#### Witness: Melissa Schwarzell and Roderick Sherman

1. Provide a copy of all reports prepared by Kentucky-American regarding consecutive estimated meter reads between January 2018 and the date of service of this Order.

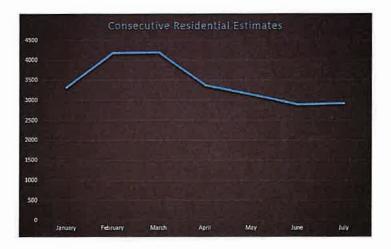
#### **Response:**

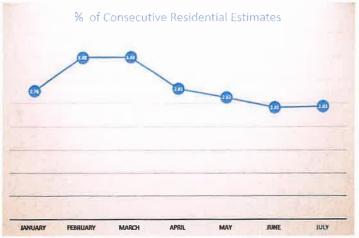
Please see the following attachments:

- Attachment 1: PSC "Consecutive Estimate Updates" for August 2018-December 2018
- Attachment 2: 2: Periodic (weekly, biweekly, or monthly) consecutive estimate reports between November 2019 and July 2020
- Attachment 3: Reports utilizing a recently created, real-time consecutive estimate dashboard, which became available in June 2022



- We are seeing progress in our efforts to manage the number of consecutive estimates; anticipating that our current action plans will lead us to see a significant reduction in estimates by the end of September.
- We are continuing to allocate additional staffing resources to perform the work deemed necessary by both the Field and Administrative Team Members to obtain accurate readings during the read cycle.
- We have continued to provide Customer education on how to protect radio read devices from damage; utilizing radio ads & interviews, social media and connection with key community outreach partners such as Councilman, Greater Lexington Apartment Association and Homebuilders Association.



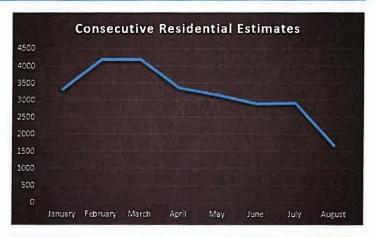


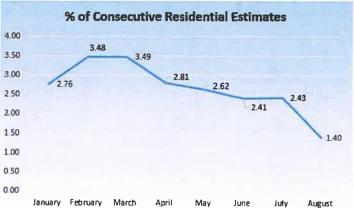
Based on avg	residential	Customer	count of	120
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Month	Avg. # of Residential Customers Billed	Newly Reported Consecutive Estimated Readings	Re-Occurring Consecutive Estimates	Percentage of Residential	Total Number of Meters Replaced Durng Period	Notes (Optional)
June	120,000	770	2118	2.41	1376	
July	120,000	939	1974	2.43	1089	



- We are seeing significant progress in our efforts to manage the number of consecutive estimates; we still anticipate that the current action plans will lead us to see a significant reduction in estimates by the end of September.
- We are continuing to allocate additional staffing resources to perform the work deemed necessary by both the Field and Administrative Team Members to obtain accurate readings during the read cycle.
- We have continued to provide
   Customer education on how to
   protect radio read devices from
   damage; utilizing radio ads &
   interviews, social media and
   connection with key community
   outreach partners such as Council
   Members for the City of Lexington,
   Greater Lexington Apartment
   Association and Homebuilders
   Association.



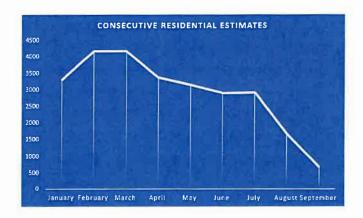


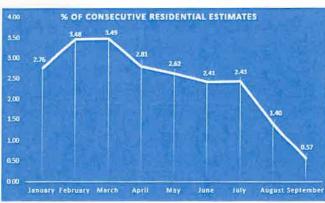
Based on avg. residential Customer count of 120k

Kentucky American Water									
	Avg. # of Residential	Newly Reported Consecutive	Re-Occurring		Total Number of Meters				
Month	Customers Billed	Estimated Readings	Consecutive Estimates	Percentage of Residential	Replaced Durng Period	Notes (Optional)			
June	120,000	770	2118	2.41	1376				
July	120,000	939	1974	2.43	1089				
August	120,000	496	1185	1.40	1035				



- We are continuing to see significant progress in our efforts to manage the number of consecutive estimates; our action plans have led to results even better than anticipated.
- We are continuing to allocate additional staffing resources to perform the work deemed necessary by both the Field and Administrative Team Members to obtain accurate readings during the read cycle.
- We have continued to provide
   Customer education on how to
   protect radio read devices from
   damage; utilizing radio ads &
   interviews, social media and
   connection with key community
   outreach partners such as Council
   Members for the City of Lexington,
   Greater Lexington Apartment
   Association and Homebuilders
   Association.



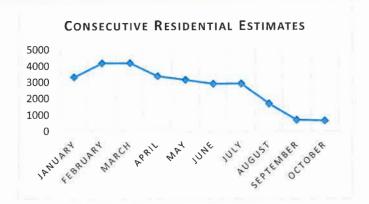


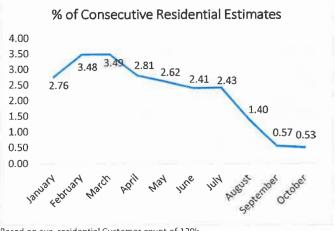
Based on avg residential Customer count of 120k

	Kentucky American Water										
Month	Avg. # of Residential Customers Billed	Newly Reported Consecutive Estimated Readings	Re-Occurring Consecutive Estimates	Percentage of Residential	Total Number of Meters Replaced Durng Period	Notes (Optional					
June	120,000	770	2118	2.41	1376						
July	120,000	939	1974	2.43	1089						
August	120,000	496	1185	1.40	1035						
September	120,000	221	466	0.57	1256						



- We have seen substantial improvement with our continued efforts to manage the number of consecutive estimated residential bills; our action plans have led us to manage the backlog of work in a timely manner, with better results than anticipated.
- We are committed to continuing to allocate additional staffing resources to perform the work deemed necessary by both the Field and Administrative Team Members to obtain accurate readings during the read cycle.
- We are committed to continuing to provide Customer education on how to protect radio read devices from damage; utilizing radio ads & interviews, social media and connection with key community outreach partners.





Based	on	avg	resid	lential	Cus	tomer	count	of	120	k

	Kentucky American Water											
Month	Avg. # of Residential Customers Billed	Newly Reported Consecutive Estimated Readings	Re-Occurring Consecutive Estimates	Percentage of Residential	Total Number of Meters Replaced During Period							
June	120,000	770	2118	2.41	1376							
July	120,000	939	1974	2.43	1089							
August	120,000	496	1185	1.40	1035							
September	120,000	221	466	0.57	1256							
October	120,000	313	323	0.53	2813							

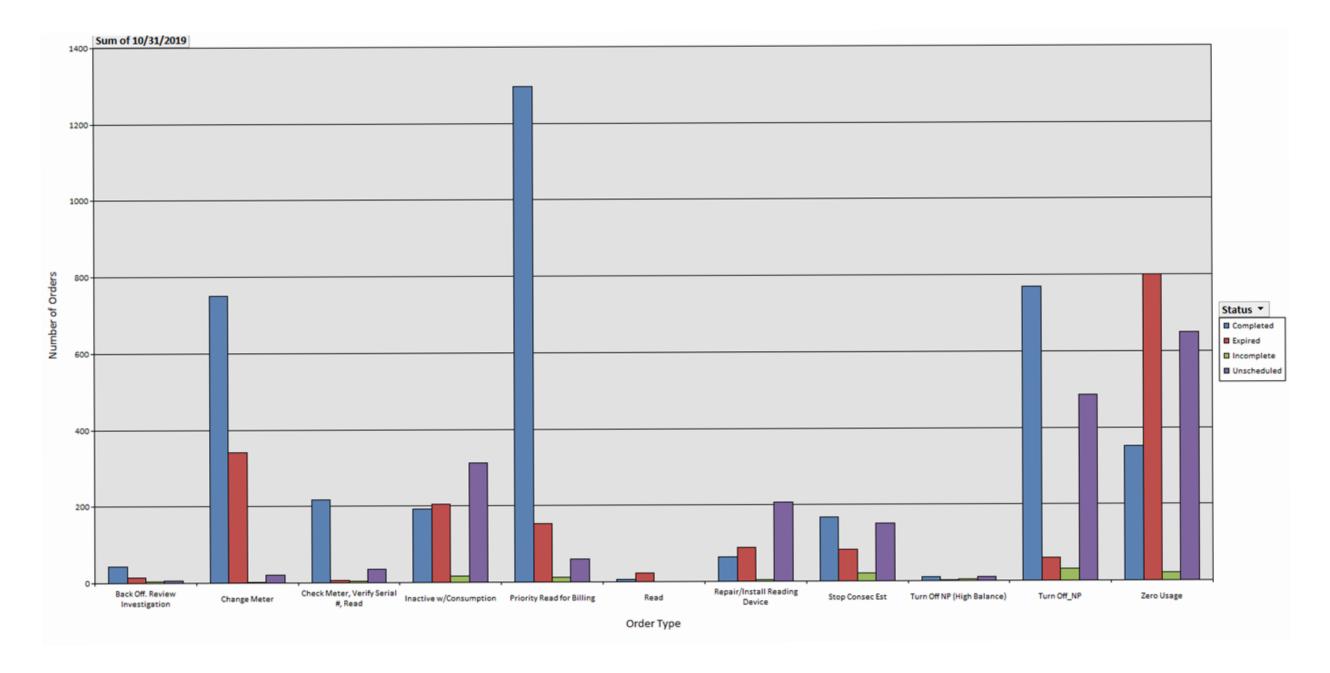


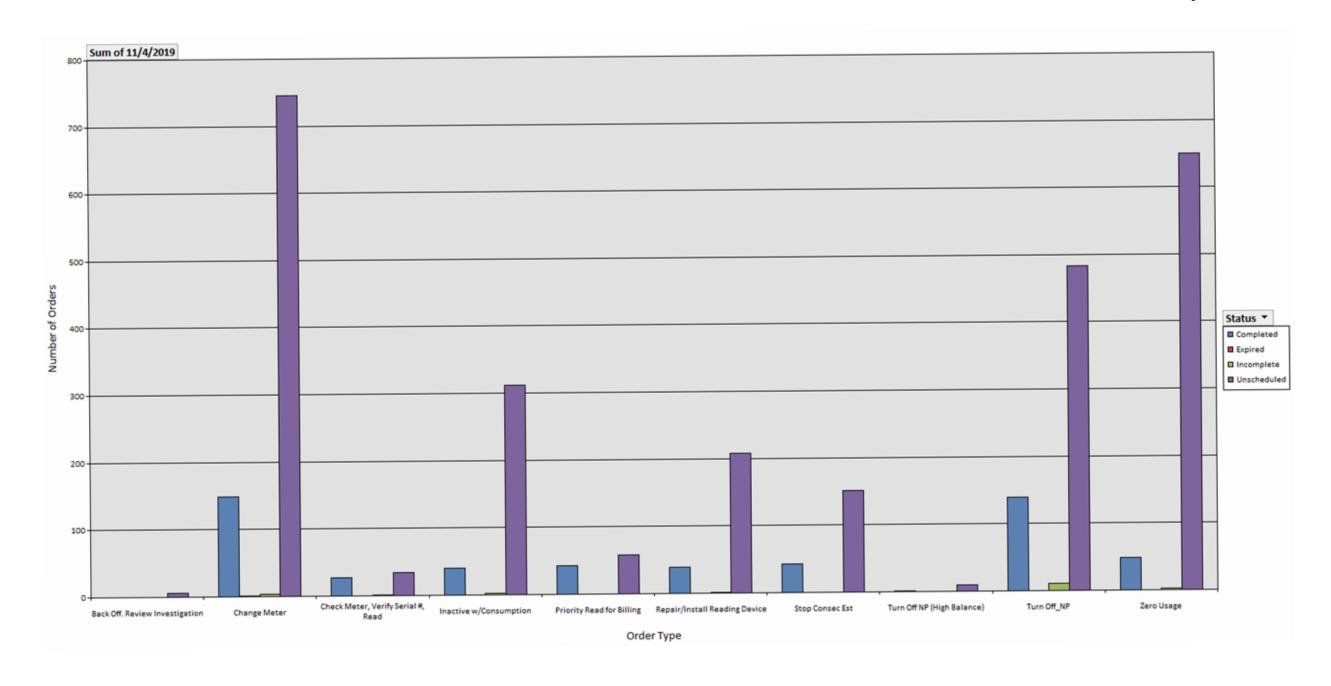
- We have continued to see a reduction in the number of re-occurring consecutive estimated residential bills; this month we saw a slight increase in newly reported consecutive estimated residential bills due to the data validation process associated with the significant number of meter changes in October.
- With the slight increase in newly reported consecutive estimated residential bills we have allocated additional staffing resources, by the way of overtime, to perform the work deemed necessary by both the Field and Administrative Team Members to process the reads obtained managing the need to estimate billing.
- We are committed to continuing to provide Customer education on how to protect radio read devices from damage; utilizing radio ads & interviews, social media and connection with key community outreach partners.
   Over the coming months we will be working to educate our Customers on the potential impacts of inclement weather on our ability to obtain an actual read that could lead to an estimated bill.

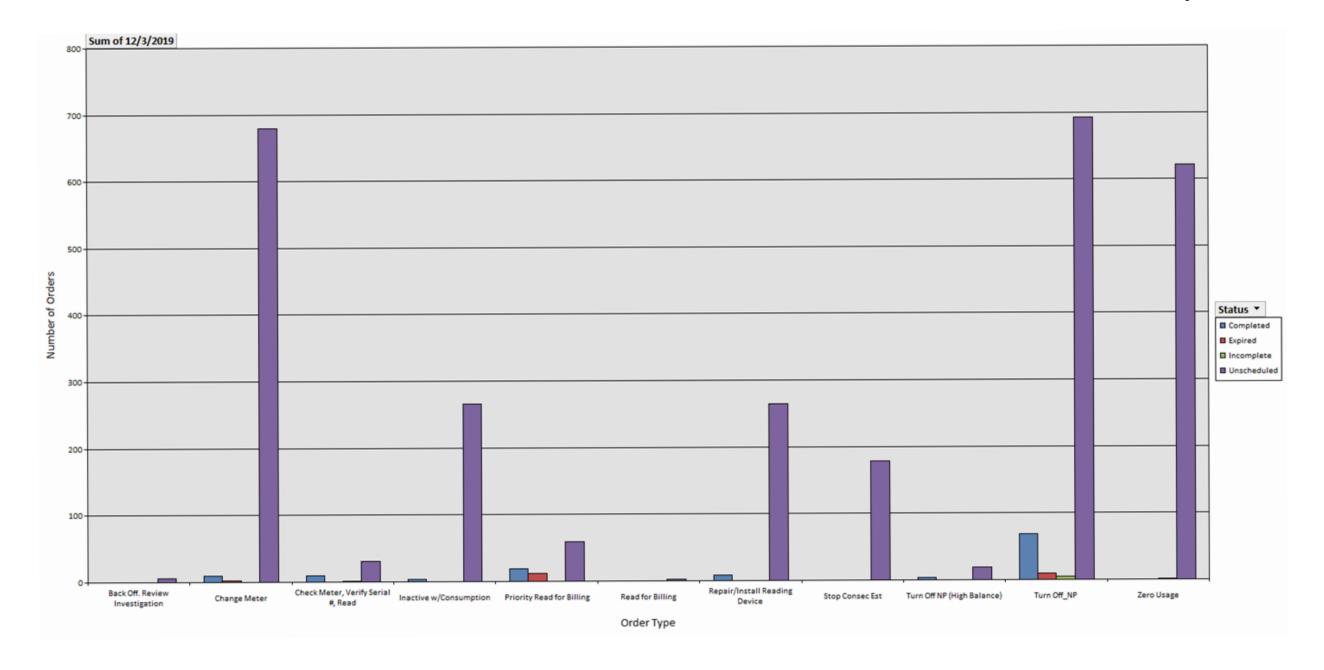
	Avg. # of Residential	Newly Reported Consecutive	Re-Occurring Consecutive	Percentage of Residential	Total Number of Meters Replaced During Period
Month	Customers Billed	Estimated	Estimates	Kesidentiai	
June	120,000	770	2118	2.41	1376
July	120,000	939	1974	2.43	1089
August	120,000	496	1185	1.40	1035
September	120,000	221	466	0.57	1256
October	120,000	313	323	0.53	2813
November	120,000	434	283	0.60	1000



Based on avg. residential Customer count of 120k

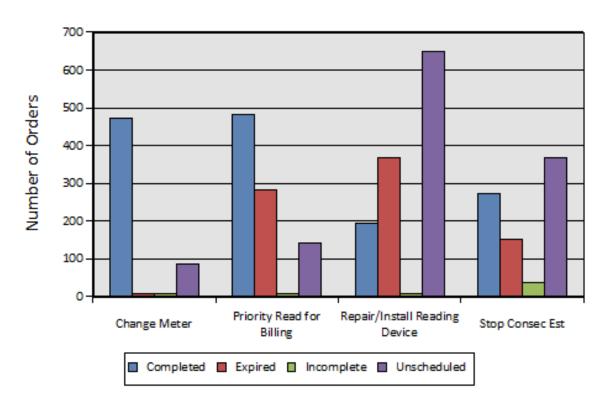




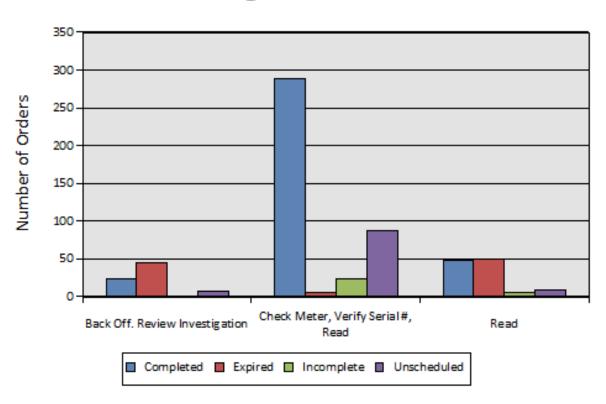


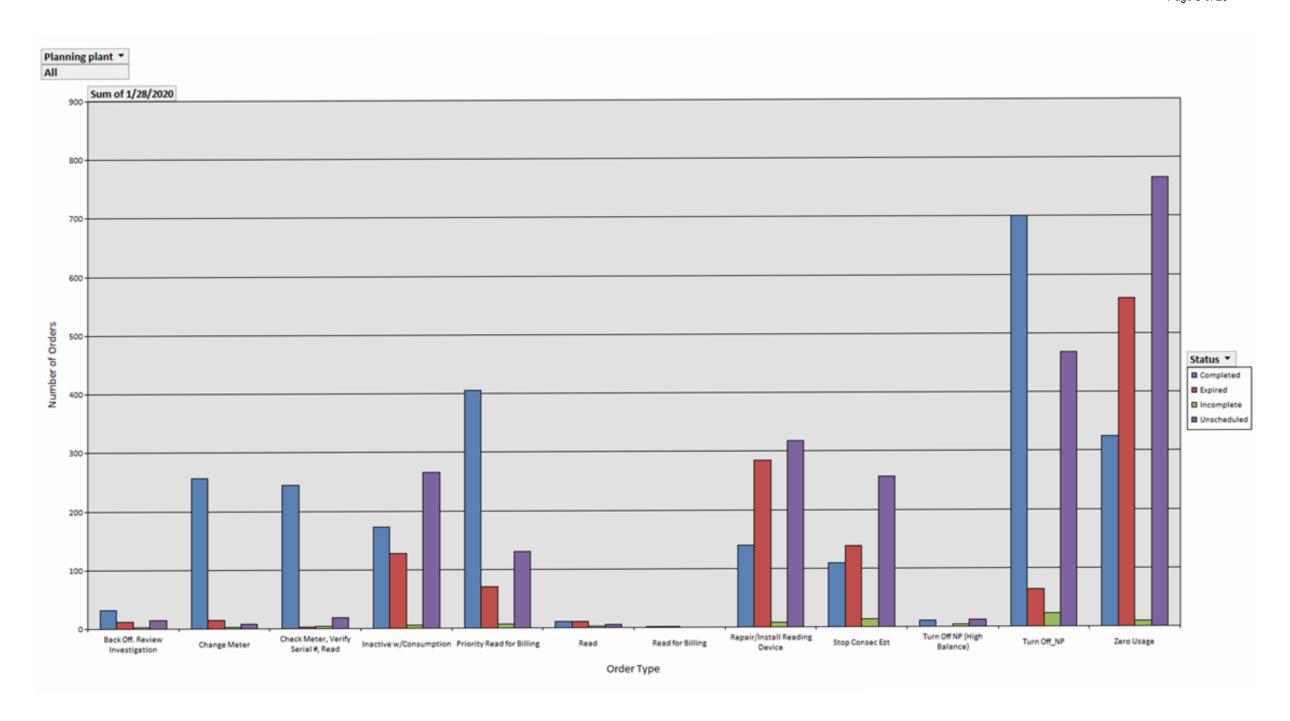
Here is the end of the month service order status.

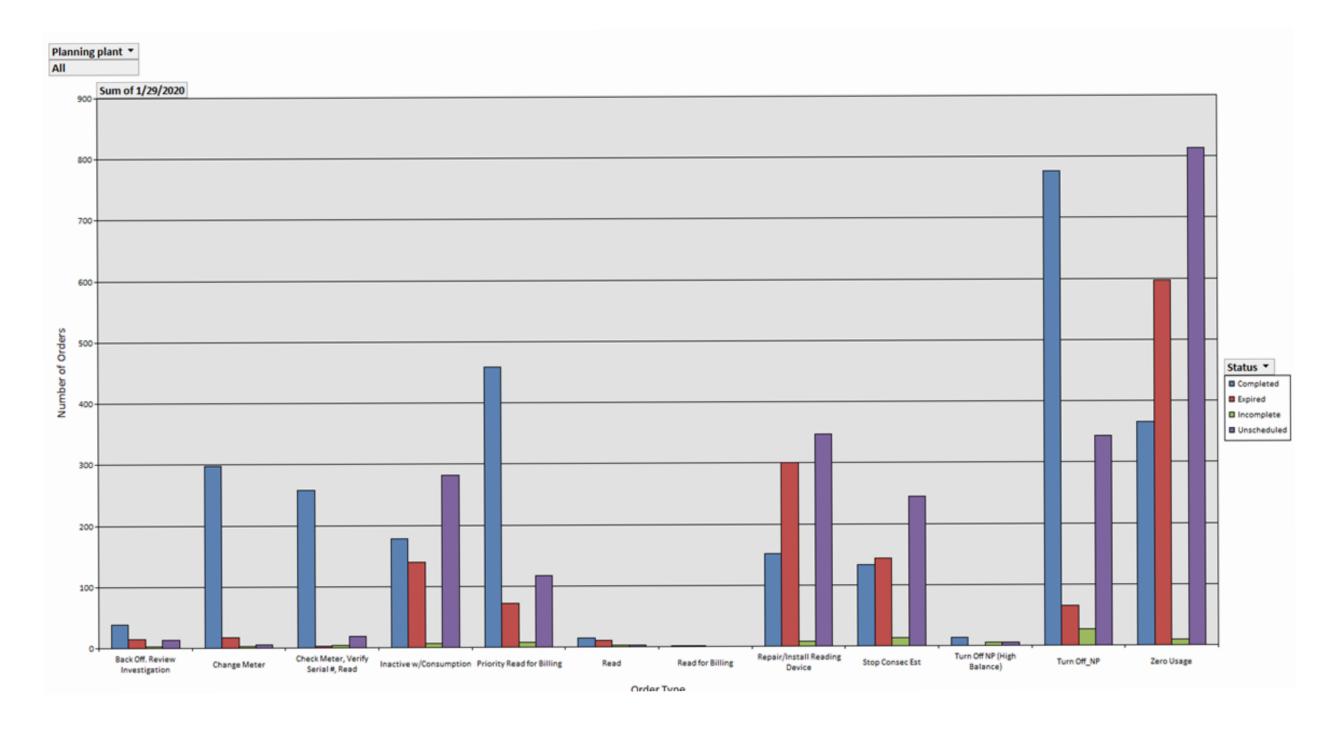
### **Estimation Orders**

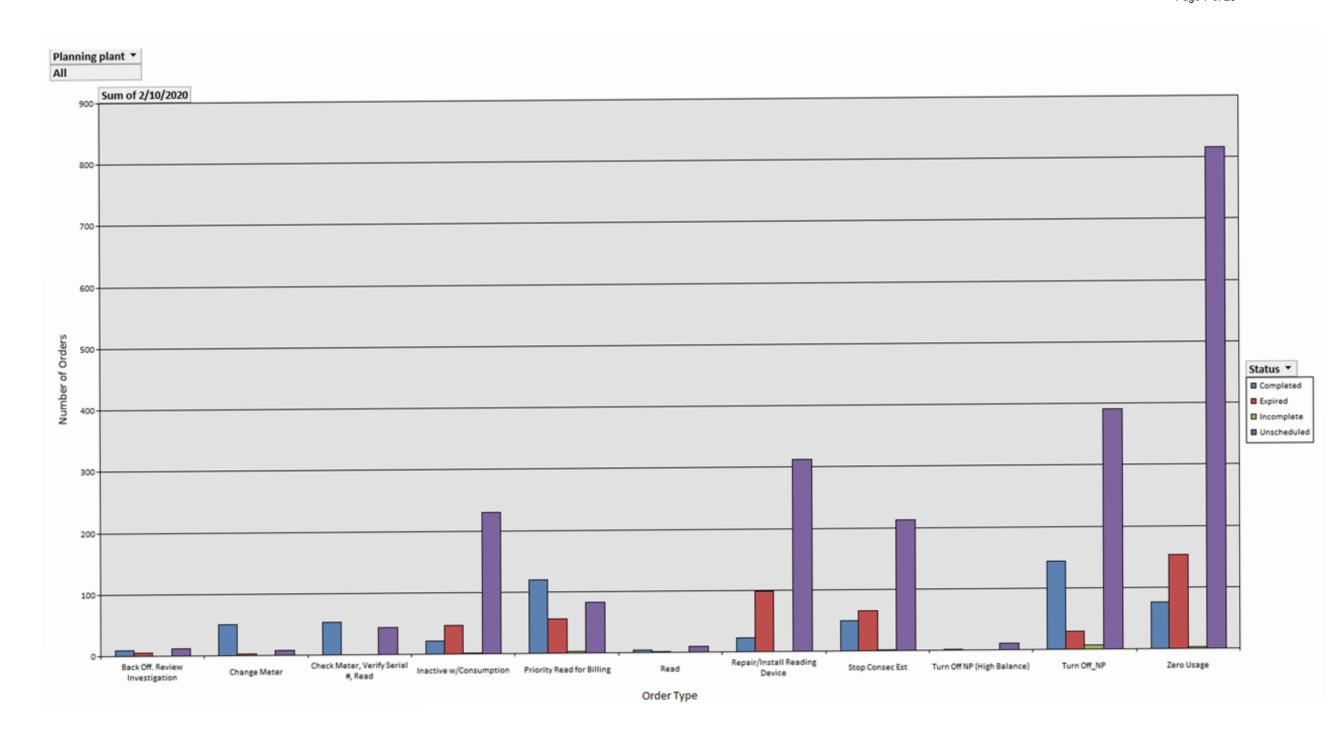


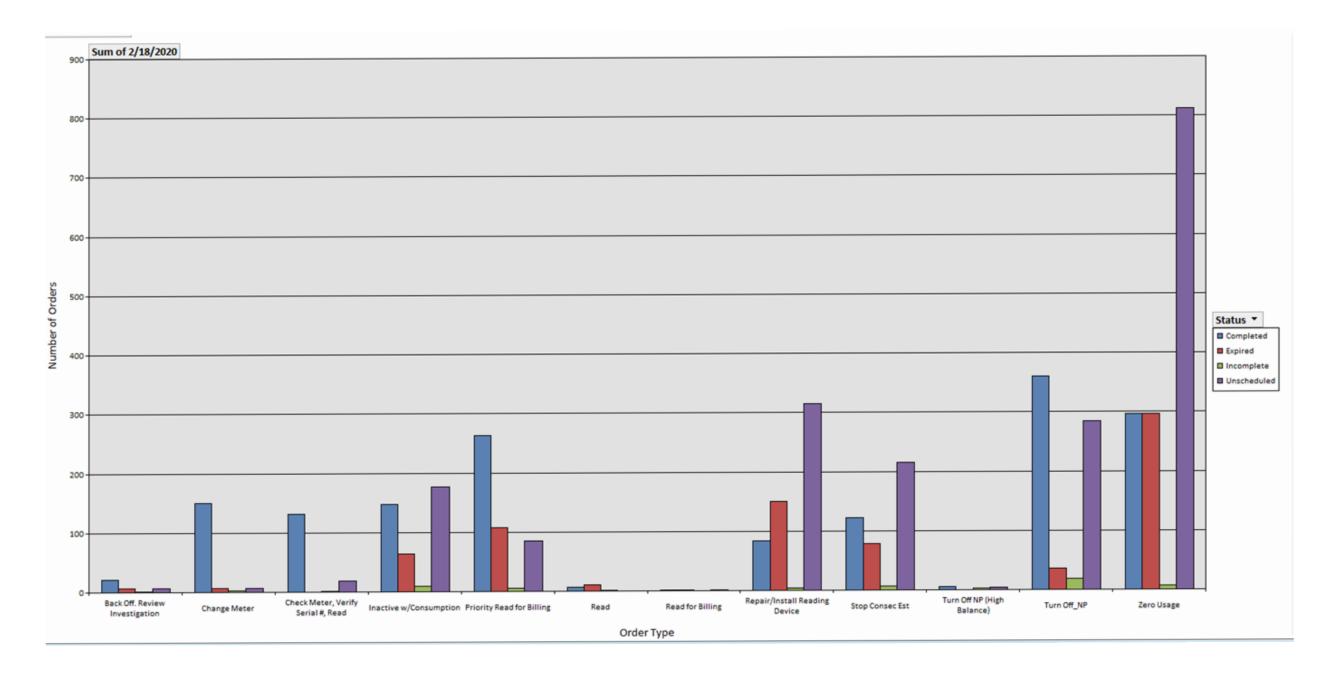
### **Investigation Orders**

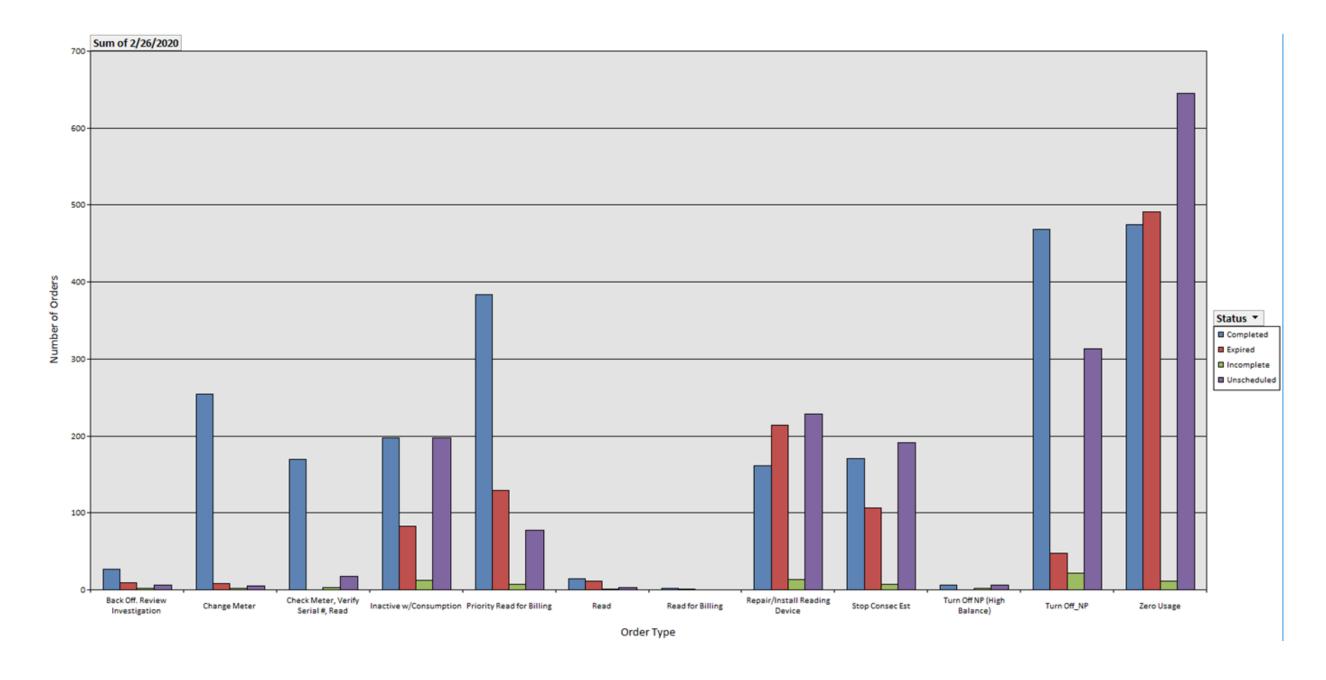


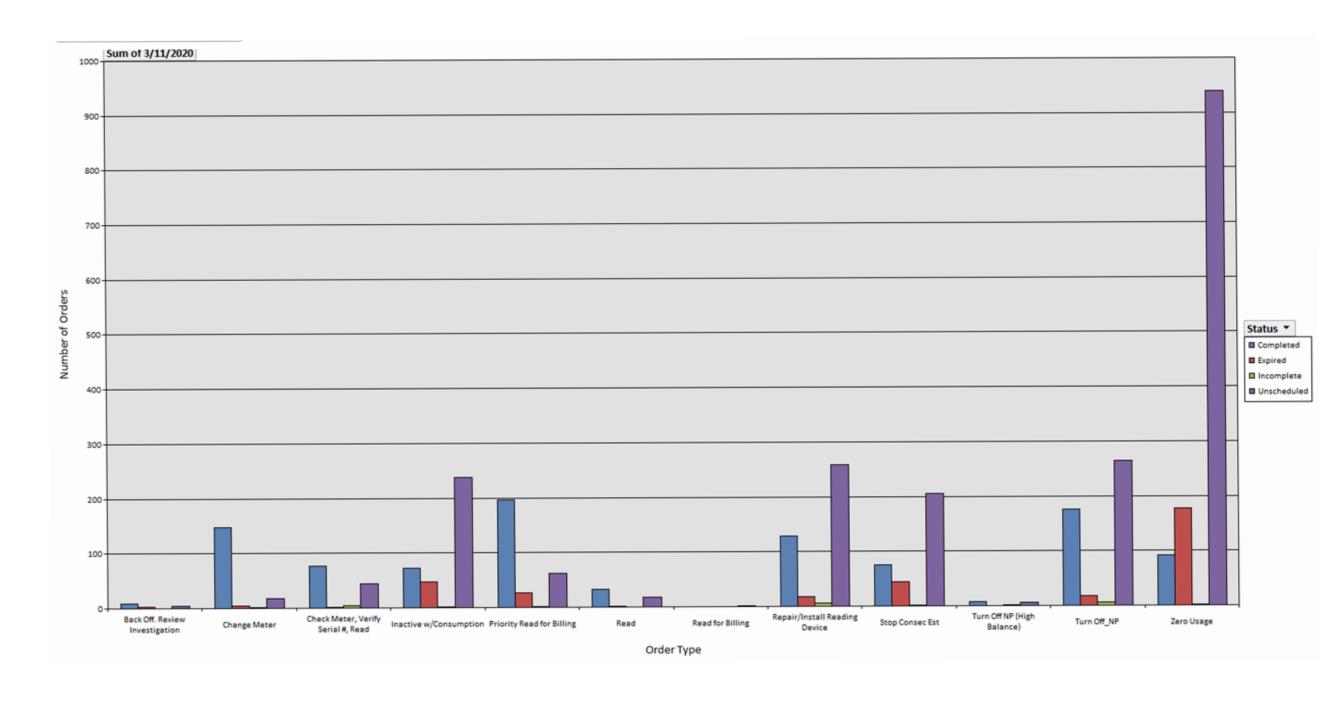


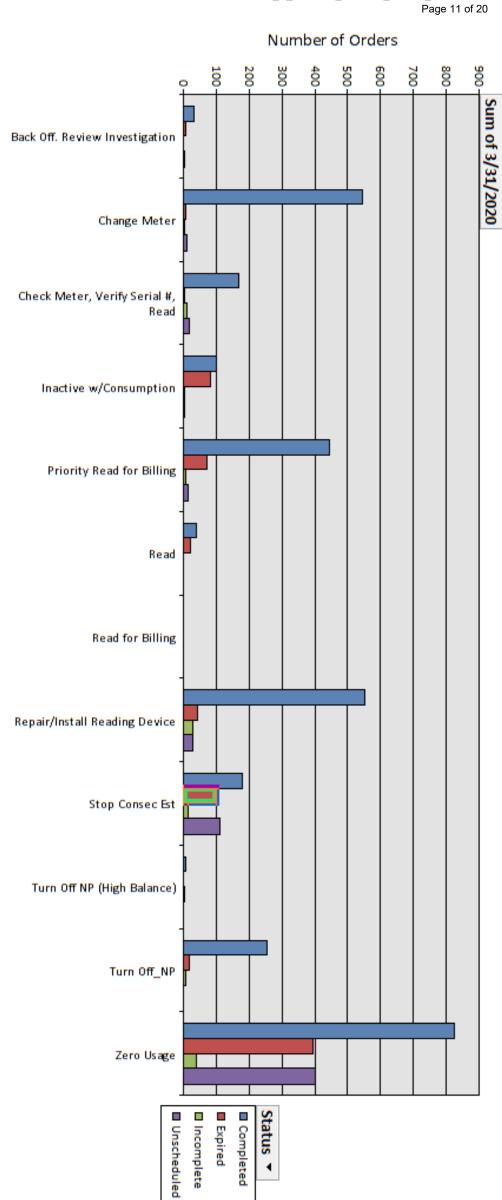




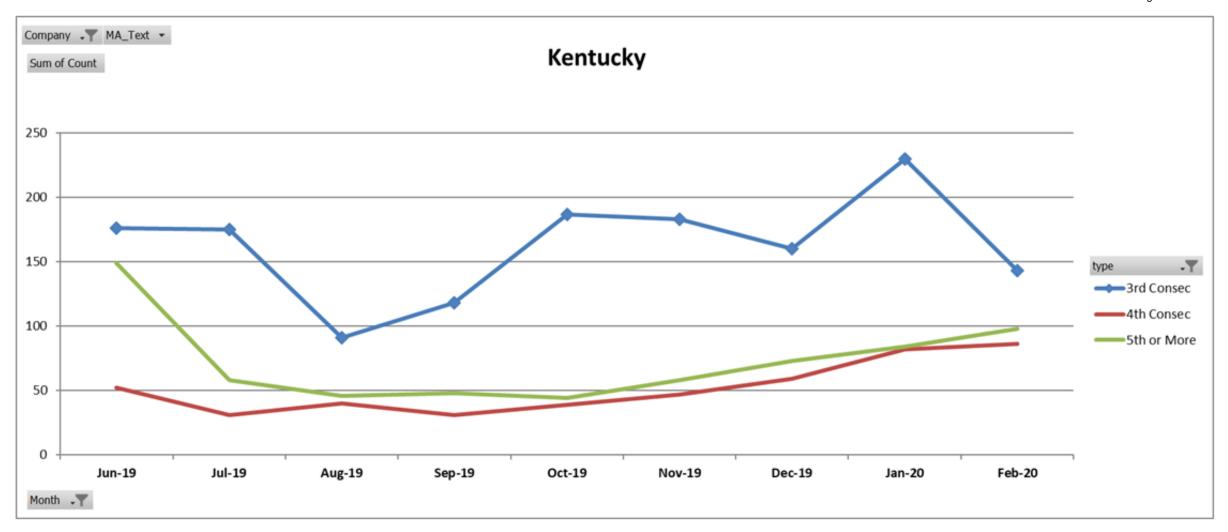


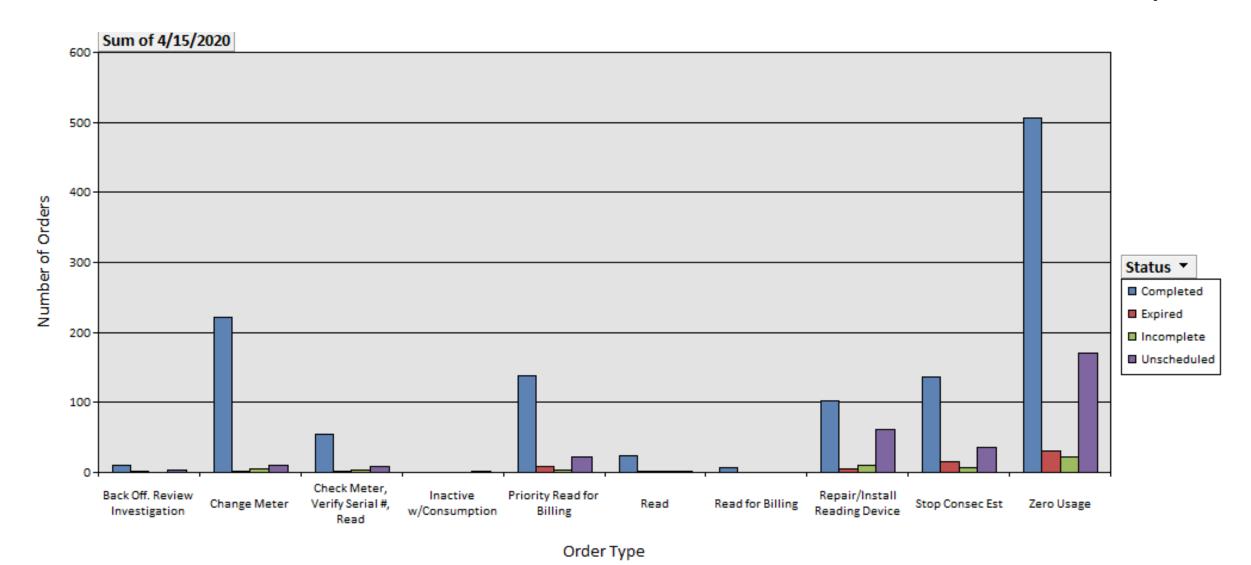


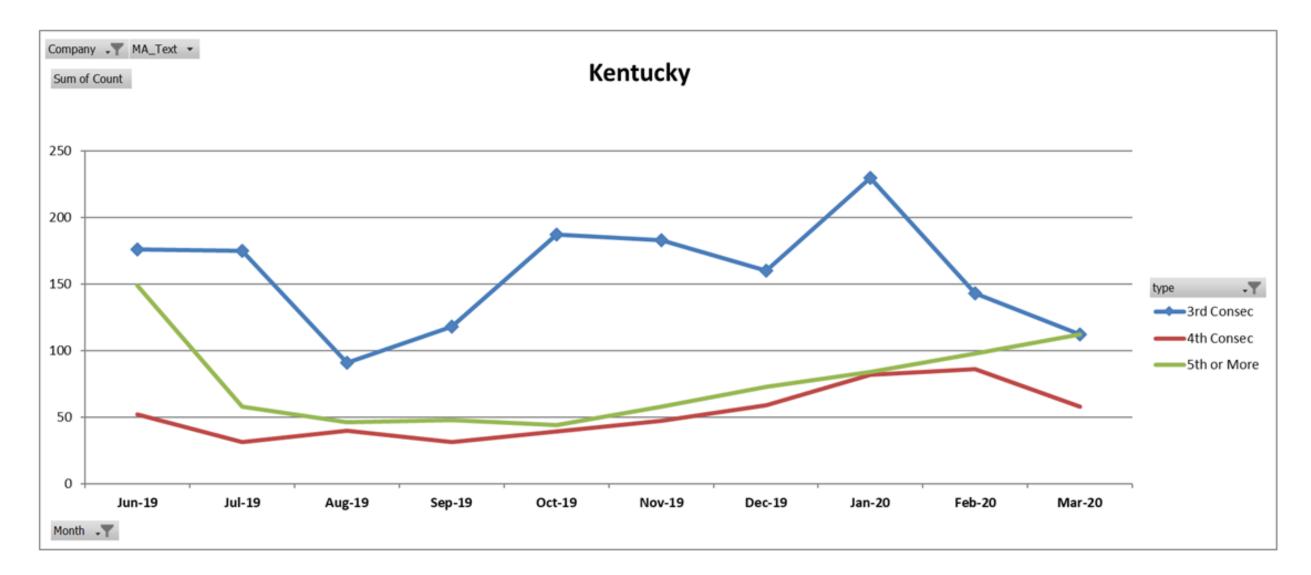


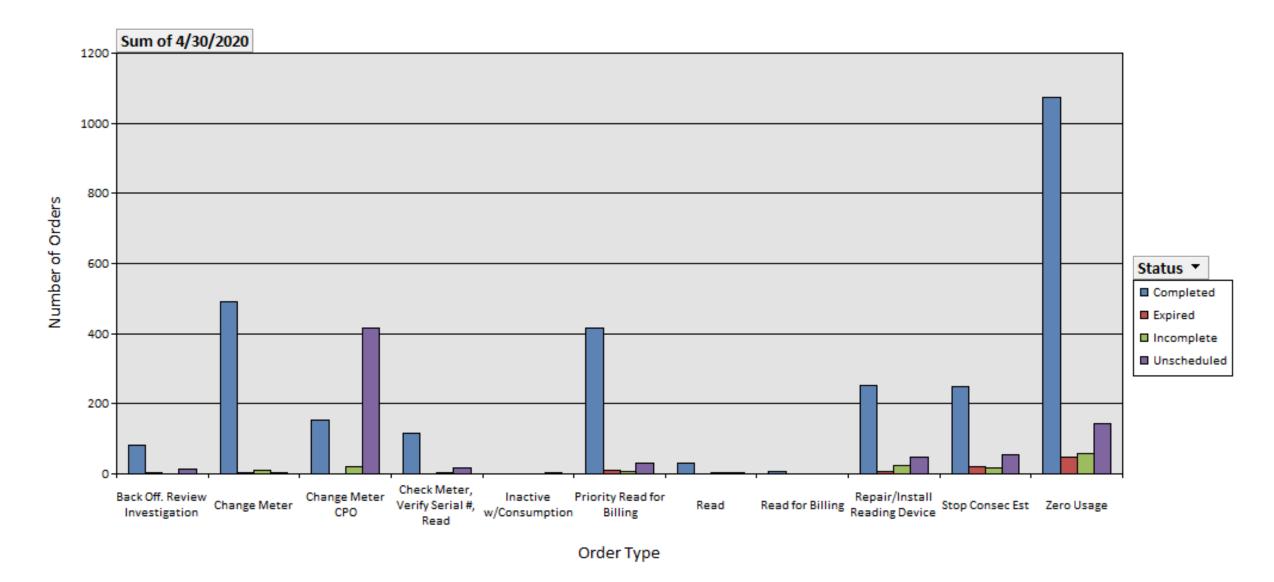


Order Type

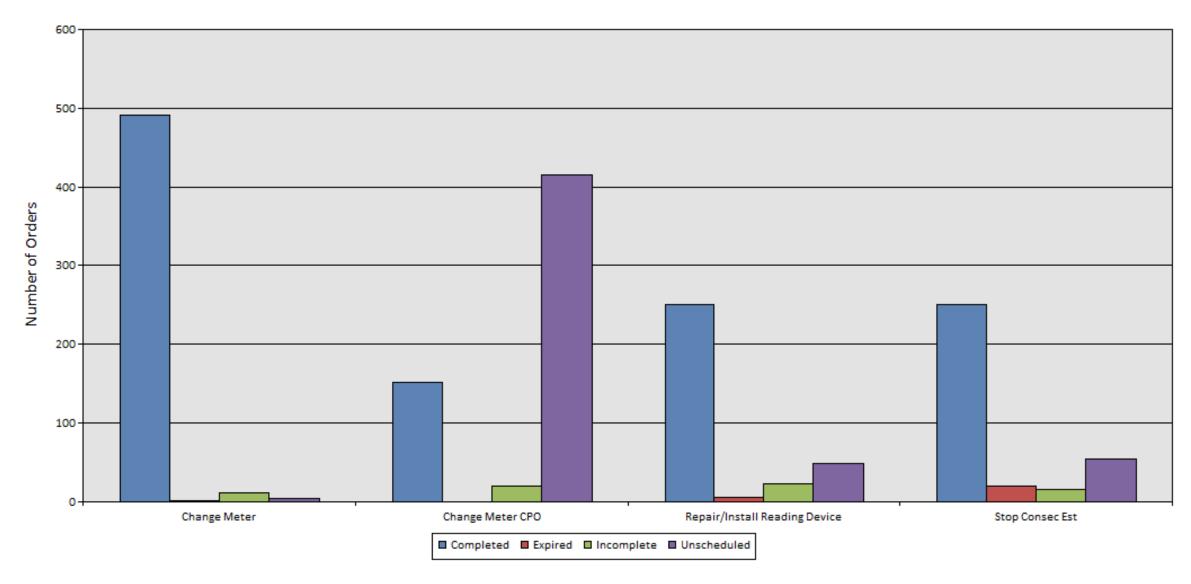


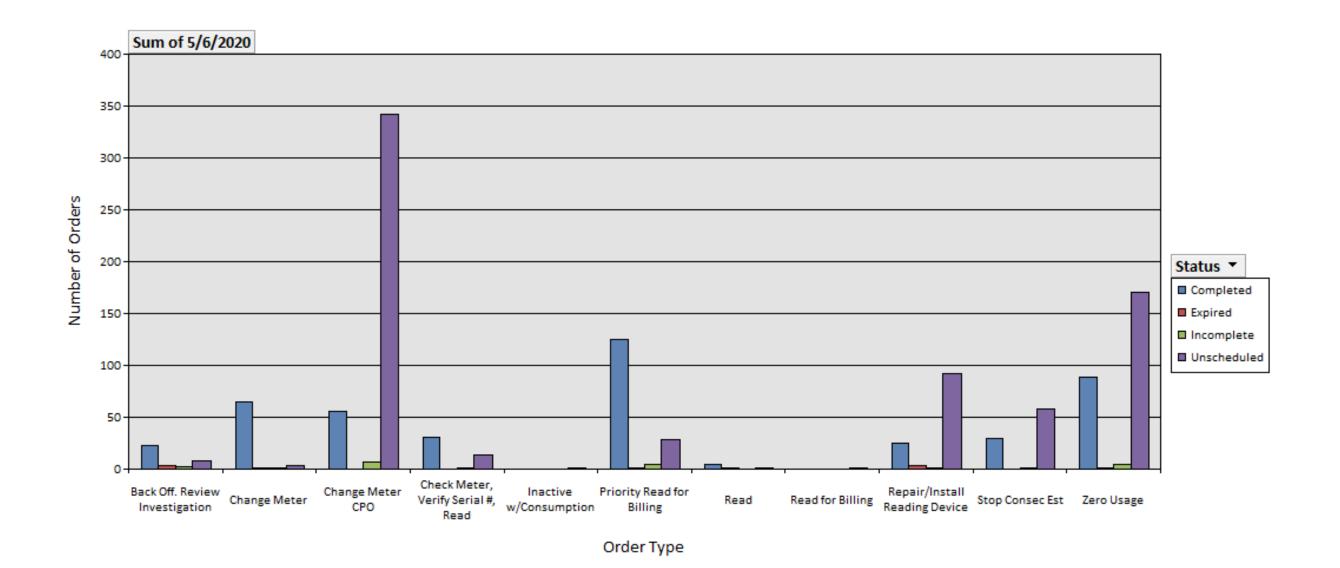


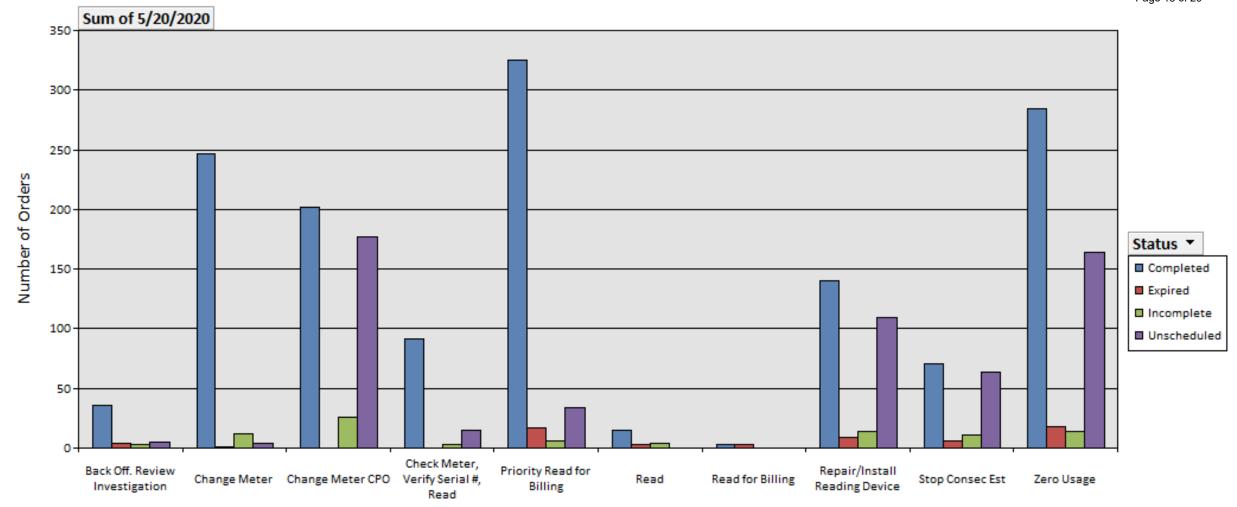




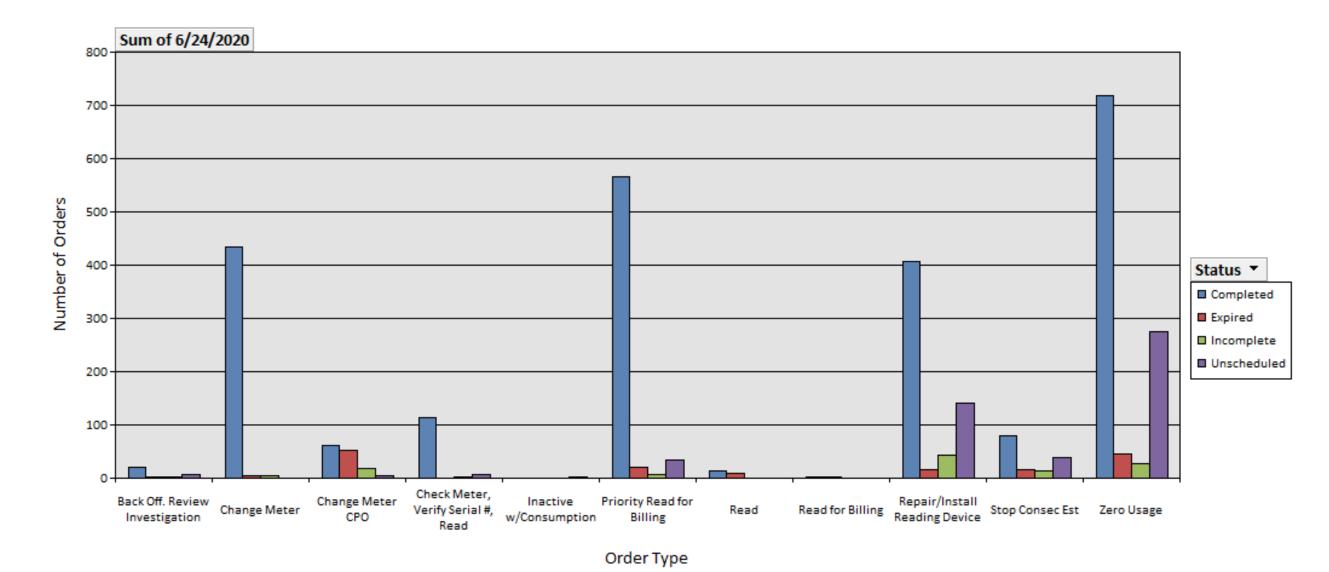
### **Estimation Orders**

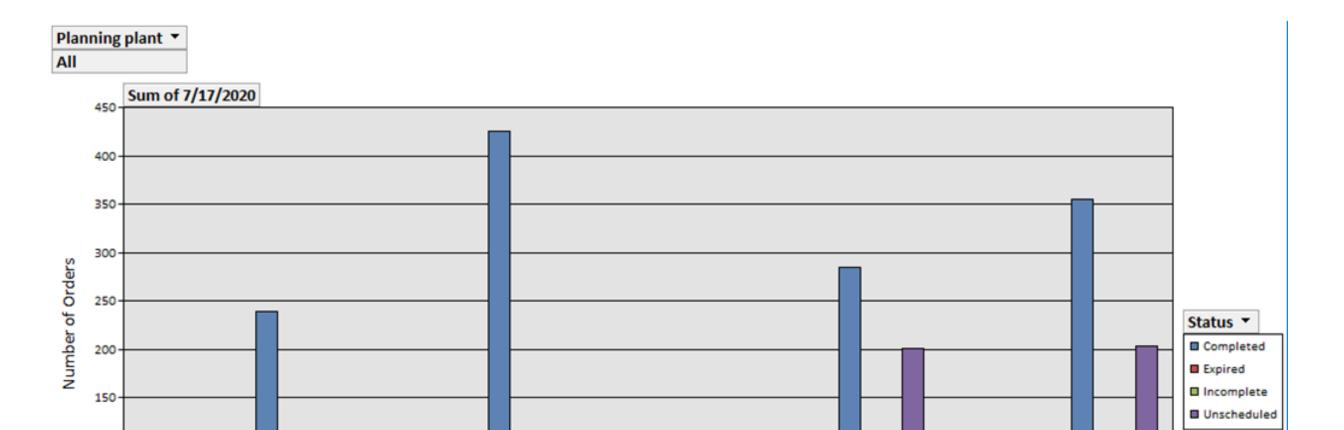






Order Type





Read

Order Type

Repair/Install

Reading Device

Stop Consec Est

Zero Usage

Read for Billing

Priority Read for

Billing

Check Meter, Verify

Serial #, Read

Change Meter

100-

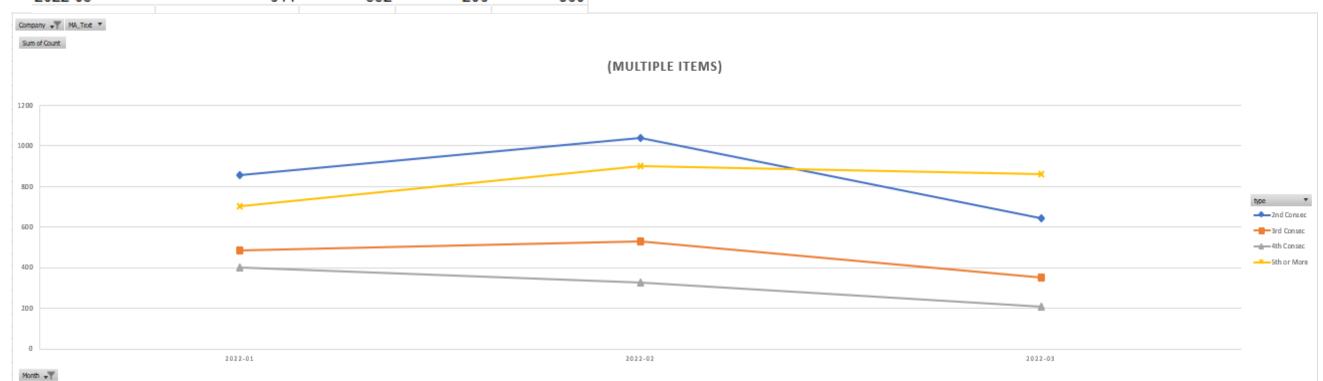
50

Back Off. Review

Investigation

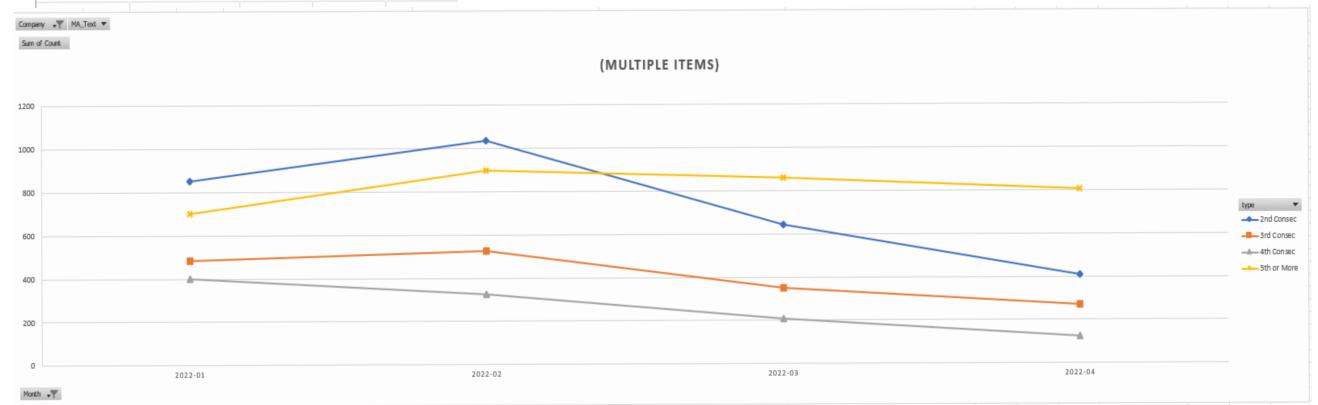
#### Trends of Consecutive Estimates March 2022

		Column Labels	ŢŢ.			
Row Labels	ŢŢ	2nd Consec		3rd Consec	4th Consec	5th or More
2022-01		85	54	484	400	702
2022-02		103	36	527	324	898
2022-03		64	41	352	206	860



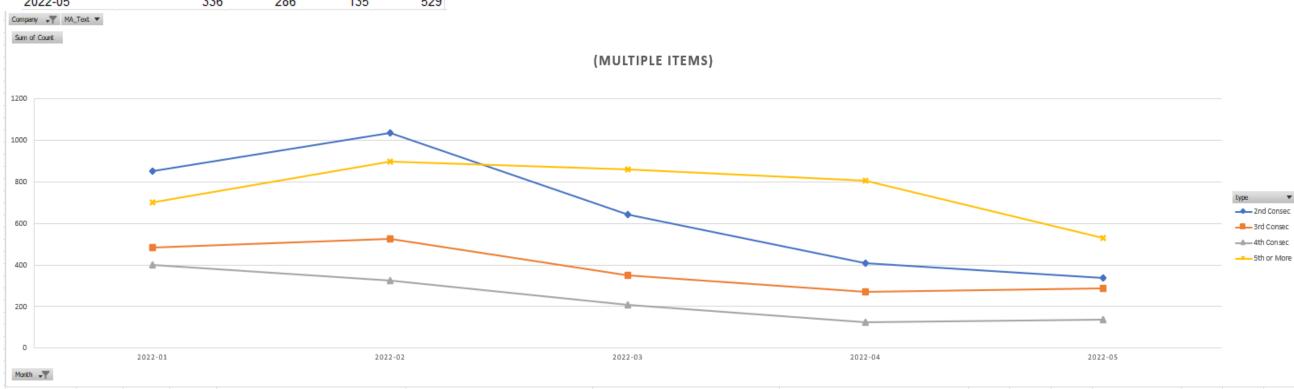
Trends of Consecutive Estimates April 2022

		Column Labels			
Row Labels	Ţ,	2nd Consec	3rd Consec	4th Consec	5th or More
2022-01		854	484	400	702
2022-02		1036	527	324	898
2022-03		641	352	206	860
2022-04		408	271	126	806



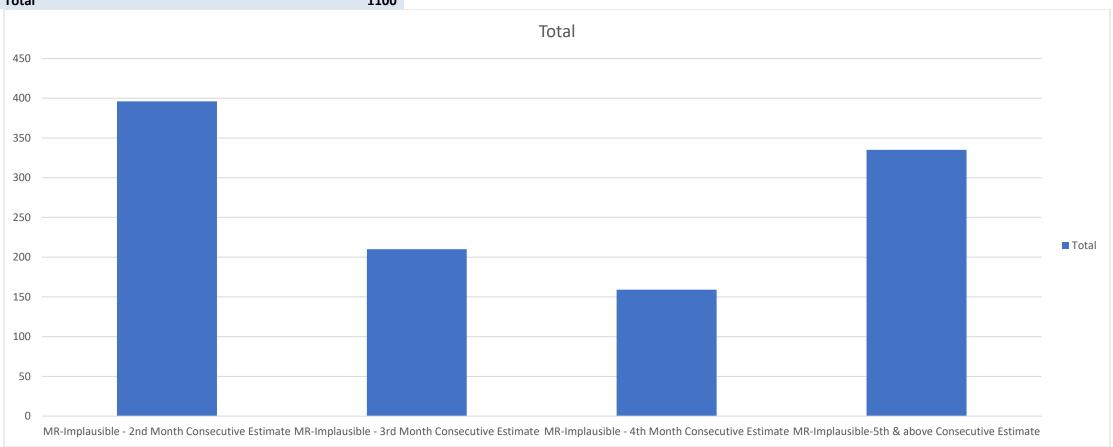
Trends of Consecutive Estimates May 2022

	nt Column Labels 🗐			
Row Labels	✓ 2nd Consec	3rd Consec	4th Consec	5th or More
2022-01	854	484	400	702
2022-02	1036	527	324	898
2022-03	641	352	206	860
2022-04	408	271	126	806
2022-05	336	286	135	529



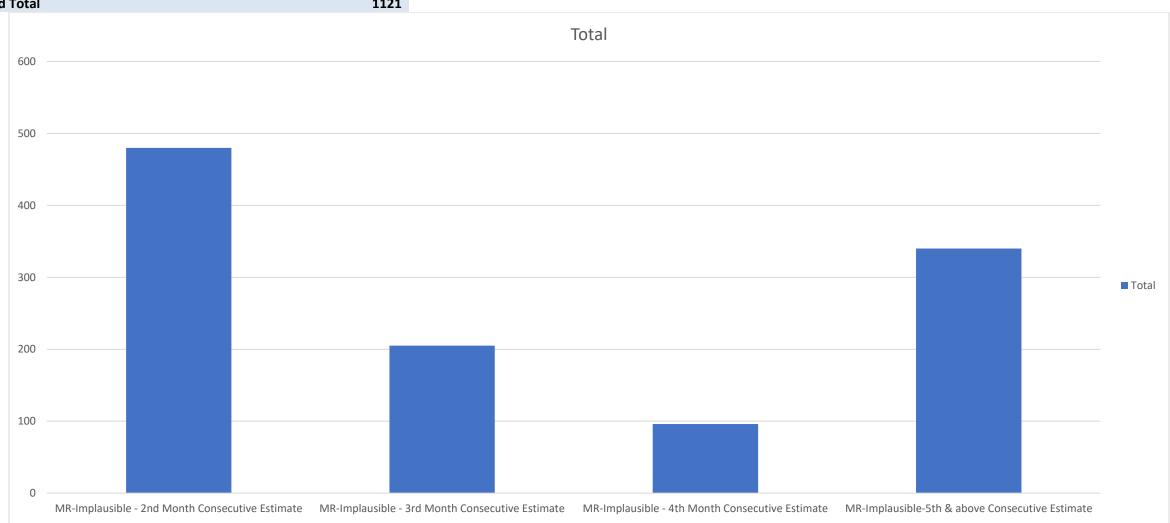
### Trends of consecutive Estimates June 2022

Row Labels	Count of Category	
MR-Implausible - 2nd Month Consecutive Estimate		396
MR-Implausible - 3rd Month Consecutive Estimate		210
MR-Implausible - 4th Month Consecutive Estimate		159
MR-Implausible-5th & above Consecutive Estimate		335
Grand Total		1100



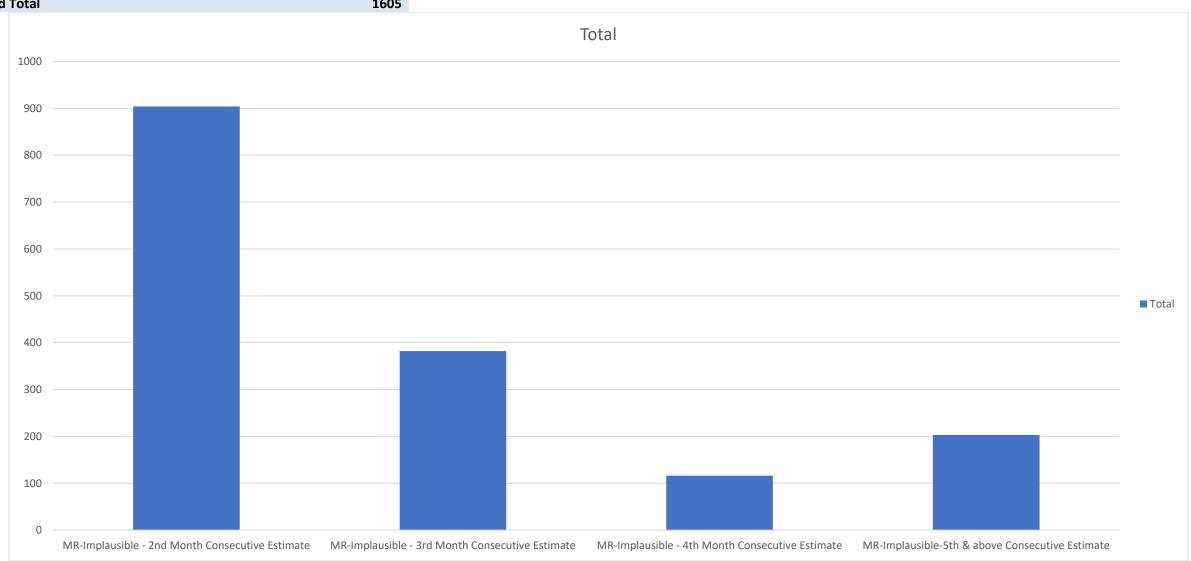
Trends of consecutive Estimates July 2022

Row Labels	Count of Category
MR-Implausible - 2nd Month Consecutive Estimate	480
MR-Implausible - 3rd Month Consecutive Estimate	205
MR-Implausible - 4th Month Consecutive Estimate	96
MR-Implausible-5th & above Consecutive Estimate	340
Grand Total	1121



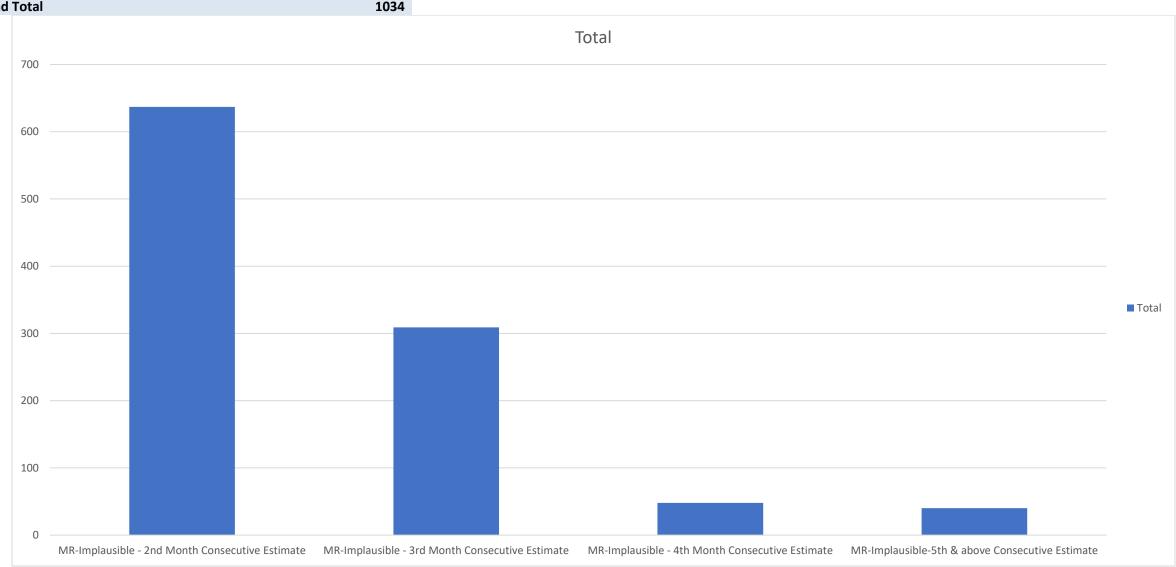
Trends of consecutive Estimates August 2022

Row Labels	Count of Category	
MR-Implausible - 2nd Month Consecutive Estimate		904
MR-Implausible - 3rd Month Consecutive Estimate		382
MR-Implausible - 4th Month Consecutive Estimate		116
MR-Implausible-5th & above Consecutive Estimate		203
Grand Total		1605



Trends of consecutive Estimates September2022

Row Labels	Count of Category	
MR-Implausible - 2nd Month Consecutive Estimate		637
MR-Implausible - 3rd Month Consecutive Estimate		309
MR-Implausible - 4th Month Consecutive Estimate		48
MR-Implausible-5th & above Consecutive Estimate		40
Grand Total		1034



#### Witness: Melissa Schwarzell and Roderick Sherman

- 2. Provide a report with the following information for each month from January 2018 through August 2022:
  - a. Number of residential customers billed.
  - b. Percentage of residential customers with an estimated read.
  - c. Newly reported consecutive estimated readings.
  - d. Re-occurring consecutive estimated readings.
  - e. Total number of meters replaced during the month.

#### **Response:**

- a.- d. Please see Attachments 1 and 2.
- e. Please see Attachment 2.

#### Witness: Melissa Schwarzell and Roderick Sherman

3. For each estimated customer billing between January 2018 and August 2022, provide the reason for the estimated reading.

#### **Response:**

There are several reasons that a meter reading might be estimated for a given period. These include the following:

- Failure to obtain a radio or manual read in the field.
  - Causes can include, but are not limited to, the following: broken equipment (either the meter, meter interface unit ("MIU"), or reading device), obstructions to the radio signal, obstructions to the meter, and inclement weather. Failure to obtain a read in the field results in a "skip code." Please see a full list of these for January 2018-September 2022 in Attachment 1. Also, please note that the ~141,000 skip codes in the attachment relate to ~7.9 million attempted meter reads, and thus represent ~18 of every 1000 reads.
- A read is obtained in the field but is not billable.
  - O A nonbillable read can be due to alphanumeric codes in the data. Alphanumeric codes can arise when a meter register dial gets stuck. A full list of the associated error codes is provided in Attachment 2. Please note, the ~34,000 error codes of this nature relate to ~7.9 million attempted reads, and thus represent approximately 4 of every 1000 reads.
  - A nonbillable read can also be due to disqualifying error codes in the data. These arise due to an interaction between the meter and MIU. A list of these is provided in Attachment 3. Please note, the ~28,000 error codes relate to ~7.9 million reads and thus represent 3 to 4 of every 1000 reads.

There are a few reasons total estimated bills may vary from estimated meter readings:

- 1) Meters can be attached to an inactive premise, and consequently there is no customer bill to be affected by an estimated read. (For example, more than 12,000 of the attached skip codes could be identified as associated with an inactive premise.)
- 2) A read may be received in the field that is estimated or problematic and the billing team may be able to work with the operational team to resolve the issue prior to billing.
- 3) A read may be received in the field and be free of error codes, but the resulting bill may be deemed implausible or outside of thresholds by the billing team. When this happens, the billing team may perform an office estimate.

#### Witness: Melissa Schwarzell and Roderick Sherman

4. For each estimated customer billing between January 2018 and August 2022 due to failure of the MIU to transmit data to the radio read receiver, or a zero usage, provide the date and time an attempt was made to manually read the meter and the reason the utility was unable to read the meter.

#### **Response:**

Please refer to KAW's response to Question 3 which explains many of the reasons that meter reads may estimate and provides three attachments with detailed information for various skip and error codes. (As seen in the response to Question 3, failure of an MIU to transmit data is just one of several causes of estimation.) These records are date and time stamped except in select cases. (Skip codes and error codes that are older than June 21, 2018 have a date stamp, but not a time stamp due to data retention activity. Alphanumeric data in field read records also have a date but not a time stamp).

In addition to the information provided in response to Question 3, which addresses KAW's efforts to obtain periodic meter reads, KAW also follows up on consecutive estimated reads with several service order types. Please see the descriptions below and the referenced attachments.

- Repair / Install Reading Device ("RID") order types. These orders can be issued in response to certain skip codes, as a result of manual effort, or due to a second consecutive estimated monthly read. If the order was worked but failed to achieve a successful result, the reasons are tracked and dated. Please see Attachment 1.
- Stop consecutive estimate ("REO" and "REC") order types. These orders can be issued due to three or more consecutive estimated monthly reads. The orders can also be manually generated. If the order was worked but failed to achieve a successful result, the reasons are tracked. Please see Attachment 2.

KAW does make efforts to follow up on zero usage reads, even though these do not generally result in estimated bills. A "Zero Usage – See if Meter Stuck" order can be generated. If the order was worked but failed to achieve a successful result, the reason is tracked. Please see Attachment 3.

#### Witness: Melissa Schwarzell and Roderick Sherman

5. Describe the steps taken by Kentucky-American since January 2018 to address the issue of the MIUs not transmitting usage data.

#### **Response:**

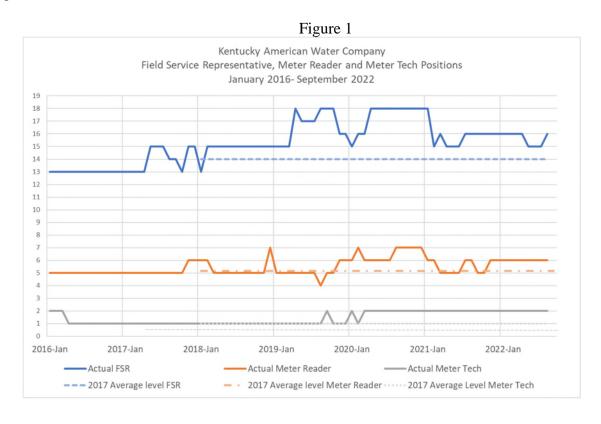
Failure of an MIU to transmit data is just one of several causes of estimation. Please see the Company's response to Question 6.

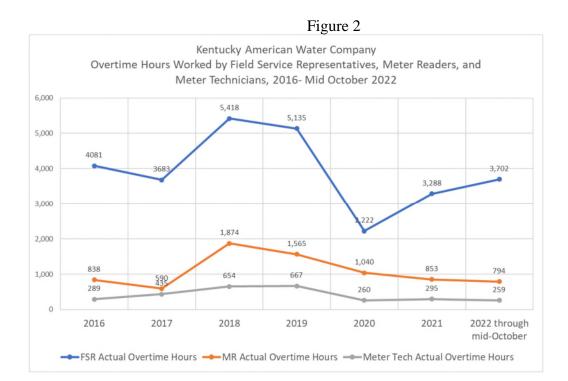
#### Witness: Melissa Schwarzell, Kathryn Nash, and Roderick Sherman

6. Describe the steps taken by Kentucky-American since January 2018 to manage the number of consecutive meter estimates.

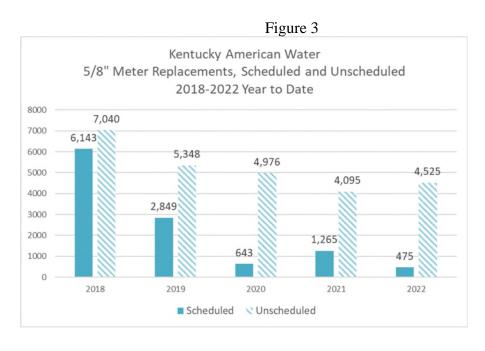
#### **Response:**

In 2018 and 2019, the Company increased the number of employees dedicated to meter reading, meter testing, and field service work, and increased overtime hours expended in these positions. Efforts focused on replacing metering equipment and obtaining missing meter reads. (Please see Figures 1 and 2).





Some of the increased labor has been focused on meter equipment repair and installation. This has resulted in the replacement of several thousand additional meters per year since 2018, beyond what was planned. These are meters that were not originally scheduled for removal, but which were no longer performing well (see Figure 3). The Company has also taken a proactive approach in addressing recent extraordinary levels of supply chain delay in metering equipment delivery. KAW is placing orders up to six months in advance to promote availability of adequate metering infrastructure supplies in the field.



In addition to the renewal of metering equipment, the Company has invested in related hardware, services, and reporting technologies to support meter reading and service order management. The Company has updated laptops and vehicle hardware related to meter reading, and it has changed wireless carriers to achieve better connectivity.

The Company upgraded its reporting capabilities to improve visibility to meter changeout and consecutive estimate data. A sample of the "dashboard" reports now available for consecutive estimates is shown in Attachment 3 to Question 1, which gives KAW the ability to provide KAW President Kathryn Nash real-time reports of the number of consecutive estimates. Dashboards have also been developed to give supervisors greater visibility to the location of their workforce, and the orders being worked within a geographic area, to allow for more efficient reallocation of resources when needed.

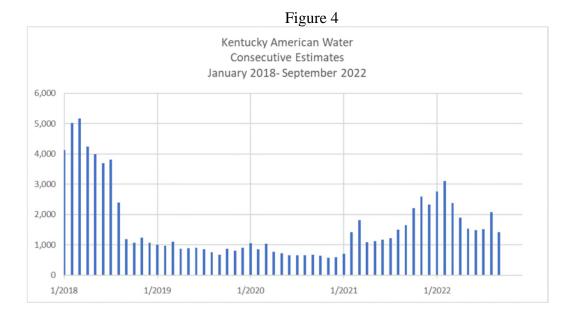
KAW supervisory staff also has worked with the Field Resources Coordination Center ("FRCC"), the dispatch team that coordinates service orders, to improve the prioritization of service orders related to consecutive estimates. As a result of that work, beginning in October 2022, service orders related to consecutive estimates receive a higher priority and will be worked more quickly.

Most recently, KAW has worked to optimize its meter reading routes. (Meter reading routes are groups of meters that are scheduled to be read in a batch each month.) KAW anticipates increased efficiencies both in how long it takes to read all meters in the system and how much travel is required to read all meters in the system. It is anticipated that the more contiguous, consolidated routes will reduce transit time and allow employees to focus more on gathering difficult reads.

The number of consecutive estimates is a lagging indicator of challenges in the meter reading process, and KAW has undertaken significant efforts since 2018 to reduce the number of consecutive estimates (see Figure 4). There has been a recent upward trend in these, however, and the KAW will continue to dedicate additional labor resources to obtaining meter reads and leverage the improved reporting, technology, process improvement,s and increased equipment renewal to further reduce the number of consecutive estimates.

3

<sup>&</sup>lt;sup>1</sup> To the extent the Commission desires it, KAW will provide the Commission periodic reports regarding estimated reads during 2023 that could include: (1) the number of first-time estimates system wide; (2) the number of recurring estimates system wide; and (3) the number of meter change outs each month.



In addition, KAW continues to evaluate planned metering equipment replacements to ensure replacement schedules align with an appropriate length of service for meters by size, given experience with the equipment in service. KAW's recent experience is that the current vintage of installed meters is lasting approximately 10 years. Approximately 80,000 of the Company's 133,000 installed 5/8" meters (the most common residential size) are imminently approaching, or have surpassed, 10 years of age. This means that a significant number of KAW's existing meters would benefit from replacement over the next 2-3 years.

#### Witness: Melissa Schwarzell and Roderick Sherman

7. Describe the steps taken by Kentucky-American since January 2018 to obtain accurate meter readings when usage data was not transmitted to Kentucky-American radio receivers during the meter reading process.

#### **Response:**

Failure of an MIU to transmit data is just one of several causes of estimation. Please see KAW's response to Question 6.

#### Witness: Melissa Schwarzell and Roderick Sherman

8. How many employee positions were dedicated to meter maintenance each month between January 2018 and August 2022 to mitigate the issue of MIU failure to transmit usage data to radio receivers. Describe in specific detail the responsibilities of each position.

#### **Response:**

Employees whose jobs are most often focused on meter maintenance include Meter Readers, Field Service Representatives, and Meter Technicians. The count of employees hired in those roles at the end of each month from January 2018 – August 2022 are as follows:

			Months										
Years	Position	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
□ 2018	Field Services Representative	13	3 1	5 15	15	15	15	15	15	15	15	15	15
	Meter Reader	(	5 (	5 5	5	5	5	5	5	5	5	5	7
	Meter Technician	:	L :	1 1	. 1	. 1	1	1	1	1	1	1	1
2018 Total		20	) 2:	2 21	. 21	21	21	21	21	21	21	21	23
□ 2019	Field Services Representative	15	5 1	5 15	18	17	17	17	18	18	18	16	16
	Meter Reader	į	5 !	5 5	5	5	5	5	4	5	5	6	6
	Meter Technician	:	L :	1 1	. 1	. 1	1	1	1	2	1	1	1
2019 Total		2:	L 2:	L 21	. 24	23	23	23	23	25	24	23	23
□ 2020	Field Services Representative	1!	5 10	5 16	18	18	18	18	18	18	18	18	18
	Meter Reader	(	5	7 6	6	6	6	6	7	7	7	7	7
	Meter Technician	2	2	1 2	. 2	. 2	2	2	2	2	2	2	2
2020 Total		23	3 2	<b>1 2</b> 4	26	26	26	26	27	27	27	27	27
□ 2021	Field Services Representative	18	3 1	5 16	15	15	15	16	16	16	16	16	16
	Meter Reader	(	5 (	5 5	5	5	5	6	6	5	5	6	6
	Meter Technician	2	2 :	2 2	. 2	. 2	2	2	2	2	2	2	2
2021 Total		20	5 2	3 23	22	22	22	24	24	23	23	24	24
□ 2022	Field Services Representative	16	5 10	5 16	16	15	15	15	16				
	Meter Reader	(	5 (	5 6	6	6	6	6	6				
	Meter Technician	2	2 :	2 2	. 2	. 2	2	2	2				
2022 Total		24	1 2	<b>1 2</b> 4	24	23	23	23	24				

The responsibilities of these positions are described below:

Field Services Representative. "FSR" performs customer service appointments, meter installation, meter removal, and initiates and discontinues service to customers. They perform work required for minor maintenance of meters and meter settings. They communicate with customers and other employees to satisfy customer requests and inquiries. They inspect customers' facilities and obtain and record data. They perform work in connection with the billing and collecting of

customer accounts. They observe and report any abnormal conditions such as unbilled accounts, dangerous meter tops, theft of service, etc. They utilize the computer and mobile application software.

- Meter Reader. A Meter Reader is responsible for accurately reading and recording
  customer meter readings. They obtain and record meter readings and data
  necessary for the billing of customer accounts. They utilize computerized hardware
  and software deemed necessary for customer billing. They communicate with
  customers and other employees to satisfy customer requests and inquiries.
- Meter Technician. A Meter Technician is responsible for repairing and testing meters. They compile and record work data. They report to their supervisor various requirements for processing adequate inventory of meters and associated material.

#### Witness: Melissa Schwarzell, Kathryn Nash, and Roderick Sherman

- 9. Provide a report with the number of service orders originated to investigate the failure of MIUs to transmit usage to radio receivers on a monthly basis between January 2018 and August 2022.
  - a. Provide the number of service orders for which the work was completed.
  - b. Provide the number of service orders that expired before the work was completed.

#### **Response:**

When KAW observes consecutive estimates (for any of the reasons identified in response to Question 3), one of three types of service orders is generally created. These include Repair / Install Reading Device orders ("RID"), Stop Consecutive Estimate Outside orders ("REO"), and Stop Consecutive Estimate Inside orders ("REC"). Please see Attachment 1 which provides a breakout by month from January 2018-August 2022 for RIDs, REOs, and RECs that were created, completed, or expired.

Per KAW's response to Question 6, the Company has undertaken significant efforts (including improved reporting, technology, process improvements and increased equipment renewal) to address and reduce consecutive estimated reads and increase service order completion.

Kentucky American Water Service Orders Associated with Consecutive Estimates REO, RCE, and RID orders, January 2018-September 2022

	2018					20	)19	2020				
Month	Created	Worked and Completed	Worked but Incompleted	Expired	Created	Worked and Completed	Worked but Incompleted	Expired	Created	Worked and Completed	Worked but	Expired
MOHUH			•			•	•				Incomplete	
Jan	3,530	422	30	3,068	2,691	597	23	2,048	966	379	34	549
Feb	4,676	561	30	4,066	2,635	402	31	2,184	695	438	24	223
Mar	4,453	1,065	45	3,267	3,000	637	42	2,297	737	588	51	50
Apr	3,497	760	35	2,579	3,294	563	37	2,680	748	459	37	25
May	2,845	878	22	1,053	3,625	588	31	2,988	599	485	58	51
Jun	3,143	419	30	2,561	3,317	567	75	1,881	658	539	84	34
Jul	2,787	1,194	47	1,526	1,528	305	49	59	893	753	84	53
Aug	2,571	1,599	84	878	593	306	39	240	924	768	91	62
Sep	1,708	702	32	962	523	182	38	170	837	665	62	103
Oct	1,333	539	28	747	719	288	24	300	513	427	42	39
Nov	1,081	152	14	902	650	294	33	317	438	371	35	32
Dec	2,369	392	17	1,944	783	276	40	466	466	363	53	48
Total	33,993	8,683	414	23,553	23,358	5,005	462	15,630	8,474	6,235	655	1,269

		202	<b>1</b>		20	22		
	Created	Worked and	Worked but	Expired	Created	Worked and	Worked but	Expired
Month		Completed	Incomplete			Completed	Incomplete	
Jan	493	199	28	263	2,584	393	30	2,119
Feb	595	192	21	380	1,953	390	35	1,475
Mar	969	248	19	698	1,292	315	29	939
Apr	860	426	22	407	1,503	441	60	981
May	822	209	25	584	988	265	47	641
Jun	789	247	12	525	1,209	221	26	944
Jul	798	172	15	608	859	210	30	568
Aug	1,063	298	36	721	1,082	673	21	351
Sep	1,027	148	25	843	1,004	484	26	494
Oct	1,464	162	20	1,269				
Nov	1,802	128	10	1,653				
Dec	1,967	235	31	1,680				
Total	12,649	2,664	264	9,631	12,474	3,392	304	8,512