Gwinnett County Non Revenue Water Pilot Project

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Gwinnett County NRW Pilot

Non-Revenue Water

What is it: water for which utility receives no revenue (leaks, inaccurate meters, theft)

How big is it: Worldwide utilities lose $14 B, $8.8 B in US

- For a small utility in the US: $1.6 M/yr, large utility: $62 M/yr

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Project Goal

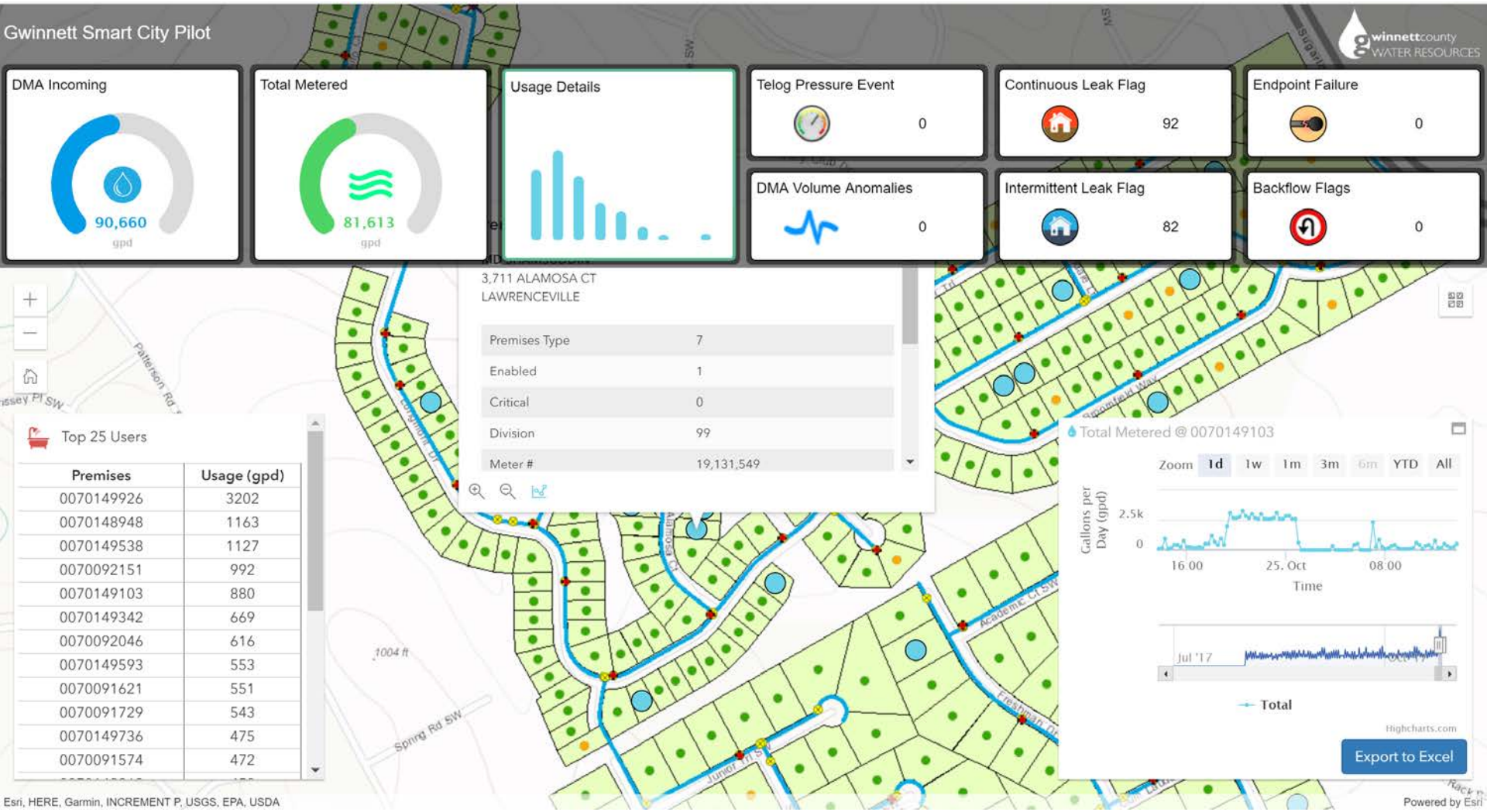
Develop a replicable cost-effective solution to reduce the amount of non revenue water (goal of 50% reduction) using advanced IoT sensors, real-time analytics, and visualization

- Demonstrate cellular technology solution
- Identify root causes for NRW (pipeline breaks/leaks, bad meters, theft)
- Reduce utility water loss
- Reduce customer water loss
- Improve resiliency and security
  - Backflow detection
  - Meter tampering

Project Benefits (Initial 4 months)

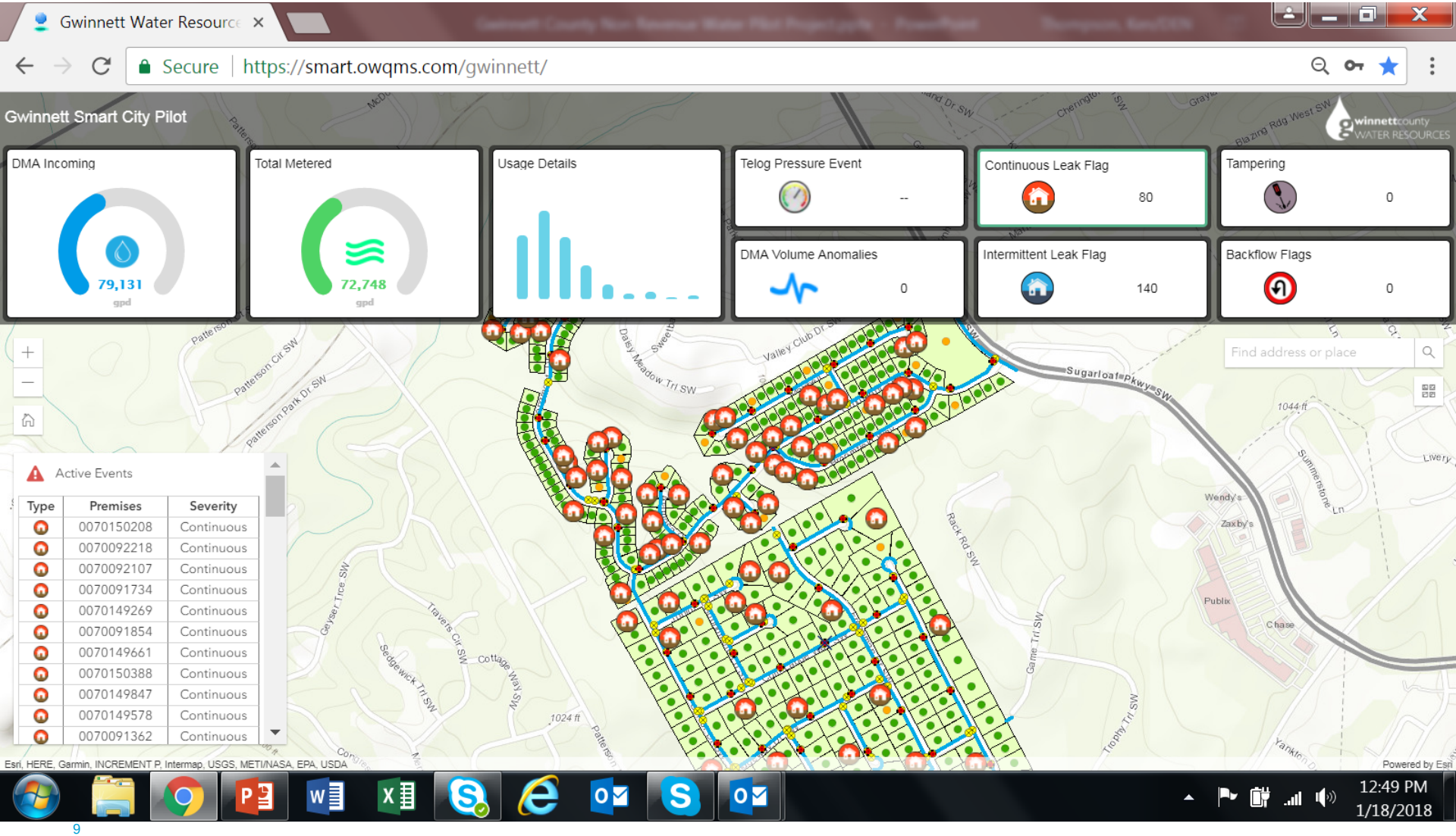
- Customer Benefits
  - Reduction of customer leaks and water losses for 9 customers.
- Operational Benefits
  - ***Zero cellular chip failures (100% reliability)***
  - Real time identification of improper valve opening incident
  - Real time identification of three backflow incidents (Hot water heater expansion)
- Environmental Benefits
  - Reduction of water extractions associated with water savings

Real-time NRW Dashboard



Detection of Valve Opening

Dashboard and Continuous Leak Reporting



Customer Internal Water Loss Process

For each of the continuous flows incident, GCDWR goes through a process to contact the customer. That process includes:

1) Evaluating historical billing (both from water usage standpoint and if they have any history of customer calls / complaints or being late with their payment.

2) They look to see if it is a renter or owner.

3) They call the customer

4) They send someone out to the meter to;

a) Manually read it

b) Visually inspect the area to ensure they don't see any issues

c) Talk to the customer.

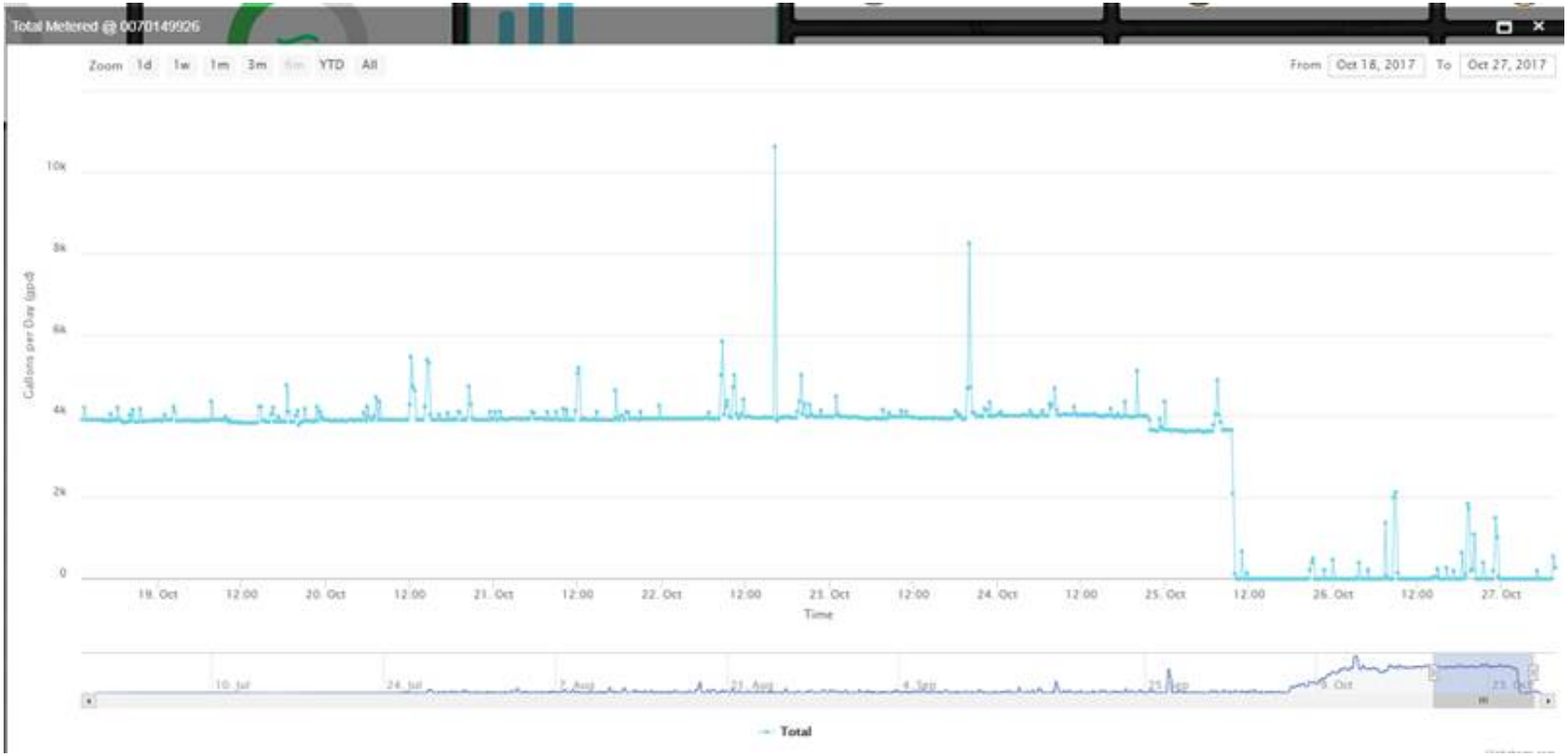
5) They may also put doorhangers or provide dye tablets based on the amount of flow and if the customer is interested.

6) They are working through how they will provide educational materials to equip their customers on how to identify and correct a potential leak.

Customer Internal Water Loss Incidents

Type of Issue	Amount of flow (gpd)	Begin Date	Resolution	date
Continuous Flow	1200	1/7/2018	shut off service	1/12/2018
Continuous Flow	3600	11/18/2017	resident corrected	11/21/2017
Continuous Flow	400	from start date	resident corrected	12/13/2017
Continuous Flow	4000	10/7/2017	resident corrected	10/25/2017
Continuous Flow	1000	from start date	resident corrected	10/13/2017
Continuous Flow	2000	1/9/2018	resident corrected	1/12/2017
Continuous Flow	80	10/27/2017	resident corrected	
Continuous Flow	1700	10/20/2017	resident corrected	10/31/2017
Continuous Flow*	3200	10/29/2017	resident corrected	11/1/2017
Continuous Flow	80	from start date	unresolved	
Continuous Flow	6500	1/25/2017	unresolved	
Continuous Flow	200	from start date	unresolved	
Continuous Flow	500	1/10/2017	unresolved	
* 2 issues - 1 corrected on 10/31 and the other on 11/1				
** We can look up individual start dates to fill those in.				

Identification and Reduction of Customer Water Loss



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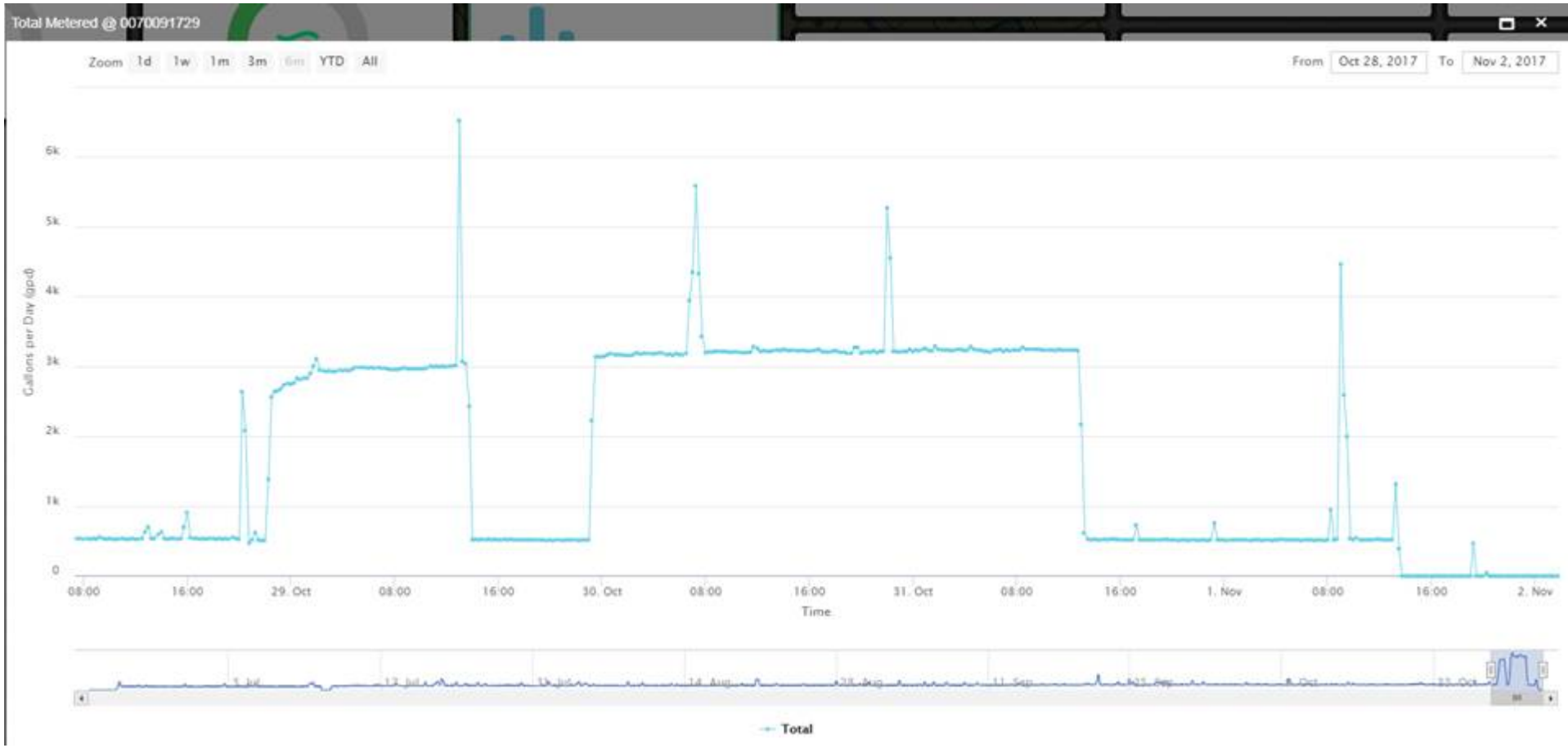

Future Pilot Project Activities

- Installation of final 25 Cellular Meter Interfaces
  - Complete DMA water balance and implement forecasting algorithms
- Installation of DMA pressure reducing valve
  - Optimize system pressure to reduced customer side leaks
- Conduct fire hydrant flow tests
  - Simulate a water theft incident
  - Simulate a pipeline break incident
- Develop backflow algorithm
  - Develop low risk and high risk alarms
- Complete Pilot Program Assessment

Wrap-up

Water Saved: The water saved from the nine customers that have fixed the internal plumbing problems equal 4.8 Million annually if it had not been corrected. The is enough water for 44 households for a year.

Public Support: The use of this application developed for GCDWR has provided very favorable support from the public.

Cellular Approach: The cellular approach has had ***zero*** downtime and has provided an extremely robust IoT communications platform.

System Expandability: The system has been designed to allow expansion into a full scale system

National protocols: Worked with GCDWR and EPA to develop national protocols to respond to metering tampering and back flow events to improve security and resiliency

Questions

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