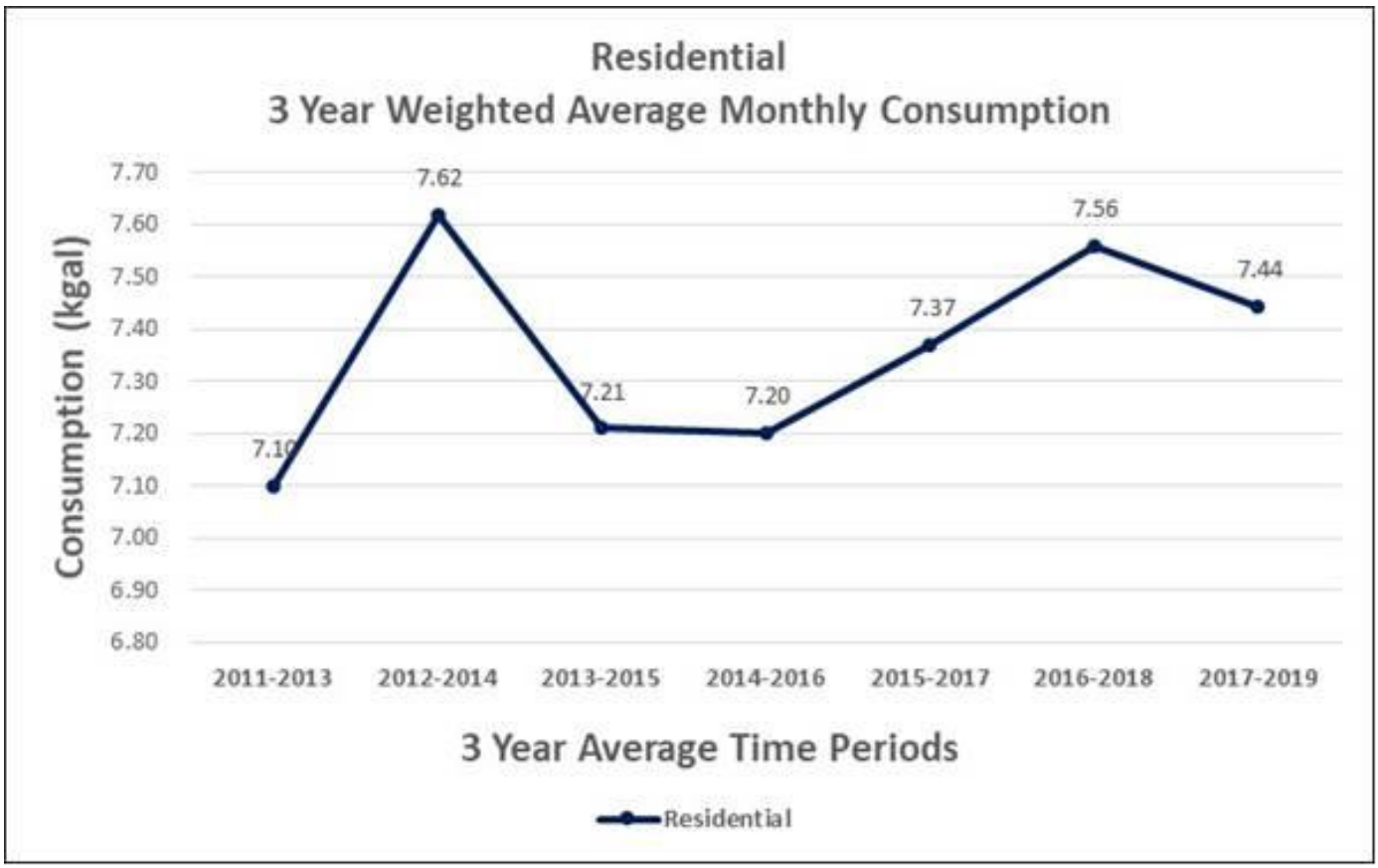
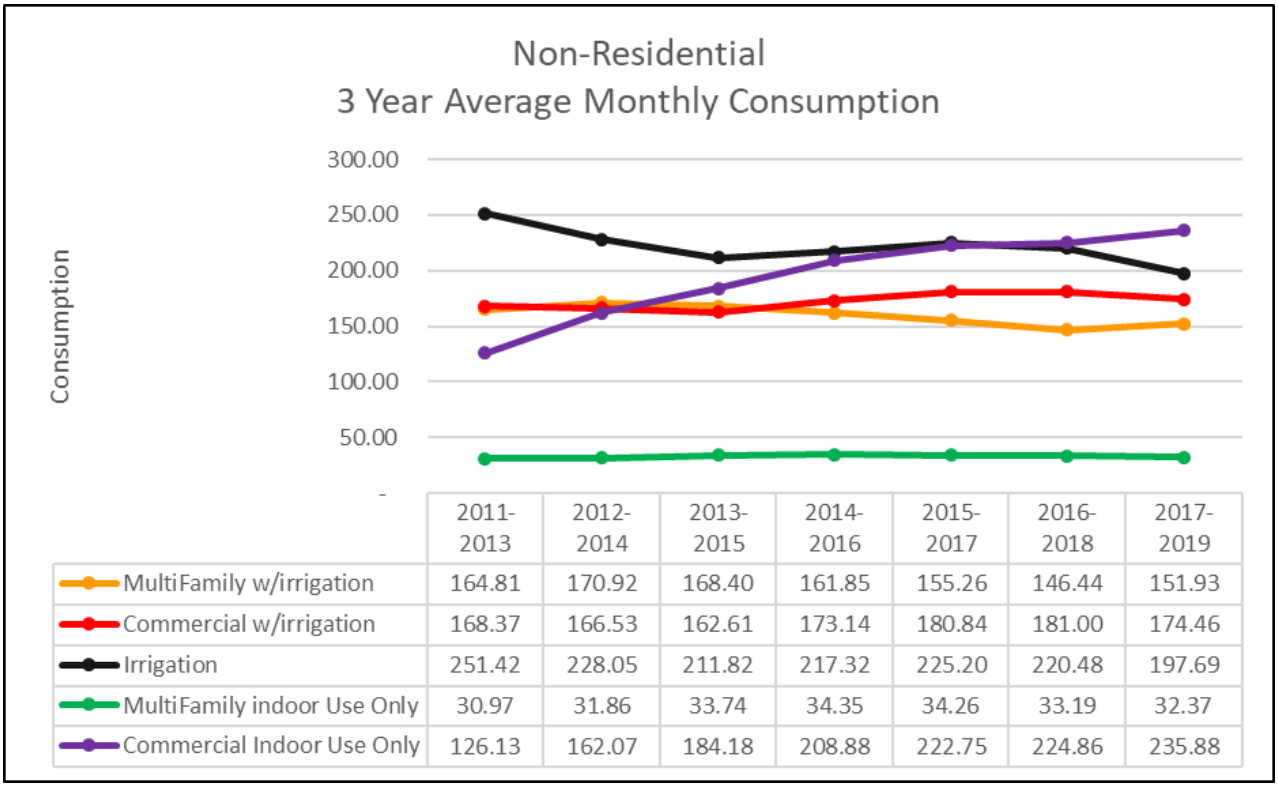


CHART 9: 3-YEAR AVG MONTHLY CONSUMPTION - NON-RESIDENTIAL ACCOUNTS

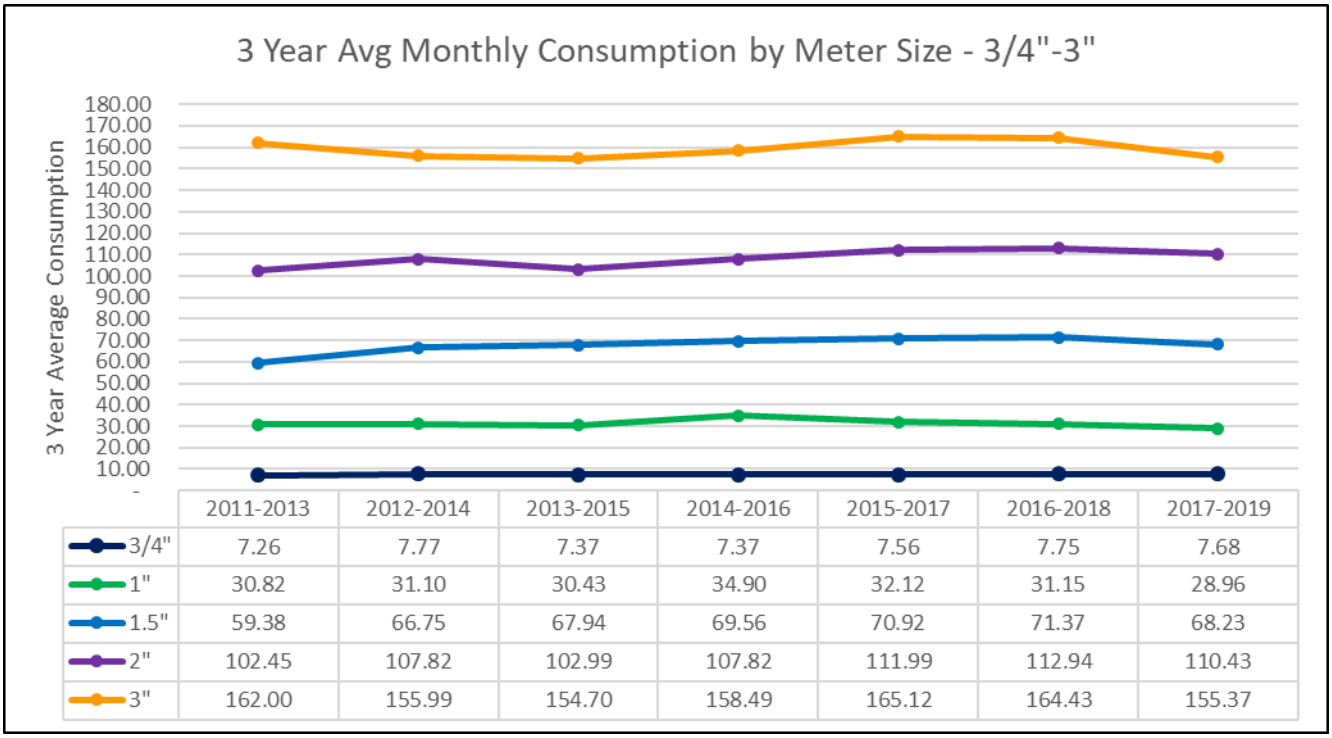


	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019
MultiFamily w/irrigation	164.81	170.92	168.40	161.85	155.26	146.44	151.93
Commercial w/irrigation	168.37	166.53	162.61	173.14	180.84	181.00	174.46
Irrigation	251.42	228.05	211.82	217.32	225.20	220.48	197.69
MultiFamily indoor Use Only	30.97	31.86	33.74	34.35	34.26	33.19	32.37
Commercial Indoor Use Only	126.13	162.07	184.18	208.88	222.75	224.86	235.88

The 3-year average monthly consumption shown above in Chart 9 is for all non-residential meter sizes combined by customer class. While all customer classes have stayed relatively flat, commercial indoor use only accounts 3-year averages have been increasing year over year. We start to see the increase in average consumption in this customer class with the addition of the 4″ meter installed in 2013 at the hospital.

In Chart 10 below the 3-year average monthly consumption for the ¾″ to 3″ size of meters for all customer classes have remained virtually flat over the comparison periods.

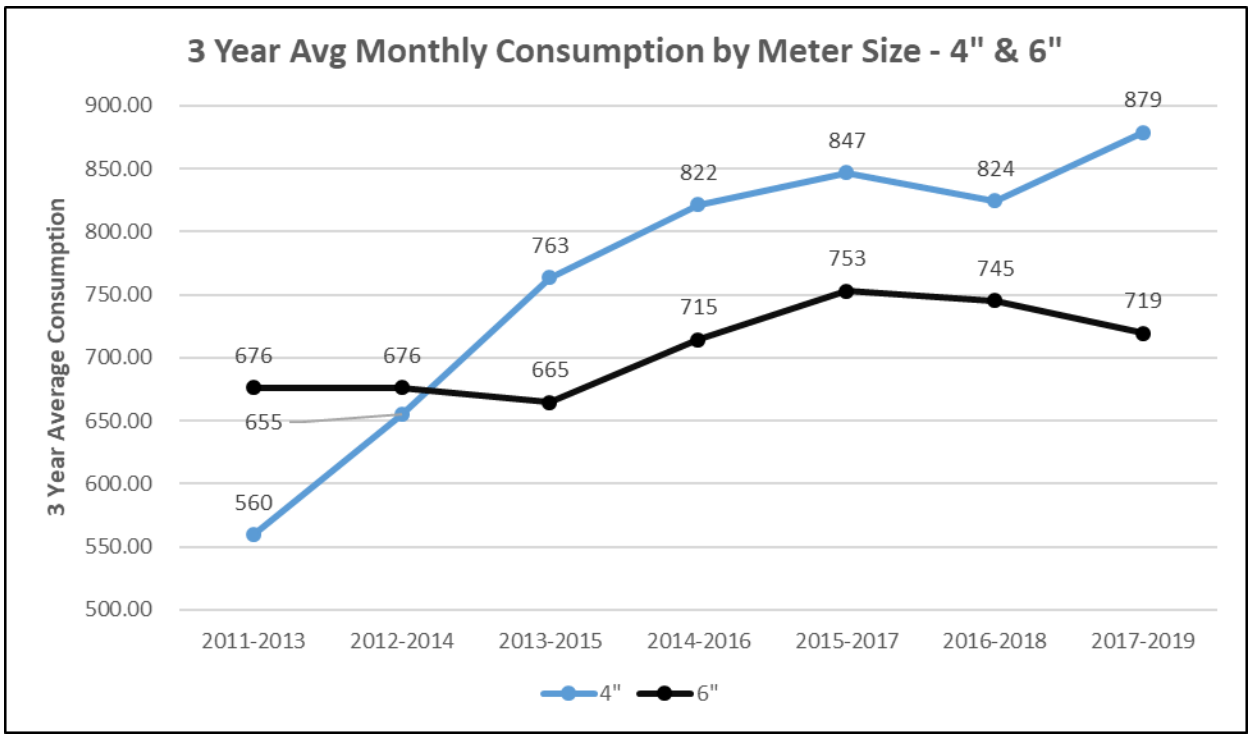
CHART 10: 3-YEAR AVG MONTHLY CONSUMPTION BY METER SIZE ¾" to 3" ALL CUSTOMER CLASSES



	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019
3/4"	7.26	7.77	7.37	7.37	7.56	7.75	7.68
1"	30.82	31.10	30.43	34.90	32.12	31.15	28.96
1.5"	59.38	66.75	67.94	69.56	70.92	71.37	68.23
2"	102.45	107.82	102.99	107.82	111.99	112.94	110.43
3"	162.00	155.99	154.70	158.49	165.12	164.43	155.37

Chart 11 below shows the average consumption for the two 6" meters in service is trending downwards slightly over the last two comparison periods. We currently have five 4" meters in service, four active meters and one redundant meter for medical purposes. The increase in the 2013 and forward consumption pattern is a result of the 4" medical facility meter that was installed in 2013.

CHART 11: 3-YEAR AVG MONTHLY CONSUMPTION BY METER SIZE – 4″ and 6″



3-YEAR AVERAGE CONSUMPTION WITH & WITHOUT IRRIGATION

The data in Table 3 shows the average monthly consumption by meter size for all customer classes combined. This shows that the monthly consumption in many cases more than doubles between the summer "with irrigation" and the winter "without irrigation" seasons.

TABLE 3: 3-YEAR AVERAGE MONTHLY CONSUMPTION BY METER SIZE FOR ALL CUSTOMER CLASSES COMBINED (2017-2019)

Meter Size	With Irrigation	Without Irrigation
5/8"	6.53	3.36
3/4"	10.02	4.31
1"	35.35	17.36
1.5"	82.39	40.14
2"	134.19	59.18
3"	187.02	102.94
4"	942.40	790.71
6"	834.60	558.13

CHART 12: 3-YEAR AVG MONTHLY CONSUMPTION ¾" METERS

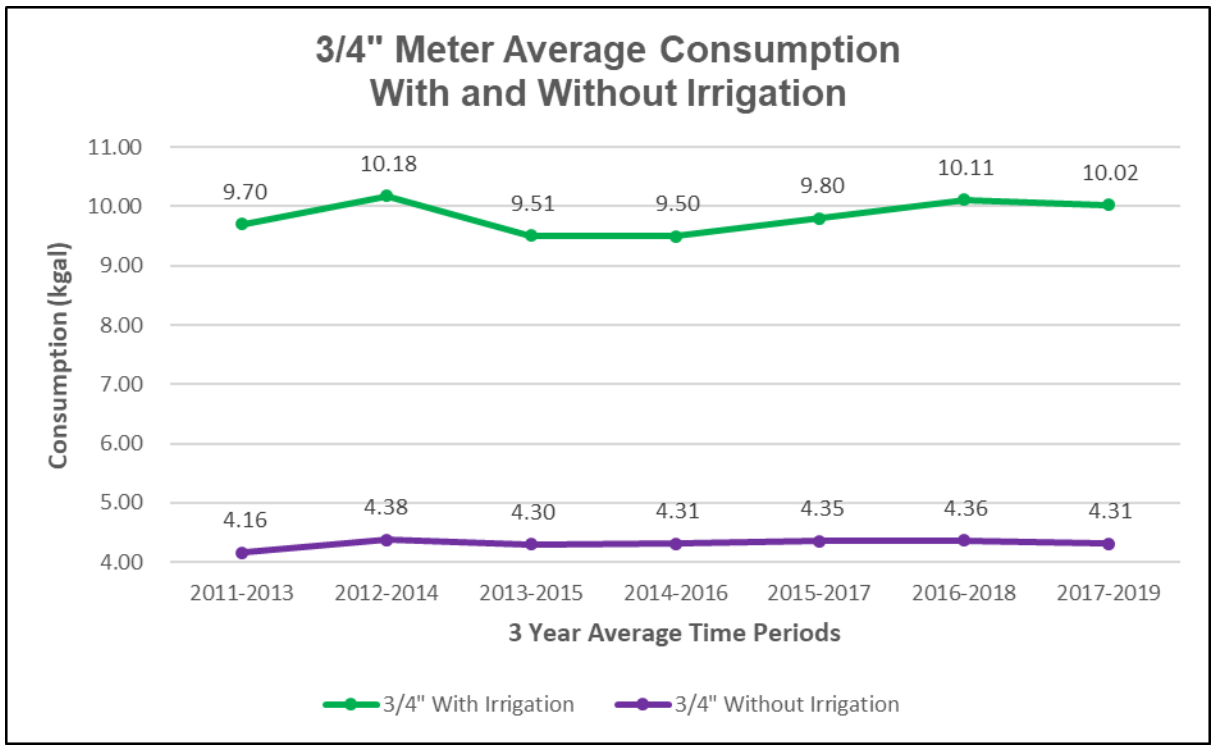


Chart 12 above shows that ¾" meter accounts usage "without irrigation" is very consistent from year-to-year. Approximately 97% of the ¾" meters are residential accounts. This trend indicates indoor water usage from year-to-year for ¾" meters is staying consistent, even with the increase in the number of accounts. However, we are starting to see a slight trend upward in the following two periods and a slight decrease in the last period for the ¾" meter usage "with irrigation" indicating that the irrigation usage for these accounts could be trending in the correct direction. Weather conditions and rainfall could be contributing factors.

CHART 13: 3-YEAR AVG MONTHLY CONSUMPTION 1″ METERS

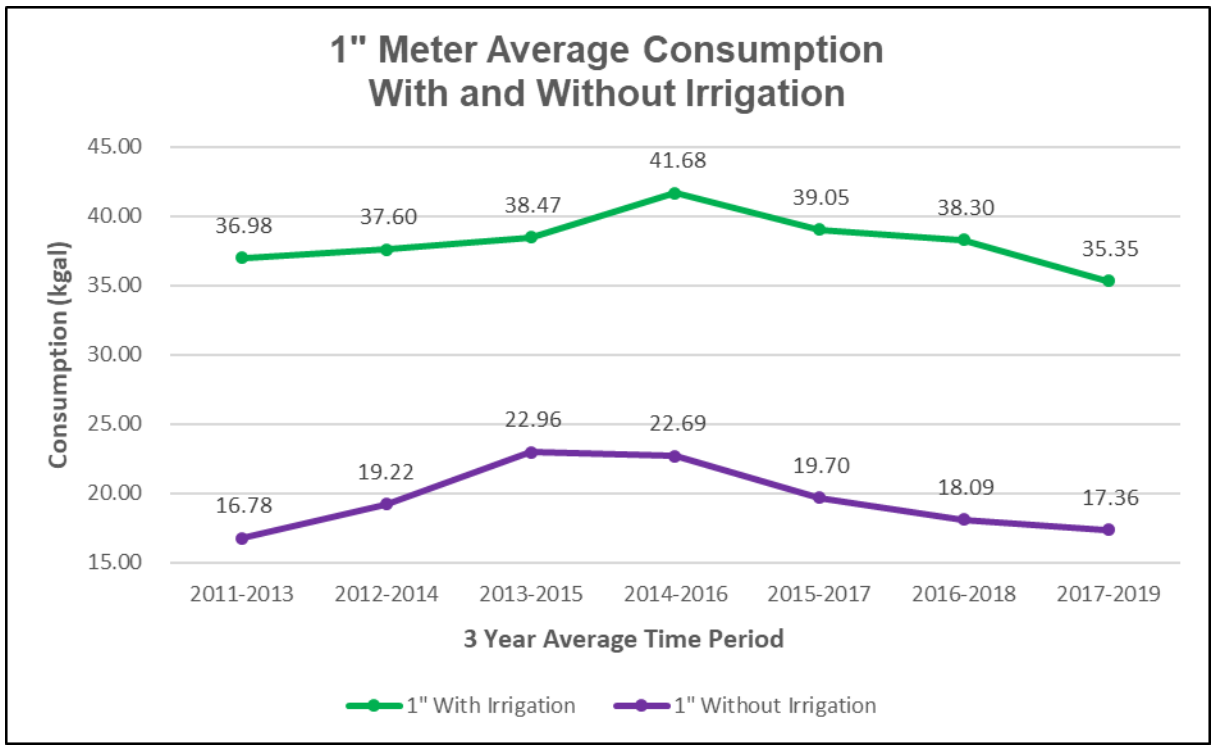


Chart 13 above shows that 1″ meter accounts usage "without irrigation" is trending downward from year-to-year, which is a good trend to see. Despite an increase of 13 accounts over the last year in the 1″ meter count, this trend indicates indoor water usage from year-to-year for meters this size are decreasing slightly. We are also starting to see a slight trend downward at an increasing level in the last three comparison periods for the 1″ meter usage "with irrigation" indicating that the outdoor usage for these accounts is trending downward.

Chart 14 below shows the accounts usage "without irrigation" for all 1.5″ accounts is relatively flat over the comparison periods until this last comparison where usage trended slightly downward. Despite an increase of 11 accounts over the last year in the 1.5″ meter count, this trend indicates indoor water usage from year-to-year for meters this size is steady and, in fact, starting to decrease slightly. We are also seeing a relatively flat trend for the 1.5″ meter usage "with irrigation" until this latest time period where we see a slight decrease indicating that the outdoor usage for these accounts is trending down given the number of new accounts.

CHART 14: 3-YEAR AVG MONTHLY CONSUMPTION 1.5″ METERS

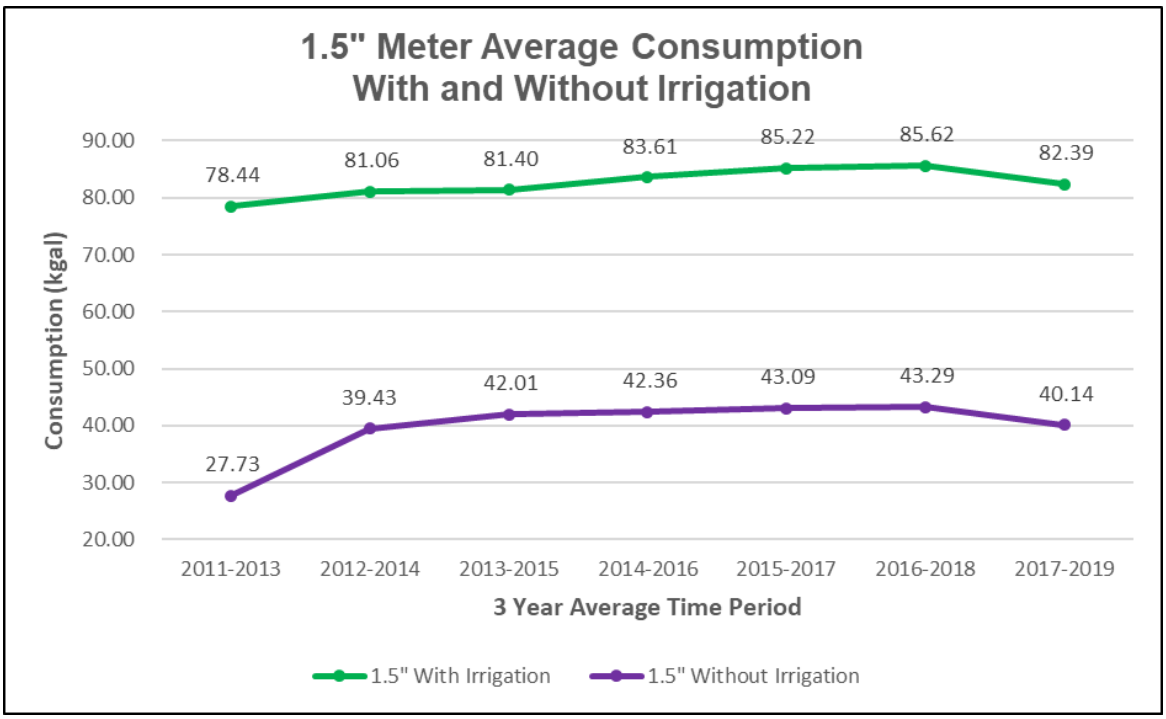


CHART 15: 3-YEAR AVG MONTHLY CONSUMPTION 2″ METERS

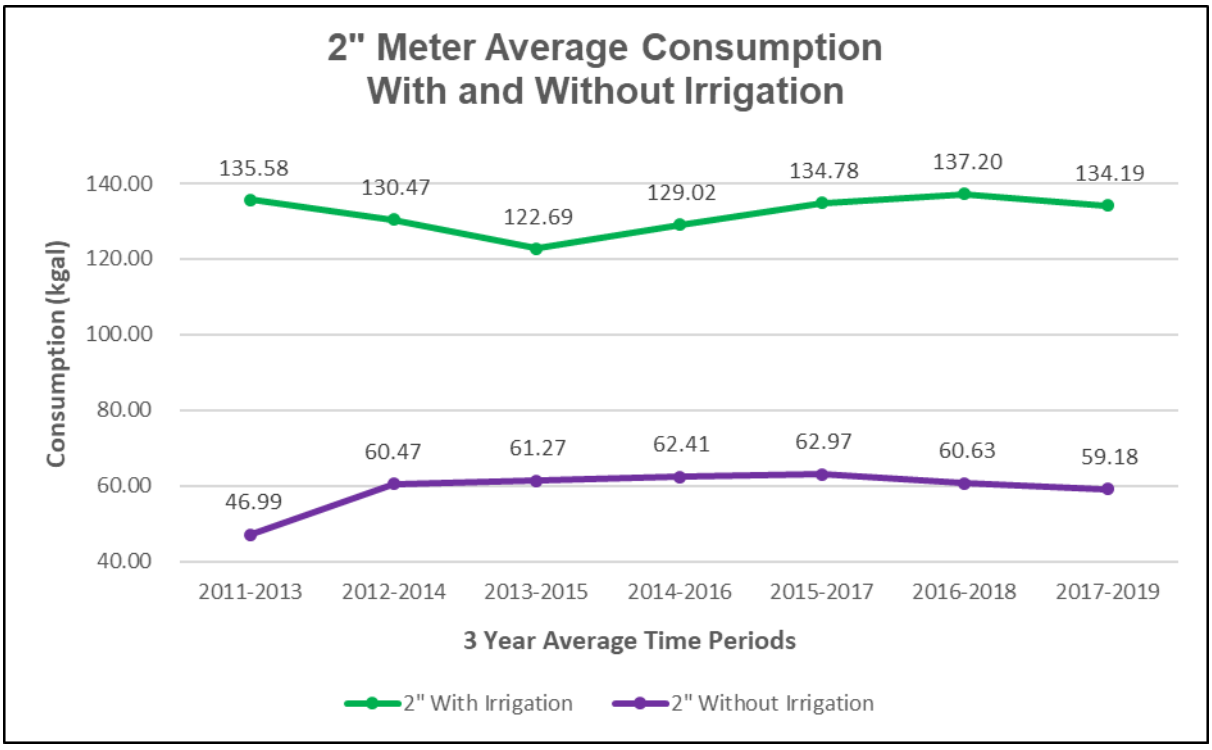


Chart 15 above for 2″ meters and Chart 16 below for 3″ meters both indicate that the consumption trends for these two larger types of meters are remaining relatively flat over the two previous comparison periods with a slight downward trend for the most recent comparison period for both the irrigation and winter season.

CHART 16: 3-YEAR AVG MONTHLY CONSUMPTION 3″ METERS

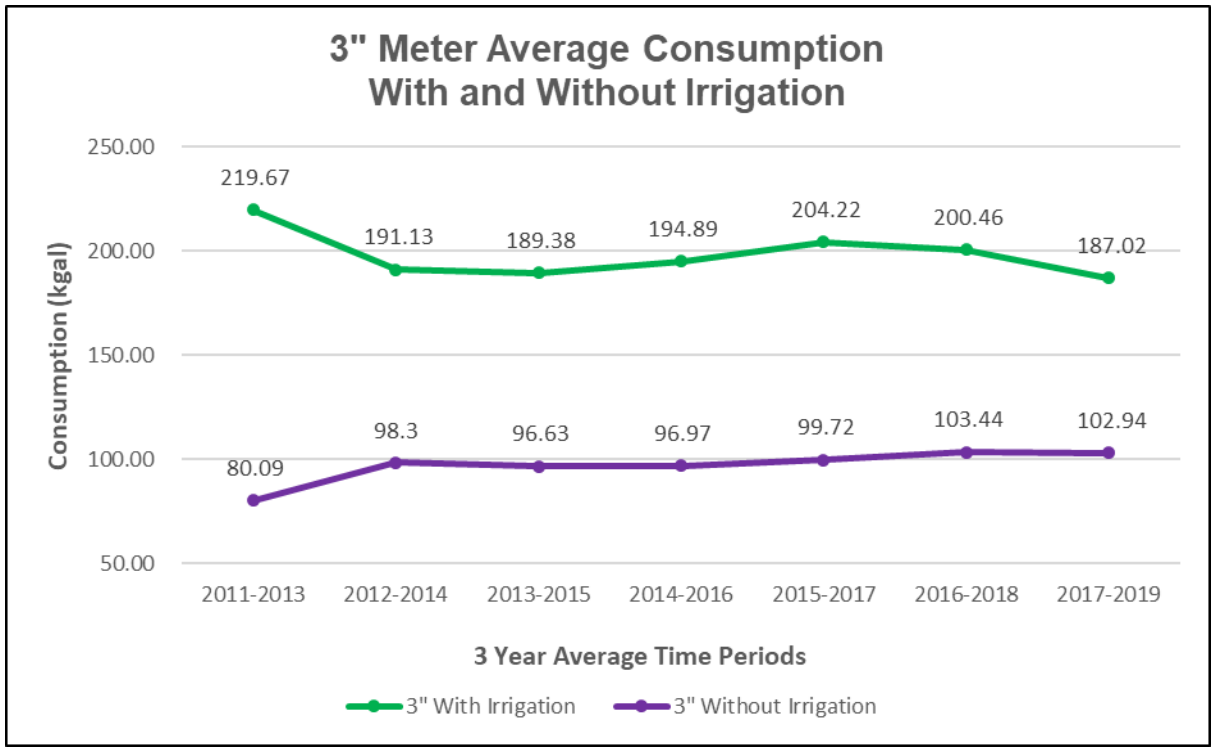
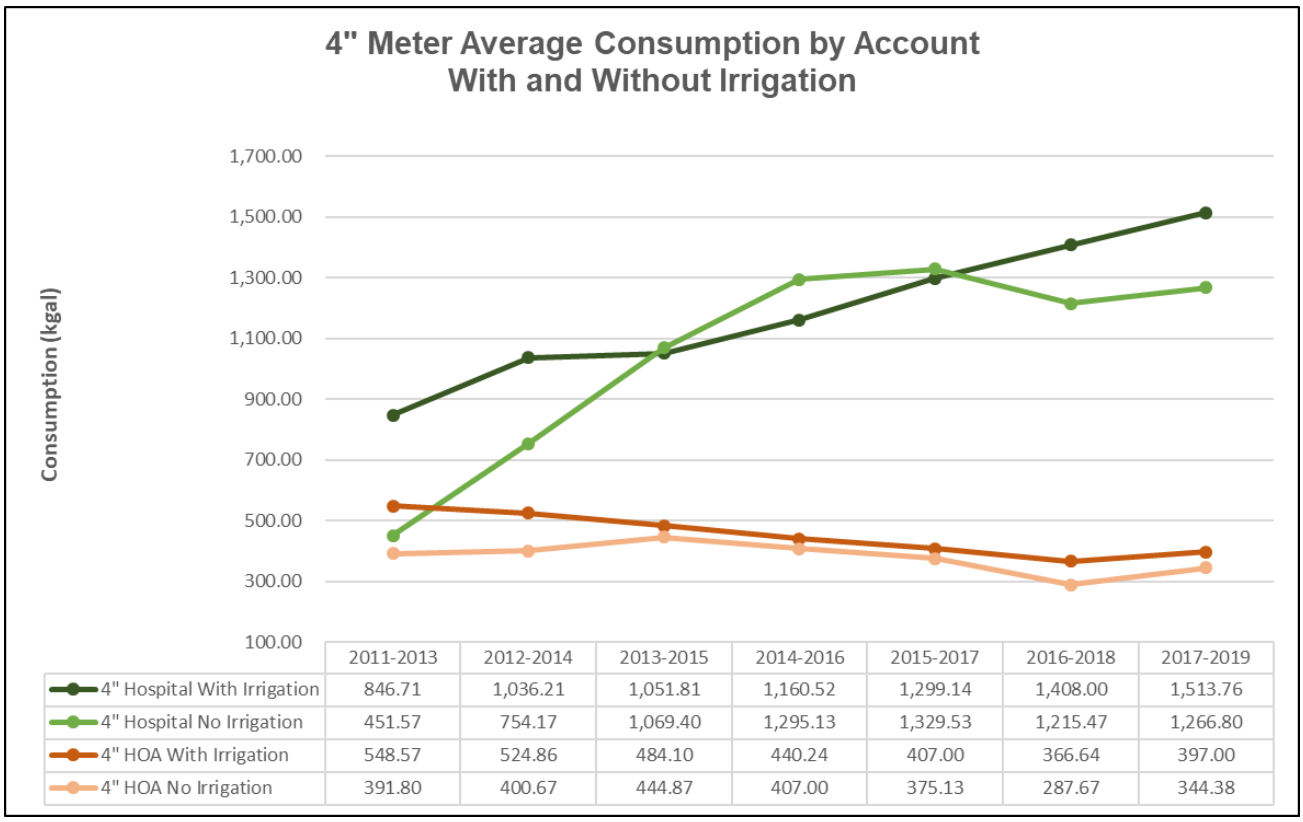


CHART 17: 3-YEAR AVG MONTHLY CONSUMPTION 4″ METERS

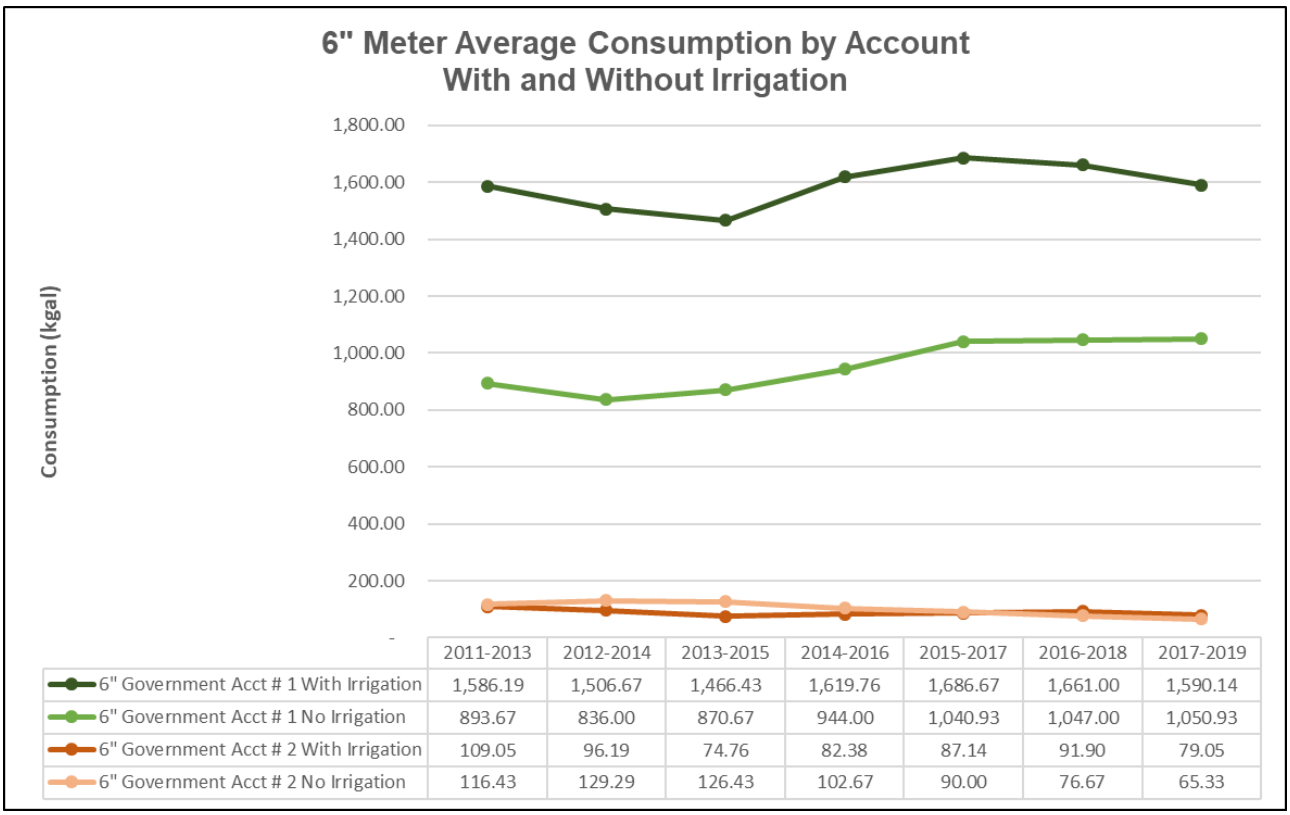


	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019
4" Hospital With Irrigation	846.71	1,036.21	1,051.81	1,160.52	1,299.14	1,408.00	1,513.76
4" Hospital No Irrigation	451.57	754.17	1,069.40	1,295.13	1,329.53	1,215.47	1,266.80
4" HOA With Irrigation	548.57	524.86	484.10	440.24	407.00	366.64	397.00
4" HOA No Irrigation	391.80	400.67	444.87	407.00	375.13	287.67	344.38

Chart 17 above shows an upward trend when comparing the last two comparison periods for both winter and summer seasons. Since there are only 4 active meters in this category, one meter can skew the average consumption for the entire customer class. In this year's study we broke down those meters further to analyze the types of customers within that meter size. As you can see from Chart 17, customer average consumption patterns with the same size meter are very different.

Chart 18 for 6″ meters shows that the average monthly consumption for these two meters in service has remained fairly consistent over the last few comparison periods. Again it shows the varying degree of usage by each of the two customers using the same size 6″ meter.

CHART 18: 3-YEAR AVG MONTHLY CONSUMPTION 6" METERS



	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019
6" Government Acct # 1 With Irrigation	1,586.19	1,506.67	1,466.43	1,619.76	1,686.67	1,661.00	1,590.14
6" Government Acct # 1 No Irrigation	893.67	836.00	870.67	944.00	1,040.93	1,047.00	1,050.93
6" Government Acct # 2 With Irrigation	109.05	96.19	74.76	82.38	87.14	91.90	79.05
6" Government Acct # 2 No Irrigation	116.43	129.29	126.43	102.67	90.00	76.67	65.33

EQUIVALENCY FACTORS

There are two different types of equivalency factors. The first is the hydraulic capacity method which is based on the relative capacity of different meter sizes and meter types utilized to deliver water. The second equivalency factor method takes into consideration the relative potential demands of different customers. Based on the characteristic hydraulic demands, a single-family meter size of ¾" serves as the base for one SFE. The maximum flow rate of water through the meter in gallons per minute (GPM) becomes the unit of comparison. The maximum flow rate demanded by new customers compares to the base demand in order to determine the equivalency ratio. For example, if the base single-family residential customer requires 30 GPM and a commercial customer requires 200 GPM, the equivalency ratio equals 6.67 (200/30). The second method is the actual use equivalency factor based on the relative average monthly water usage of CRW's customers.

Table 4 calculates equivalency factors by customer class and meter size based on a ¾" single-family residential customer. The equivalency factor in Table 4 is an input into the system development fees model used to calculate the number of SFE's. This is achieved by multiplying

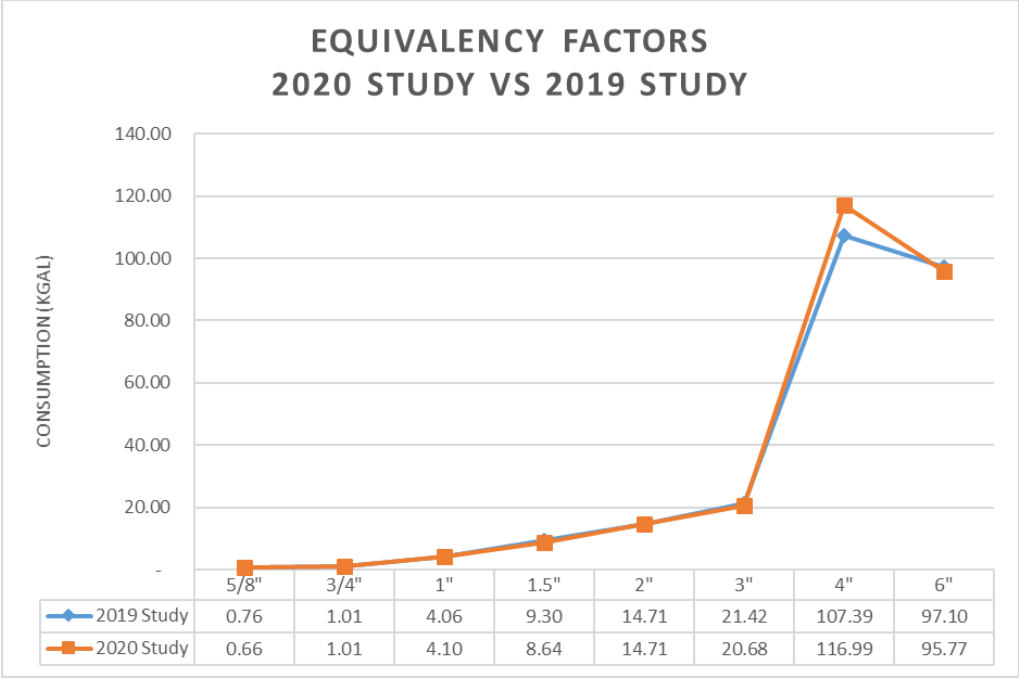
the equivalency factor times the number of meters which then equals the number of SFE's currently being served by the system.

Chart 19 compares the equivalency factors calculated from the most current rates and fees study to the prior year study. As seen in the chart no major variances exist from study to study so no methodology change is recommended to the 2020 study.

TABLE 4: 2019 STUDY ACTUAL USE EQUIVALENCY FACTORS (BASED ON 3-YEAR AVG. 2017-2019)

Meter Size	Residential	Multifamily	Commercial	Irrigation	MultiFamily Indoor Use Only	Commercial Indoor Use Only	Equivalency Factor
5/8"	0.69	-	-	2.49	0.42	0.45	0.69
3/4"	1.00	2.93	1.20	4.14	0.40	1.18	1.01
1"	2.30	3.89	4.11	8.24	1.89	3.16	3.81
1.5"	-	9.13	6.55	18.61	5.57	5.37	8.98
2"	-	13.48	10.30	28.50	9.18	8.76	14.54
3"	-	41.26	20.94	53.45	14.97	12.73	20.46
4"	-	49.36	-	66.80	-	185.78	115.73
6"	-	-	94.73	-	-	-	94.73

CHART 19: EQUIVALENCY FACTORS 2020 STUDY COMPARED TO THE 2019 STUDY



REPRESENTATIVE CUSTOMER BY CUSTOMER CLASS

Customer data for the last three years (2017-2019) determines an average representative customer for each customer class. One customer from each customer class then represents the class average and their consumption patterns calculate a typical customer's annual bill. The process includes the following steps:

- Calculate the average consumption, total consumption, and consumption for irrigation season and winter season based on the most recent billing data (Jan19-Dec19).
- Select the most common meter size within each customer class and associated average consumption based on customer class and meter size.
- Select one customer per class from the data sample with both irrigation and winter period consumption to be a representative customer for each customer class.
- Eliminating customers with atypical consumption from the pool of customers eliminates skewing the average calculation for a representative customer by class. See the next section on atypical accounts for more information about the atypical accounts and the consumption patterns of these customers.

Results of the representative customer analysis shown in Table 5 are very similar to those we calculated in the prior year study. Average Winter Monthly Consumption (AWMC) calculated by averaging the total potable water consumption used by the customer in the months of November-February in accordance with standard operating procedures maintained by Castle Rock Water. This represents the amount of water for indoor use (Tier 1) and the amount of wastewater treated each month. Since new customers do not have an established AWMC, the customer class average for water and a $36/SFE monthly fee for wastewater is used.

During this study period, for single-family residential customers, the average AWMC is 4,000 gallons (water available at Tier 1) and the monthly wastewater charge is $36/SFE. Irrigation does not typically have winter consumption, however as shown below in Table 5 there is a small amount that is consumed due to leaks, winterization late or early in the season.

TABLE 5: REPRESENTATIVE CUSTOMER BY CLASS
2019 BILLING DATA

Customer Class	Most Common Meter Size	Total Annual Consumption (kgal)	Average Monthly Consumption (Jan-Dec 2019) (kgal)	Average Winter Monthly Consumption (kgal)	Average Irrigation Monthly Consumption (kgal)
Residential	¾″	81.74	7.25	4.16	9.41
Multifamily (with irrigation)	1.5″	849.03	64.88	44.20	79.58
Commercial (with irrigation)	¾″	105.05	8.54	6.06	10.24
Irrigation	¾″	367.40	30.29	10.73	30.78
Multifamily Indoor Use Only	1.5″	482.27	40.28	39.11	41.12
Commercial Indoor Use Only	¾″	110.35	9.06	7.64	10.01

ATYPICAL ACCOUNTS

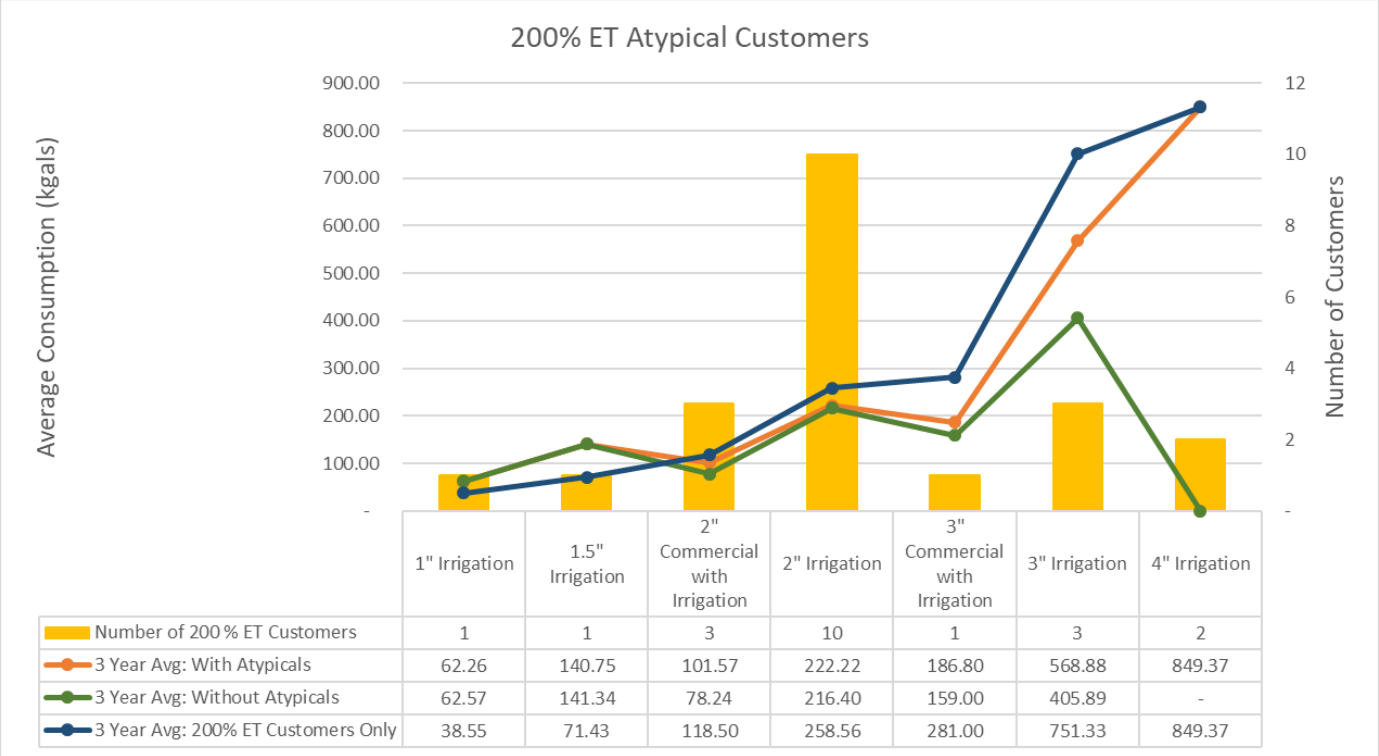
In addition to completing the three-year average consumption comparisons, CRW looks at atypical customers. Atypical can be defined as a customer whose consumption patterns are not typical of an average customer in that same meter size and/or customer class due to the nature of their business or varying water needs. We eliminate these from the average calculation as to not skew the average for a representative customer by meter size and customer class.

The larger atypical customers that have been removed from the three year averages for the 2020 rates and fees study are 200% ET, carwashes, hotels, outdoor bathrooms, parking garages, sample stations, SFE reservations and swimming pools. Charts 20 through 23, shown below, are some of those atypical customers with the larger consumption variances. After further analysis of the consumption patterns of the following accounts, they were deemed to not be considered

atypical accounts as their average consumption patterns were much like those of the other customers in the corresponding meter and/or customer class. They remain in the average calculations: snowbirds, medical facilities other than the hospital, CR Water facilities, and the fairgrounds. Customers designated with a 200% are programmed athletic fields.

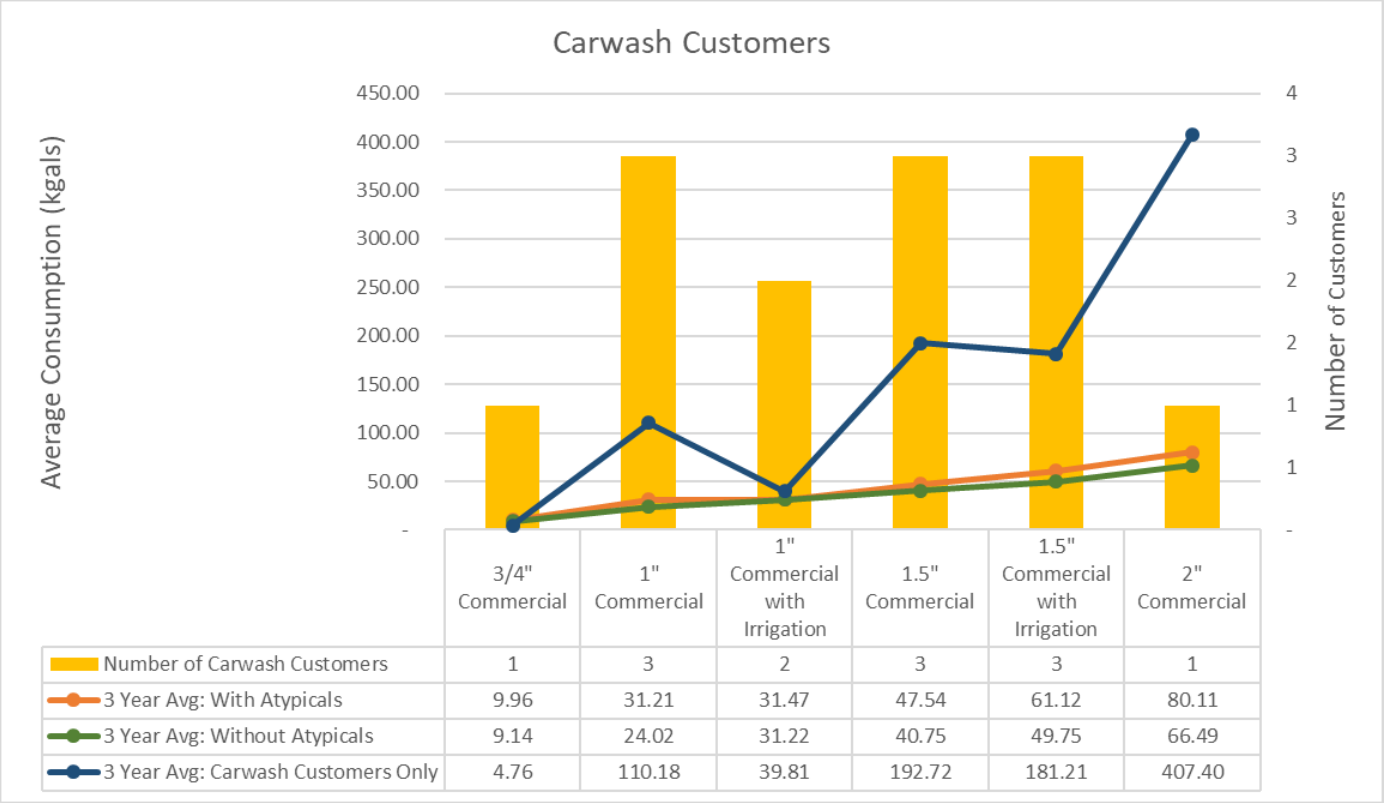
Charts 20 through 23 show the number of customers in each atypical class, the 3-year average with the atypical customers included, the 3-year average without the atypical customers included and the 3-year average of the atypical class by itself.

CHART 20: 200% ET ATYPICAL CUSTOMERS



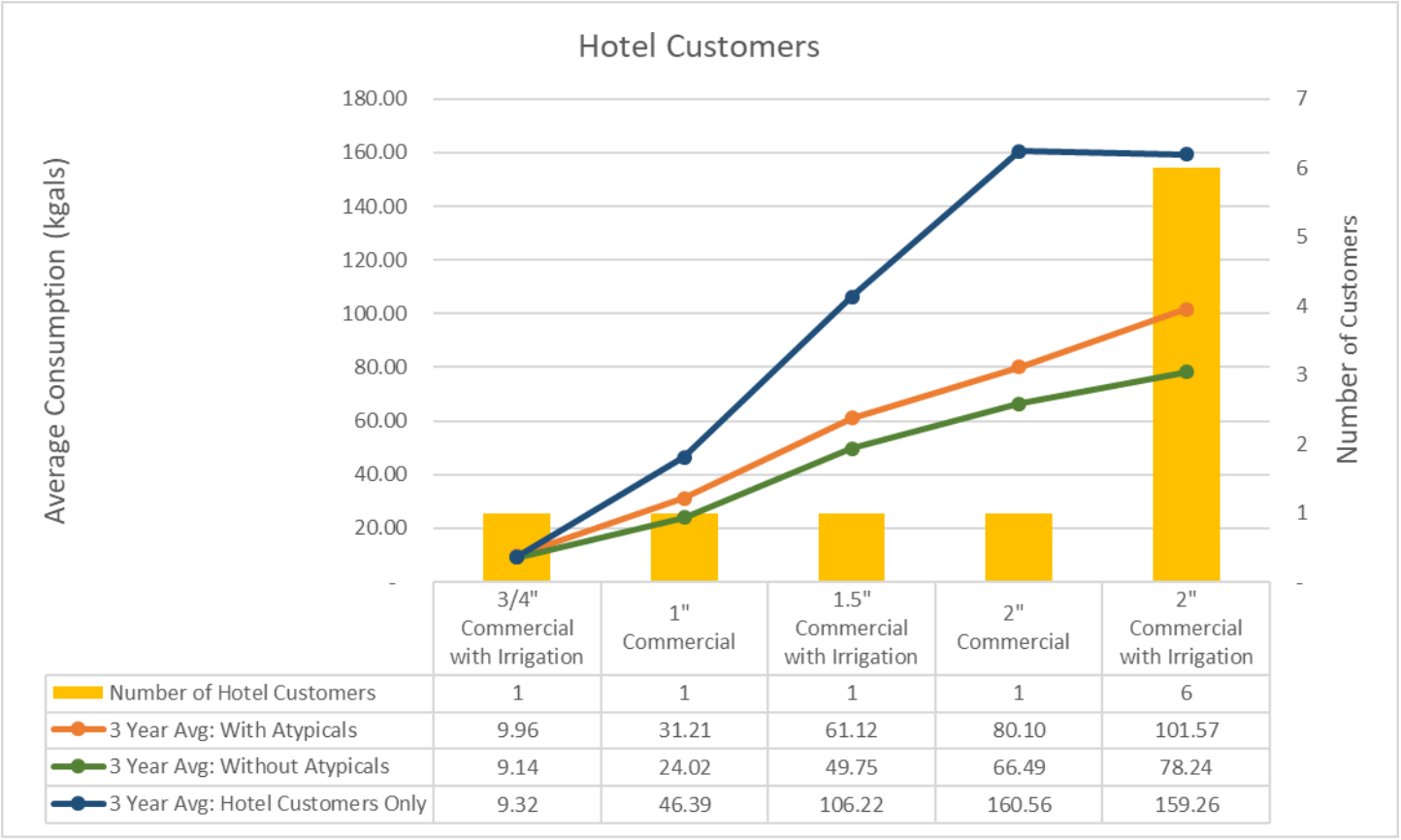
	1" Irrigation	1.5" Irrigation	2" Commercial with Irrigation	2" Irrigation	3" Commercial with Irrigation	3" Irrigation	4" Irrigation
Number of 200% ET Customers	1	1	3	10	1	3	2
3 Year Avg: With Atypicals	62.26	140.75	101.57	222.22	186.80	568.88	849.37
3 Year Avg: Without Atypicals	62.57	141.34	78.24	216.40	159.00	405.89	-
3 Year Avg: 200% ET Customers Only	38.55	71.43	118.50	258.56	281.00	751.33	849.37

CHART 21: CARWASH CUSTOMERS ATYPICAL COMPARISON



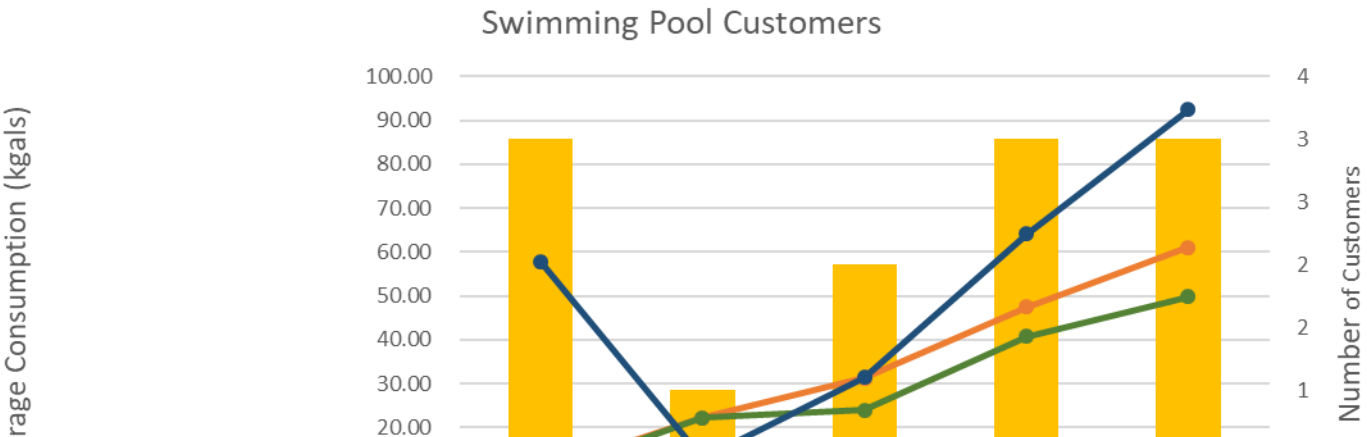
	3/4" Commercial	1" Commercial	1" Commercial with Irrigation	1.5" Commercial	1.5" Commercial with Irrigation	2" Commercial
Number of Carwash Customers	1	3	2	3	3	1
3 Year Avg: With Atypicals	9.96	31.21	31.47	47.54	61.12	80.11
3 Year Avg: Without Atypicals	9.14	24.02	31.22	40.75	49.75	66.49
3 Year Avg: Carwash Customers Only	4.76	110.18	39.81	192.72	181.21	407.40

CHART 22: HOTEL CUSTOMERS ATYPICAL COMPARISON



	3/4" Commercial with Irrigation	1" Commercial	1.5" Commercial with Irrigation	2" Commercial	2" Commercial with Irrigation
Number of Hotel Customers	1	1	1	1	6
3 Year Avg: With Atypicals	9.96	31.21	61.12	80.10	101.57
3 Year Avg: Without Atypicals	9.14	24.02	49.75	66.49	78.24
3 Year Avg: Hotel Customers Only	9.32	46.39	106.22	160.56	159.26

CHART 23: SWIMMING POOL CUSTOMERS ATYPICAL COMPARISON



	3/4" Commercial with Irrigation	3/4" Multifamily	1" Commercial	1.5" Commercial	1.5" Commercial with Irrigation
Number of Swimming Pools Customers	3	1	2	3	3
3 Year Avg: With Atypicals	9.96	22.22	31.21	47.54	61.12
3 Year Avg: Without Atypicals	9.14	22.22	24.02	40.75	49.75
3 Year Avg: Swimming Pool Customers Only	57.74	12.94	31.43	64.15	92.42

CONSUMPTION BY TIER

To compare the total water usage by tier over time, Table 6 and Table 7 were prepared from actual billing data for January 2019 through December 2019. Charts 24-28 compare the total water usage by tier for each customer class for the years 2012-2019. Surcharge revenues funds water conservation programs such as the rebate program in the Water Resources Fund.

TABLE 6: BILLED USAGE BY CUSTOMER CLASS BY TIER JANUARY 2019-DECEMBER 2019

Class	Tier 1	Tier 2	Tier 3	Total	Surcharge
Commercial	108,507	-	45,921	154,428	-
Commercial w/ Irrig	71,597	33,015	24,034	128,646	-
Irrigation	-	291,917	49,126	341,043	-
MultiFamily	89,237	-	20,475	109,712	-
MultiFamily w/ Irrig	53,814	19,139	11,951	84,904	-
Residential	849,428	696,795	155,376	1,701,599	9,024
Total Kgals	**1,172,583**	**1,040,866**	**306,883**	**2,520,332**	**9,024**
Tier % of Total	47%	41%	12%	100%	

TABLE 7: BILLED USAGE BY SEASON BY CUSTOMER CLASS BY TIER JANUARY 2019-DECEMBER 2019

Winter Season

Class	Tier 1	Tier 2	Tier 3	Total	Surcharge
Commercial	45,207	-	13,338	58,545	-
Commercial w/ Irrig	28,613	-	6,485	35,098	-
Irrigation	-	-	921	921	-
MultiFamily	36,700	-	7,295	43,995	-
MultiFamily w/ Irrig	21,797	-	3,875	25,672	-
Residential	334,349	-	68,623	402,972	535
Total Kgals	**466,666**	**-**	**100,537**	**567,203**	**535**
Tier % of Total	82%	0%	18%	100%	

Irrigation Season

Class	Tier 1	Tier 2	Tier 3	Total	Surcharge
Commercial	63,300	-	32,583	95,883	-
Commercial w/ Irrig	42,984	33,015	17,549	93,548	-
Irrigation	-	291,917	48,205	340,122	-
MultiFamily	52,537	-	13,180	65,717	-
MultiFamily w/ Irrig	32,017	19,139	8,076	59,232	-
Residential	515,079	696,795	86,753	1,298,627	8,489
Total Kgals	**705,917**	**1,040,866**	**206,346**	**1,953,130**	**8,489**
Tier % of Total	36%	53%	11%	100%	

CHART 24: COMMERCIAL CUSTOMER CLASS ANNUAL BILLED USAGE BY TIER 2012-2019

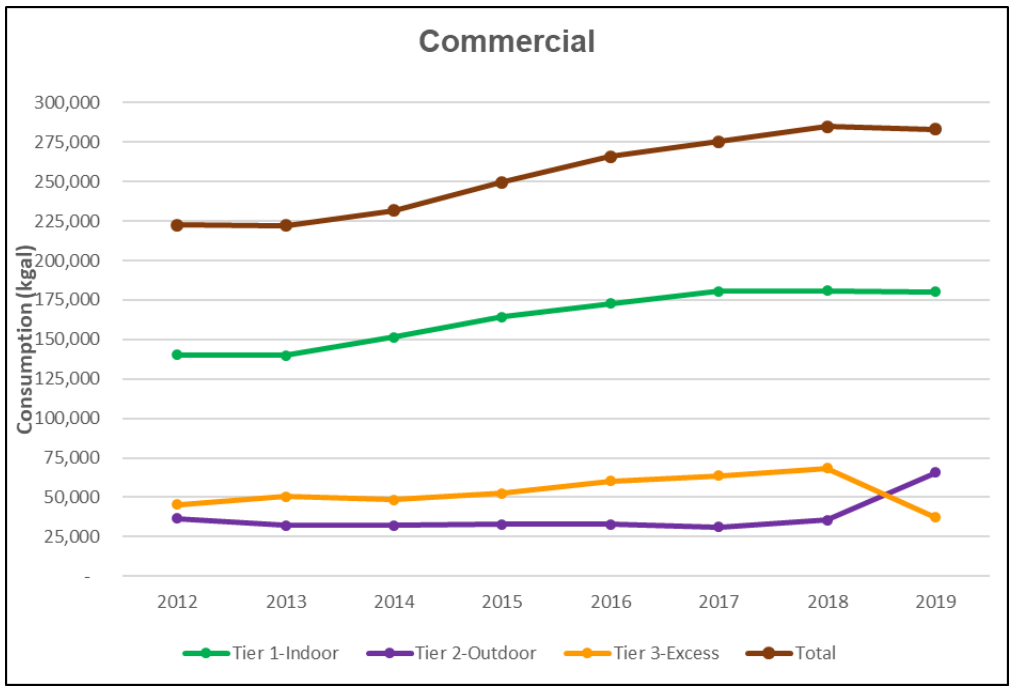


CHART 25: MULTIFAMILY CUSTOMER CLASS ANNUAL BILLED USAGE BY TIER 2012-2019

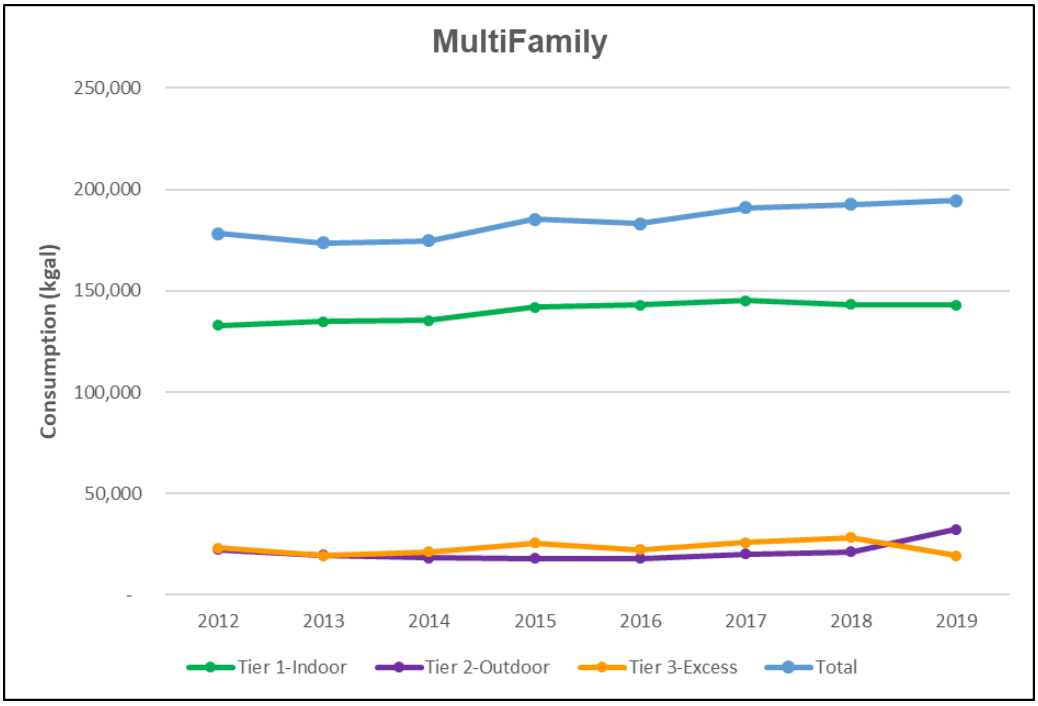


CHART 26: IRRIGATION CUSTOMER CLASS ANNUAL BILLED USAGE BY TIER 2012-2019

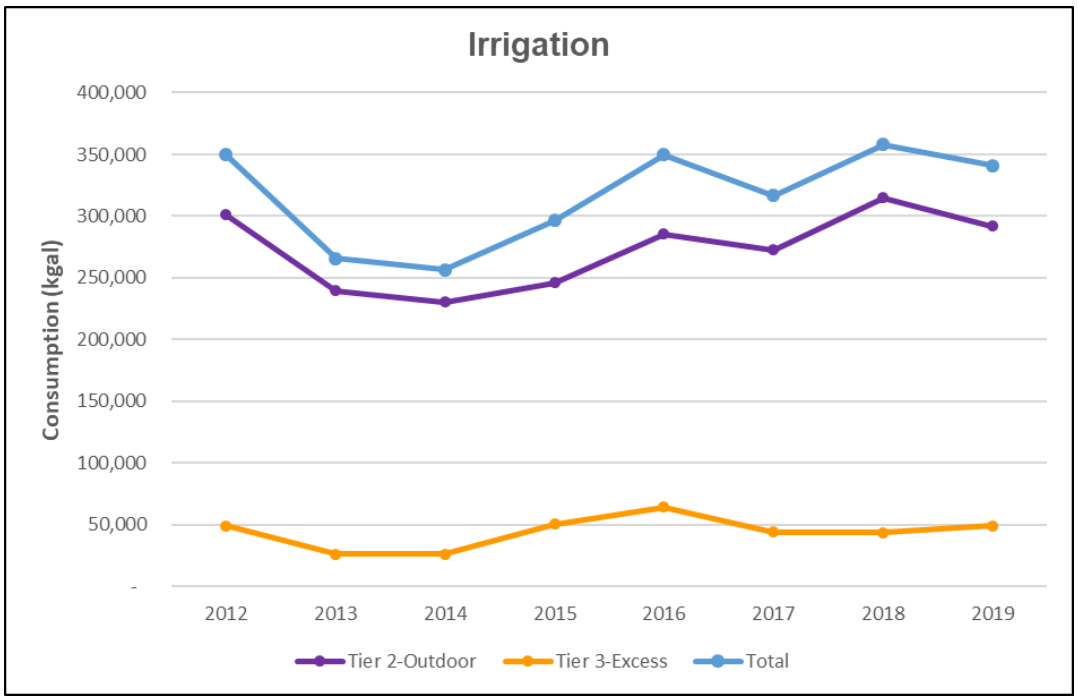


CHART 27: RESIDENTIAL CUSTOMER CLASS ANNUAL BILLED USAGE BY TIER 2012-2019

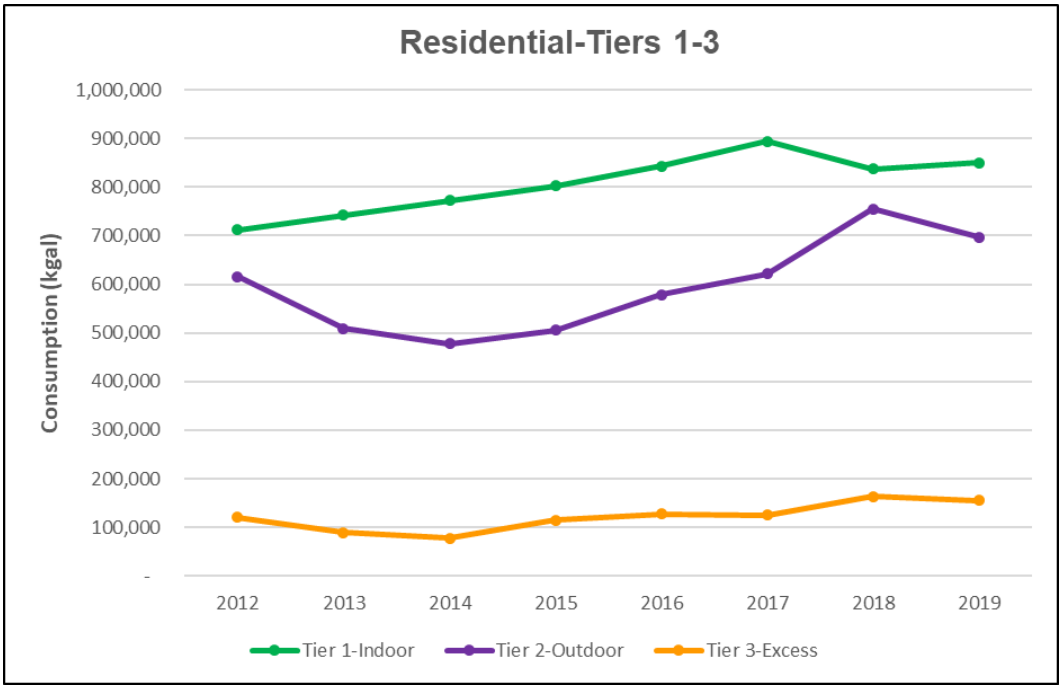
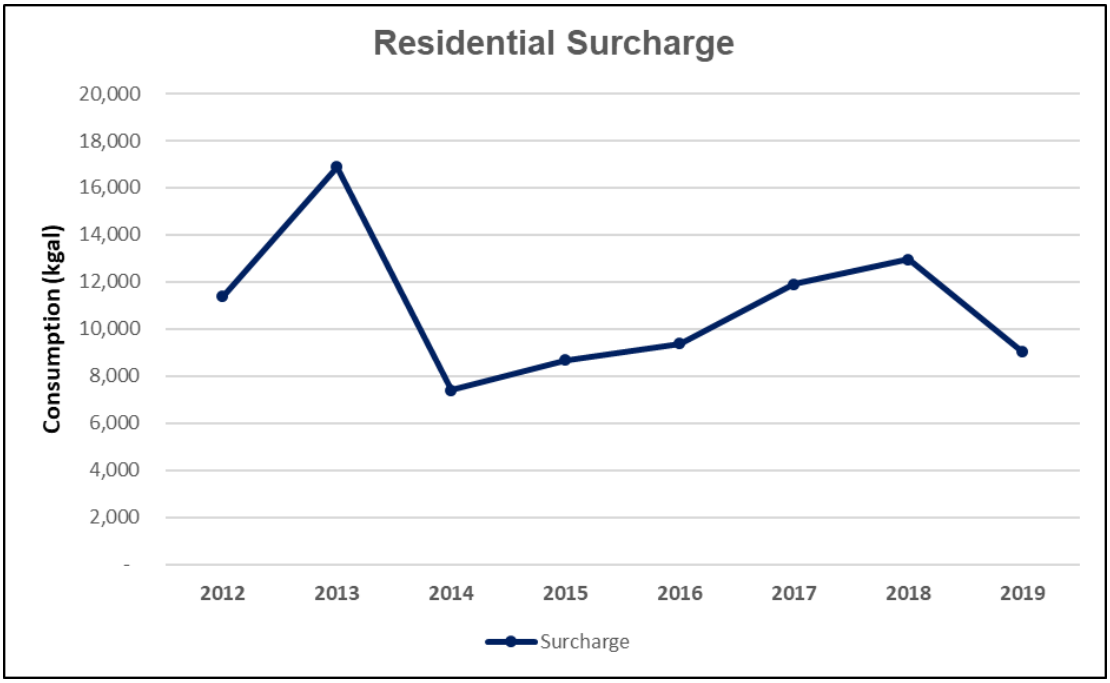


CHART 28: RESIDENTIAL CUSTOMER CLASS ANNUAL BILLED USAGE SURCHARGE ONLY 2012-2019

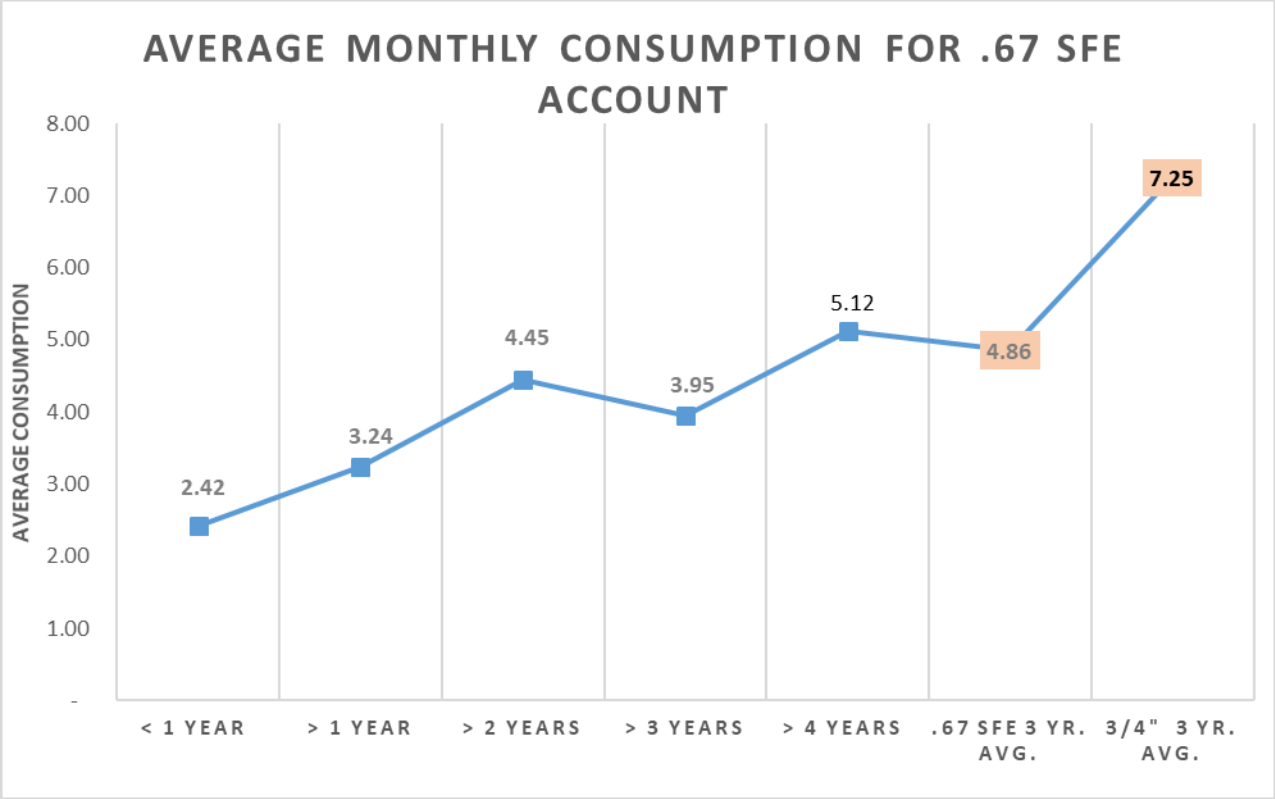


Charts 24-25 show that even though growth has continued through 2019 consumption by tier for Commercial and Multifamily customer classes have remained consistent with a slight decrease in Tier 3 excessive usage, which is a good trend to see. Irrigation customers as shown in Chart 26 are also trending downward, which is also a good trend to see. Residential account usage by tier in Chart 27 appears to be trending slightly downward for 2019 in Tier 2 with a flattening out of Tiers 1 and 3. Surcharge usage started to trend upward over the last few years, but went down considerably for 2019.

5/8" ACCOUNTS - 0.67 SFE

Castle Rock Water continues to evaluate 0.67 SFE accounts to determine performance relative to the goal of 67% of average residential use. As shown in Chart 29 below, the 7.25 is the average monthly consumption for a ¾" residential account, or one SFE, which is slightly lower than last year's average, whereas the 4.86 is the monthly consumption that a 0.67 SFE account should be using. What is concerning is the longer an account has been a 0.67 SFE, the higher the average monthly usage. For example, customers with 4+ years of usage at 5.12 are above the expectation for a 0.67 SFE account at 4.86 average monthly consumption.

CHART 29: 0.67 SFE ACCOUNT CONSUMPTION BY YEAR



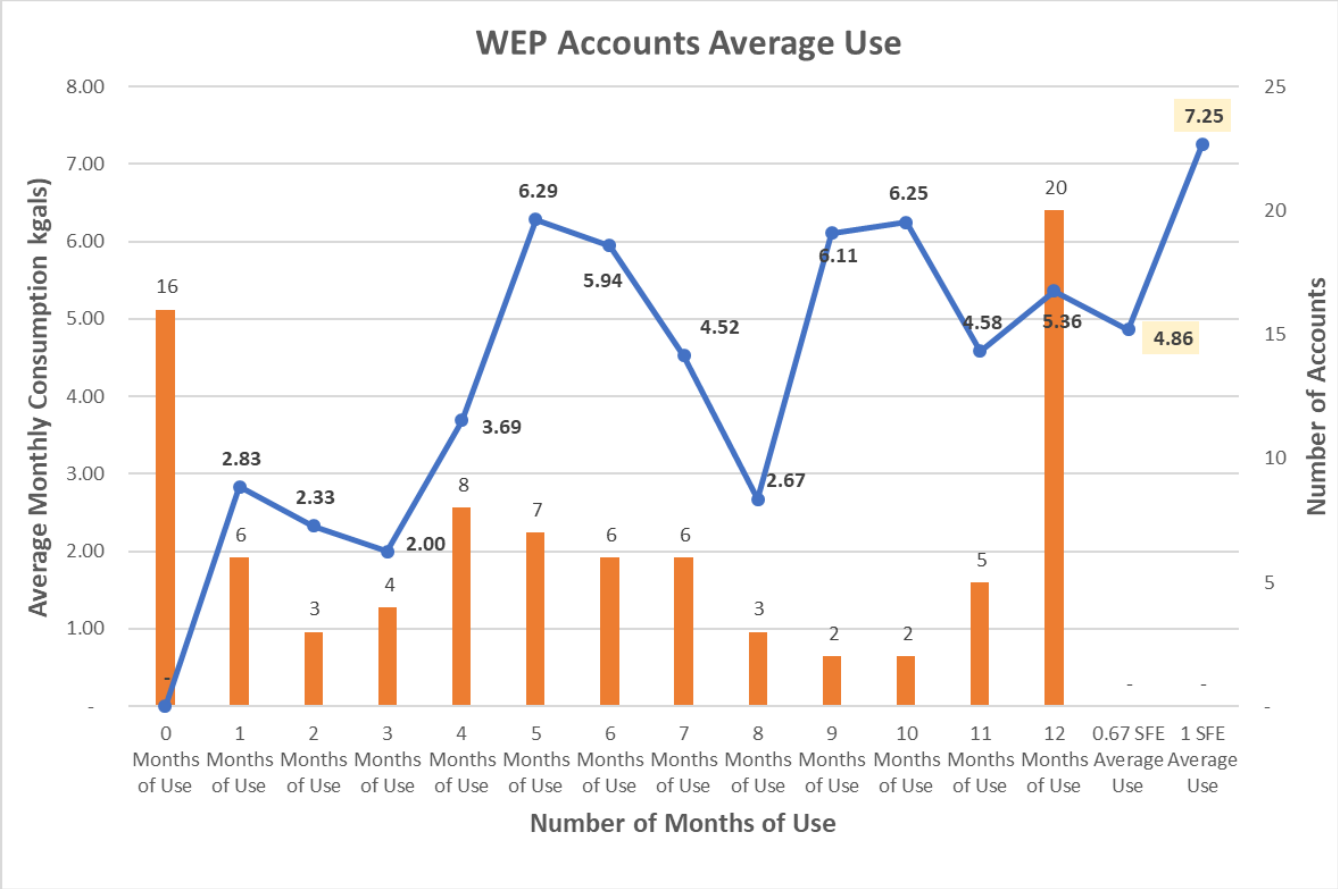
WATER EFFICIENCY PLAN (WEP) ACCOUNTS

New to CR Water in 2019 are water efficiency plan accounts. These are accounts that must meet the criteria for a water efficiency plan. In 2019, there were 88 accounts that met the criteria and were approved. As Table 8 below shows 10 customers were over the average usage in 2019 for a 1 SFE and 18 are over the 0.67 SFE. Unlike the 0.67 SFE program these 88 accounts can have varying SFE's below a 1 SFE based on fixture calculations and irrigation requirements.

TABLE 8: AVERAGE WEP ACCOUNT USE

Average Use	Number of Accounts
7.25 kgals and above	10
4.86 -7.25 kgals	18
2.00 - 4.85 kgals	37
0.00 - 2.0 kgals	23
Total Accounts	**88**

CHART 30: AVERAGE WEP ACCOUNT USAGE VS. 0.67 AND 1.00 SFE USAGE



The data collected for this chart is from January 2019-December 2019

IRRIGATION USAGE BASED ON WATERING SCHEDULES

Each irrigation season Castle Rock Water puts out a residential watering schedule based on the last digit of their service address representing a circle, diamond or a square. Starting in 2018, non-residential customers were assigned watering days based on being on the east or west side of I-25. Given the importance of the watering schedules, CRW has tracked the usage of customers by year by watering schedule.

Below are charts that show the residential and non-residential water usage from 2012 to 2019 based on their scheduled watering days. For residential customers, circle and diamond customers have very similar usage for all the years, whereas the square customers have slightly higher usage than the other two sets of customers. One reason for this is the number of customers for each schedule. Square has the most at 8,020 customers, circle is second with 6,552 customers and diamond has the least with 6,320 customers based on the 2019 billing data.

With the non-residential customers, the west side appears to be smaller or have less usage each year than the east side of I-25 customers. The east side has more customers, 1,012 customers, than the west side, 651 customers, based on the 2019 billing data. Overall this information can help us to track water consumption patterns for each customer group and can help CRW to determine if the schedule breakouts need to be reevaluated in the future or if the water usage patterns are adequate in meeting peak daily demands.

CHART 31: RESIDENTIAL IRRIGATION SEASON USAGE BY WATERING SCHEDULE

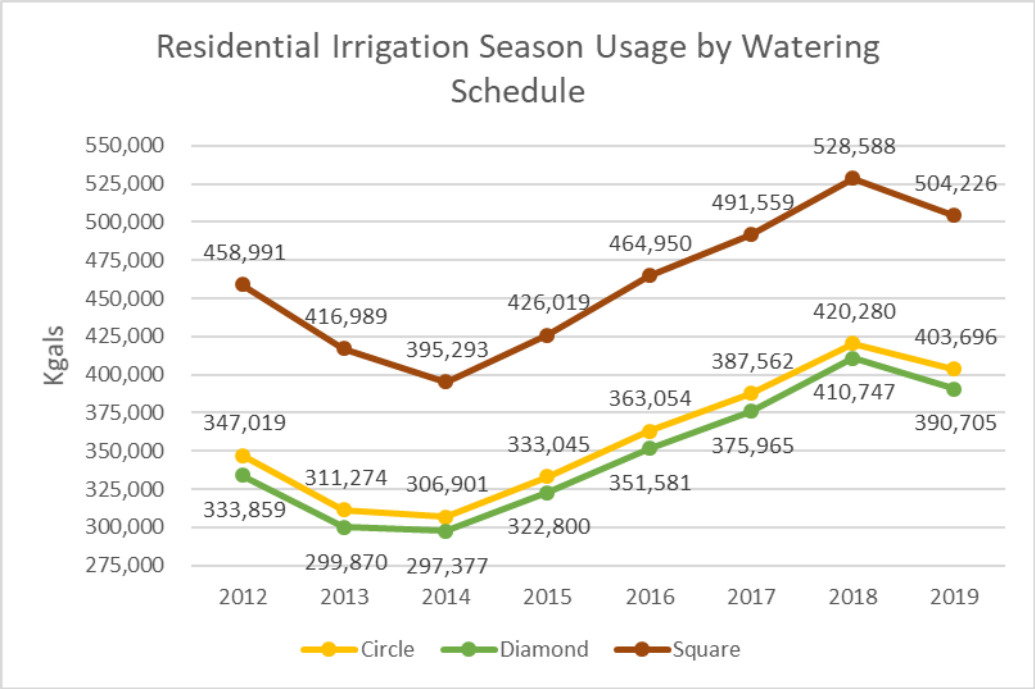
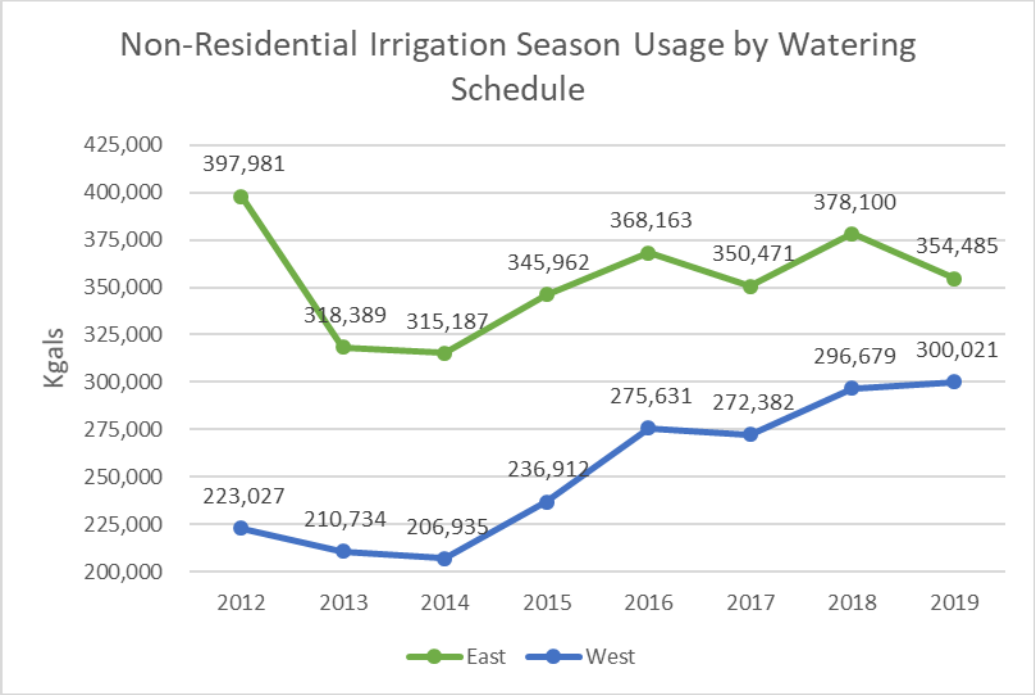


CHART 32: NON-RESIDENTIAL IRRIGATION SEASON USAGE BY WATERING SCHEDULE



IRRIGATON SEASON USAGE VERSUS WEATHER PATTERNS

CRW has looked further into if dry versus a wet irrigation season would make a difference on usage patterns for the difference customer classes. The four charts below show the numbers of days of rainfall for each month for a three-year time period and compares the actual usage for the customer class for the same months. For our residential customers, the amount of rainfall doesn't appear to impact the amount of water being used during the irrigation season. One example shown is in August of 2019 there was less rainfall out of the three years, but the most usage out of the 3 years as shown below. The same goes for irrigation, multifamily with irrigation and commercial with irrigation customers as well. So overall it doesn't seem that the customers let the amount of rain affect their watering patterns or water conservation efforts.

CHART 33: RESIDENTIAL MONTHLY USAGE VS. DAYS OF MONTHLY RAINFALL

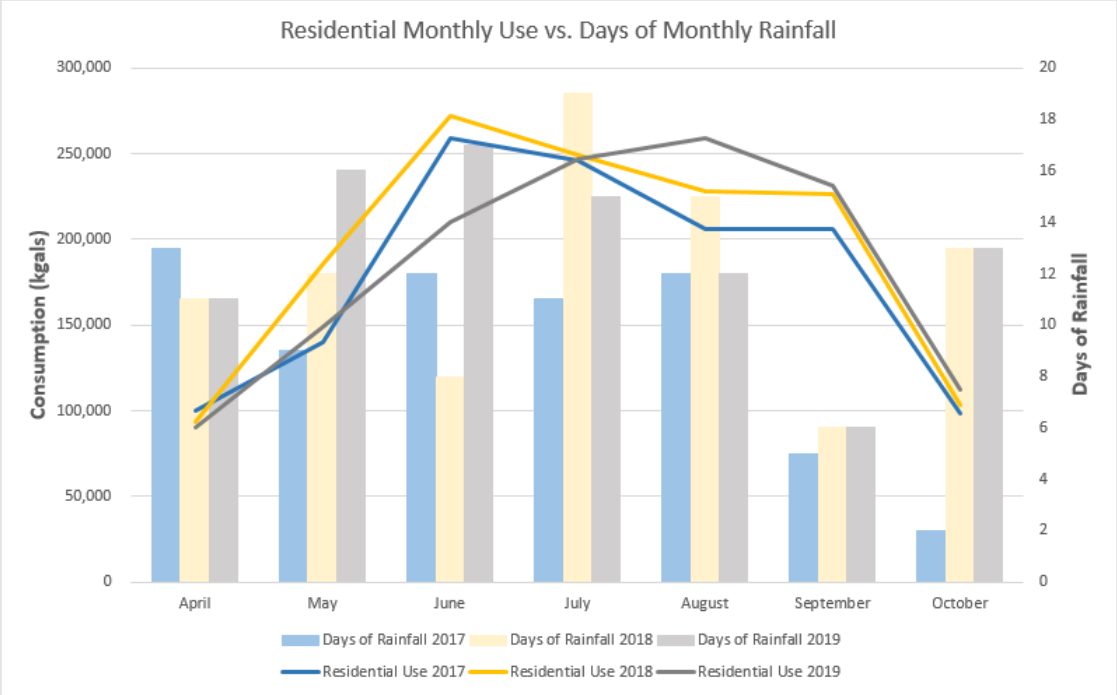


CHART 34: IRRIGATION MONTHLY USAGE VS. DAYS OF MONTHLY RAINFALL

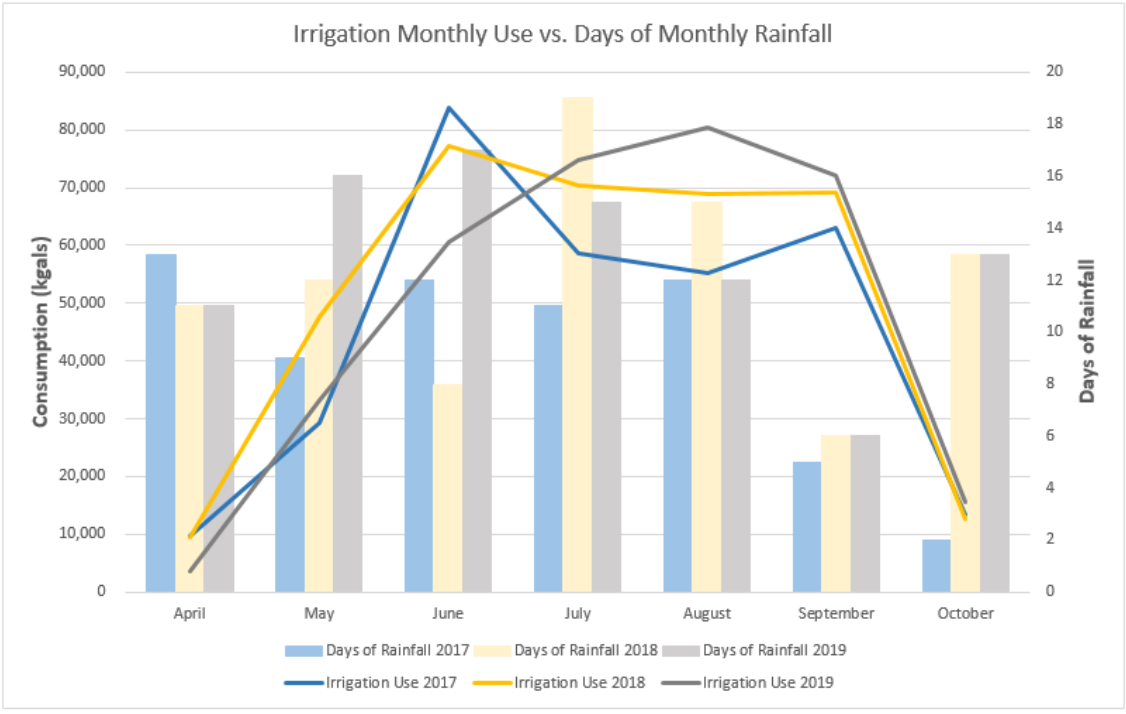


CHART 35: MULTIFAMILY WITH IRRIGATION MONTHLY USAGE VS. DAYS OF MONTHLY RAINFALL

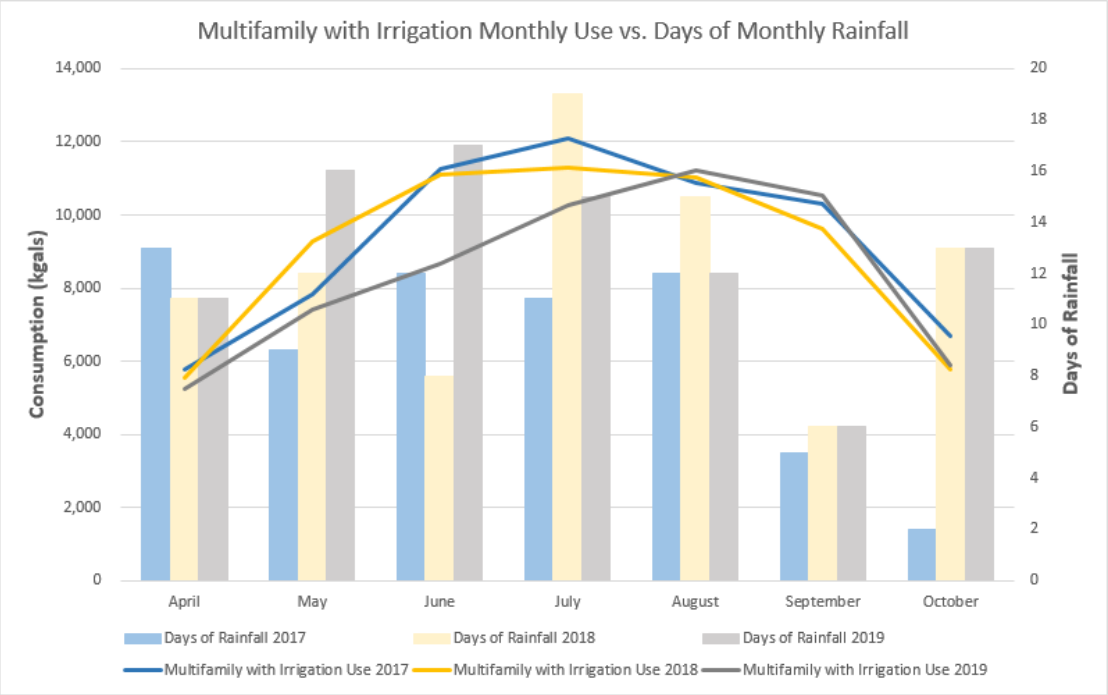
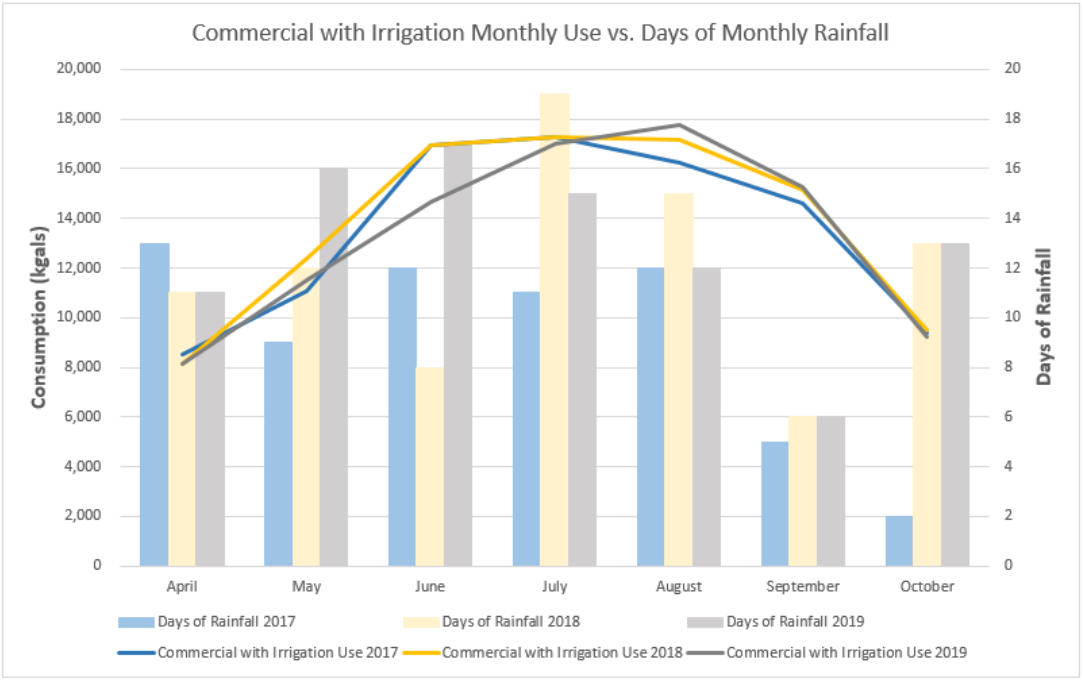


CHART 36: COMMERCIAL WITH IRRIGATION MONTHLY USAGE VS. DAYS OF MONTHLY RAINFALL



WATER WISER CUSTOMERS

Each year CRW offers Water Wiser classes for customers. The purpose of the class is to help educate customers about watering more efficiently. It also helps to educate customers on water conservation and more efficient landscaping ideas. As a water wiser customer, you can water any day versus following the every third day watering schedule. However, residential customers must still water between the hours of 8:00 p.m. and 8:00 a.m.

In order to see the success of the program, CRW completed some analysis on the water wiser accounts consumption patterns before and after taking the water wiser class. In order to analyze these customers, CRW looked at three different data sets. These three customer sets were customers who had water usage for 12 months before they obtained their water wiser status and 12 months of usage after they became a water wiser. The other two data sets were for customers with 24 months and 36 months of data before and after completing the water wiser program. The table below shows the before and after water wiser average usage.

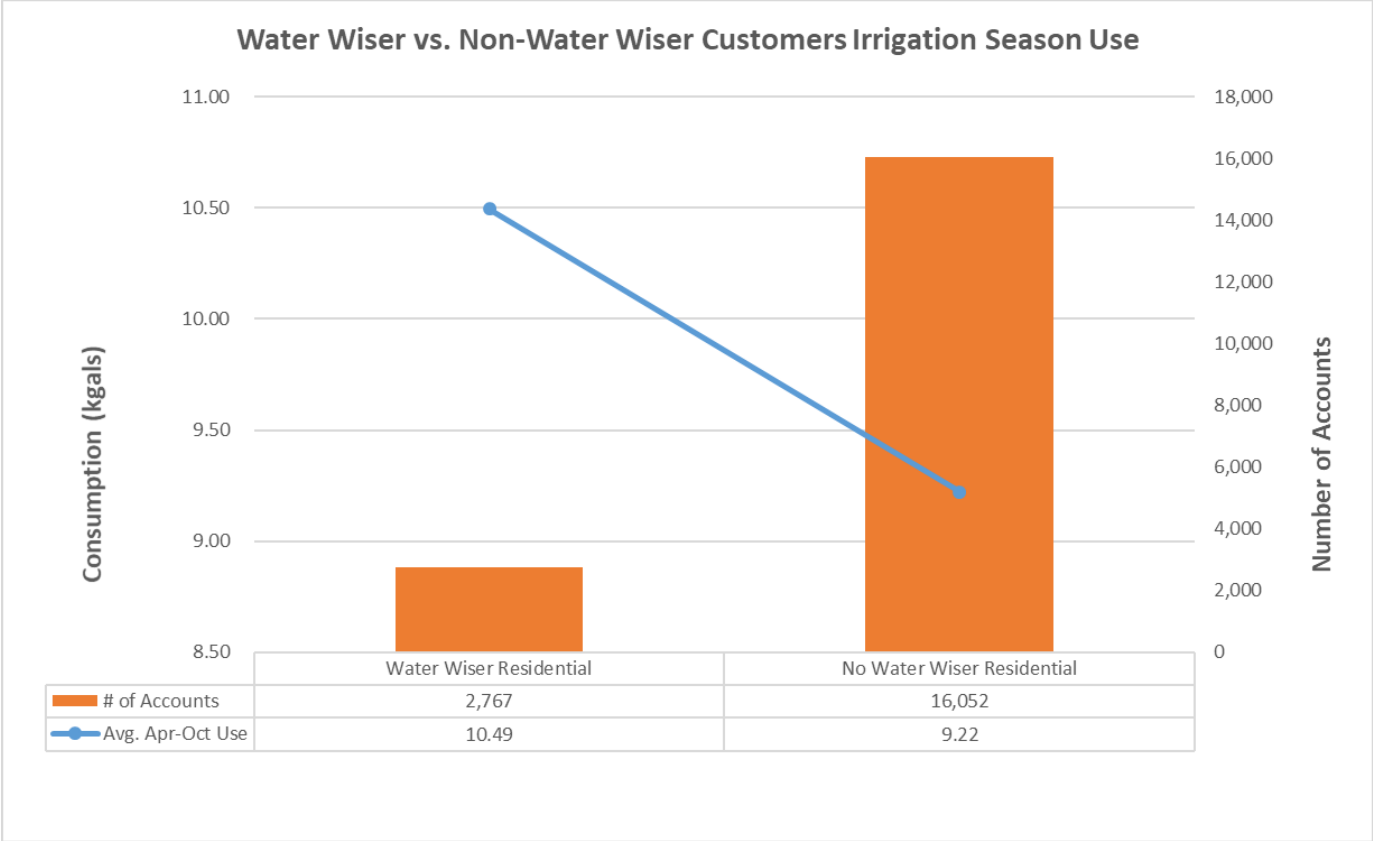
TABLE 9: BEFORE AND AFTER WATER WISER AVERAGE USAGE

# of Months Before and After Water Wiser	Average Usage Before Water Wiser Class	Average Usage After Water Wiser Class	% of Customers to Decrease Usage After Water Wiser Class
36 Months	9.9	8.3	67%
24 Months	8.9	8.3	60%
12 Months	8.5	8.2	56%

The chart shows that overall the average consumption has been decreasing for customers after taking the water wiser class. In general, when looking at the individual accounts for the 36 months of data 67% of people have decreased their average usage, which means that 33% of users still have increased their average usage despite attending a water wiser workshop. This data shows that as we add more months the data is improving. At 12 months of consumption, it shows that only 56% of users decreased their usage and at 24 months of consumption this increased to 60%. Overall, there is room for improvements for 33% of the water wiser customers.

One other comparison completed to see how the water wiser customers compare to the non-water wiser customers was to look at the average irrigation usage (April through October) of each customer class that has water wiser customers. This includes the residential customer class. When looking at the residential customers for the average irrigation season usage the water wiser customers have a higher average at 10.49 kgals versus 9.22 kgals for the customers who have not taken the water wiser classes.

CHART 37: WATER WISER VS. NON-WATER WISER CUSTOMERS IRRIGATION SEASON USE (APRIL TO OCTOBER)



IMPACT OF IRRIGATED AREAS (SQUARE FEET)

Chart 38 shows the number of residential accounts by irrigated area. Chart 39 shows the average monthly consumption by irrigated area for residential customers. As expected, the more irrigated area, the more the average consumption per month. Chart 40 shows total usage by irrigated area for commercial accounts. Chart 41 shows average monthly consumption for commercial accounts by irrigated area.

CHART 38: RESIDENTIAL ACCOUNTS BY IRRIGATED AREA

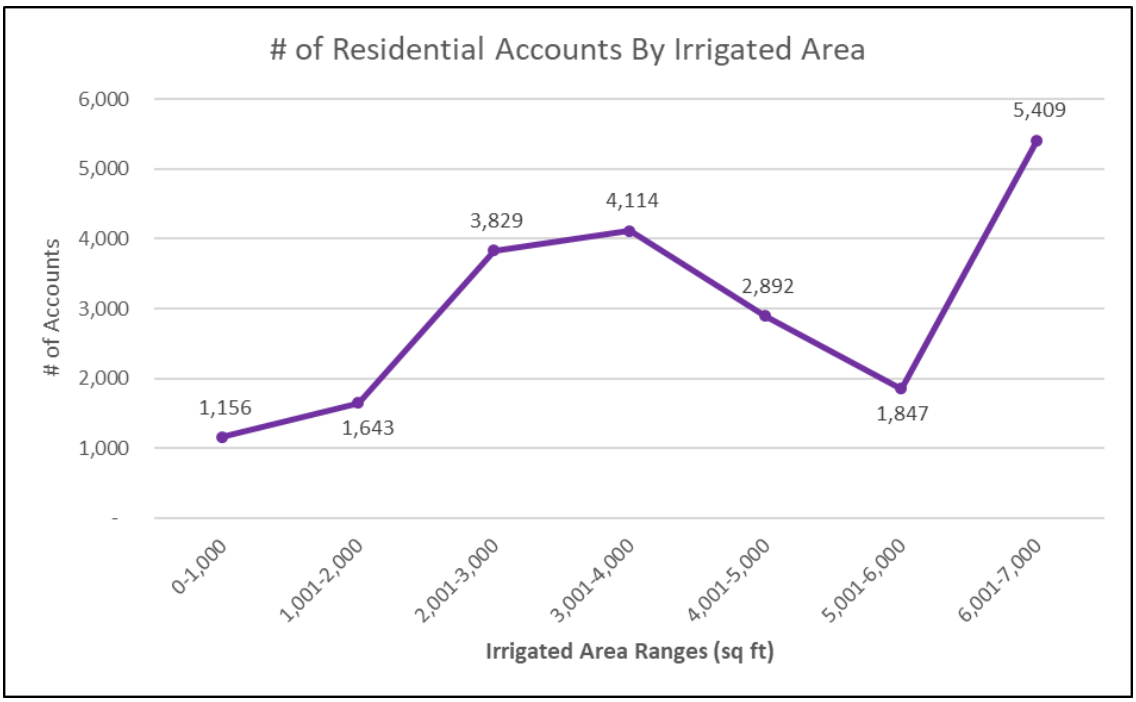


CHART 39: RESIDENTIAL AVERAGE MONTHLY CONSUMPTION BY IRRIGATED AREA

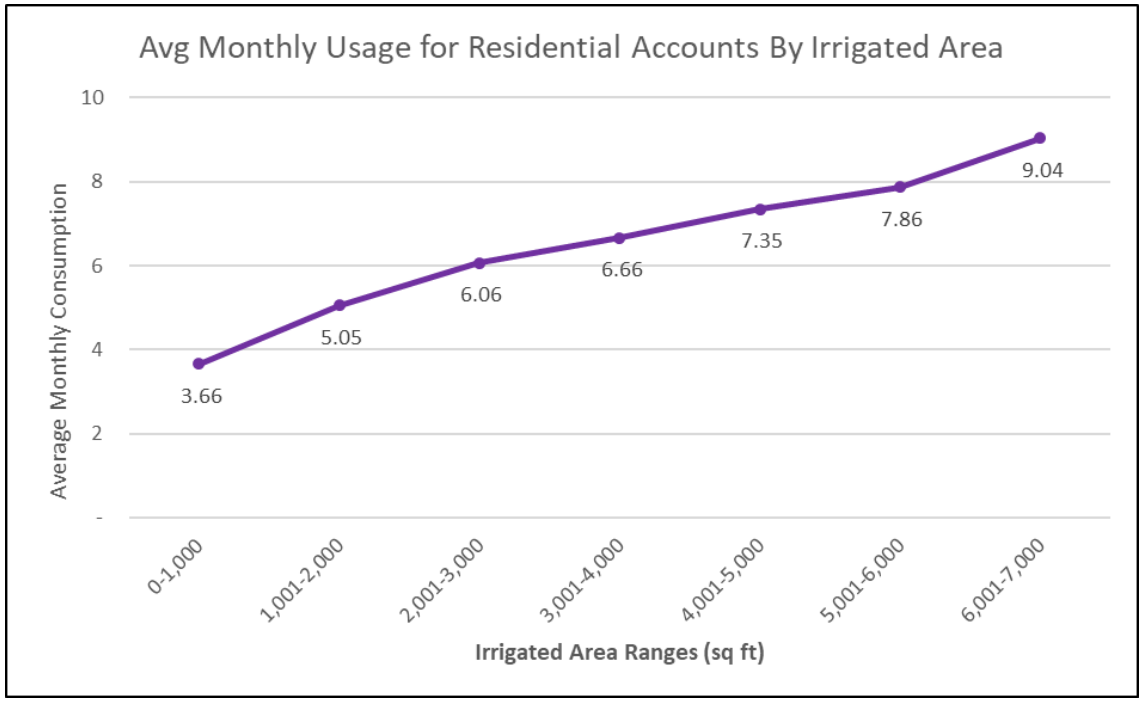


CHART 40: COMMERCIAL ACCOUNTS BY IRRIGATED AREA

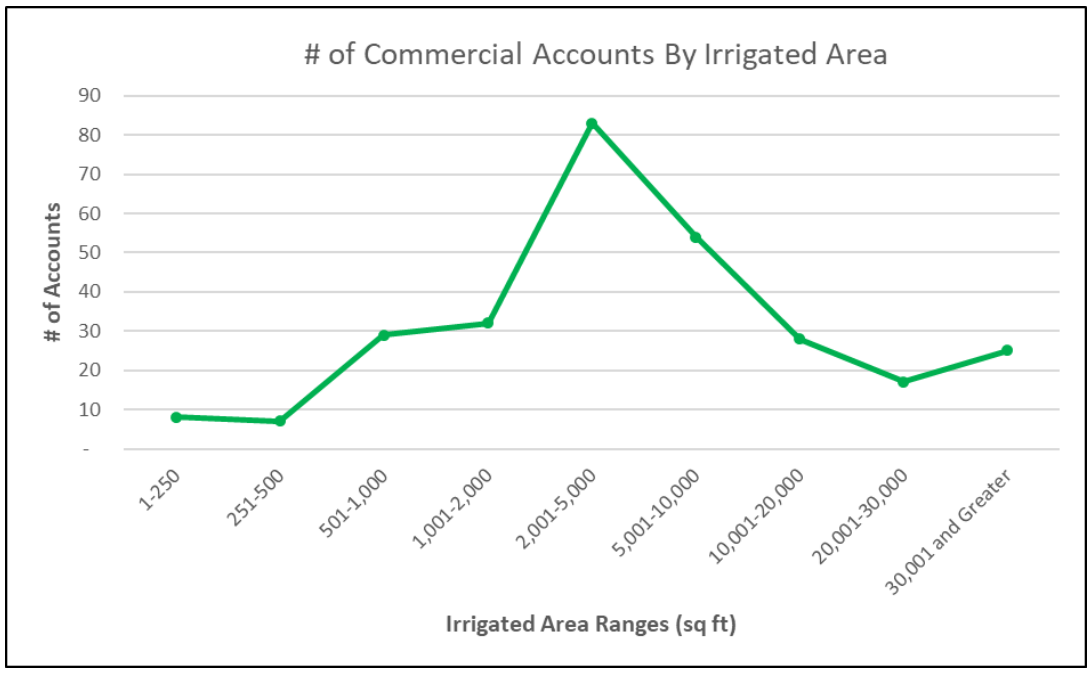
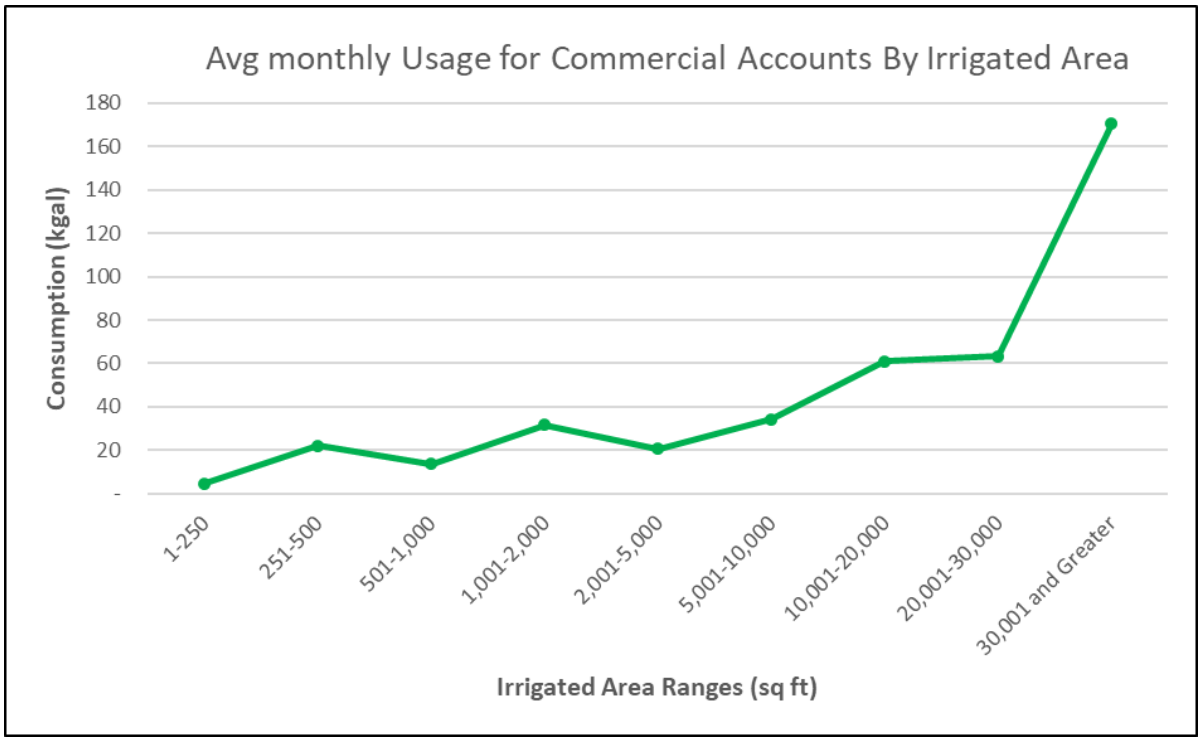


CHART 41: COMMERCIAL AVERAGE MONTHLY CONSUMPTION BY IRRIGATED AREA



HOA'S AVERAGE MONTHLY CONSUMPTION

CHART 42: AVERAGE MONTHLY CONSUMPTION FOR ALL HOA'S (85) COMBINED

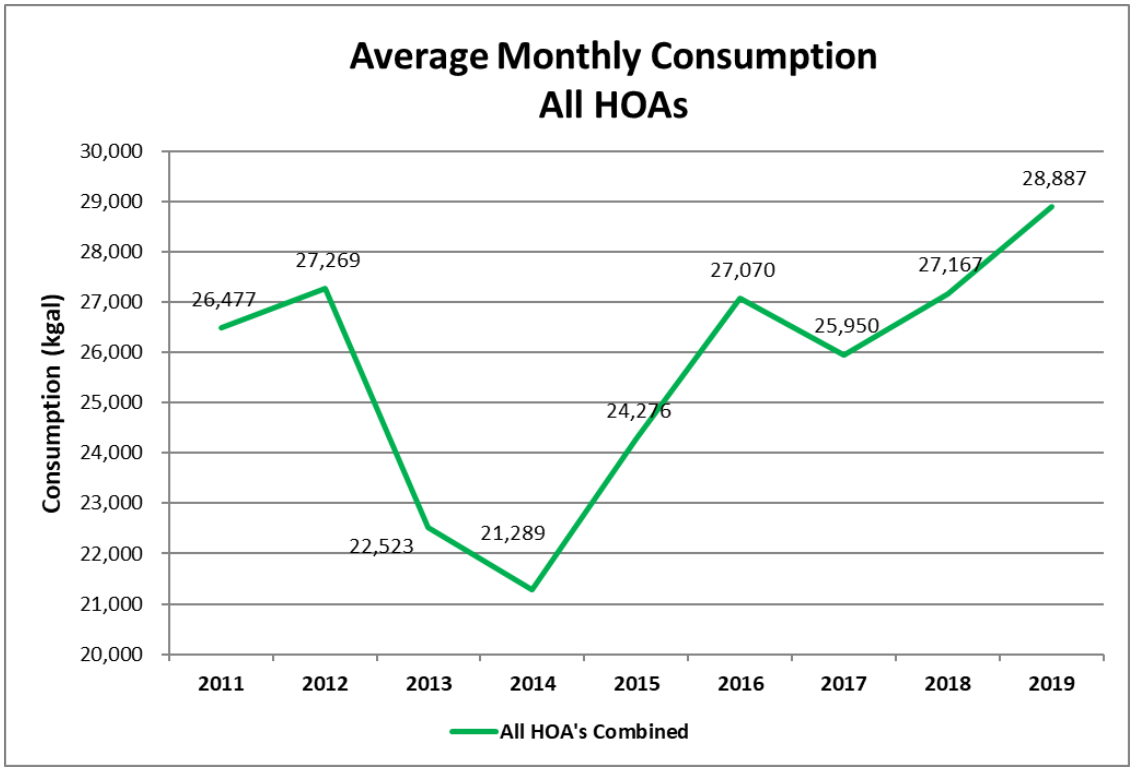
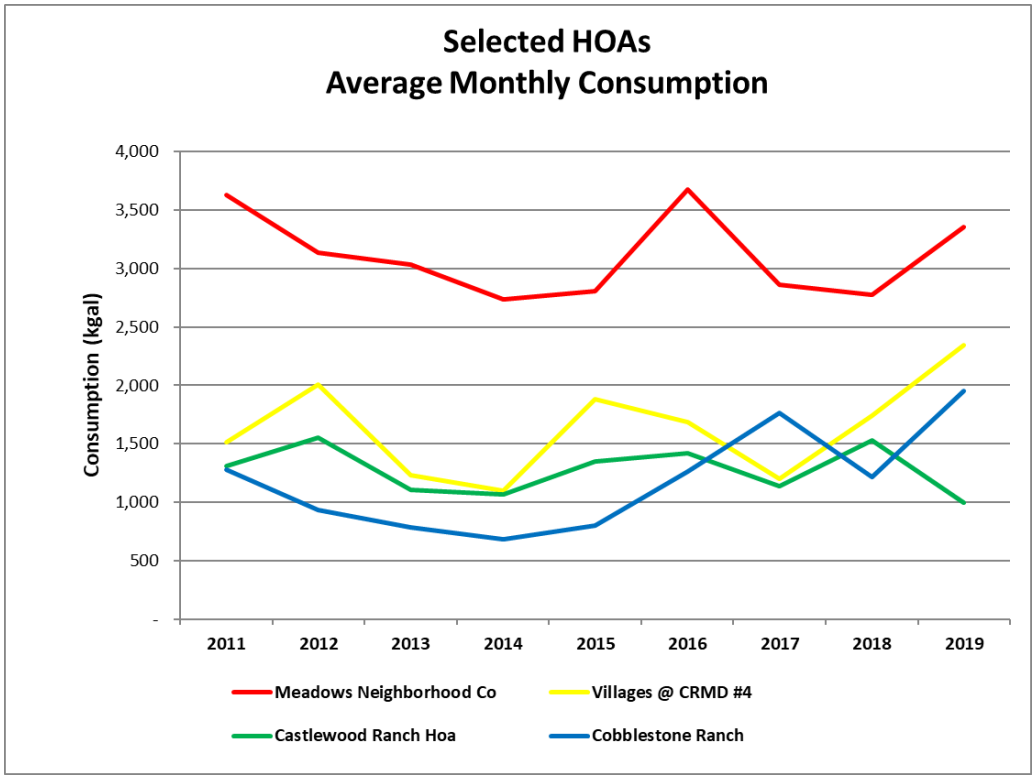


Chart 43 shows four HOA's that were selected at random out of the 88 in total to show the average monthly consumption patterns for these user types.

CHART 43: SELECTED FOUR HOA'S AVERAGE MONTHLY CONSUMPTION



MONTHLY CONSUMPTION BY SUBDIVISION

CHART 44: MEADOWS AVERAGE MONTHLY CONSUMPTION

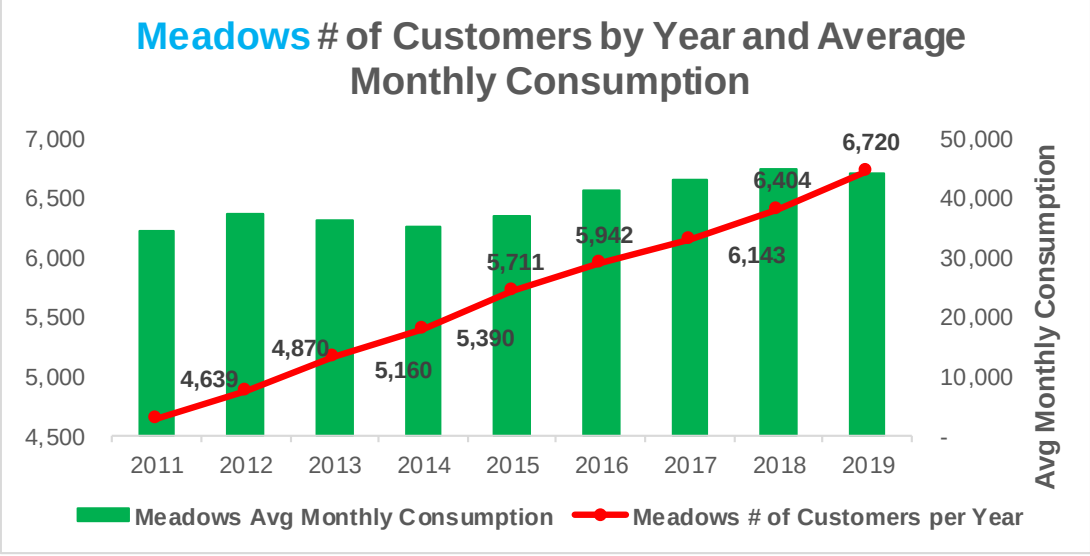


CHART 45: MEADOWS AVERAGE MONTHLY CONSUMPTION BY CUSTOMER

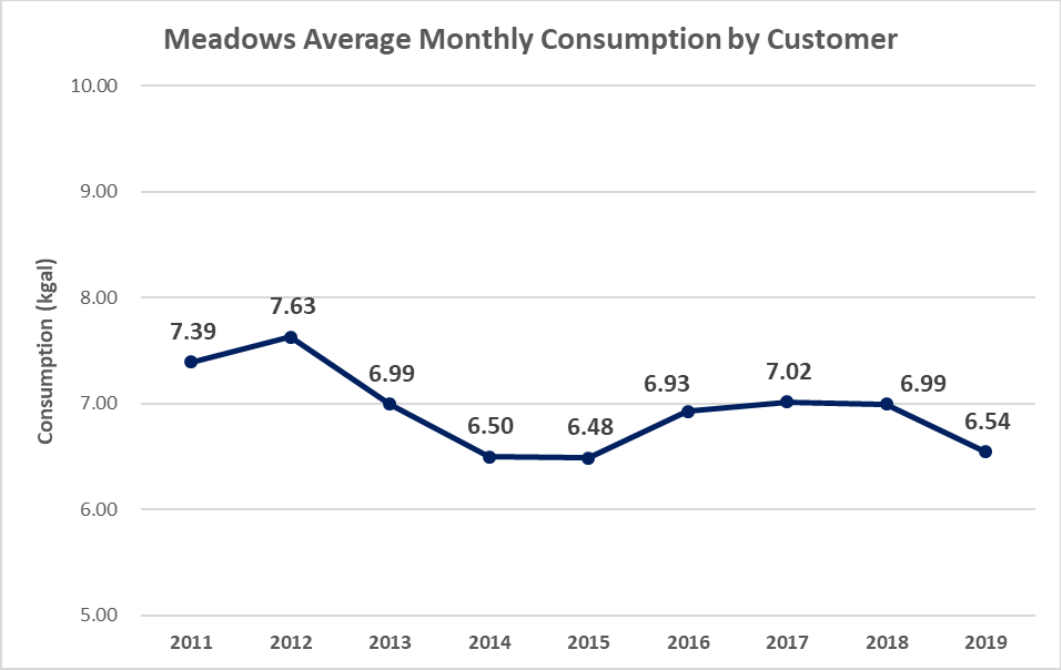


CHART 46: MEADOWS RESIDENTIAL ACCOUNTS BY IRRIGATED AREA

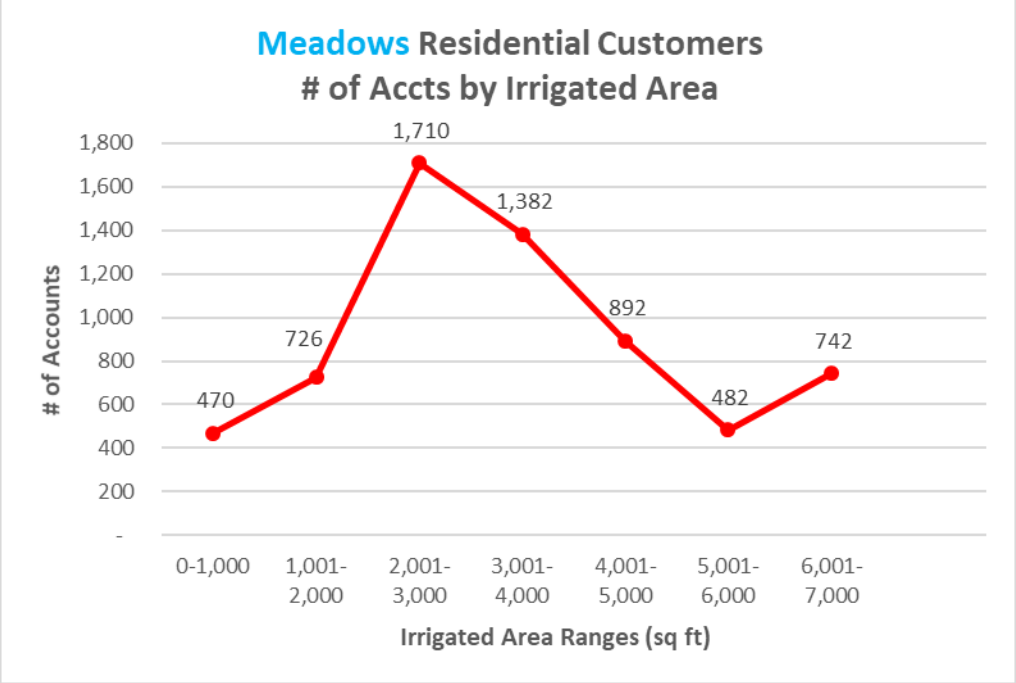


CHART 47: MEADOWS RESIDENTIAL ACCOUNTS IRRIGATED AREA BY CUSTOMER

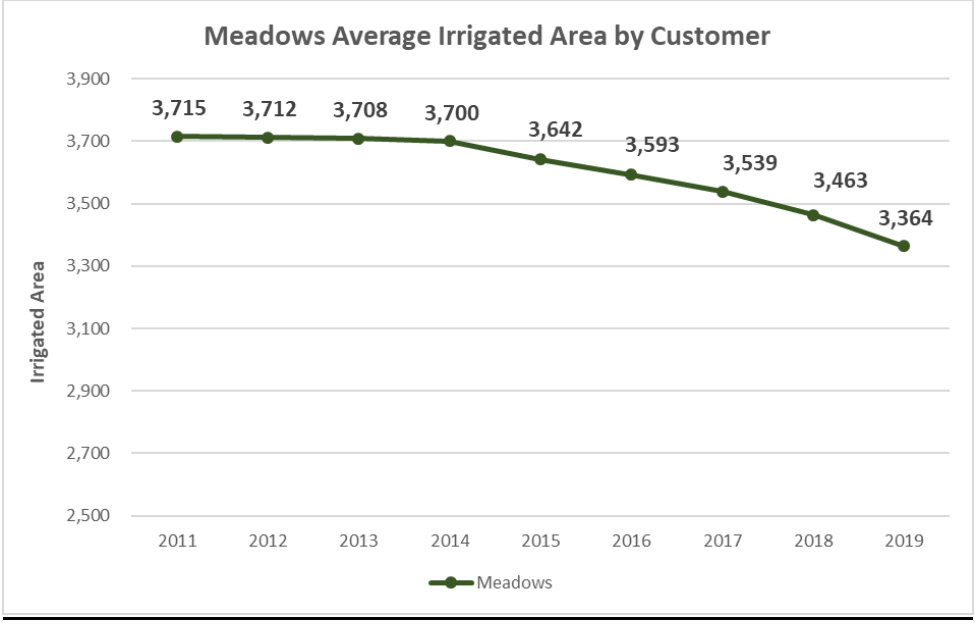


CHART 48: FOUNDERS AVERAGE MONTHLY CONSUMPTION

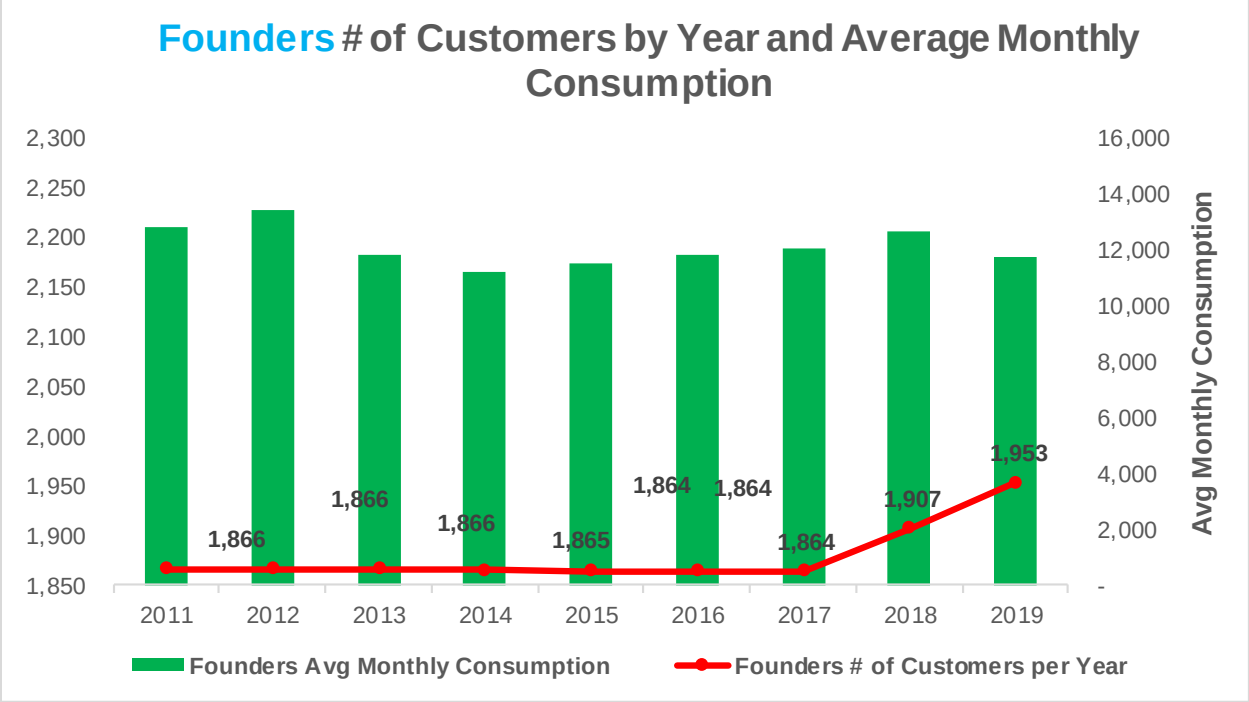


CHART 49: FOUNDERS AVERAGE MONTHLY CONSUMPTION BY CUSTOMER

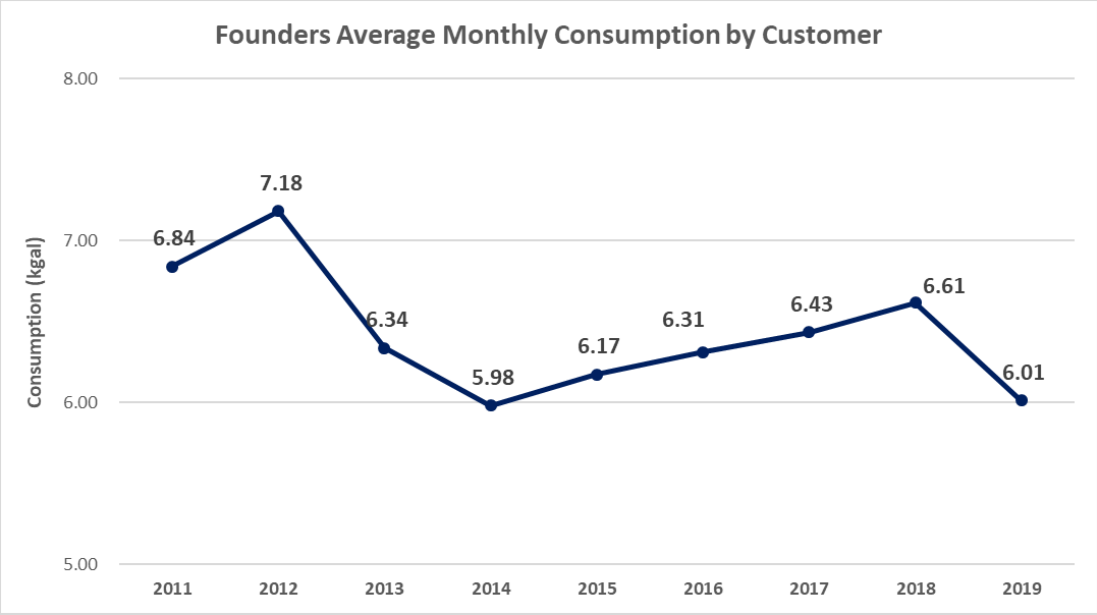


CHART 50: FOUNDERS RESIDENTIAL ACCOUNTS BY IRRIGATED AREA

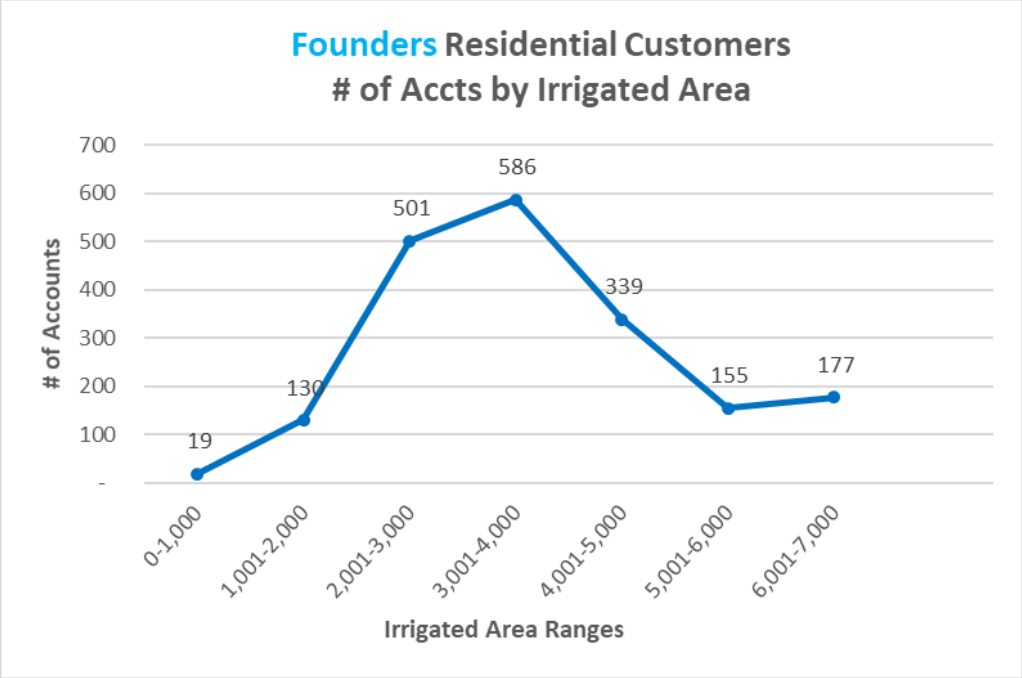


CHART 51: FOUNDERS RESIDENTIAL ACCOUNTS IRRIGATED AREA BY CUSTOMER

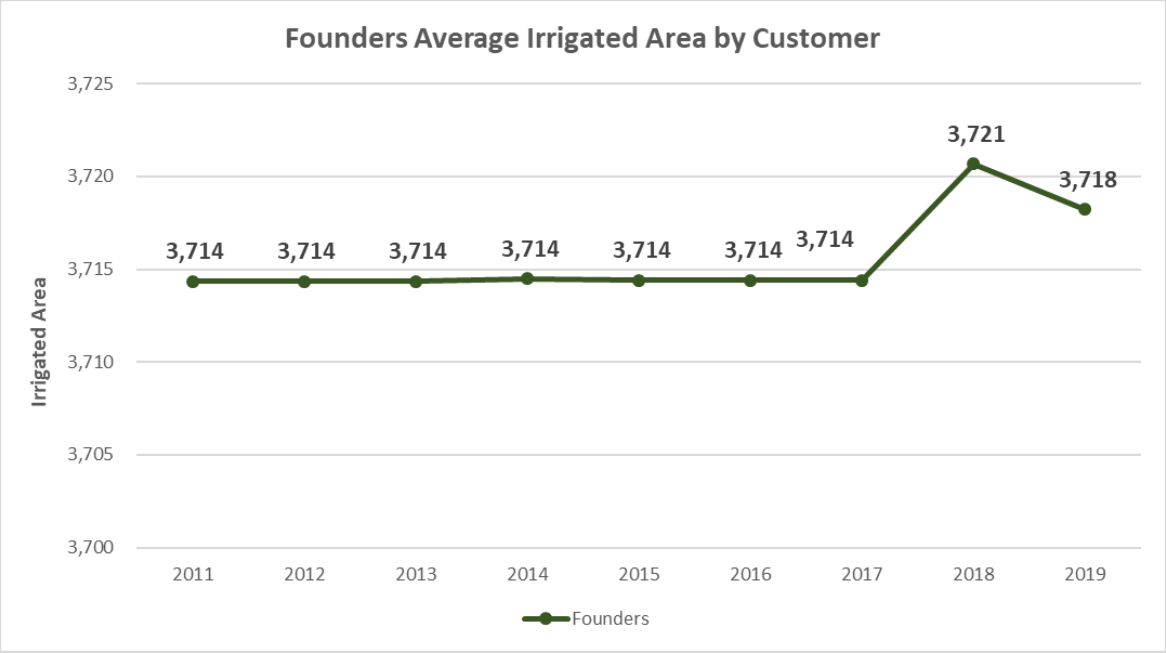


CHART 52: PLUM CREEK AVERAGE MONTHLY CONSUMPTION

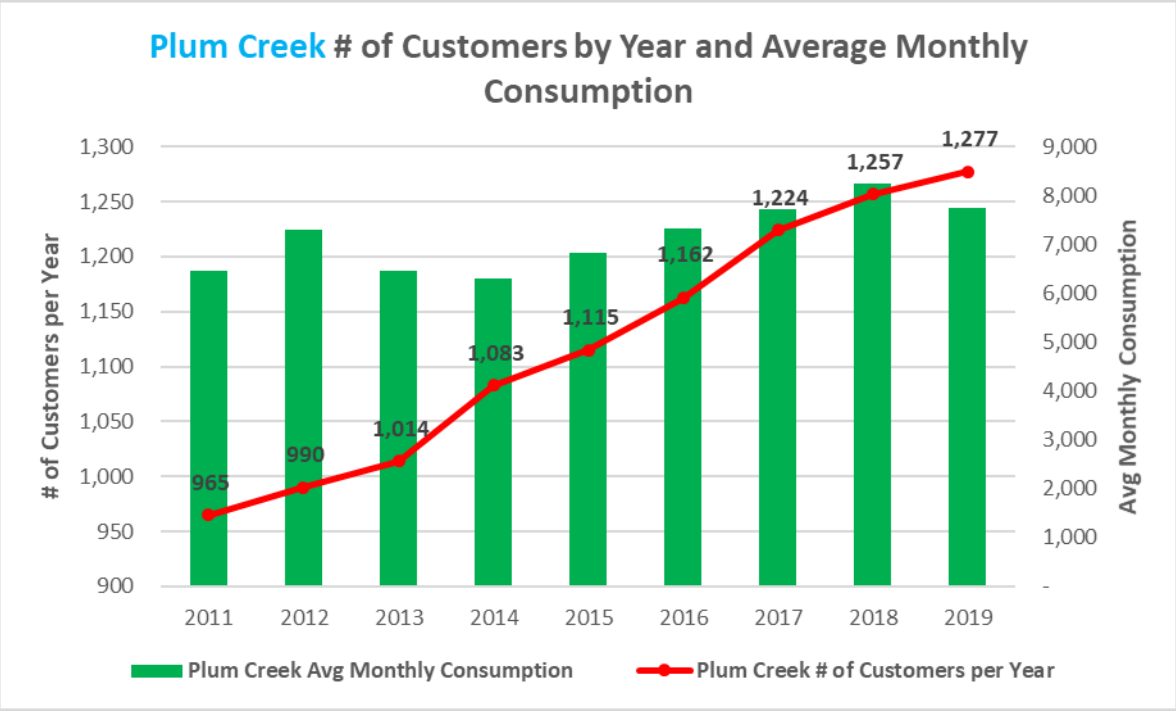


CHART 53: PLUM CREEK AVERAGE MONTHLY CONSUMPTION BY CUSTOMER

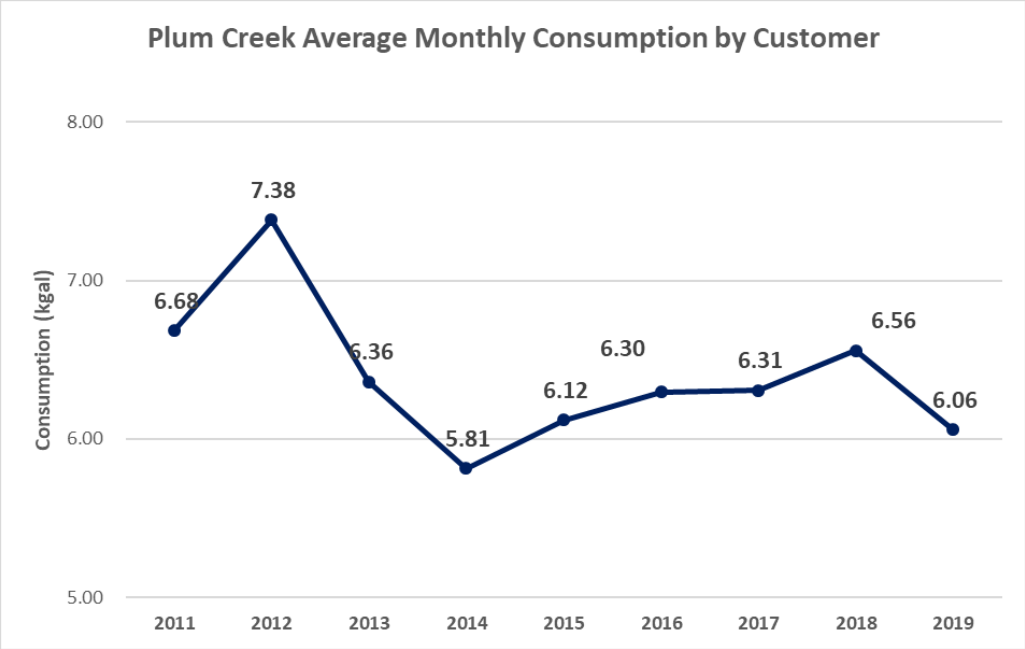


CHART 54: PLUM CREEK RESIDENTIAL ACCOUNTS BY IRRIGATED AREA

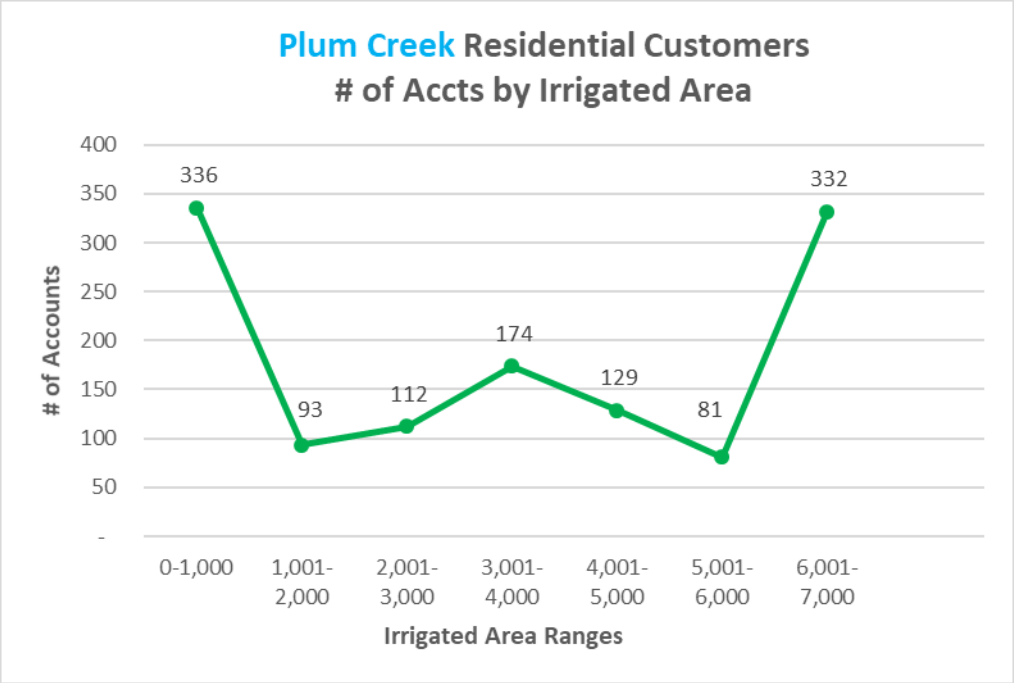
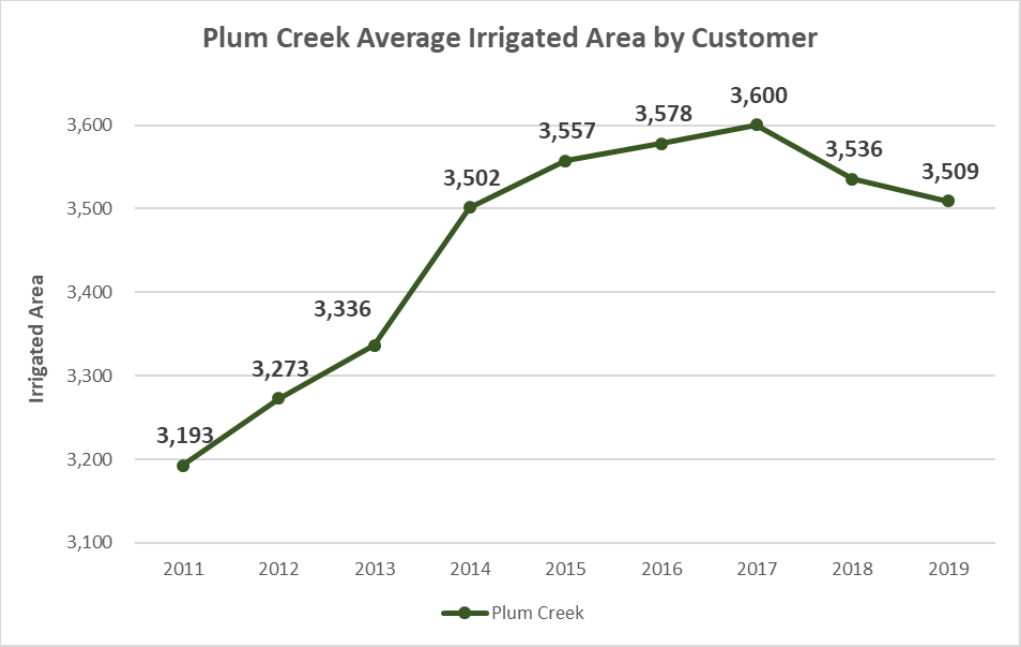


CHART 55: PLUM CREEK RESIDENTIAL ACCOUNTS IRRIGATED AREA BY CUSTOMER



BULK WATER ACCOUNTS

CRW has both bulk hydrant accounts and bulk station accounts. CRW tracks the number of accounts and annual usage for these account types each year. The charts below show the bulk hydrant and bulk station accounts and usage from 2012 to 2019. These accounts vary from year-to-year based on the need and demand of the customers using the program.

CHART 56: BULK HYDRANT AND STATION ACCOUNTS

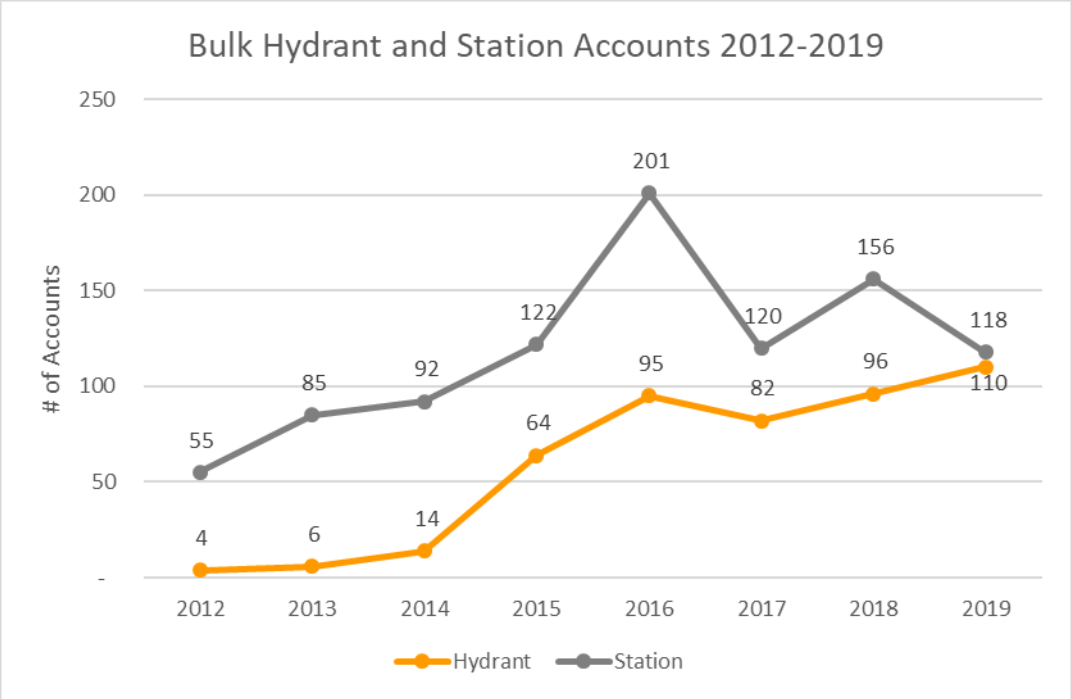


CHART 57: BULK HYDRANT USAGE

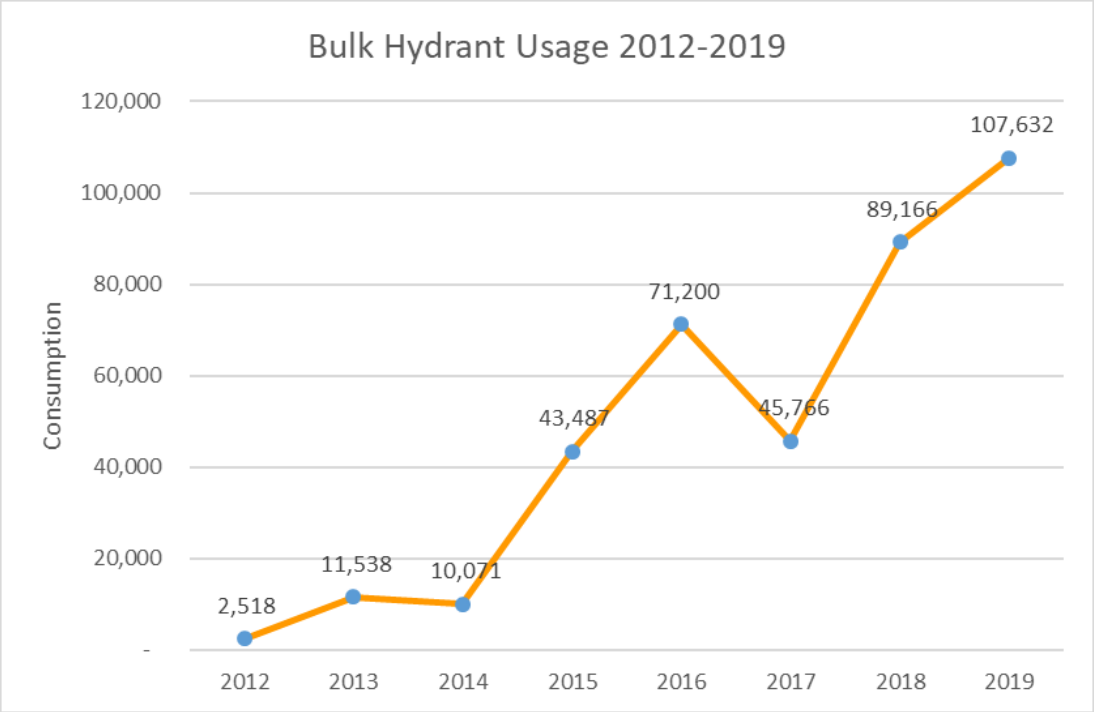
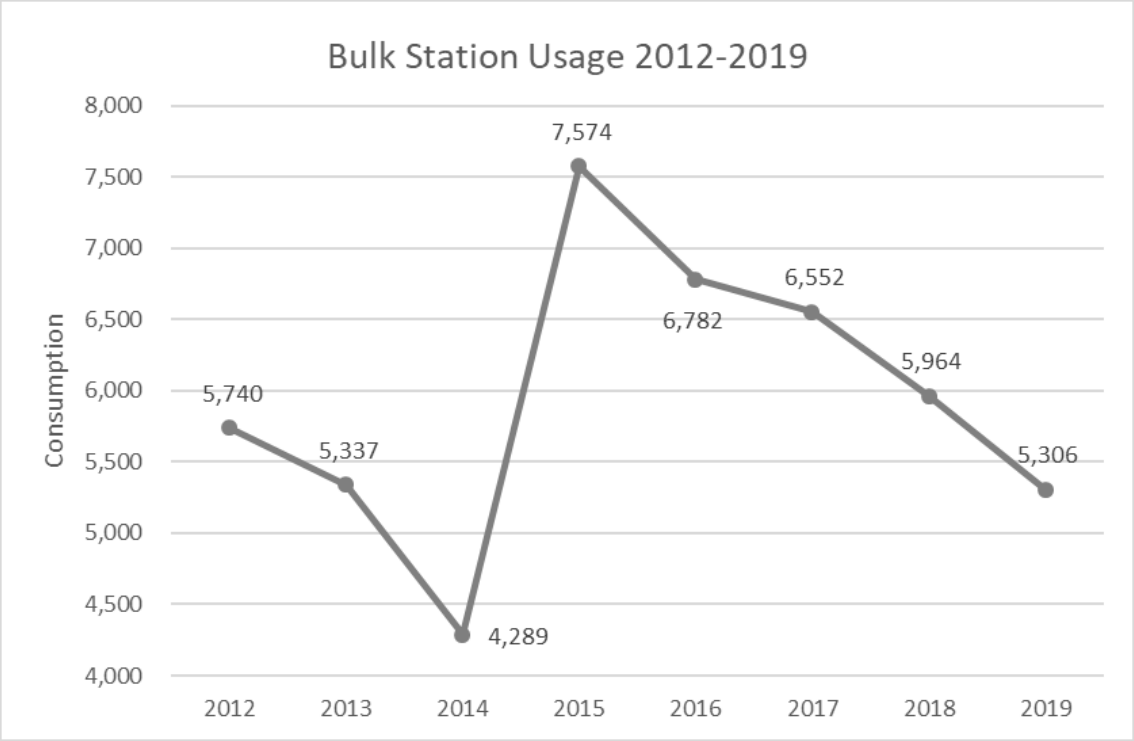


CHART 58: BULK STATION USAGE



TOWN ACCOUNT CONSUMPTION

Below is a chart showing overall town consumption from 2012 to 2019. From 2018 to 2019 consumption decreased, which was mainly due to the Parks Department.

CHART 59: TOWN CONSUMPTION

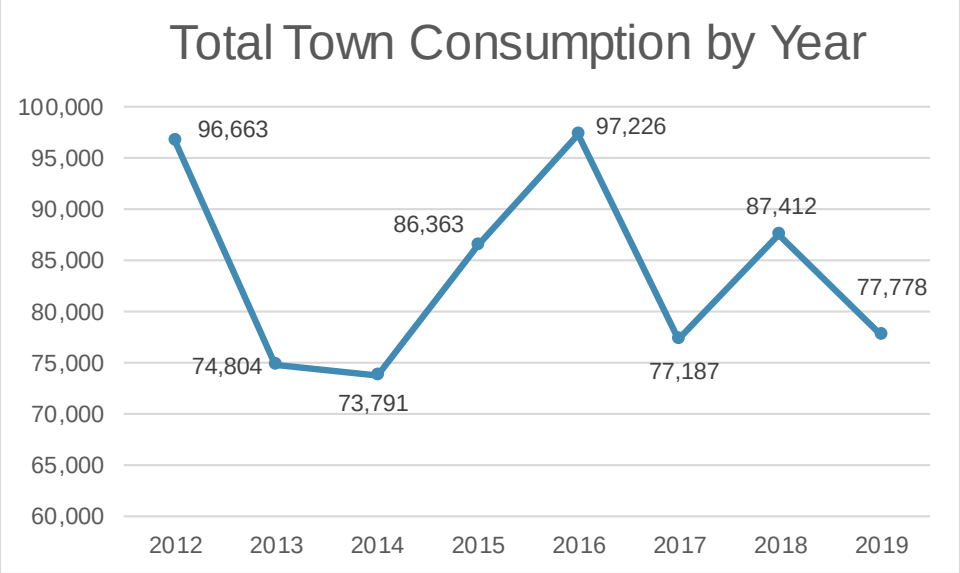


TABLE 10: TOWN CONSUMPTION BY YEAR AND DEPARTMENT (Kgal)

Department	2012	2013	2014	2015	2016	2017	2018	2019
CRW	918	1,087	2,078	2,238	1,544	693	757	856
Facility Maintenance	0	0	0	0	0	22	25	7
Fire	937	1,209	1,164	1,274	1,117	861	1,152	1,302
Golf Course	365	342	340	379	385	325	326	310
Parks	85,461	63,324	63,467	75,079	87,041	66,867	76,539	68,631
Police	340	258	326	340	231	210	264	188
Rec Center	7,431	7,243	5,299	5,308	5,586	6,246	5,890	4,679
Service Centers	1,051	698	830	898	789	771	689	188
Streets	0	0	0	0	0	416	430	444
TownHall	160	147	154	165	172	172	335	338
Treatment Plants	0	496	133	682	361	604	1,005	835
Total Consumption	**96,663**	**74,804**	**73,791**	**86,363**	**97,226**	**77,187**	**87,412**	**77,778**

WASTEWATER ENTERPRISE FUND

NUMBER OF ACCOUNTS BY METER SIZE & CUSTOMER CLASS

Table 11 shows the number of accounts by meter size and customer class using 12 months of billing data (Jan19-Dec19). This shows that 21,836 customers were receiving wastewater service during this capture period. The FY2018 accounts based on 12 months of billing data (Jan18-Dec18) shows that 20,868 accounts were receiving wastewater service. There are 967 more accounts in FY2019 than FY2018.

There are approximately 699 less customers receiving wastewater service than water service due to irrigation customers who don't have wastewater and a few customers who have their own septic tanks thus not utilizing Castle Rock Water's wastewater services.

TABLE 11: ACCOUNTS BY METER SIZE & CUSTOMER CLASS (FY2019)

Meter Size	Residential	Multifamily	Commercial	MultiFamily Indoor Use Only	Commercial Indoor Use Only	Total
5/8"	1,425	-	-	4	9	1,438
3/4"	19,284	14	123	101	117	19,639
1"	24	25	69	94	89	301
1.5"	-	55	48	114	86	303
2"	-	15	26	42	46	129
3"	-	2	5	2	13	22
4"	-	1	-	-	1	2
6"	-	-	2	-	-	2
Total	20,733	112	273	357	361	21,836

CHART 60: RESIDENTIAL WASTEWATER ACCOUNTS

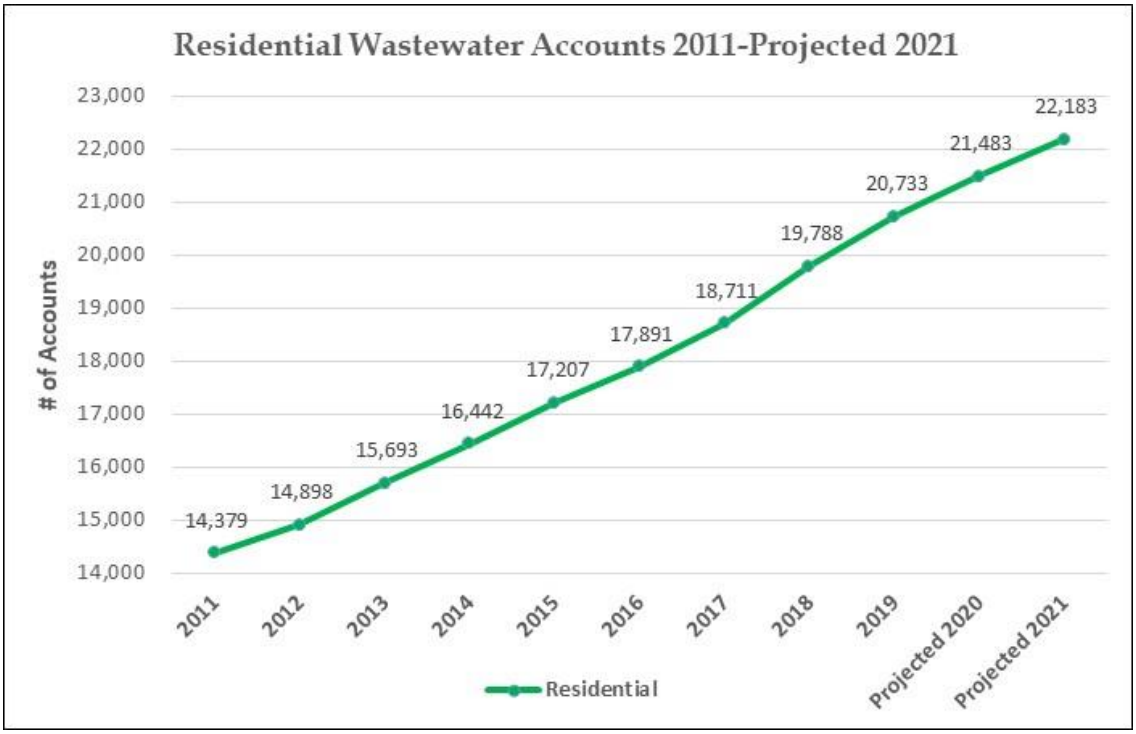
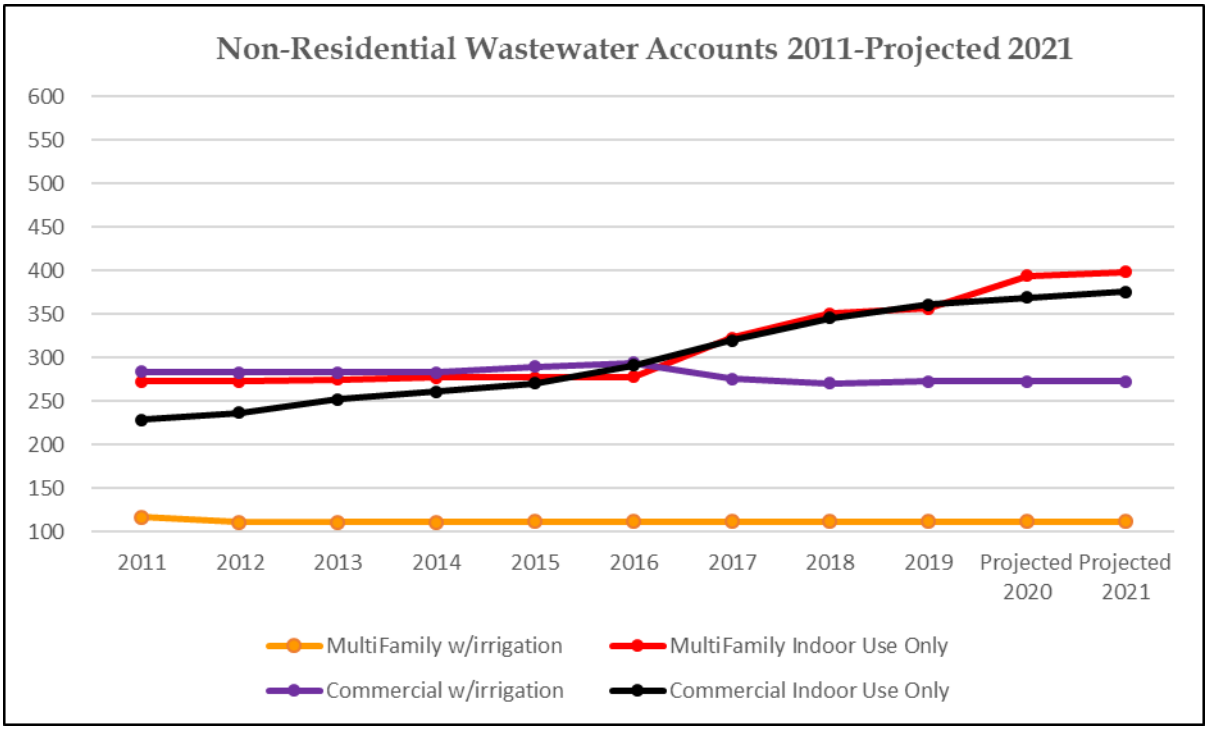


CHART 61: NON-RESIDENTIAL WASTEWATER ACCOUNTS



Castle Rock Water projects FY2021 wastewater accounts by using 2019 billing data plus projected growth for FY2020 and FY2021. The FY2021 wastewater accounts are projected to equal 23,342 (22,182 for residential and 1,160 for non-residential).

2020 Projected Accounts by Customer Class:

50 Residential (.67 SFE)
700 Residential (1 SFE)
37 Multi-Family
8 Commercial
795 Total

2021 Projected Accounts by Customer Class:

47 Residential (.67 SFE)
653 Residential (1 SFE)
5 Multi-Family
7 Commercial
712 Total

Total growth of 795 accounts is projected for FY2020 and 712 for FY2021 for a total of 1,507 projected for the wastewater fund thru FY2021.

WATER RESOURCES ENTERPRISE FUND

NUMBER OF ACCOUNTS BY METER SIZE & CUSTOMER CLASS

Table 12 shows the number of accounts by meter size and customer class using 12 months of billing data (Jan19-Dec19). This shows 22,632 accounts served by the water resources enterprise fund. The FY2018 accounts based on 12 months of billing data (Jan18-Dec18) showed 21,634 water resources accounts. There are 998 more accounts in FY2019 than in FY2018.

TABLE 12: ACCOUNTS BY METER SIZE AND CUSTOMER CLASS (FY2019)

Meter Size	Residential	Multifamily	Commercial	Bulk	Irrigation	MultiFamily Indoor Use Only	Commercial Indoor Use Only	Total
5/8"	1,425	-	-	-	3	4	9	1,441
3/4"	19,440	14	126	110	179	101	123	20,093
1"	25	25	71	-	109	94	93	417
1.5"	-	55	50	-	133	114	86	438
2"	-	15	26	-	78	42	47	208
3"	-	2	5	-	6	2	14	29
4"	-	1	-	-	2	-	1	4
6"	-	-	2	-	-	-	-	2
Total	20,890	112	280	110	510	357	373	22,632

CHART 62: RESIDENTIAL WATER RESOURCES ACCOUNTS

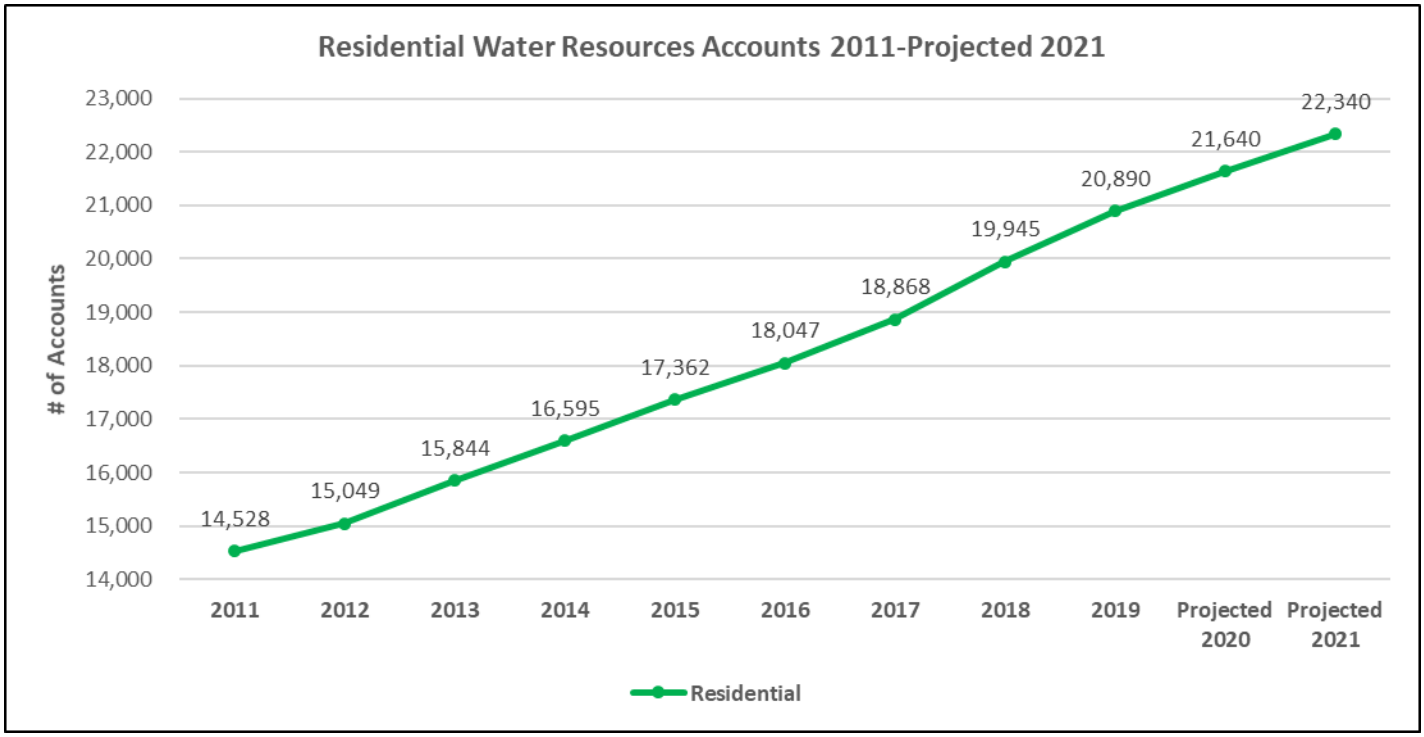
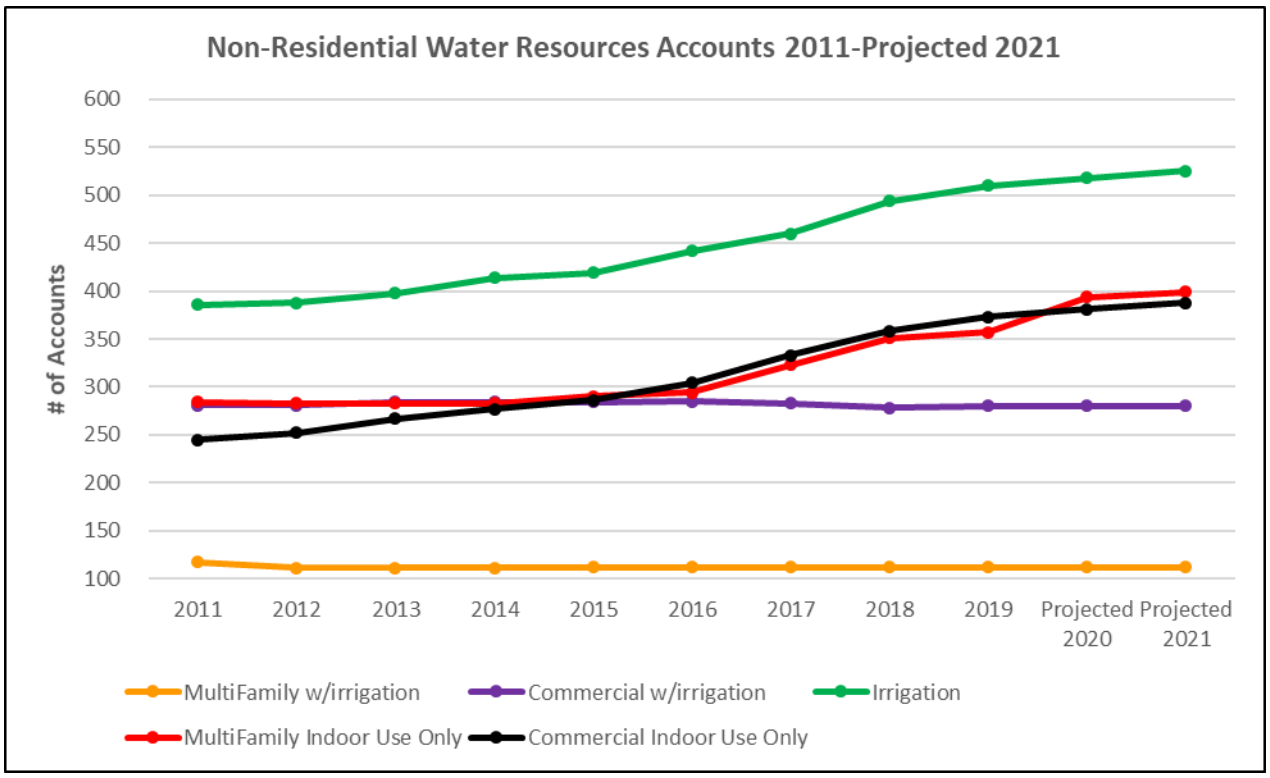


CHART 63: NON-RESIDENTIAL WATER RESOURCES ACCOUNTS



Castle Rock Water projects FY2021 water resources accounts by using 2019 billing data plus projected growth for FY2020 and FY2021. The FY2021 water resources accounts are projected to equal 24,044 (22,340 for residential and 1,704 for non-residential).

2020 Projected Accounts by Customer Class:

50 Residential (.67 SFE)
700 Residential (1 SFE)
37 Multi-Family
8 Commercial
8 Irrigation
803 Total

2021 Projected Accounts by Customer Class:

47 Residential (.67 SFE)
653 Residential (1 SFE)
5 Multi-Family
7 Commercial
7 Irrigation
719 Total

Total growth of 803 accounts is projected for FY2020 and 719 for FY2021 for a total of 1,522 projected for the water resources fund thru FY2021.

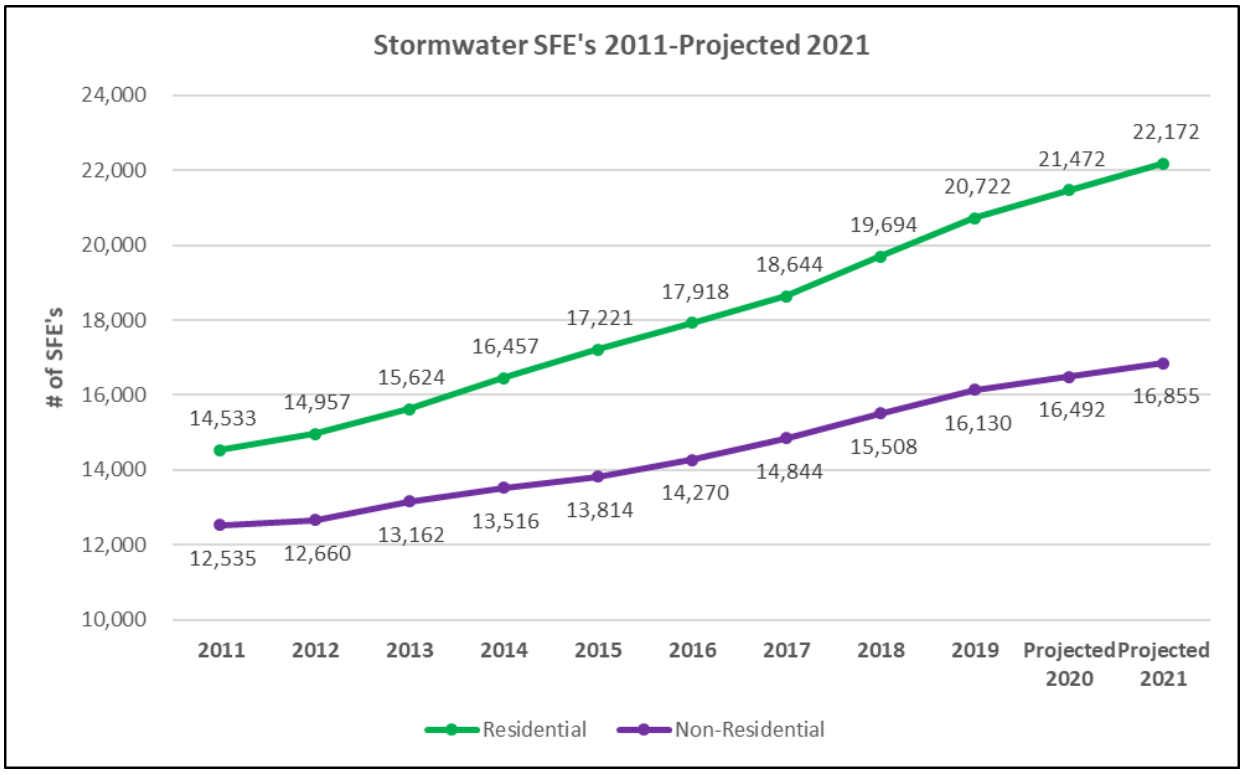
STORMWATER ENTERPRISE FUND

Table 13 shows stormwater average monthly SFEs based on 12 months of billing data (Jan19-Dec19). This shows that 36,851 SFE's were receiving stormwater services during this capture period. The FY2018 billing data (Jan18-Dec18) showed 35,202 SFE's receiving stormwater services. There are 1,649 more SFE's in FY2019 than FY2018.

TABLE 13: STORMWATER SFE'S (JAN 19-DEC 19)

Total Monthly SFE's	
Residential	20,722
Non-Residential	16,130
Stormwater SFE's	36,851

CHART 64: STORMWATER SFE'S



Castle Rock Water shows FY2021 projected stormwater SFE's based on 12 months of billing data (Jan19-Dec19) plus projected growth for FY2020 and FY2021. The FY2021 stormwater SFE's are projected to equal 39,027 (22,172 for residential and 16,855 for non-residential).

2020 Projected Accounts (SFE's)

750	Residential
30	Detached in Cherry Creek Basin
720	Detached in Plum Creek Basin
362	Commercial in the Plum Creek Basin
1,112	Total

2020 Projected Accounts (SFE's)

700	Residential
28	Detached in Cherry Creek Basin
672	Detached in Plum Creek Basin
362	Commercial in the Plum Creek Basin
1,062	Total

Total growth projected for the stormwater fund is 1,112 SFEs in FY2020 and 1,062 for FY2021.