

Lanai Water Company

Smart Meter Impact

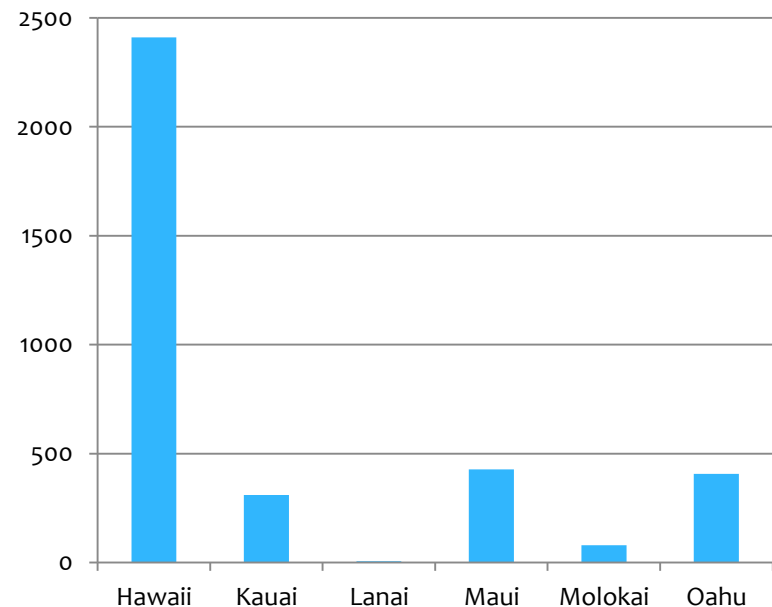
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Lanai Utilities

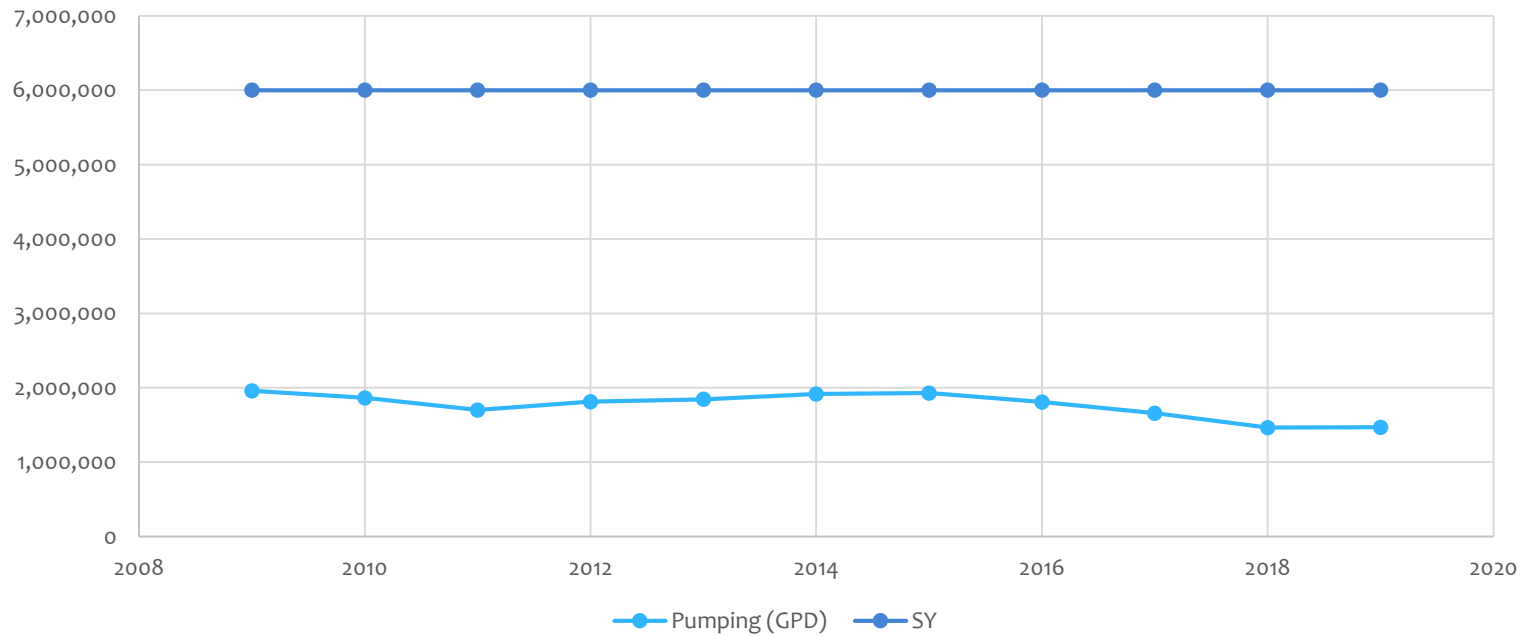
- * Covers approximately 13 sq. miles of the island
- * 9 wells – 4 irrigation and 5 drinking water
- * Storage – approx. 3.5 MG drinking water, 15 MG brackish water, 3 MG storage R1 at Manele and 11 MG R1 storage in City
- * About 77 miles of active pipeline
- * Sustainable Yield of 6 MGD

Sustainable Water Yield MGD



Sustainable Yield and Pumping Rates

Lanai Water Pumping & Sustainable Yield (GPD)



Conservation Planning

- * Majority of the meters on the island were installed in the late 80's or had vastly exceeded their anticipated useful life.
- * Legacy utility billing system.
- * One of the largest utility customer irrigation system experienced numerous breaks.

Conservation Planning

▣ Real Losses



▣ Apparent Losses



- * Apparent Losses
 - * Legacy Utility Billing System
 - * Majority of meters exceeding useful life
- * Real Losses
 - * Manele Golf Course Irrigation System
 - * Distribution System
- * Evaluate what our real and apparent losses were

Lanai Water Company (LWC) Goals

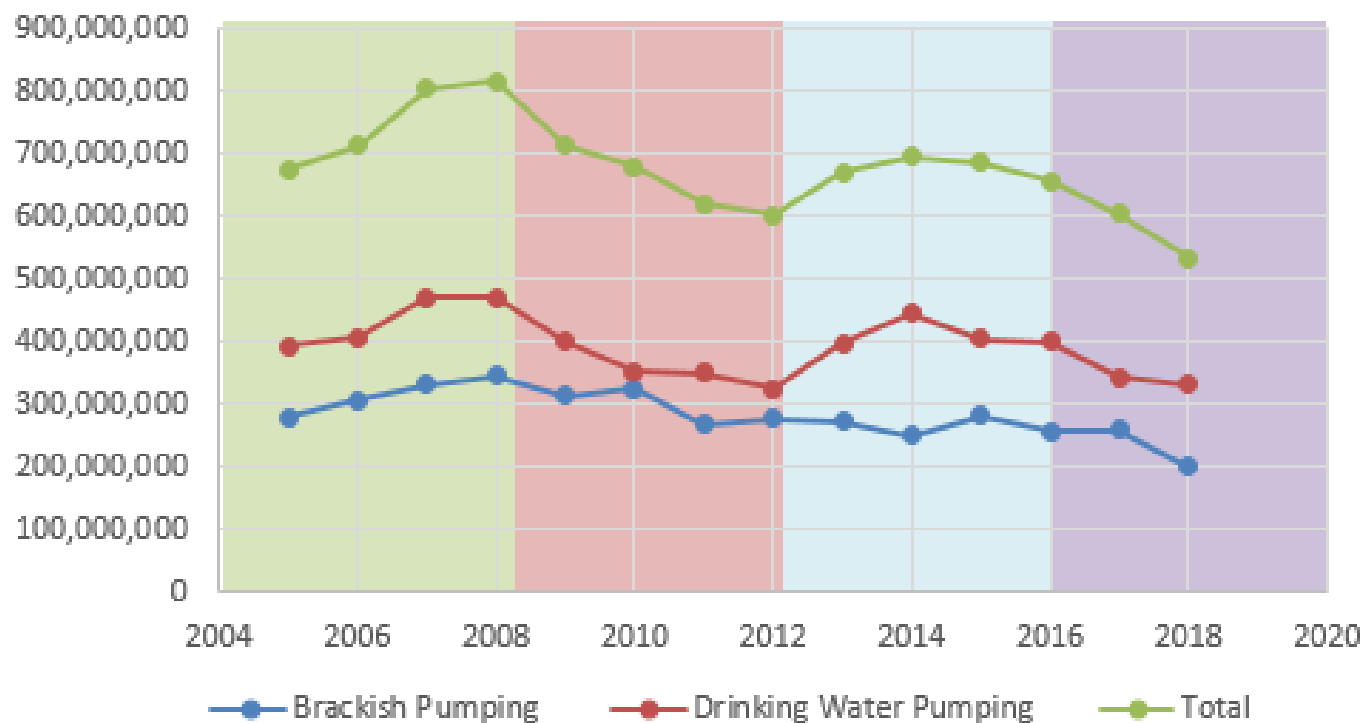
- * Improve Information
 - * Notification to consumer & LWC of leaks
 - * **Provides more information to customer on water use**
- * Customer Service
 - * Helps to resolve billing discrepancies positively with customers
 - * Accurate and timely billing
- * Reduce non-revenue water
 - * District Metering
 - * Water Loss Audit
 - * Save WATER!
- * Improve our business model
 - * Electrical costs of pumping water from deep wells

Recent Conservation Actions

1. Replaced the irrigation system at the Manele Golf Course
2. Replace all of the island's water meters with smart meters (currently at 95% changeout) and replaced the utility billing system.

Impact of Conservation Efforts

Lanai Water Pumping Rates



Impact of Conservation Efforts

Estimated Water Savings

- * Brackish Water \approx 45 M gal/year
- * Drinking Water \approx 45 M gal/year

Weather is a large factor on water use.

- * 2018 was a wet year.
- * 2019 Lanai has largely been either drought or abnormally dry conditions and we are on track to be consistent with 2018 pumping rates.
- * Based on current use patterns the savings of a 90 M gallons/year appears to be conservative.

Cost of Water Delivery

- * Labor
- * Materials and Supplies
- * Electrical/fuel costs to pump
- * Chemical
- * Capital Expenses
- * Etc. Etc.



Power cost and
Disinfection costs
approx. \$1.83-\$1.90
per thousand gallons
of water pumped.

Conservation Business Model

* Brackish Water

≈ 45 M gal

-33 M gal golf course
improvements

≈12 M gal saved with smart
meters

Variable Cost Savings Annually
of approx. \$23,000.

* Drinking Water

≈ 45 M gal saved with
smart meters

Variable Cost Savings

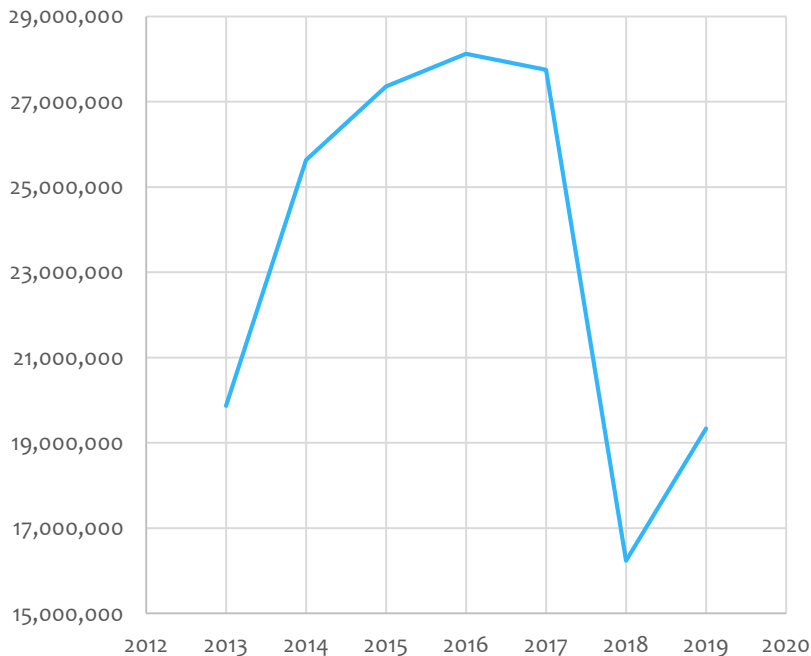
Annually of approx. \$82,350

Conservation Business Model

- * Estimate variable costs savings of about \$105,000/yr. so far
- * 95% of meters on island changed out to smart meters
- * Only 30% of meters with leaks have adopted Eye on Water which provides leak notification.

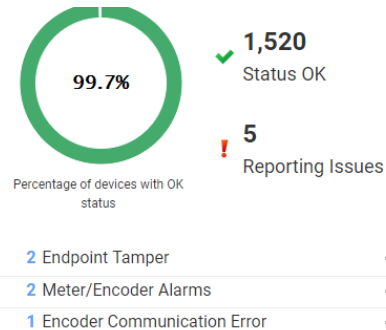
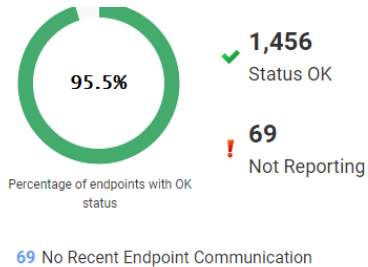
Impact of Smart Meters

Brackish Roadside Irrigation
2019 Projected based on half year use



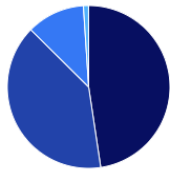
- * Brackish Meters – Approx 9M gal annually saved by changing out 14 roadside irrigation meters.
- * Drinking Water - Some large impact customers but largely a lot of smaller changes and responding to leaks sooner.

Smart Meter Implementation



Flow Health

All Meters ▾



Breakdown of flow anomalies. Click on arrows for details.

System Water Usage

Weekly Usage (Gallons/Week)*

* This metric is calculated from networked meters only.



This Week

29,758K Gallons

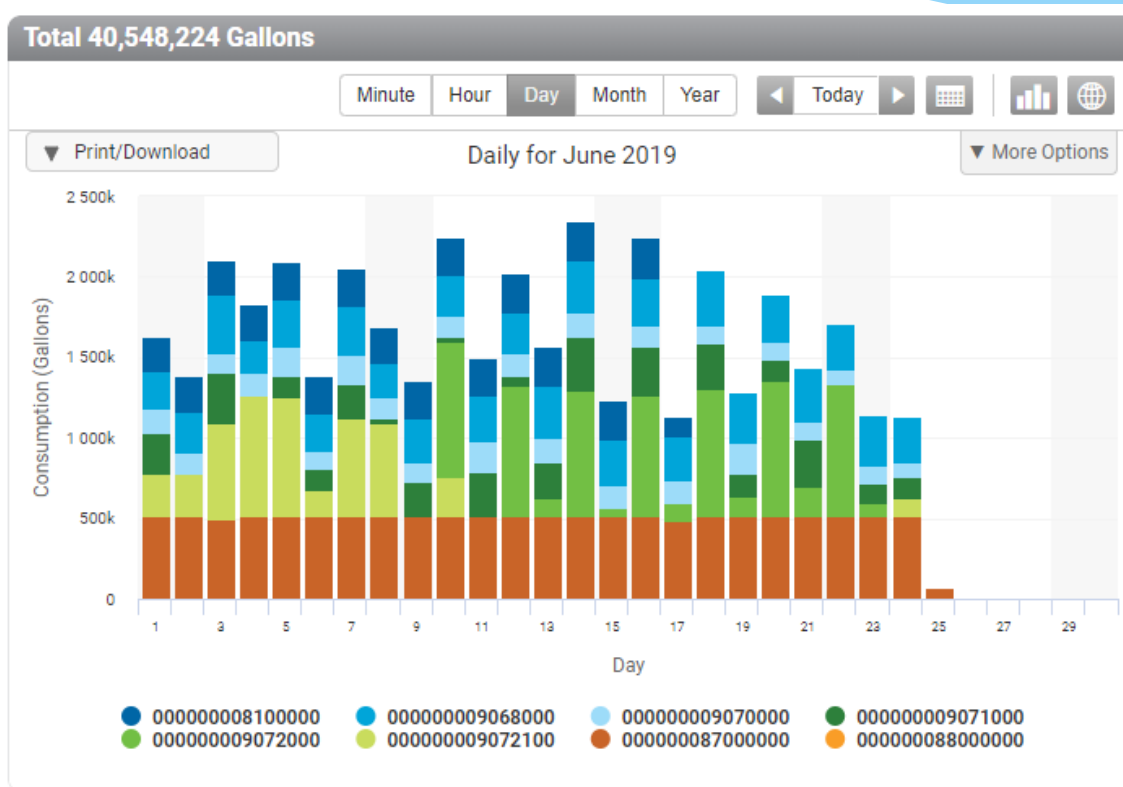
Last Week

32,161K Gallons

▼ 7.473 %

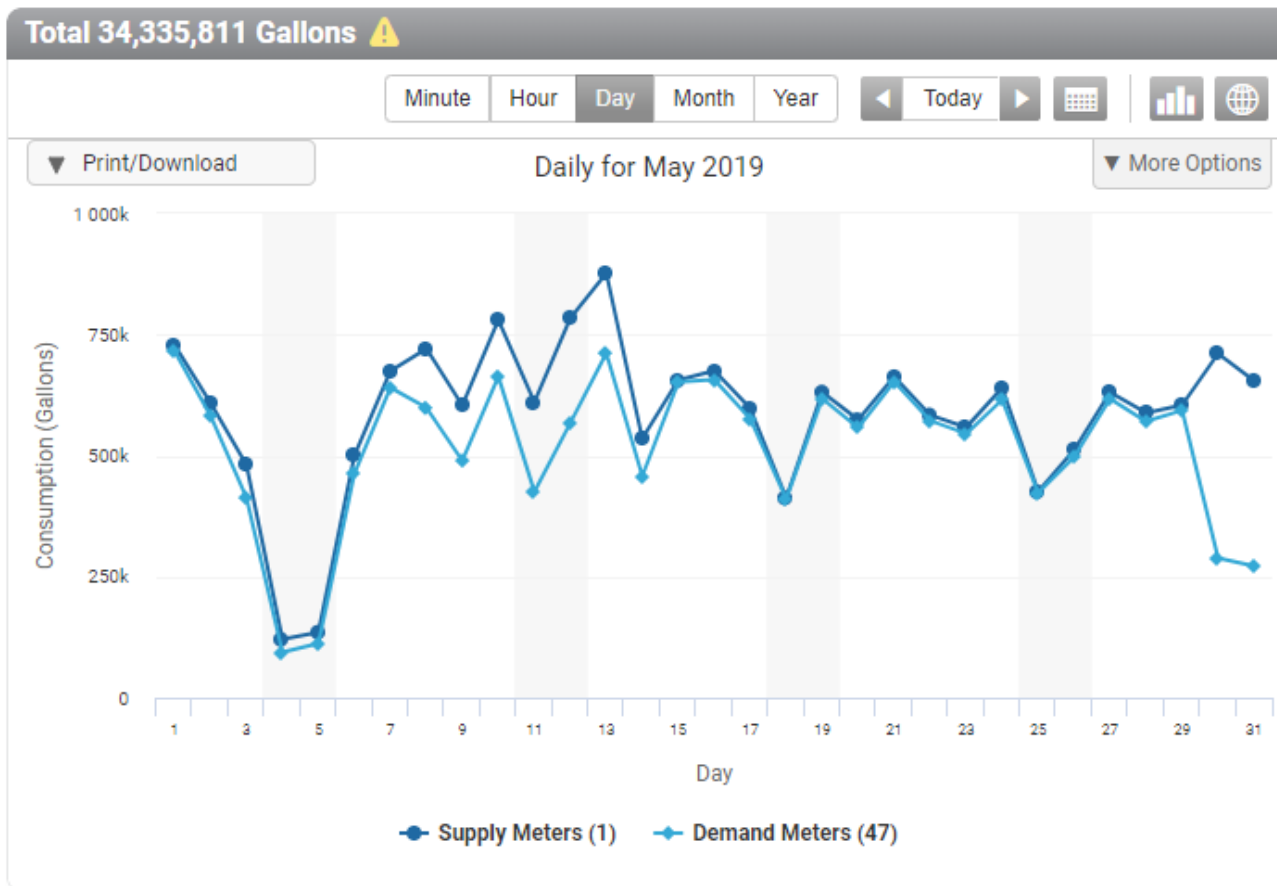
- * Check the dashboard daily.
- * Review the customers with leaks and nudge customers to respond.
- * Eye on Water Account?
- * Leak Alert set?
- * Phone calls/email/letters

Smart Meter Implementation

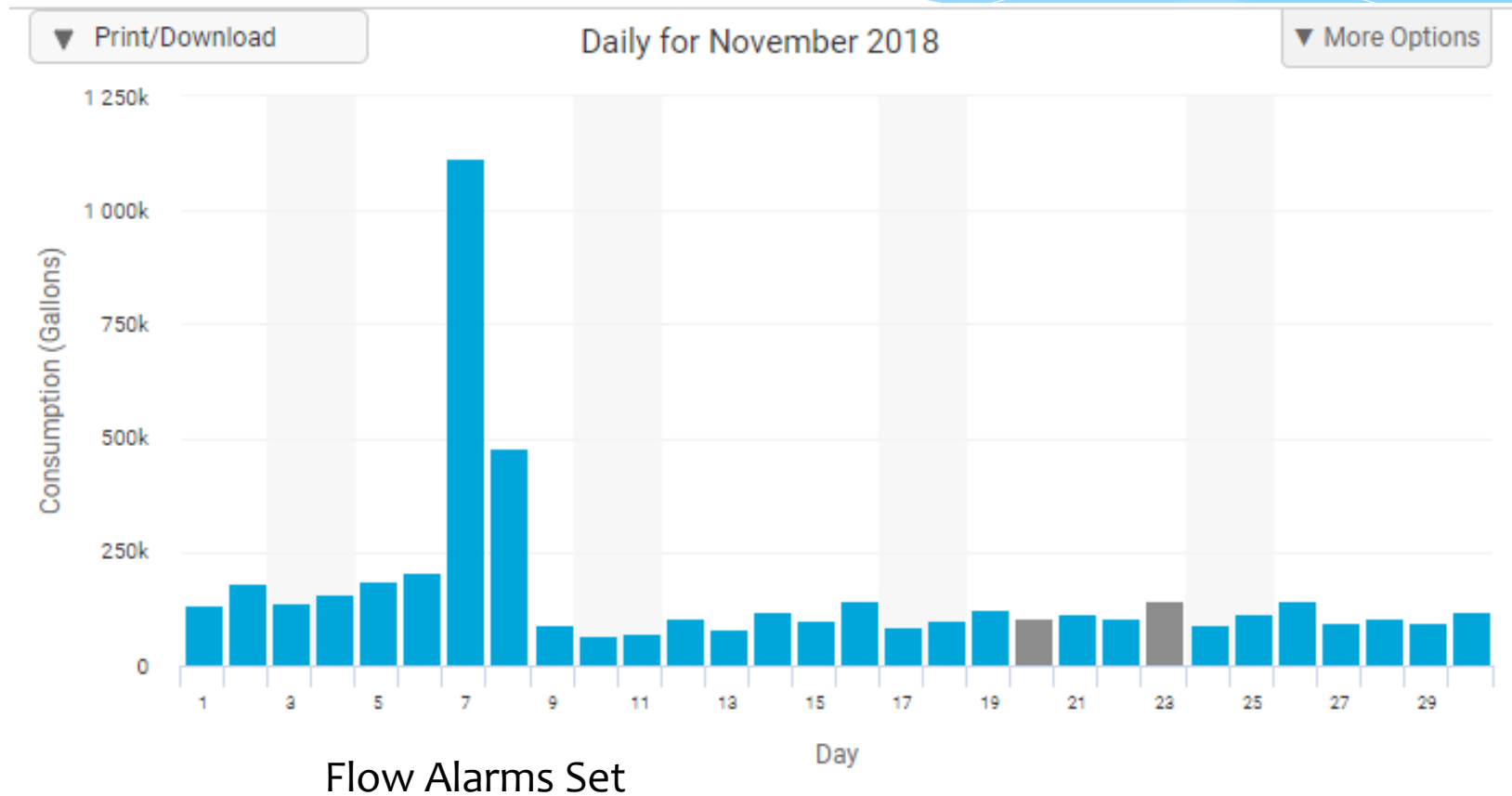


- * Every Source Water Production Well is Monitored Daily rather than every 28 days.
- * Easier to spot trends/problems

District Metering



District Metering

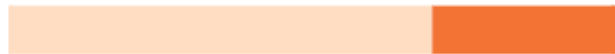


Leak Monitoring/Leak Alerts

Leak Count

192

Out of 1,508 Meters

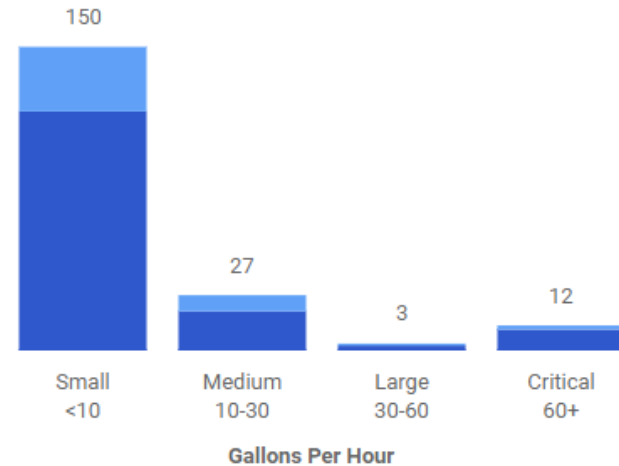


134 70%
Without EyeOnWater

58 30%
With EyeOnWater

Leak Flow Rates

■ Over 7 Days ■ New



- Current continuous flow (leak) rate is 2,143/gal hour or about 19 MG/yr.
- 10% of homes have leaks that waste 90 gallons or more of water each day, according to the EPA.
- Avg. leak size on Lanai is about 273 gal/day.
- Initially 1 out of 6 meters installed had a leak past the meter. Now down to 1 out of 8.

Lessons Learned

- * Customer Education
- * Landscaping Timers
- * Monitors for Backflow Events
- * Audits utility billing data and meter information
- * Notification Tool – Email/Phone/Letters

Questions?