

# Water Meter Management Recommendations

## Mitigation of Exorbitant High-Water Usage

### Background:

It has been reported by users and validated by the City that some accounts have significantly high or low meter reads that are suspected errors in the meter (internal to the meter intermittent failure) or in loss of bits in the consumption data transfer. The City has previously taken the position to flag the highest 25 consumption accounts to proactively contact that user may have a leak. When users complained about high water bills (often in 10,000 gallons of usage); City response is that user had a leak. If no leak was identified, most often, no adjustments were made, and the user was offered a payment plan. The Utility Billing Ad Hoc Committee has investigated the meter technology and reviewed the City provided data that indicates that meter errors or data errors are affecting a small number of accounts each meter read cycle with errors both high and low. While a small number of the total accounts, this is one issue that is driving significant loss in confidence in the Utility Billing Department among the citizens of Pearland.

### City Provided Data:

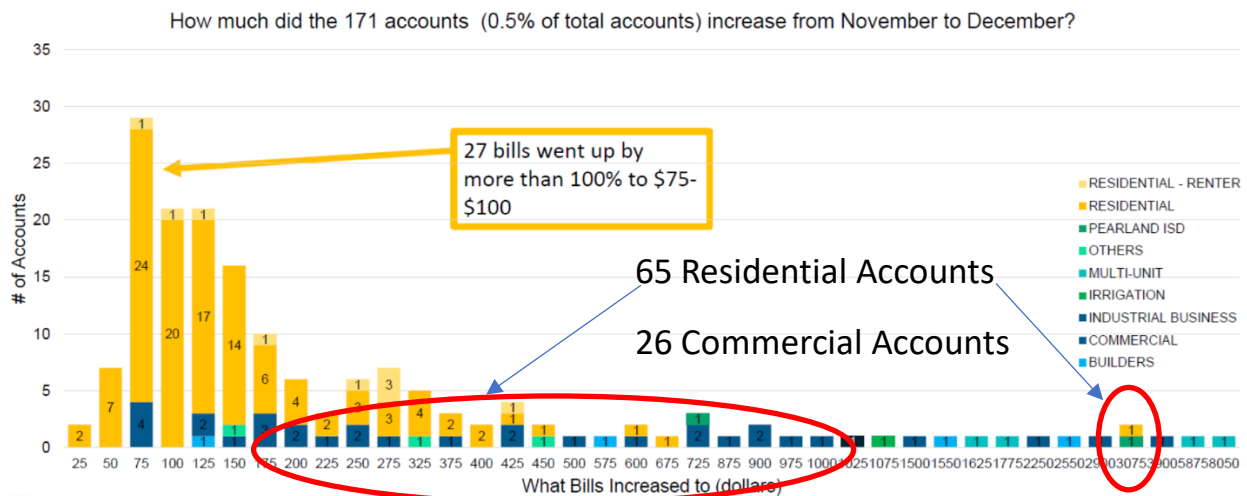
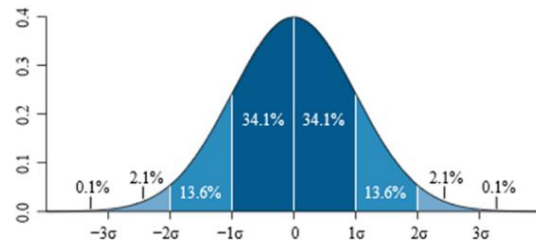


Figure-1 Amount of Increase for Accounts That Increased by 100% for the investigated Two Month Period

From the City Utility Billing Analysis: 32/30 and Unbilled Arrearage presentation, the following number of accounts had to have “adjustments” to account for meter data errors:

- “There were 141 (0.18%) out of 77,938 bills with a negative consumption figure”
- “23 (0.03%) out of 77,938 bills had abnormally high consumption”

## Recommendations:



1. Recognize the reality that the current meter technology and data management can potentially have a small number of accounts to have errors – both high and low. City metering and billing processes MUST reflect this fact and mitigate such errors.
2. As temporary – interim mitigation actions:
  - a. Expand the flagged accounts past top 25
    - i. > 50% increase ???.... And
    - ii. More than \$150 dollars???
    - iii. Certainly, ask about a large usage – fill a pool, etc.
  - b. Immediately implement a policy, that if a high usage event is flagged - complaint, to bill at some estimated usage (the average of the last three previous meter readings, etc.)
    - i. Do this until the long-term mitigating actions made below are implemented
    - ii. Based on the provided data, this is only a small fraction of the accounts – not a significant dollar amount - ~\$36k for the two months evaluated
3. City has historical account usage data.
  - a. Using past water usage; implement a data historian (data warehouse) to:
    - i. Do a rolling retrospective water usage analysis going back ~5 years if possible
    - ii. Execute mean and standard deviation analysis (seasonally adjusted – average rainfall for the month, degree days, etc.)
    - iii. Utilize the historical usage to determine if the current meter reading is within the statistical range (two or three standard deviations)
    - iv. Utilize this information by providing historical usage plots and data via the new AMI portal
      1. Require the AMI portal to report the account analysis with the ability to download the actual data
      2. This will enhance City transparency and fosters customer confidence in the meter and billing processes
  - b. IF a high usage meter failure event is detected
    - i. Communicate to customer the consumption issue and pursue investigation as to what may be occurring (fill pool, leak, etc.). If no cause can be identified, then:
    - ii. Bill at the historical mean for the reporting period – seasonally adjusted
    - iii. Flag the meter as suspect and immediately remove the meter if a second failure is detected and return to Badger as a bad meter – change out with new meter – Warranty Claim
  - c. All these actions are executed by the meter reading system and ONLY confirmed good data is loaded for billing

Highlighted text indicates values that need to be decided upon by Staff and Committee.