

Leaking Water = Leaking Pockets: A Consumer's Guide to Water Meters



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Abstract

Water meters have been present in the homes of Philadelphia residents for years. However, a significant amount of Philadelphians are unaware of how to accurately read their meters. This raises a concern for both residents and the City, as water leaks continue to go unnoticed, when they could easily be detected simply by reading one's water meter. Leaks result in higher monthly water bills, and it is important for residents to learn how to read their meters in order to avoid unnecessary costs. The purpose of this project is to create an instructional video for the City of Philadelphia titled, "Leaking Water Equals Leaking Pockets," that explains how to read a water meter and understand a water bill, for the benefit of Philadelphia residents. The goal is to raise awareness of this issue with the use of the video and supplemental informational brochure, to promote water conservation, and protect Philadelphians from the financial burden of a costly water bill due to an unnoticed and preventable leak.

Introduction

Locally, water meters have been present in the homes of Philadelphians for years, yet many residents do not know how to read and interpret their meters. Our team was presented with the task of developing an informational video relating to the use of water meters. The goal is to create a video that provides the relevant information in a format that is easily understandable and accessible for everyday consumers. The main issue is that many residents discover their water bills have increased, but are unaware of how to look into the problem prior to contacting the Philadelphia Water Department or Water Revenue Bureau. During our research process, we identified a correlation between checking one's water meter and the ability to determine if there is a leak in the home. As a result of these findings, our group created a YouTube video and supplemental brochure, to not only explain how to find and read a water meter, but also how to interpret a water bill and tell if there is a leak. Creating and advertising an instructional video could increase overall effectiveness, as the use of visuals as instructional material "decreases learning time, improves comprehension, enhances retrieval, and increases retention" (Bushman, 2012).

It is important for consumers to have the ability to access and interpret their water meters, in order to gain a better understanding of how to conserve and monitor water usage, detect leaks, and keep track of their monthly bill. Our video generally explains the purpose of a water meter, which is essentially a device "used to measure water volume, and the flow control" of water flowing from public water sources into an individual's home (doityourself.com, 2014). The most common leaks are household leaks such as faucets, showers, and toilets. However, there are other leaks that include pools, plumbing pipes, and irrigation systems that play a factor into hefty water bills. The EPA explains that faucets can drip at the rate of one drip per second,

which in turn can waste more than 3,000 gallons of water a year (EPA, 2014). When standard readings are completed by a city representative, an Automatic Meter Reading (AMR) device is used to read a customer's water meter using radio waves. This may be convenient for city officials, but regular citizens do not have access to devices such as AMR to help them read their meter. In the event that an AMR is not installed in a person's home, the customer is either left to rely on a city representative, read the meter on their own, or receive an estimate of their water bill based on previous water usage and water meter size (Philadelphia Water Revenue Bureau, 2014). In some instances, water consumers do not know where their water meter is located and have to wait for a city representative to perform the reading, which is troublesome since these visits may take time to occur, and would require the representative to locate the water meter within the customer's home (Philadelphia Water Revenue Bureau, 2014). An estimated water bill may be sent if both the consumer and city representative are unable to locate and read the meter. However, a possible downfall to using an estimate is that customers may unknowingly have a leak in their home, which would result in a significantly higher water bill than what the estimate shows. It is important to educate the public on how to find a leak in their home because without this knowledge, consumers may be overcharged on their monthly bill and will unknowingly pay for water they did not use. After speaking with Debra McCarty, Deputy Water Commissioner and Director of Operations with the Philadelphia Water Department, our group found that within the week of July 14, 2014, 74.1% of calls were relating to billing, 4.2% related to leaks, and 3.2% were directly related to water meters. As a result of this, we dedicated a portion of the video towards helping homeowners interpret their bills.

Additionally, homeowners should be able to properly interpret their water meter, find a leak, and read their bill, to increase self-sufficiency among the public. Although the Philadelphia

Water Department and Philadelphia Water Revenue Bureau have been able to effectively carry out their readings and calculations, we feel that it is important to get homeowners involved and informed about the process to create a uniform understanding between municipal services and the public. For example, if a homeowner manages to locate their water meter, it is important that they understand that one cubic foot approximates to 7.48 gallons of water, so that they can understand the amount of water being used within their home and can better understand the charges made by the Philadelphia Water Revenue Bureau on their monthly bill. Some water meters have “low flow” dials that will spin, indicating that a leak is present somewhere within the household, which would allow homeowners to discover for themselves why their bill may be unusually high (EPA, 2014). With this knowledge, homeowners will be able to utilize the information presented in our YouTube video and brochures to interpret their water meter, correct a leak, and read their bill more accurately.

Problem Statement

The City of Philadelphia’s Water Revenue Bureau has determined that many Philadelphia residents are concerned about the abnormally high usage values seen on their water bills. As a result, many residents felt they were overpaying on their monthly bills and lodged complaints with the Water Revenue Bureau. One of the main reasons for unexpectedly high water bills is the existence of a leak. According to the EPA, homeowners can save approximately 10% on their water bills by simply discovering and correcting a leak. The amount of water wasted annually as a result of undetected leaks averages to around 10,000 gallons, and nationally more than 1 trillion gallons of water are wasted each year (EPA, 2014). Many residents do not know that they can check for a leak simply by reading their water meter each month. Therefore, the Water Revenue Bureau determined that an important step towards helping

residents maintain control of their water bills is to teach them how to read their water bills in conjunction with their water meters to determine if there is a leak in the household.

Teaching Philadelphia residents how to read their water meters is extremely important. It empowers Philadelphians to partake in the water billing process. By teaching residents how to read their water bills and water meters, they can be sure that the Philadelphia Water Department is not overcharging them, and will know who they can contact if they have concerns. The hope is that residents will continue to pay their water bills on time and feel that they are receiving stellar customer services from the Department or Revenue and Philadelphia Water Department. Moreover, teaching Philadelphia residents how to read their water meters and water bills provides an opportunity for city officials and residents to interact with one another, fostering a reciprocal relationship between government and its constituents.

Teaching residents how to find a leak by reading their water meter is also important for water conservation. Many environmentalists argue that there is an impending water crisis due to climate change, and water conservation efforts are necessary to prevent this from happening (EPA, 2013). Given that leaks are the most common cause of wasted water, Philadelphia can make great strides towards environmental conservation by teaching residents how to read their water meters.

Proposed Solution and Execution

To address this issue, the City of Philadelphia asked our group to create an instructional video detailing how to read a water meter, and create a corresponding informational brochure. We determined this to be the most effective way to convey the information, as the instructional video serves as the “training media,” that communicates our primary message to citizen viewers,

while the brochure serves as the “instructional aide,” reinforcing the information and ensuring the target audience will receive and understand the message (Dynamic Flight Inc., 2007).

First, the most relevant information about water meters was compiled, such as what a water meter is, what it does, and how to read it. This information was then condensed into facts and statements, and incorporated into our video script. We decided a “Question and Answer” format would work best for our instructional video, with the “questioner” portrayed as a Philadelphia resident to gain credibility and make it relatable for consumers. When composing the script, succinct, easy-to-understand statements were incorporated, since our target level of comprehension is for a viewer at a sixth-grade educational level. These guidelines were selected because the goal is for the video to be applicable to the broadest possible range of citizens. Studies show that using video-based instructional materials results in more “superior craftsmanship” than print materials (Donkor, 2010). We incorporated an easy-to-read brochure to make sure the information is also available in a written format, and to reinforce the messages presented in the video. In 2012, around 55% of Philadelphians did not have access to the internet in their homes (Kirk, 2012). As a result, our group felt it was important to have this information available in an alternate medium, for citizens without internet access, who would otherwise have difficulty educating themselves on the subject.

Group Challenges and Limitations

Our team encountered several challenges throughout the process. First, we discovered that there are numerous types of domestic water meters in Philadelphia homes, including but not limited to: displacement water meters, turbine water meters, velocity water meters, and electromagnetic and ultrasonic water meters (doityourself.com, 2014). Each water meter

requires different instructions for reading, so writing a universal script was difficult as we could not address each type of water meter present in Philadelphian's homes. Additionally, water meters are located in various places inside or outside of homes: in basements, underneath kitchen sinks, in common areas above doors, underneath sidewalks or other pavements (California Urban Water Conservation Council, 2009). The variability of water meter locations made it difficult to accurately instruct residents on where to find their meters. To remedy this problem, we addressed the situation by stating that residents may have a different type of water meter than the one featured in the video, and recommended they contact the Philadelphia Water Department for further assistance.

Scheduling conflicts and last minute changes in filming location presented additional challenges for the group. We had difficulty attempting to rearrange the filming construct, and trying to adjust the change of location. The new location also left the group with a lack of resources to film the video. Lack of research, miscommunication, and location issues all contributed to a delay in the filming process. Another obstacle was finding the research and statistics revealing how many residents have each type of water meter, call the Water Revenue Department about their water bills or meters, or how many residents feel confident in locating and reading their water meters. We initially relied on the Internet, but this was ineffective because the information available online is very limited. As a result, the group sought out an alternate means of acquiring information by contacting the Philadelphia Water Department. Fortunately, we obtained the correct contact within the education department of the Philadelphia Water Department. However, due to the volume of phone calls, it was difficult to get in touch with the Water Department. We eventually received a response, and an interview was conducted with Debra McCarty, Deputy Water Commissioner and Director of Operations with the

Philadelphia Water Department, to gather more statistics. The group decided to primarily rely on the Internet resources in order to prevent further delays and complete the project on time.

The next challenge was securing quality video footage of an actual water meter. As previously discussed, water meters can be located in various places depending on the home. The group had originally planned to use a water meter prop provided by the Water Revenue Bureau, which was no longer available for the group at filming time. Instead, we filmed at a newly constructed apartment building with a water meter in the basement, but given that it was an apartment building, we were unable to completely turn off the water of the building and demonstrate the leak test. Since we were unable to provide an actual visual of the leak test, we chose to explain it to the viewers while diagramming what a leak test should look like when properly performed. Through swift and collaborative thinking and outstanding creativity, the group was able to complete a successful video shoot.

Finally, each individual member of our group did not have prior experience with script development and video making. However, despite our collective inexperience, we were able to draft a creative script based on our research, and utilized movie making programs to assist in the final video production and editing. Overall, we feel confident in our “Leaking Water Equals Leaking Pockets” Water Revenue Bureau video.

Conclusion

This was a valuable learning experience in project development and implementation, and gave our group the opportunity to collaborate on the development of a solution to a legitimate issue affecting the City of Philadelphia’s residents. Although there were challenges present throughout the process, our group was able to successfully brainstorm and utilize our resources

and abilities to overcome these obstacles. We are confident in our video, “Leaking Water Equals Leaking Pockets” as an effective educational tool for Philadelphians to learn how to accurately read their water meters, and eliminate the financial burden of a costly bill due to an unnoticed leak. Philadelphia residents will also gain the knowledge to better understand and interpret their monthly water bill, information that is also important for correcting a leak and conserving water. Our supplemental brochure will reinforce this information and provides an alternate means for accessing this information, especially important for residents without Internet access. Overall, our project was a success, and we are hopeful it will be utilized to benefit the City of Philadelphia and its residents.

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