



VALOR WATER
ANALYTICS

The Brave New World of Apparent Water Loss: Automation & Machine Learning

Christine E Boyle, PhD
Founder & CEO, Valor Water Analytics
International Water Association

July 19, 2017

Introduction

- Water analytics company based in San Francisco, CA
- 5 Core Data Analytics Solutions
 - Hidden Revenue Locator
 - SMART Targets
 - Cutoff Analyzer
 - Water Rate Simulator
 - Water-Energy Nexus Calculator
- > 500,000 meters under management



Background



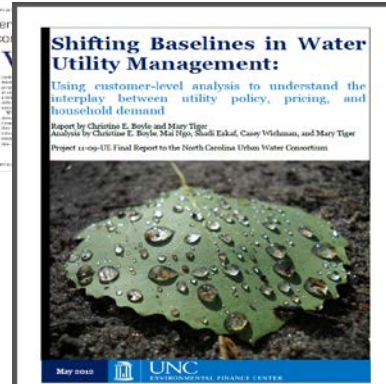
UNC
ENVIRONMENTAL
FINANCE CENTER



AWWA
MEMBER



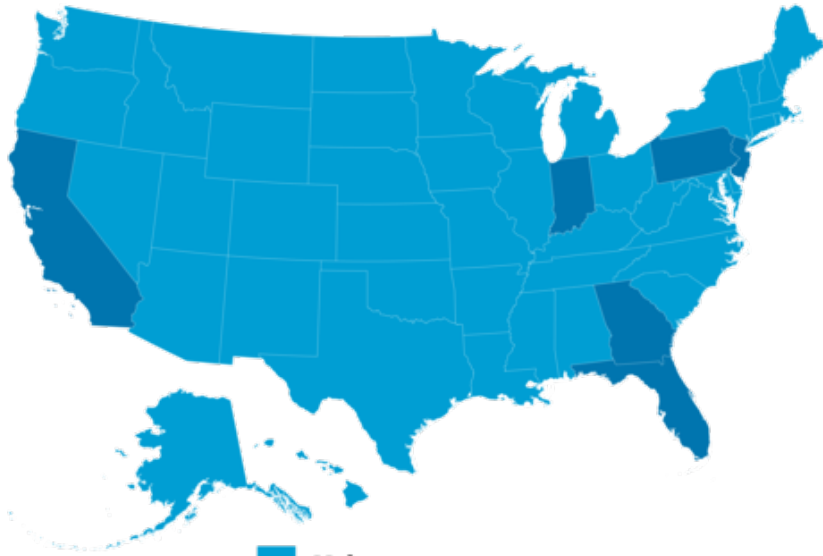
VALOR WATER
ANALYTICS





Valor Water Analytics is the...
IMAGINE | H₂O
Infrastructure Challenge
Early Stage Track



VALOR WATER
ANALYTICS



-  Valor coverage areas
-  Current client areas



AMERICAN WATER





HIDDEN REVENUE LOCATOR AKA “APPARENT LOSS DETECTION TOOL”





Machine Learning Approach

Data Inputs



Historic and current meter and billing data



Machine learning/AI



Data analytics powered by machine learning, to produce informed decisions, recover revenue, reduce costs



Industry Intelligence



Insights driven by industry expertise including knowledge of consumption patterns, AWWA specs, weather impacts, hardware specs & anomalous use



Intuitive Dashboards



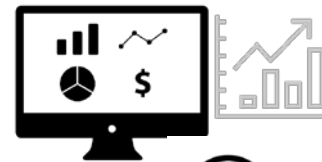
Actionable insights are displayed over the web via intuitive dashboards. Analytics are relevant and allow for revenue recovery

Operational Interventions



Predictive alerts, prioritized operational schedules for repair and replacement, field inspections, validation reporting, and 3rd party testing

Outputs



- Revenue Recovery
- Operational Efficiency
- Informed Operators
- Happy Customers

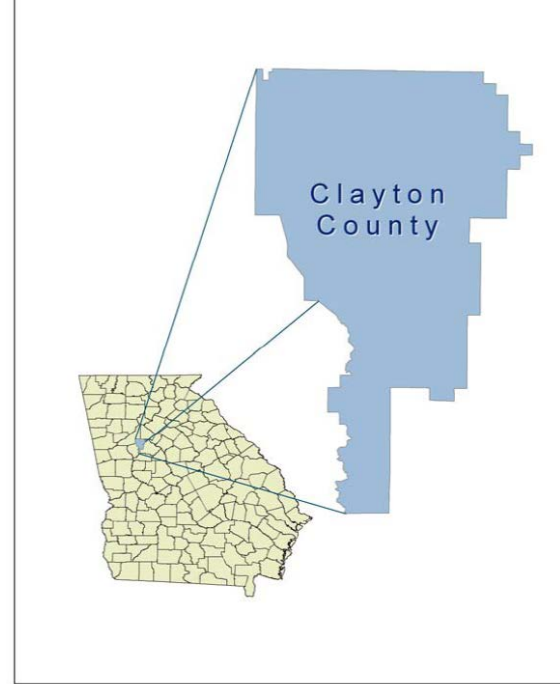


Case 1: Clayton County Water Authority





CLAYTON COUNTY
Water
AUTHORITY



Project Details

- CCWA Apparent loss management goals
 - Revenue Recovery opportunities
 - Business Process Improvement
- ‘Software as a Service’ Solution
 - Hidden Revenue Locator
 - Monthly meter and billing data
 - 6 month pilot (May-Oct 2016); Historical data analyzed
 - Uses data to identify apparent loss, per meter

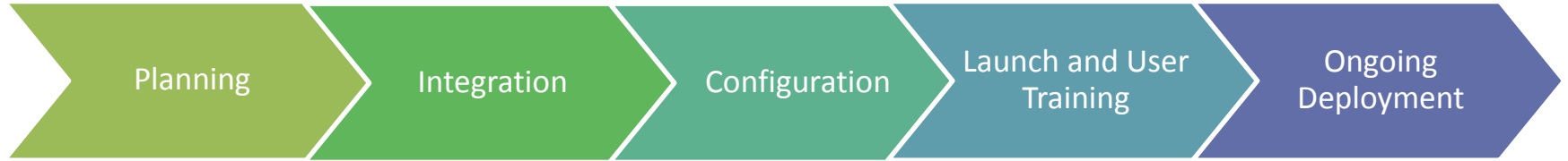


CCWA Meter Fleet Info

- 99+% AMR (Beacons)
- 99+% Mechanical drives
- Installed 2008 -2013
- Compound meters



SaaS Delivery Process



- Best Practices
 - Staffing: Identify all stakeholders
 - Data Integration: Automate
 - Quantify Value of Pilot
 - Portal Training
 - Validation procedures (M6 & M36)

Meter Under-registration Non-Residential Results

	Meter Size (inches)	# Discrete Flags (6 month total)	Revenue Amount (6 month total)
Non Residential	0.625	148	\$7,484
	0.75	74	\$2,590
	1	83	\$5,908
	1.5	111	\$45,000
	2	101	\$141,000
	3	30	\$3,524
	4	23	\$2,114
	6	46	\$86,023
	8	35	\$4,374
	10	5	\$622
	Total	657	\$299,038
	<i>As percent of non-residential meters</i>	14.8%	
	<i>Average \$ value per meter</i>	\$67.6	



Results

- 8 Indicators Presented
- Meter Under-registration yielded largest value
 - n=75,911 meters
 - Estimated \$754,424 revenue discrepancy
- Validations
 - Decision to validate “Top 100” flags
 - Use M6 Guidelines



Case 2: Los Angeles County Utility

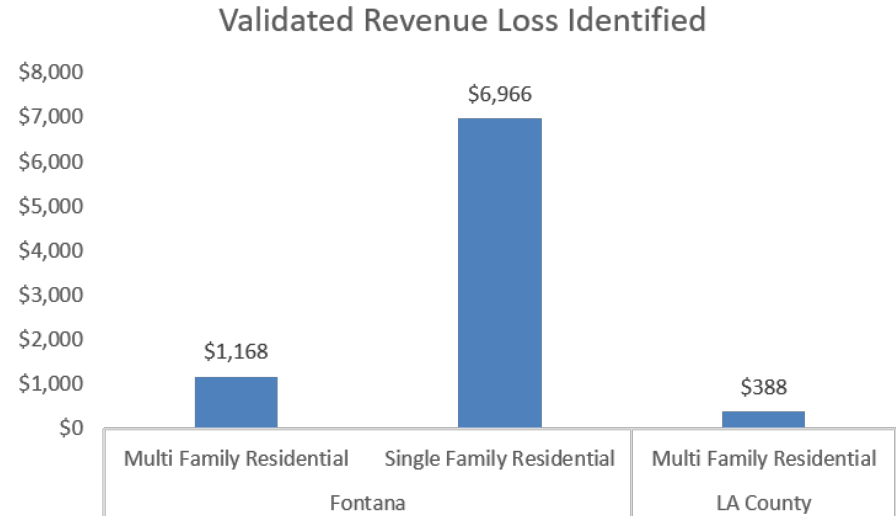


- Investor owned Utility
- 90,000 meters
- Pilot on 500 meters



* Summary Results – Validated Correct

- 86% Hit Rate
 - 6 Correct, 1 Incorrect
- \$8,522 of Revenue Loss Identified from 6 Validated Correct Flags
- 18.7% Additional Revenue that could have been billed and collected
 - \$45,518 Total Amount Billed After 6 Flags First Identified



* Value Add: Voiced by CCWA & LA

- Ongoing data analysis → Prompt issue identification and resolution
- Cutting Edge and Cost Effective Technology
- Third party guidance for Operations on validation best practices
- New perspective to Meter Replacement programs
 - Optimize current process
 - Independent input to gain the most from new meter investment (e.g AMI)
- Potential to set and hit Revenue Enhancement program targets
- Potential to demonstrate high ROI





VALOR WATER
ANALYTICS

Meter-data Analytics Utilities

Christine@valorwater.com

