PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

August 27, 2020

AGENDA FOR A MEETING OF THE RESOURCE AND FACILITIESCOMMITTEE OF THE PALMDALE WATER DISTRICT

Committee Members: Kathy Mac Laren-Chair, Robert Alvarado

TO BE HELD VIA TELECONFERENCE ONLY

DIAL-IN NUMBER: 571-748-4021 ATTENDEE PIN: 549-214-570#

Submit Public Comments at: https://www.gomeet.com/549-214-570

TUESDAY, SEPTEMBER 1, 2020

3:00 p.m.

NOTE: To comply with the Americans with Disabilities Act, to participate in any Board meeting please contact Dawn Deans at 661-947-4111 x1003 at least 48 hours prior to a Board meeting to inform us of your needs and to determine if accommodation is feasible.

Agenda item materials, as well as materials related to agenda items submitted after distribution of the agenda packets, are available for public review at the District's office located at 2029 East Avenue Q, Palmdale (Government Code Section 54957.5). Please call Dawn Deans at 661-947-4111 x1003 for public review of materials.

PUBLIC COMMENT GUIDELINES: **The prescribed time limit per speaker is three-minutes. Please refrain from public displays or outbursts such as unsolicited applause, comments, or cheering. Any disruptive activities that substantially interfere with the ability of the District to carry out its meeting will not be permitted, and offenders will be requested to leave the meeting. (PWD Rules and Regulations, Appendix DD, Sec. IV.A.)**

Each item on the agenda shall be deemed to include any appropriate motion, resolution, or ordinance to take action on any item.

1) Roll call.

2) Adoption of agenda.

3) Public comments for non-agenda items.

4) Action Items: (The public shall have an opportunity to comment on any action item as each item is considered by the Committee prior to action being taken.)

4.1) Consideration and possible action on approval of minutes of meeting held August 11, 2020.

4.2) Consideration and recommendation to Board for the award of contract for Meter Procurement and Future Technology Enhancements No. 20-611 to Ferguson Waterworks, Inc. ($865,136.00 – Budgeted – Budget Item No.'s 20-611, 20-623, and 20-419 – Engineering/Grant Manager Rogers – Board Approval)

4.3) Consideration and possible action on authorizing the General Manager to execute Change Order No. 1 to California Compaction Corporation for installing new line to the Leslie O. Carter Treatment Plant main building. ($9,793.26 – Budgeted – budget Item No. 1-05-4235-415 – Operations Manager Masaya – Committee Approval)

5) Reports.

5.1) Resource and Analytics Director Thompson II:

a) 2020 State Water Project allocation use.

b) Water Conservation and Education Garden.

5.2) Engineering/Grant Manager Rogers:

a) Littlerock Reservoir Sediment Removal Project.

b) Palmdale Regional Groundwater Recharge and Recovery Project.

6) Board members' requests for future agenda items.

7) Date of next Committee meeting.

8) Adjournment.

Dennis D. LaMoreaux

DENNIS D. LaMOREAUX,
General Manager

DDL/dd

P A L M D A L E W A T E R D I S T R I C T

B O A R D M E M O R A N D U M

DATE: August 26, 2020 **September 1, 2020**

TO: RESOURCE AND FACILITIES COMMITTEE **Committee Meeting**

FROM: Mr. Scott Rogers, Engineering/Grant Manager

VIA: Mr. Adam Ly, Assistant General Manager
Mr. Dennis D. LaMoreaux, General Manager

RE: ***AGENDA ITEM NO. 4.2 – CONSIDERATION AND RECOMMENDATION TO BOARD FOR THE AWARD OF CONTRACT FOR METER PROCUREMENT AND FUTURE TECHNOLOGY ENHANCEMENTS NO. 20-611 TO FERGUSON WATERWORKS, INC. ($865,136.00 – BUDGETED – BUDGET ITEM NO.'S 20-611, 20-623, AND 20-419 – ENGINEERING/GRANT MANAGER ROGERS)***

Recommendation

Staff recommends that the Committee recommend the Board award a contract to Ferguson Waterworks, Inc. from San Jacinto, California, in the not-to-exceed amount of $865,136.00 for the meter procurement and future technology enhancements under Specification No. 20-611.

Alternative Options:

Select next highest rated supply/manufacturer at an additional cost of $75,573.60.

Impact of Taking No Action:

Decreased revenue from failed and/or misreading meters.

Background:

In 2014, the District issued a Request for Proposals for meters, and a vendor was recommended to the Board for award and awarded by the Board. Staff moved forward with the purchase of meters and radios from the Distributor. Starting in 2016, the newly replaced meters and radios started to fail, and staff engaged the Distributor, meter manufacturer, and the radio manufacturer to start determining the root cause of the problem. Numerous meetings were held with all three to work through the issues. The radio manufacturer vendor tested the radios and determined it was functioning properly. Per a meeting with the Distributor and manufacturer of the meter, the issue was determined that there was a programmer (electronic transmitter between the meter and radio or ERT) issue with the meter issue. Below is a timeline of events since the issues with the meters and meter interface units started.

2016	
Date	**Event Description**
July 7, 2016	Staff had a meeting with the Distributor to discuss tracking and replacing meter transmitter, and possible "wiggin" replacement in the future. (now known as ETR – Meter Manufacturer).
September 22, 2016	Discussed with District staff to review Meter Manufacturer's testing process.
September 27/28, 2016	Distributor will be in to see District's Facility to meet with District staff.
October 13, 2016:	Vendor came in. District staff created new time code 16-414 to start tracking time spent on meter and electron meter interface issues.
October 25, 2016	Email with District's Facilities Manager as to programmers not working.
November 7, 2016	District Purchasing Technician had meeting with Distributor prior and gave the programmers to the Distributor.

2017	
Date	**Event Description**
January 4, 2017	Customer Care Supervisor advised Facilities Manager that Meter Manufacturer VP Factory Operations will be at the District's office on approximately January 23rd.
January 25, 2017	Meter Manufacturer, pre-meeting, 9:30 – Meeting in construction room. Discussed ETR style flat (old) vs Horseshoe (new) and the reprogramming difference. Meter Manufacturer will bring 6 new programmers.
February 15, 2017	Two meters located in system with same meter number. District staff returned meters.
May 18, 2017	Advised to only install ETRs on 2011 and newer District's existing Hersey meters. Otherwise replace older Hersey meters with meters from Meter Manufacturer.
October 4, 2017	Radio manufacturer discussion of testing, warranty, and bench testing due to equipment confusion.

2018	
Date	**Event Description**
March 13, 2018	District Purchasing Technician advised 1-inch meter is out of stock and needs more ETRs. Reviewed need meter transmitter manufacturer confirming we are testing properly. Senior Field Customer Care Representative contacted Distributor. Spreadsheet created for maintenance.
October 17, 2018	Meeting with Carey, Chris, Ryan, District Purchasing Technician, Customer Finance Supervisor, Field Customer Care Representatives to discuss meter transmitter bench testing & years to throw out.
November 11, 2018	District Purchasing Technician email advising some Meter Manufacturer register issues, not ETR. Ensure to diagnose properly for warranty.
December 6, 2018	Customer Care Supervisor emailed District Purchasing Technician number of ETR's are rising and split bills. Request meeting with Distributor and Meter Manufacturer. Per District Purchasing Technician, they will be out next week to see firsthand. Other water agencies having issues also.
December 17, 2018	Meter Manufacturer meeting. (District Purchasing Technician, Customer Care Supervisor, Field Customer Care Representatives, Customer Finance Supervisor, Distributor, Meter Manufacturer VP Factory Operations, Meter Manufacturer President, Meter Manufacturer Field Representative, Manufacturer VP Factory Operations, there is a bad chip but not able to track numbers affected. Discussed: training on ETR replacement again – now spin register, Pasadena Water and Power has same issues but not in this large scale, 90% horseshoe (chip issue), do not reset, change ETR. ETR's are 7-wheel compatible now. Meter Manufacturer VP Factory Operations gave us 50 as warranty. Distributor will set up with District staff to test some meter transmitter with handheld.

2019	
Date	**Event Description**
May 2019	Distributor Email summary: Bad ETR numbers unacceptable. 6/18/19 278 units plus. Where are our new programmers? Serviced? Numerous times to reset. Testable? Meter manufacturer field crew replace ETRs. Training as to how "meter transmitter tests" for good/bad per the meter manufacturer. Update on meter reading software and equipment upgrade information.
June 6, 2019	Request follow-up meeting. 262 open work orders are unacceptable.

2019	
Date	**Event Description**
July 18, 2019	Distributor asked for list of work orders. Customer Care Supervisor emailed.
July 22, 2019	Scheduled meeting for August 1. Requested programmers again.
August 1, 2019	Meeting (closed session) with District Staff, Meter Manufacturer VP Factory Operations, Distributor, Meter Manufacturer Field Service Worker; • 50 ETR in warehouse. Will give to Meter Manufacturer VP Factory Operations. • Route 51, 4 bad ETR in one month • Total 500 • Mechanical – ok. Electronics – bad. 14 stuck meters. Gave Meter Manufacturer VP Factory Operations totals. He will get back next week. Meter Manufacturer will repair. They are not seeing issues at this scale. Not radio issue. • Programmers, Meter Manufacturer VP Factory Operations will send. Forgot due to jury duty. • District staff sent back meters and meter manufacturer returned a box from back in December 2018. • Customer Finance Supervisor gave Excel spreadsheet with list and manhours to repair. • 8/19 Meter Manufacturer VP Factory Operations will have a report. • Meter Manufacturer will absolutely stand behind their product. • Horseshoe ETR software change. • Pull new Meter Manufacturer (route 10) and tag for Meter manufacturer project manager. • 2015 – Issue with gray wire will not reprogram as District staff tried to resolve issue with ETR. • 2016 – Issue with black wire will not reprogram as District staff tried to resolve with ETR. District Assistant General Manager meters and transmitters have become a liability to customers (accurate reads, no reads) bringing issue to Board, District is looking at other meter manufacturers. Sensor signal failure.
August 5, 2019	Follow-up email sent by Customer Finance Supervisor with Meter Manufacturer/ETR list.
August 12, 2019	Received programmers from Meter Manufacturer.
August 15, 2019	Meter Manufacturer VP Factory Operations is still reviewing list.
August 22, 2019	Meter Manufacturer VP Factory Operations – findings of spreadsheet. 8/1 meeting Meter Manufacturer VP Factory Operations will review when to repair vs replace.

2019	
Date	**Event Description**
	Customer Finance Supervisor – Is there a pattern in Meter Manufacturer VP Factory Operations' findings?
August 28, 2019	Meter Manufacturer VP Factory Operations' response – no pattern.
September 17, 2019	Customer Care Supervisor asked Meter Manufacturer VP Factory Operations when they will come out.
September 19, 2019	Customer Finance Supervisor updated spreadsheet with new work orders.
September 25, 2019	Email from Meter manufacturer project manager regarding upcoming work 9/30 – 10/3.
September 1, 2019	Meter Manufacturer announces new project manager for District. The second project manager assigned by manufacturer to District.
September 11, 2019	Customer Care Representative job task of 1, canceling replacement of regular ERT work order if prior to 12/2018.
September 29, 2019	Customer Care Supervisor emailed Meter Manufacturer VP Factory Operations to follow-up. He claimed human errors per Meter Manufacturer VP Factory Operations.
October 1, 2019	Meter Manufacturer's Project Manager. • Always verify with True Read. • Log when new meter and it does not read. Log it, so can track. • District Purchasing Technician noted problem with meters that come right out of box. • True Read test crew. Color coordinate so FCCR can reprogram. • Meter manufacturer field representative – logging is signaling debris.
November 14, 2019	Customer Finance Supervisor emailed that new meter not working.
November 19, 2019	Customer Care Supervisor followed up with Meter Manufacturer VP Factory Operations.
November 20, 2019	Meter Manufacturer VP Factory Operations – thought had already done. Will get back with Customer Care Supervisor.
November 21, 2019	Meter Manufacturer VP Factory Operations – list.
December 10, 2019	Warehouse fourteen (14) 1-inch meters have bad threads. District staff returned to Distributor.
December 17, 2019	Customer Care Supervisor responded to Distributor busy month and still having ETR issues. For the month of December, District had 75 new ETR issues

2020	
Date	**Event Description**
January 13, 2020	Customer Care Supervisor spoke with Distributor and Meter Manufacturer visited Thursday and met Field Customer Care Representative in the field. Meter Manufacturer Questions: • District Purchasing Technician's list of 14 1-inch meters with funky threads? • Status of meters picked up here during visit for replacement. 8/15/19 – Warehouse Technician provided. Fourteen (14) 1-inch and sixty-five (65) 3/4-inch meters • 1/1/20 – 1/13/20 Thirty-three (33) New ETR issues
January 16, 2020	Distributor met in field with Field Customer Care Field Representative. Replacement meters noted in an email dated November 6, 2019 were delivered to District Purchasing Technician. Discussion: • ETR issue with "check wiring" on over 43 units. • Distributor will go to Meter Manufacturer President, Meter Manufacturer President. • Distributor, Pasadena "don't pay bill" so we should not pay. • Reviewed account Field Customer Care Field Representative replaced ETR & now not picking up. • January ETR work order number. • Pull ETR from list Routes 32 & 35. • Customer Finance Supervisor will cross reference list of repaired/good whether pick up in December and January. • Where are the replacement meters District Purchasing Technician sent in August? 79 meters were returned. • District Purchasing Technician is concerned with what is causing the issue. • Senior Field Customer Care Representative showed picture of condensation in a register of the new meters. • From November 18-20, 2019 a total 44 new ETR issues, which increased the total of issues to 660.
January 21, 2020	Meter Manufacturer VP Factory Operations will be in California February 3rd or 4th.
January 23, 2020	Distributor visited. Route 10 – 2 Good, 7 Bad, 3 replaced meter transmitters. Route 11 – 3 bad, 2 good. 1 cut wire. 1 radio. ETR's in stock. 90 straight. 30 horseshoe. Additional 88 ETR issues this month.
February 4, 2020	Meter Manufacturer meeting held in closed session. (Distributor, Meter Manufacturer President, Meter Manufacturer VP Factory

2020	
Date	**Event Description**
	Operations, Robert, Albert, District Purchasing Technician, John, Customer Finance Supervisor, Chad, Customer Care Supervisor.)
February 6, 2020	Field Customer Care Representative gave reader/programmer statistics as to working/nonworking.
February 14, 2020	Meter Manufacturer VP Factory Operations picked up bad programmers.
February 26, 2020	Customer Finance Supervisor email to Distributor the meter transmitter spreadsheet.
March 2, 2020	Customer Care Supervisor sent cleaned up list to Meter Manufacturer VP Factory Operations.
March 3, 2020	Meter Manufacturer VP Factory Operations will be out in April for maintenance.
March 23, 2020	Due to COVID, Meter Manufacturer VP Factory Operations rescheduled maintenance trip to week of May 4th and 11th.
March 28, 2019	Meter Manufacturer VP Factory Operations advised will now be out June 1st. Number of bad meters increase from 689 to 756.
May 21, 2020	Customer Finance Supervisor emailed Distributor as no reply received from email sent on February 26th. Distributor claimed spreadsheet could not be located.
May 22, 2020	Distributor responded with ERT types.
May 27, 2020	Customer Care Supervisor sent cleaned up list of pending Diagnose ETR work orders.
May 28, 2020	(Meter Manufacturer VP Factory Operations, Distributor, Customer Finance Supervisor, Field Customer Care Representative, Meter Manufacturer President and Project Manager, Customer Care Supervisor) Meeting. Meter Manufacturer President- will not leave until everything is done.
June 1, 2020	Meter Manufacturer crew here for 2 to 2 ½ weeks. (770)
June 2, 2020	New Project manager with Meter Manufacturer) & Meter Manufacturer team begins work on problem meters.
June 30, 2020	Meter Manufacturer team completes work on problem meters. Work orders canceled complete.

There are currently 201 Diagnose ETR work orders open created since mid-June 2020 that meter manufacturer field team worked on the previous meter problem. Below is a summary of the failed ETR from 2017. The total number of ETR represent about 6-percent of the recently installed meter/transmitters installed in the District.

Year	Total Number of Bad ETR	Percentage of Installed Meters	Staff Time Spent (hours)	Total District Cost for re-reads
2020	643	3%	75	$9,000
2019	641	3%	75	$9,000
2018	126	1%	15	$2,000
2017	31	0%	4	$400
Total	**1,441**	**6%**	**168**	**$20,400**

District staff met and decided that a Request for Proposals was necessary to determine if a more reliable meter and radio were available on the market that would address the issues experienced by the District with the current manufacturer. Additionally, District staff wanted to find a distributor and manufacturer that would provide the latest, most reliable system for the meters, meter interface, radio, and future technology enhancements that include both advanced meter infrastructure (AMI), and customer portal.

The intent of the Request for Proposals was to determine the most qualified meter manufacturer that produces high quality meters, provides responsive customer service, and a long-term plan for replacement of the District's meters. Over the next five years, the planned replacements total a little under 8,000 meters with over 50-percent of the meters replaced over the next two years.

As part of the project to procure meters for the District, District staff decided to look at a long-term solution with a manufacturer and distributor that would benefit the long-term objectives for water conservation and use efficiency. Additional items were included in the bid to include future technology enhancements where customers and customer service staff would have the ability to look at hourly usage, engage with customer's on water usage to identify customer leaks and provide targeted conservation messaging. The implementation of AMI and Customer Portal would allow customers to view usage and customer service staff to view usage and offer messages for water conservation through rebates like low flush toilets and landscape conversions.

District staff are in the process of applying for a grant with the Bureau of Reclamation's Water SMART Small Water Efficiency Projects where the grant would cover the cost of AMI and the Customer Portal up to $75,000 matching funds under the Grant.

The total bid price in the bid proposal submitted by Ferguson Waterworks is $865,136.00.

Ferguson Waterworks, as the best qualified, responsible bidder based on the criteria set forth in the bid documents. Responsiveness of the bid pertaining to compliance with the material terms of the bid documents has been reviewed, evaluated, deemed acceptable, and recommended for award by District staff.

Ferguson Waterworks, Inc., as the highest qualified bidder, has met the criterion for providing the necessary qualifications to be rated highest by staff and bid price of $865,136.00.

Strategic Plan Initiative/Mission Statement:

This item is under Strategic Initiative No. 1 – Water Resource Reliability.

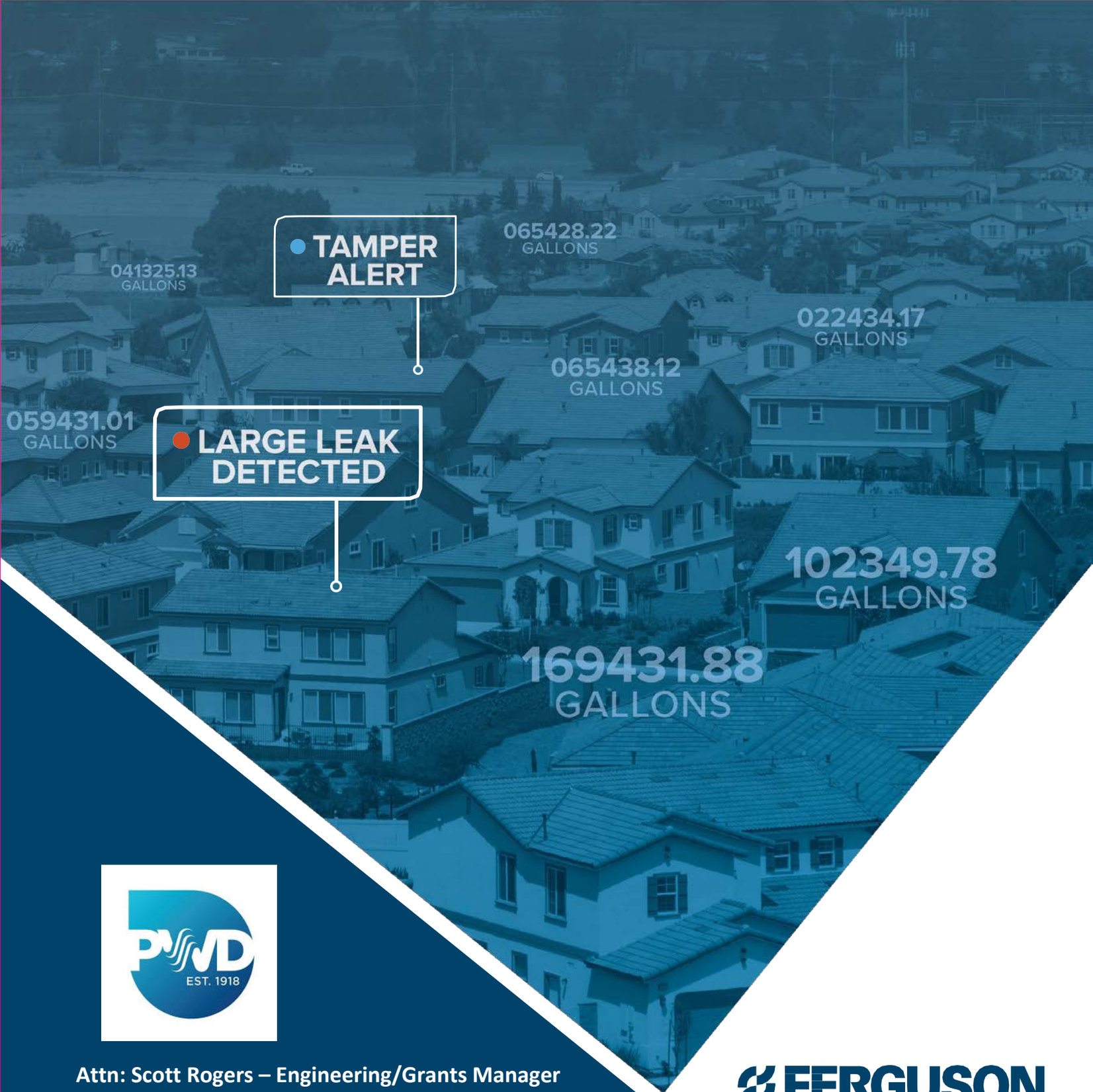
This item directly relates to the District's Mission Statement.

Budget:

These items are under Budget Item No.'s 20-611 ($626,636.00) Meter Procurement, 20-623 ($137,500.00) AMI System, and 20-419 ($101,000.00) Customer Portal.

Supporting Documents:

- Proposal Package from Most Qualified Bidder
- Evaluation Score Summary
- Request for Proposals Meter Procurement and Technology Enhancements



Attn: Scott Rogers – Engineering/Grants Manager
REQUEST FOR PROPOSALS –
Meter Procurement & Future Technology Enhancements
Due: 5:00pm June 18th, 2020

Authorized signature and affirmation of no conflict of interest/non-collusion
Eric Tracy
Business Development Manager
Ferguson Waterworks Meter & Automation
(415) 309-2702 Eric.Tracy@Ferguson.com

ORIGINAL

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June 18, 2020

Mr. Scott Rogers – Engineering & Grants Manager
Palmdale Water District
2029 E Ave Q
Palmdale, CA 93550

Subject: Request For Proposals (RFP) – Meter Procurement and Technology Enhancement

Dear Mr. Scott Rogers:

Ferguson Waterworks is pleased to submit the accompanying proposal for your District's Meter Procurement and Technology Enhancement project. Ferguson Waterworks, Meter and Automation is uniquely qualified with many distinct advantages for the District, operating as both a Neptune Level 1 distributor in select areas of the United States, and as a proven meter systems and water meter installation contractor nationwide. We have a rich history in both arenas, having been a stocking Neptune distributor since 1975, and a meter/radio installation contractor since 2001, which includes the installation of over 1 million meters and endpoints.

For your project, Ferguson Waterworks would partner with Neptune Technology Group to source the AMI infrastructure, AMI meters, endpoints, and Software/MDMS. Our in-house Neptune System Specialist will provide ongoing system training and support of the headend/MDMS system during and after the completion of the project. Finally, Ferguson Waterworks is proud to have partnered with WaterSmart for our Customer Portal solution, to complete a full package for the District.

Ferguson Waterworks is registered with the State of California's Department of Industrial Relations PW-LR-1000401934. We also hold a valid State of California "A" Contractor's License #CSLB: 870926. Ferguson has a proven track record of successful AMI projects which include both supply and installation of the meter and AMI endpoints, and are confident you will find Ferguson Waterworks and the aforementioned partners well qualified to help the District successfully complete your Meter Procurement and Technology Enhancement project.

We look forward to detailing, in the proposal ahead, the unique advantages of partnering with Ferguson Waterworks on this extremely important project for Palmdale Water District.

Sincerely,

E D. 2

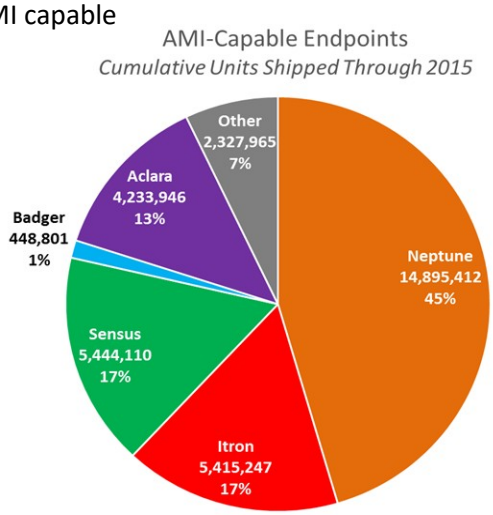
Authorized signature and affirmation of no conflict of interest/non-collusion

Eric Tracy
Business Development Manager
Ferguson Waterworks Meter & Automation
11909 Tech Center Ct. Poway, CA 92064
(415) 309-2702
Eric.Tracy@Ferguson.com

EXECUTIVE SUMMARY

On the surface, utilities evaluating new meter and automation options might readily conclude that the products and services offered by the leading manufactures and their distribution partners appear very similar. While each vendor will offer standard features from AWWA-rated meters, to leak detection, conservation tools, alarms, notifications, and millions and millions of data points to streamline business processes, there is much more to the evaluation of a vendor than alarms, standards, and hourly data reports. The product and service options available to a utility are actually very, very different from vendor-to-vendor.

At the core of the **FERGUSON Waterworks** options contained herein are PROVEN PRODUCTS and SYSTEMS. The accompanying chart from the independent *SCOTT Report* details where the **NEPTUNE TG** products proposed herein provide more AMR radios that are AMI capable that all others combined.



There will be no risk of finger-pointing, no combinations of multiple manufactures and parts, no splicing radios, no limits to simultaneous operation of both AMR and AMI modes, no on-the-job installation training, no subcontractors, no warranty issues or long-term support ambiguities hiding in the weeds by combining manufactures. We propose one integrated vendor, providing one meter with integrated radios, installed and integrated into your District by that same one single vendor with AMI endpoints with simultaneous AMR backup functionality for the District without reprogramming.

PARTNERSHIP, PERFORMANCE, PRICE

At **FERGUSON Waterworks**, we not only view our relationship as a true 20-year partnership during the lifecycle of your system, we've built our meter offering around this belief and literally stake our reputation on this belief.

In the pages ahead, you will notice many unique advantages offered both by our manufacturing partner **NEPTUNE TECHNOLOGY GROUP** and **FERGUSON Waterworks** that are designed to reduce and eliminate many of the common risks associated with any investment in meter and automation technology, while providing proven products and systems to customers.

ADVANTAGES WITH FERGUSON AND NEPTUNE INTEGRATED R900i RADIO SOLUTION

NO WIRES, NO SPLICING, NO CONNECTORS – The R900i integrated register and radio eliminates a huge point of failure, troubleshooting, installation time and expense, and the benefits of a single vendor for maintenance.

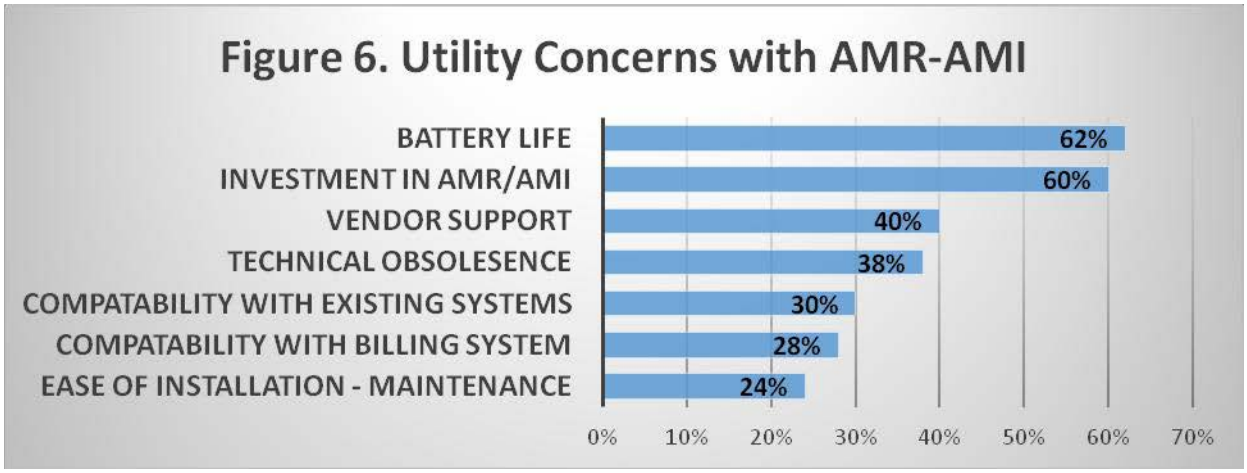
NO ENDPOINT PROGRAMMING AT INSTALLATION - or EVER. Spending less time at each box means more radios are installed faster and better without costly human errors.

NO STRANDED ASSETS – Neptune continues to support automation products from the 1990's and takes great pride in being both backwards compatible with forward migration – all designed to preserve your 20-year investment.

NO FOREIGN MADE PRODUCTS – All Neptune meters and products are made in the USA. Port strikes, trade agreements, labor unrest, and international events will not disrupt our quality control, supply-chain or delivery schedules.

NO FCC FREQUENCY TO PURCHASE, RENEW, COLLIDE, OR LOSE – Over 60 million unlicensed Frequency Hopping Spread Spectrum (FHSS) radios in service nationwide. Our unlicensed frequency delivers proven reliability with no loss in performance compared to licensed options.

NO WARRANTY GIMMICKS in the prorated years when warranty matters most – We base our warranty on the sale price in the year of replacement, not some mysterious, unpublished, elevated list price in the year of replacement. (See attached PROCODER)R900i Warranty document)



Source: California Energy Commission – PIER (Public Interest Energy Research) 2010 Status and Overview: Smart Meters and Water Agencies

Although the chart above is from a research report from 2010, the concerns and risks identified are no less important today. Upon closer examination, utilities may also discover that these concerns can be classified into three common areas: *Partnership* – whom they choose to invest with, *Performance* of the various systems, products and services, and how that Partnership and Performance have a dramatic impact on project success and the *Price* and *Value Proposition* of each vendor. FERGUSON Waterworks has built its Meter and Automation Group, and our product offerings around addressing these concerns with a portfolio of products and services unmatched in the California market.

Battery Life – Neptune radio and meter products use the leading utility battery provider in the world – SAFT Batteries. SAFT Batteries are designed for use in extreme environments including satellites and missile systems and feature the lowest self-discharge to ensure extended product life.

Investment in AMR-AMI – While the investment varies from utility to utility, working with a proven vendor, proven products and a committed local partner will minimize costs and optimize the utility's

investment. As a member of the FERGUSON family with 13 statewide Waterworks locations, your insurance policy for success is that FERGUSON must also successfully complete your project on-time and on-budget or risk future waterworks business with the District. We stake our reputation and future business relationship on success.

Vendor Support / Technical Obsolescence – *ALL NEPTUNE PRODUCTS ARE FORWARD AND BACKWARD COMPATIBLE.* NEPTUNE does not obsolete it products and is still supporting AMR systems introduced in the 1990's. We'll put our record supporting our products against any in the industry. FERGUSON Waterworks also provides multiple layers of support and training, from local Municipal Waterworks sales, to local System Sales Specialists, to in-state Technical Support staff – as well as Call Center Technical Support 24/7. FERGUSON also warehouses local inventory and designated RMA staff.

Billing and System Compatibility – NEPTUNE's systems, as *FORWARD and BACKWARD COMPATIBLE*, support common encoder protocols for meter/register connectivity. Relative to Billing Systems, with more than 4,000 active AMR/AMI utility customers nationwide, NEPTUNE has established compatibility with virtually every utility billing system supported in the market today.

Ease of Installation – Another unique advantage to partnership with FERGUSON Waterworks is the ease of installation, as NEPTUNE radios require NO programming in the field when installed. This saves time and reduces costs while virtually eliminating the errors and expense associated with programming mistakes common with products from other vendors.

FERGUSON Waterworks also offers Turnkey Installation Services using local FERGUSON employees (no subcontractors) featuring software to track the daily progress, including bar coding and pit/meter photos, electronic data validation and data transfer to ensure accuracy. Because we only install NEPTUNE products and only for our customers, we are NEPTUNE experts. This saves you time and money. There is no finger-pointing or on-the-job training with Ferguson's experienced installation team, as is common with sub-contractors and temporary workers.

STRENGTH IN NUMBERS

Because so many systems seem so similar and accomplish many of the same core tasks, choosing the right partner can be complicated. To summarize and highlight the stability, experience and expertise **NEPTUNE TECHNOLOGY GROUP** and **FERGUSON Waterworks** offer the District some big numbers:

$18200000000

FERGUSON ENTERPRISES ANNUAL REVENUE

32440625

NEPTUNE MONTHLY METER READS FROM OVER 4,000 ACTIVE RF SYSTEMS

1 8 8 9 5 4 1 2

NEPTUNE AUTOMATED RADIO UNITS IN SERVICE TODAY

1 1 3 9 1 4 0

METERS AND RADIOS INSTALLED BY FERGUSON STAFF

0

CUSTOMERS STRANDED WITH FUTURE COMPATABILITY ISSUES

In the end, a "No Thank You" to Ferguson/Neptune means saying YES to all of the performance pitfalls, disadvantages, and time-consuming hidden costs detailed above.

And while all of the qualified proposers will boast of big numbers and various banners of success (Neptune is the North American market share leader in meter sales and boasts more than 4,000 active AMR/AMI systems in use today, while Ferguson boasts larger annual revenue than the top 5 meter and automation manufactures combined), behind our success we are an organization committed to partnership, the highest quality risk-free products, and a proven record of performance as detailed in the pages ahead.

FERGUSON WATERWORKS – More than just meters and automation. *Performance Distribution!*

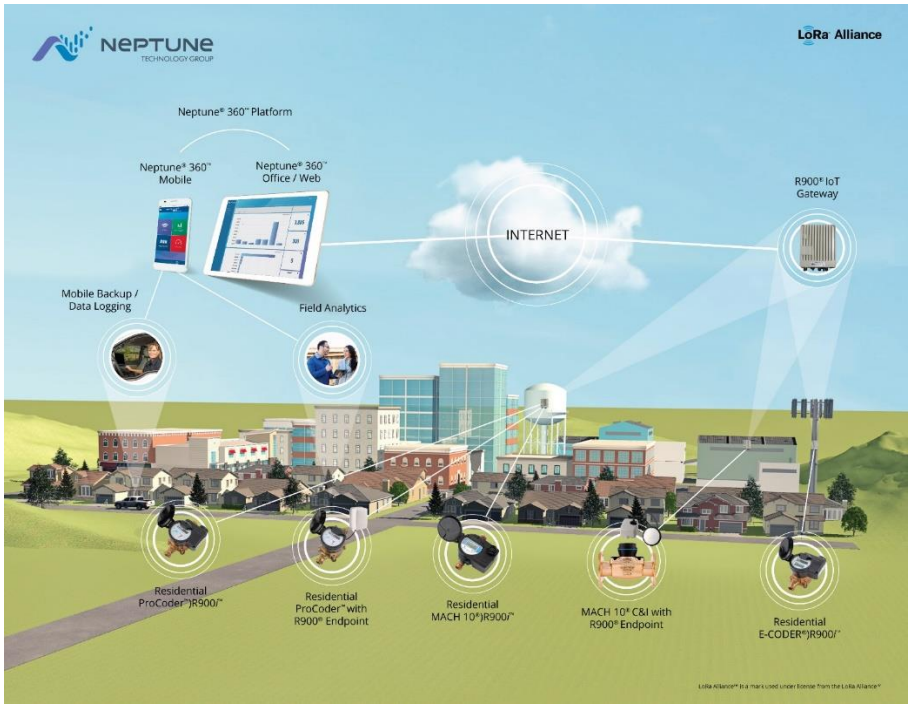
Recent Ferguson – Neptune AMI Awards

- City of Ventura – 31,500
- City of Buena Park – 19,500
- East Valley Water District – 24,000
- Las Virgenes WD – 21,500
- Indio Water Authority – 21,500
- City of Oceanside – 44,000
- Valley County WD – 12,500
- Mission Springs WD –13,500

NEPTUNE PROPOSED TECHNICAL SOLUTION OVERVIEW

Neptune is proposing its R900® wireless technology for endpoint meter support. The built-in ability of Neptune's R900® endpoints to be read in mobile AMR and fixed network AMI mode simultaneously assures ***AMI network compatibility with mobile AMR backup support***, eliminating significant costs associated with replacing and/or reprogramming endpoints regardless of reading system needs. Neptune's approach is a build-on rather than a change-out model assuring ***forward and backwards compatibility*** while leveraging R900® technology with its unique interleaved mobile and fixed network messaging, including LoRa messaging.

The architecture is ideally suited for Smart Water AMI networks and can be extended to a variety of other IoT/M2M applications for water/wastewater automation and possible Smart Utility initiatives. By leveraging the LoRaWAN™ network and the LoRa Alliance eco-system of developers, Palmdale WD will be well positioned to support the immediate needs for AMI and future IoT/M2M applications as they evolve. This enables District to capitalize on the immediate requirements for Smart Water AMI, while balancing the longer-term benefits towards other potential water/wastewater automation needs.

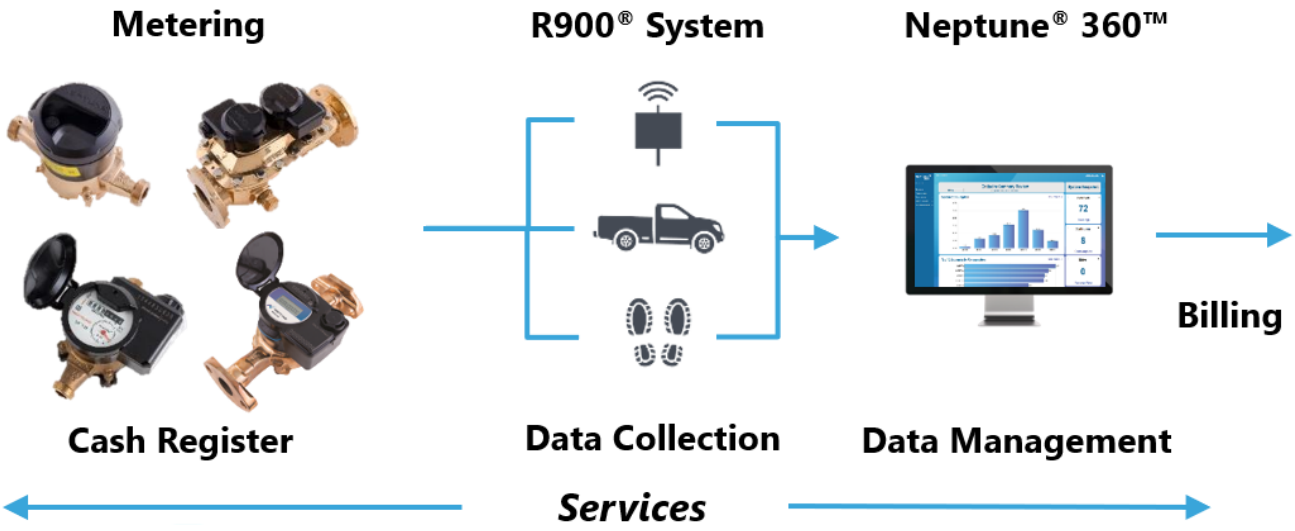


The LoRaWAN™ architecture is star-based and provides for both redundancy and reliability of endpoint and gateway communications. Overlapping gateway reception provides a redundant communication path for end-devices, contributing to higher message success rates. The network design criteria typically result in endpoints communicating to 2 or more LoRaWAN™ gateways.

The LoRaWAN™ network is designed as carrier-grade to withstand the harshest of weather conditions and events. Network gateways are rated IP67 for ingress protection, 10% to 100% condensing for humidity, and -40°C to +55°C for temperature.

Neptune is proposing its Cloud-Based Data Management platform "Neptune® 360™" as the primary head-end systems (HES) which functions as a Meter Data Management System. Neptune 360 is offered in a Software-as-a-Service (SaaS) model which provides utilities with a solution that is scalable, reliable and secure without the burden of implementation and management of data. Through Neptune® 360™, Neptune is responsible for hosting the application and providing all software management activities to ensure the District's metering data is accurate, secure, and available anytime in support of utility operations, billing, and customer care.

TECHNICAL APPROACH



Metering Technology

Neptune is proposing its R900® wireless technology for endpoint meter support. The built-in ability of Neptune's R900® endpoints to be read in mobile AMR and fixed network AMI mode simultaneously assures AMI network compatibility with mobile AMR backup support, eliminating significant costs associated with replacing and/or reprogramming endpoints regardless of reading system needs. Neptune's approach is a build-on rather than a change-out model assuring forward and backwards compatibility while leveraging R900® technology. with its unique interleaved mobile and fixed network messaging, including LoRa messaging.

Neptune T-10® and ProCoder™)R900i™ Water Meters

This proposal is based on the supply of Neptune's T-10® positive displacement meter. The T-10® mechanical meter is time-proven for dependability and provides a wide effective flow rate range for maximum revenue generation. It is designed with a corrosion-resistant, lead-free, bronze alloy maincase built to withstand the harsh environmental conditions of pit and/or vault meter applications.

Neptune is proposing the ProCoder™)R900i™ integrated endpoint meter as its primary offering in response to the District's AMI requirements. [redacted] The ProCoder™)R900i™

provides for both AMI and back-up mobile AMR reading through its unique mobile and fixed network interleaved messaging.

The ProCoder™ register attaches directly to the meter body providing a simple and intuitive installation. Additionally, the end-point supports an external through-the-lid antenna allowing for installation in any pit or vault. [redacted]

The following provides details on the metering hardware being proposed by Neptune within this response. Additional specifications are provided in the Product Specification Sheets included with this proposal.

	**T-10® Residential Meter** Time proven for dependability and provides a wide effective flow rate range for maximum revenue	**Key Features** • Meets or exceeds latest AWWA C700 Standard • Lead free bronze main case – NSF/ANSI 61 and NSF/ANSI 372 certified, SDWA compliant • Lifetime guarantee on meter body • Positive displacement nutating disc measuring chamber • Effective flow range • Proprietary polymer measuring chamber material for long-term accuracy • Floating chamber design unaffected by meter position or in-line piping stresses
	**ProCoder™)R900i™** Combination absolute encoder register/radio frequency meter interface unit (RF MIU) provides [redacted] for advanced smart metering. Make migration from mobile to fixed network reading without site visits or reprograming with the ProCoder®)R900i™ interleaved mobile and fixed network messaging	**Key Features** • 8-digit remote meter reading • Leak, tamper, and reverse flow detection • Solid-state absolute encoder – fully submersible • Long-life lithium battery with capacitor [redacted] • Interleaved standard mobile message [redacted] • [redacted]

Neptune R900® System MIU

The R900® Meter Interface Unit ("MIU") has [redacted] transmitting at predetermined intervals for both the standard mobile message and interleaved fixed network LoRa message. This [redacted] ensures that there is no opportunity for human error in the configuration and programming of the endpoint during installation. Additionally, the MIU has a consistent and predictable battery life ensuring its operation throughout the life of the unit. [redacted]

[redacted].

The R900® MIU has the capability of storing [redacted] days of hourly reading intervals. This information is always available and can be retrieved using the standard RF-activated data logging procedure for field presentment or consumption by the HES. Furthermore, the R900® MIU contains up to [redacted] reading intervals that are transmitted in the interleaved fixed network message along with 1 reading interval in the standard mobile message.

The R900® MIU is engineered and optimized for the harshest of pit environments. Our pit radio antennas [redacted] and designed to be mounted through meter lids for maximum signal range and system performance.

The R900® AMI System operates in the FCC unlicensed ISM band, between 910 MHz and 920 MHz. Since the units operate within the ISM unlicensed band, there are no special licenses or authorization needed from the FCC to begin installation or to expand the system for future growth.

All Neptune R900® endpoints provide *leak detection, tamper, and backflow detection* regardless of which register it is connected to. These flags are calculated at the MIU level on the R900®. Using the enhanced capacity of the R900® MIU capacity to store every [redacted] monitoring interval (totalizing to [redacted] interval reads in a [redacted]-hour period), [redacted].

The R900® MIU operates using a LoRaWAN™ cloud-based network that includes [redacted] to securely transfer information to and from deployed MIUs. Since the LoRa network has built-in bi-directional capability, the R900® MIUs can receive time information from the LoRa network to keep each endpoint [redacted].

Neptune's R900® MIU is a [redacted] certified LoRa end-device. The two-way functionality is provided by the LoRa network. [redacted]. On-request reads can be initiated to the [redacted] within seconds. [redacted] This fixed interval reading provides for a

guaranteed 20-year life expectancy of the MIU. As more features are added to the LoRaWAN™ specification, Neptune expects to leverage the LoRa two-way communications to provide additional AMI features.

As part of the LoRaWAN™ specification, the LoRa network provides built-in mechanisms of data integrity and security based on the industry standard, IEEE 802.15.4 security protocols [redacted] In addition to the encryption of the payload, this security protocol provides data integrity for the communication between the R900® MIU and LoRaWAN™ network components.

Data Collection Systems

The LoRAWAN™ network architecture proposed is a point-to-multi-point (PMP) architecture. The architecture incorporates several standardized features and algorithms to assure end-to-end security and confidentiality of the application data transcending the network.

AMI Data Collection- LoRAWAN Gateway – "R900® IoT Gateway"

The LoRaWAN™ network architecture is based on geographically placed R900® IoT Gateways in a "star-based" point-to-multipoint architecture. The R900® IoT Gateways is considered a permanent connected equipment. The Gateways provide for full duplex operation making all receive and transmit channels available simultaneously. [redacted]

The R900® IoT Gateway is a hardened carrier grade enclosure designed for the harshest of environmental conditions. Specifications for the R900® IoT Gateway are:

- Operating Temperature -40°C to 60°C (-40°F to 140°F)
- Relative Humidity of 10% to 100% condensing
- Operating Altitude of -60 meters to 4000 meters (-197 ft to 13,123 ft)
- Weather Tightness UL Type 6 (IP-67)

Provided in a carrier grade enclosure and properly installed, grounded, with proper electrical isolation, the R900® IoT Gateway has been designed to operate reliably under the most extreme weather conditions. Backhaul options for the IoT gateways include multi-carrier 4G LTE cellular modem and Ethernet.

Mobile Data Collection

With Neptune's field proven mobile collection devices, the MRX920™ mobile data collection unit or the R900® Belt Clip Transceiver (BCT) walk-by data unit can be used in support of hybrid AMI/AMR solutions, as back-up to AMI or in support of field service calls. Field support is provided simply by pairing the collection units with a handheld or mobile device running the Neptune® 360™ mobile application.

[redacted]

[redacted] This enables the user to support monthly reading routes, to perform re-reads, and/or perform local data logging in response to high water bill complaints. The mobile application is Android and iOS compatible and supports both standard phone and tablet devices. The application is supported in the evolving practice of "bring your own device" BYOD.

 	**MRX920™ Mobile Data Collector, R900® Belt Clip Transceiver (BCT) Data Collector** Make meter reading automatic using Neptune' reliable, accurate, and field proven MRX920™ mobile data collector. Compatible with all generations of R900® MIUs. Perform out-of-cycle or high-density meter reads by pairing the R900® BCT transceiver with a handheld or mobile device running the Neptune® 360™ Mobile application.	**Key Features** • **MRX920™ Mobile Data Collector** ○ ESRI powered GIS maps show meter reading/flag status ○ View and share consumption activity graphs onsite to address high bill complaints • **R900® BCT Walk-by Transceiver** ○ Software-defined radio (SDR) for compatibility with future products ○ Retrieve 96 days of hourly consumption data ○ Wireless paired to an Android or iOS compatible handheld or mobile device through Bluetooth

Neptune's Cloud-Based Head-End Data Management System

[redacted]. As part of Neptune's commitment to be our customers' most valued partner, Neptune launched in [redacted] its proprietary AMI Head End Software, *Neptune® 360™.* [redacted] Neptune currently has over 4000 water utilities utilizing our software applications. With our ability to adapt to customers' desired integration requirements, to date [redacted] utilities have already converted to the new *Neptune® 360™* platform with more customers in the progress of conversion.

Proposed as the primary head-end system (HES) to PWD, Neptune's Cloud-Based Data Management platform *"Neptune® 360™* functions as a Meter Data Management System all within one platform. It is offered in a ***Software-as-a-Service (SaaS)*** model that will provide PWD with a powerful data platform critical to leveraging all remote metering assets and data. [redacted].

With *Neptune® 360™.* Neptune is responsible for hosting the application and providing all software management activities to ensure the District's metering data is accurate, actionable and secure. This service model not only provides a lower total cost of ownership (TCO) but enhanced data security, less strain on budgets, infrastructure and IT resources, than an on-premise server deployment. The only required hardware is a workstation with internet access and either Microsoft Edge or Google-Chrome web browsers.

Neptune® 360™ **provides alert notifications via email or text message for alert such as continuous and intermittent leaks, major and minor reverse flow, invalid readings, and inactive account with usage. Within this** out-of-the-box functionality, it allows PWD to automatically analyze usage and alarm data from the endpoint to make daily operations efficient.

Neptune® 360™'s intuitive and modern design is built upon the most advanced technological infrastructure, while focusing on data integrity and state-of-the-art data security. [redacted]

Neptune® 360™ Mobile Application

Neptune's Mobile *"Bring Your own Device (BYOD)"* technology provides direct communication via wireless from the field using an alternative approach to other ruggedized handset devices. Use your utility's existing Android or iOS compatible mobile or tablet devices in the field for meter reading and local data logging support. Pair the handset devices with the R900® Belt Clip Transceiver (BCT) or MRX920™ Mobile Data Collector to perform monthly reading, out-of-cycle reads, and respond to customer inquiries such as high-water bill complaints. There's no need to bring mobile devices back into the office to synchronize information with the host software. Application capabilities include RF testing, off-cycle reads, and local datalogging to capture [redacted] days of hourly historical consumption, stored in all Neptune R900® RF MIUs.

Installation/ Onboarding Activities/ Integration

Neptune provides a cloud-based data management system that will process readings from both the AMI and AMR network. Neptune has experience of integrating with more than [redacted] CIS/Billing software vendors, using Application Programming Interfaces ("API) to integrate with work order solutions, hydraulic modeling, customer engagement and a list of additional third-party applications. As a standard practice, [redacted]

[redacted]

The process for integration to the District's CIS is summarized as follows:

- Districts' billing system will provide an interface to the HES via import/export files in a Neptune record format. For billing purposes, the user will select which cycles and routes that are required for meter reading and billing.
- The data is paired to meter reading data captured from the field either through the AMI or AMR network. Routes with completed meter reading data are sent via an export file to the billing system.
- The billing system will process the readings from the export file for billing purposes.

[redacted]

Neptune is proposing a hosted solution where all the installation efforts and onboarding activities are conducted by Neptune personnel. Neptune also assigns an implementation specialist that will work to ensure successful integration with CIS/Billing software and if applicable any third party integration efforts through our Application Programming Interfaces. The implementation specialist also works with the utility to ensure all configurations are complete prior to the customer handoff. [redacted]

The *Neptune® 360™* platform includes an online help content management area, which is specifically focused on how to use the software. It is broken down by each screen to assist users with application usage. [redacted]. *Neptune® 360™* also includes a new customer guide that assist new customers with setting expectation around the implementation of *Neptune® 360™*.

Neptune® 360™ Security

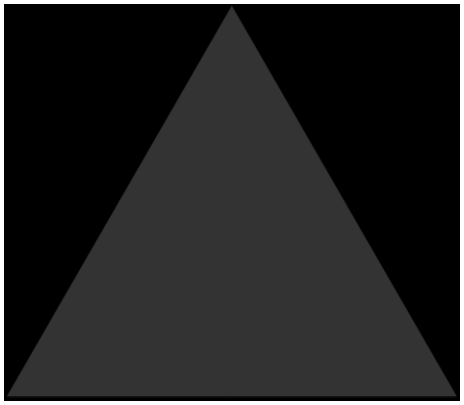
Neptune's Head End System (HES) is hosted via [redacted]. This cloud-based-data data management platform is hosted [redacted]

The HES system utilizes many industry standard security practices to ensure that system and data integrity is maintained at all points throughout the system. The host database is [redacted]

[redacted]

Neptune's security strategy encompasses our core platform and the HES system [redacted]

[redacted]



HES System Security Model

Physical Security

[redacted]

Network Security

[redacted]

[redacted]

Application Security

[redacted]

❖ Training Methodology

As part of Neptune's commitment to be your most valued partner, Neptune's has structured a training program to help ensure our customers receive a foundation of knowledge that will allow their personnel to quickly and accurately understand Neptune's AMI system functions, plus take full advantage of the information and material provided.

Neptune will provide a customized training program for PWD to address your specific needs of utility personnel, including meter readers, in-office software system operations as well as in-house technical support personnel. District personnel will be trained on the basic system functionality, communication hardware and Neptune's software.

All system configuration, technical, and operational documentation is provided for all AMI system hardware and software during training (i.e. meters, encoded registers, RF MIUs, and HES system software).

Training classes will be conducted at PWD's premises utilizing actual equipment installed in the District's production AMI meter reading system. Software training will be made available through either remote or onsite as dictated by the preference of the District.

Current Training will be modified and reviewed during the pre-project planning sessions to most closely mirror the actual conditions and requirements based on the attendees assigned by PWD.

A high-level overview of the proposed training for PWD is detailed below:

R900 LoRaWAN System
Class Duration: 3 days

Day One: Focus Meter Readers and Field Operations Personnel

- R900® end-point meter and MIU installation and test
- Overview of LoRaWAN™ network architecture

Day Two: Focus In-Office Software System Operators

- Overview of cloud-based head-end host software and platform
- Review of HES features and functionality (i.e. base meter reading, alarms, event notifications, reports)

Day Three: Additional Training (optional)

- An additional half day can be utilized to ensure that all content has been reviewed and all questions are answered. This half day is not required, however, is available as needed to support a comprehensive training program to our customers.

❖ Software and AMI Network Support and Service Levels

Neptune provides AMI Network Maintenance and Technical Support services with a toll-free Telephone Help Desk (1-800-647-4832) available between 8:00 a.m. and 6:00 p.m. EST. Neptune System Support Agents are trained in the use and application of all Neptune meter reading hardware and meter reading software products. Our response time is typically immediate, where our agents answer calls directly from our toll-free Support Line. On the rare occasion when a customer might have to leave a voice mail, our response time is normally within [redacted]

Neptune® 360™ Support Process (SaaS)

Support Level	Description
Tier [redacted] Support	[redacted]
Tier [redacted] Support	

An example service level agreement of *Neptune® 360™ is* provided as an Exhibit in this proposal document for District's review. Key components of each agreement are as follows:

[redacted]

❖ Neptune® 360™ Release Management Methodology

One of the key benefits of *Neptune® 360™* and the SaaS delivery model is the ability to deploy new updates and feature releases faster and more efficiently. Neptune has the ability to release new product features quarterly or sooner for features that are in high customer demand. All updates, new feature releases, and maintenance are scheduled after hours or on weekends to prevent any customer interruption and minimize potential downtime.

Neptune's software development lifecycle ensures software development unit testing and quality assurance testing and approval prior to every customer release . Neptune's software is designed to be forward compatible with future system offerings. [redacted]

Neptune® 360™ utilizes [redacted].

❖ Network and Performance Monitoring Tools

As part of the proposed Software-as-a-Service (SaaS) managed services, Neptune monitors both the AMI network infrastructure and Head End System (HES) to provide robust redundancy and disaster recovery capabilities.

[redacted]

As part of Neptune's Disaster Recovery strategy, [redacted]

Neptune's Disaster Recovery plan is broken into three (3) sets of procedures:

1. Emergency Response Procedures – [redacted]

2. Backup Operations Procedures - [redacted]n.

3. Recovery Actions Procedures - [redacted]

For the AMI network, a Network Operations Control (NOC) center is staffed by experienced network operations engineers both physically and virtually 24x7. The NOC is secured using industry standard physical and cyber practices. [redacted]

The LoRaWAN™ AMI network [redacted]. It uses a [redacted] Automated [redacted]

PROJECT APPROACH AND DISTRICT OPTIONS

Ferguson Waterworks is proposing that Palmdale Water District immediately deploy a Neptune R900 AMI network [redacted]) along with Neptune R900i meters for all new meter changeouts moving forward. The advantage of deploying the entire R900 AMI network up front is that it allows for the ultimate flexibility for the District moving forward towards the District's goal of having its entire meter population being read by an AMI system. Below we have listed 4 viable solution options for the District to move towards its AMI goals. The options range from running dual meter reading systems, to fully converting your old AMR system over to a new AMI system. Please see the District's options below:

[redacted]

[redacted]

[redacted]

[redacted]

message.

[redacted]

[redacted]

[redacted]

[redacted]

CUSTOMER PORTAL

Ferguson & Neptune have partnered with WaterSmart and their Customer Portal solution to complete our full system proposal to Palmdale Water District. WaterSmart is a Preferred Partner of Neptune's and have deployed full AMI solutions in many utilities across the country. We have existing API's built to share data seamlessly between Neptune & WaterSmart databases. Please see WaterSmart's Customer Portal proposal to the District below in pages 24 - 81 of our proposal to see the full details of their Customer Portal solution for the District, as well as, their Scope of Work for this project.

Accounts supplied with over 2k Neptune meters in 1 year within the last 5 years

LA County Waterworks	City of Orange
Los Angeles Water & Power	City of Redlands
Cal American Water	Santa Margarita WD
City of Ventura	City of Corona
City of Victorville	East Valley WD
City of Buena Park	Indio Water Authority
City of Huntington Beach	Indian Well Valley WD
Irvine Ranch WD	Western MWD
City of Lakewood	Mission Springs WD
City of Pico Rivera	San Gabriel Valley WC

Neptune R900v5 Propagation Study

Confidential Information

Confidential Information

Conditions:

Confidential Information

KEY PERSONNEL & QUALIFICATIONS

Eric Tracy – Business Development Manager, CA

- Eric has been in the water industry since 2005. Since receiving a degree in Commerce, Financing & Marketing from the University of Virginia in 1997, Eric has served in many capacities with manufacturing and distribution throughout his 14 years in the industry. He has served as a delegate on the Neptune Distributor Advisory Board – a group of Neptune Distributors who assist Neptune in developing future business trends and directions. His previous position was as a partner in a distribution firm that specialized in implementing meter systems and change-out programs in the California market. Eric's experience with meter technology dates back to 2005 and it spans all technological systems that have been marketed to the water industry – from the touchpad systems to the more modern fixed-base RF technologies. He is a software expert and will be a key person for leadership and expertise.

Mike Bortoletto – Utility Solutions Sales Manager

- Mike has been in the metering industry since 2009 and has been selling, negotiating, and performing on large-scale contracts throughout the State. He supervises and works hand-in-hand with the Ferguson Utility Solutions Specialists to drive successful opportunities and projects

Adam Milauskas – Utility Solutions Specialist

- Adam will be very active with the Palmdale WD's personnel in setting-up the right expectations and getting the project off on the right foot. He will quarterback the different firms involved in the overall project, including our Ferguson team, and of course Neptune. It is his role to make sure the District is comfortable with the overall project and that stated goals are met and exceeded.

Brad Foster – AMI Project Manager

- Brad is in his 17th year of being a Neptune meter distributor. He began his career in Ferguson's meter installation group and has held many positions during his career. He's always focused on delivering expected results to our customer base. Brad will be sure that all aspects of an AMI deployment run smoothly from start to finish, acting as the hub of all of the AMI activity. He's been a part of many AMI deployments that are successfully running today (Ventura, Buena Park, North Marin Water District, East Valley WD, to name a few) and oversees the operation of 100+ Neptune AMI Gateways in California.

Johnny Ho – Sr. Integration & Support Specialist

- Johnny has been working in the Integration Specialist role for the past 3 years. In that time, he has experience implementing multiple AMR and AMI systems throughout Southern California. Johnny's recent work in the field have given him the experience and understanding to work with the different applications and databases that need to communicate to roll-out an AMI platform.

NEPTUNE TECHNOLOGY GROUP

Andy Bohn, District Manager CA/Las Vegas

- BS Business Administration
- 18 years of experience with Neptune TG in the West Region sales roles
- District Manager covering: All of California & Las Vegas Territories
- Expertise in sales, customer relations and Customer Service

Julio Flores, Sr. Systems Support Specialist

- Bachelor of Electrical Engineering
- 8 years of experience with Neptune TG in the West Region Systems Support role
- Will be crucial with overseeing network installation and activation.
- Will also be crucial with Neptune 360 system training and support throughout the pilot project

Jim Dunham, System Deployment Project Manager

- Expertise in project management and AMI systems
- BS Business Administration
- Successful Completion of 60 plus AMI deployments (2 R450, 58 R900) including Lora network within allotted timeframe and budget constraints
- 17 years Project Management in AMI systems
- 18 years water industry in meter reading systems, software, infrastructure, and AMI solutions

WaterSmart a vertexone brand

Brandon Sherman, Regional Sales Director

- Years of experience deploying & supporting WaterSmart Customer Portals across the Country
- Expertise in Customer Portal Deployment, Project Management and Engagement
- Will be crucial with getting the District access to the WaterSmart demo database
- Will also coordinate with his team at WaterSmart to fully train District Staff on WS platform

Lindsey Fransen, Associate Director Customer Success

- Oversee the successful implementation & continuous operation of 8 utility partnerships in 4 states
- Ensure consistent & timely customer communications by coordinating content updates, mailing schedules & quality control checks for over 100,000 Water Reports per month.
- Collaborate with Customer Success & other WaterSmart department team members to continually improve the quality partner experience.

JM Electrical Services

Jeff Mandell, Network Installation Manager & Journeyman Electrician

- Since 2012, the Ferguson Waterworks/Neptune team has trusted Jeff Mandell with the installation of Neptune's AMI network infrastructure. With over 100+ installations at 15 separate utilities, we have the highest level of confidence with his quality of workmanship and ultimately the successful deployment of the Neptune AMI network at each utility. JM Electric Services is Licensed & Insured to the satisfaction that meets Ferguson standards.

WaterSmart Software Proposal for Palmdale Water District, CA

Meter Procurement and Future Technology Enhancement

RFP Packet

6/9/2020

WaterSmart SOFTWARE

20 California Street, Suite 200
San Francisco, CA 94111

415.366.8622

First & Last name
email@watersmart.com3

WaterSmart SOFTWARE

TABLE OF CONTENTS

SCOPE OF WORK

General

Firm must provide the time to launch (contract signing to program start) for five programs implemented for water utility customers in past two years. Proposer shall include Utility, program manager name, title, and contact information.

Utility Name	Time to Launch	Utility contact
City of Canyon, TX	59 days	Eric Whitten, Water Superintendent, 806-656-6831, ewhitten@canyontx.com
City of Buda, TX	60 days	Blake Neffendorf, Water Resource Coordinator, 512-523-1079, bneffendorf@ci.buda.tx.us
Orange Water & Sewer Authority, NC	81 days	Mr. Addison McDonough, Business Systems Analyst, (919) 537-4324, amcdonough@owasa.org
Town of Galena, MD	98 days	Kathleen Billmire, Town Facilities, Zoning Coordinator, Code Enforcement, & Grant Writer, (410) 648-5151, kbillmire@townofgalena.com
Village of Oak. Lawn, IL	101 days	Thomas Swaw, Information Services, (708) 499-7097, tswaw@oaklawn-il.gov

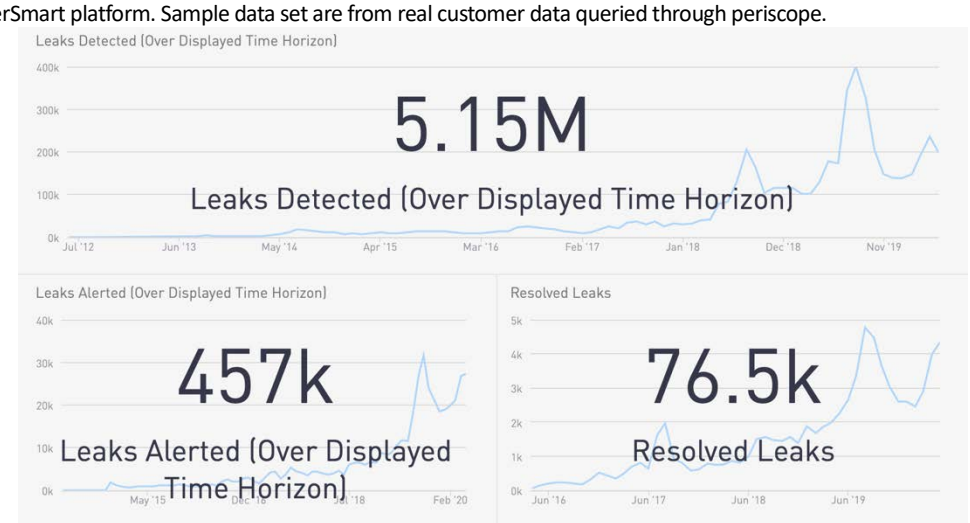
Firm must provide third party verified results of similar program implementation including impact on water conservation, customer engagement, and program participation compared to a control group.

This independent report is from the E2e collaborative, a joint initiative of the University of California, Massachusetts Institute of Technology, and University of Chicago.

See below for an infographic of the third-party verified study results.

Firm must provide evidence it has sent at least 75,000 abnormal use ("leak") alerts, and have statistics showing the end result of these leak alerts (whether or not they were resolved, and what the leak source was).

Palmdale will be able to see statistics for their customers around detected, alerted, and resolved abnormal use via the WaterSmart Utility Analytics Dashboard. The following is a sample screenshot of leaks detected, alerted and resolved with the WaterSmart platform. Sample data set are from real customer data queried through periscope.



Overview of Solution and Program Design

Proposer shall provide an overview of their proposed program, including information on how the program will be designed. Proposer shall include descriptions with the necessary information of:
information of:

i. Program goals
ii. Implementation approach, program launch timeline and responsibilities
iii. What accounts will be involved in program and what they will receive
iv. What utility staff will receive
v. Training and support
vi. Ongoing program responsibilities
vii. How program results are tracked and measured

Program goals; What accounts will be involved in program and what they will receive; What utility staff will receive

The WaterSmart Customer Self-Service Portal is available to all customer accounts in English and Spanish through a mobile and web application interface. The Portal provides a single place for customers to see their consumption, check and resolve leaks, view bills, sign up for paperless billing, complete digital forms, and receive targeted messages about Utility promoted events and programs

WaterSmart provides alerts to customers to notify of potential high volume or continuous use leaks, to notify a customer that they have reached a self-selected consumption threshold, or to inform customers before the end of the billing cycle that they are likely to have high water use on their upcoming bill. WaterSmart provides the industry's first and only Closed-Loop Leak Resolution System, which helps customers identify the source of their leak, and resolve the leak on their own through step-by-step instructions and how-to videos.

Bill Explainer is a powerful personalized resource within the Customer Portal, providing automated self-help to customers to identify and resolve concerns over high bills. Bill Explainer analyzes a customer's billing period consumption data in conjunction with their property data and information collected in their Household Profile to provide a personalized assessment of the most likely drivers for their bill. District staff see the same information as the customer on the Utility Dashboard, supporting their efforts to respond to customer calls about perceived high bills in a faster, more satisfying manner.

Customers will also be able to track their water usage across a variety of intervals, relative to local temperature and precipitation, and against the District's rate tiers. These personalized water-use insights inform the actionable recommendations available to each customer in the Portal. Finally, District customers will be able to access their existing Invoice Cloud online payments portal from within the WaterSmart Customer Portal.

District staff will receive access to the Utility Analytics Dashboard. The Utility Analytics Dashboard creates actionable insights from data and provides a communication platform to drive the District's conservation, engagement, and operational efficiency goals. District personnel are able to analyze consumption, anomalous use, and user engagement. There are approximately 50 configurable reports with current and historical data that

support filtering, drill-down, and mapping capabilities across time, customer class, and more. This data can be managed in the Dashboard or easily exported for further analysis. District staff will be able to analyze and communicate with all accounts using the Dashboard.

Each customer account has its own profile with attributes about that individual's account, usage, and property. District personnel, particularly those in Utility Billing, are prompted with personalized suggestions each billing cycle to answer customer questions about high bills and then easily follow-up with personalized template emails. These insights decrease call time and increase one-call resolution. Representatives are also able to gather customer contact information and enroll customers and their designees in leak, threshold, or other alerts.

The Utility Analytics Dashboard is also a communication engine. It provides the ability to send and re-send timely and targeted information to customers via email, text, or voice. Customer opens, clicks, and actions are all recorded and displayed so that the City can measure the efficacy of a communication and refine its approach for continuous improvement.

Implementation approach, program launch, timeline, and responsibilities

WaterSmart and the Utility shall each designate a project manager for the program. All Utility decisions shall be channeled through the Utility's project manager. In addition, Utility shall designate a Data contact who is responsible for providing the data indicated in the Data Specification File. Program initialization and subscription begin with Contract Signing. The Utility should move to set up data transfers with the quickest speed to make the most use of their subscription. *Significant delay on the part of the Utility during launch may result in less than 12 months of access to the Customer Portal and Utility Analytics Dashboard and/or fewer than the planned number of communications to be sent during the 12-month period.*

30-60-90 Initialization

WaterSmart works with Utility to launch the WaterSmart platform within 90 days from contract start. The following steps are requirements for successful launch:

Pre Contract Signing	WaterSmart provides Data Specification File and 30/60/90 Day Schedule, utility reviews and agrees to provide requirements as specified and within given timeframes Utility IT contact completes Data Survey
0-30 Days ***Orientation and Data Transfer***	WaterSmart conducts a 60- to 90-minute online Kickoff meeting to orient Utility staff involved in the Program. Utility should include a representative from each functional group that will be involved with the setup and use of the program WaterSmart technical team conducts Data Call with Utility IT lead to go over Data Survey and next steps Utility IT sends initial Sample Files per Data Specification File 30 Day Check in
31-60 Days ***Data and Portal Configuration***	WaterSmart provides feedback on Sample Files Utility and WaterSmart work to setup Ongoing File Transfers per Data Specification File Utility PM approves content and configures general settings

	60 Day Check In
61-90 Days ***Quality Assurance and Launch***	WaterSmart conducts Quality Assurance Utility Dashboard is live and fully functional Customer Portal is live and functional (though may not be open for registration depending on Utility needs)
Post Launch	If applicable, embedded Payment site, SSO, PDF Bill Display, AMI data, and other premium integrations are configured and go live (if not included in initial 90 day launch) On-site or Online Training completed Customer Letters (if applicable) are sent and Customer Portal open for registration Leak Alerts and other Notifications begin Ongoing Support

Data Transfer and Utility Obligations: Initiative and technical know-how on the part of Utility IT staff, consultants or existing vendors is necessary. WaterSmart works with the Utility to securely transfer a dataset on accounts, including but not limited to Account Information, Consumption History, ongoing feeds of Current Consumption, AMI Interval Information (if applicable), and Billing and Payments (if applicable). Should Utility provide data files in a new format which requires WaterSmart to re-onboard new file structures or map historical identifiers (e.g., customers, accounts, premises), WaterSmart assesses an additional one-time fee not to exceed $10,000 upon receipt of first test files from the new system.

Configuration of Customer Portal: WaterSmart works with the Utility to configure the Customer Portal with Utility logo and contact information. Utility has the opportunity to approve or exclude any recommendations shown in the Customer Portal and provide WaterSmart with information on available rebates and incentives. Utility should provide consolidated feedback and final approvals to WaterSmart no more than ten (10) business days from when initial materials are provided to Utility.

Finalization of Customer Letter: If selected, WaterSmart sends a Customer Letter on behalf of the Utility, to accounts that receive access to the Customer Portal. The Customer Letter is branded for the Utility (has utility logo and contact information) and Utility has the ability to personalize the signature. No other customization is available. WaterSmart sends Customer Letters by email where a valid email address is available and by print otherwise.

Training: After all initial customer data has been received and program content is finalized, WaterSmart provides Utility staff with training and resources to understand the features and functionality of the Customer Portal and Utility Analytics Dashboard. If selected in Program at a Glance, WaterSmart Software provides training on-site; if not selected, training is provided via webinar. On-site training may be conducted as multiple sessions on a single day.

Training and Support

Palmdale Water District will designate a project manager for the WaterSmart program. All Utility decisions shall be channeled through the Utility's project manager. In addition, Utility shall designate a Data contact who is responsible for providing the data indicated in the Data Specification File. After all initial customer data has been received and program content is finalized, WaterSmart provides Utility staff with training and resources to understand the features and functionality of the Customer Portal and Utility Analytics Dashboard. If selected,

WaterSmart Software provides training on-site; if not selected, training is provided via webinar. On-site training may be conducted as multiple sessions on a single day. Below is a thorough overview of the training information that is provided:

- **Introduction to all customer facing elements**: includes the Portal, alerts, mobile interface, the Marketing Kit, and more
- **Detailed Customer Success functionality**: how to use Utility Analytics Dashboard to respond to customer questions (WaterSmart related or not), track customer interactions, provide customer support with technical issues related to the WaterSmart program, send emails, and more
- **Analytics training**: review of analytics available, how to access information, how to evaluate programs, and more
- **Brief WaterSmart program information session**: for members of your staff who may need to speak about the WaterSmart program or be aware of the program goals and tools available, but may not need to use the platform on a regular basis, the CS Manager can provide a shorter 45 – 60 minute-long informational session about the program and products, including the Customer Portal and Utility Analytics Dashboard
- **"Train-the-Trainer" Session**: WaterSmart offers a "train-the-trainer" model where WaterSmart staff trains Utility staff to conduct ongoing training for their colleagues throughout the year. This option gives Utility staff the information and materials necessary to train their colleagues where and when necessary throughout the program

Palmdale Water District will have a dedicated Customer Success ("CS") Manager that will support the Utility's program throughout its implementation, launch, and lifetime to answer questions, provide updates, support complex tasks, share new feature updates, and provide additional training as needed.

Ongoing Support

WaterSmart does not communicate directly with the Utility's customers; end-user support is the responsibility of the Utility. WaterSmart provides a number of tools to assist Utility staff looking to understand and maximize their WaterSmart experience:

- The WaterSmart Support Site, which is accessible by all Utility staff, includes responses to Frequently Asked Questions as well as common troubleshooting topics, how-to videos and other customer support-oriented content.
- The Customer Detail Page helps customer service representatives respond to Customer inquiries by providing all relevant customer information.
- Live Chat allows Utility staff to ask questions and receive a response within the hour. Available 7 a.m. to 6 p.m. Pacific Monday thru Friday, excluding federal holidays.
- Quarterly Product Webinars provide the latest WaterSmart news including product releases, case studies, and a forum to interact with other customers.
- Quarterly check-in calls with the assigned Utility Project Manager and dedicated WaterSmart Customer Success Manager will be conducted to track performance relative to Utility objectives and adjust as

necessary, provide implementation support, review best practices, support outreach efforts, gather feedback and answer any questions.

Programs Results and Tracking

The dedicated WaterSmart Customer Success Manager will work with the utility to track performance metric and results. These will be discussed during the quarterly meetings. Customer Engagement metrics are also available in the Utility Analytics Dashboard homepage.

Web Based Application for Customers

Registration and Basic Information

Secure registration and login for each utility account, regardless of meter type, the granularity of meter data or frequency of meter data collection (allowing for use with AMR, and AMI data).

i. Ability to configure the main tiles of the Home Page based on Utility priorities.
ii. Ability to add items to the Home Page based on common requests to the Utility.
iii. Ability to communicate AMI data interruptions to your customers through their data feed to decrease the number of customer calls.
iv. Dynamic customer profile that customers can update 24x7 to personalize their portal and recommendations
v. Provide customers the ability to enter information about home size, square footage, number of persons in home and other useful information in comparing water usage of similar properties
vi. Ability to fill out web forms designed by the Utility from within the Customer Portal and view previously submitted forms

WaterSmart meets requirements i-vi.

Notifications and Alerts

i. Easily customizable communication preferences – customers shall be able to determine how they receive outgoing communications including by text/SMS, email, automated call and mail
ii. Account management module to set communication preferences for alerts (see Alerts section)
iii. Ability to automatically detect leak events using AMI or Non-AMI data, automatically notify the customer of suspected leaks, engage the customer to investigate and resolve the leak with step-by-step instructions and resources, and provide resolution details to Utility through the Dashboard
iv. Ability to view dynamic, personalized information on why a bill might be high and what can be done to reduce future consumption

WaterSmart mets requirements i-iv.

Personalized Data and Insights

i. Personalized consumption displays in gallons per day, seasonal consumption trends, year-over-year usage, and ability to compare use to utility goals. Residential accounts shall include water use consumption comparisons to similar households based on occupancy and outdoor area characteristics and residential end-use disaggregation
ii. Disaggregated water consumption estimates for indoor and outdoor usage
iii. Display water consumption data in context of temperature and precipitation data to inform users of how weather impacts water use
iv. Ability to view water consumption by rate tiers and to forecast end-of-period total consumption levels
v. Ability to view current and prior period consumption relative to a utility determined water budget, consumption goal, or usage allocation
vi. The ability to display missed meter reads
vii. The ability to estimate and display irrigation events in the consumption graph view
viii. Interactive money-saving recommendation library, customized for each account profile and configurable by the Utility with step-by-step implementation instructions, informational links and videos, dynamic estimates of savings potential in GPD and dollars per year, and ability to sign up for, and keep track of,

money saving activities. Library shall highlight and rotate most relevant savings actions for customers based on the customer's profile and the season

WaterSmart meets i-vii

Multiple Users and Accounts

i. Users or managers of multiple properties or commercial properties with multiple meters, can view a roll-up of all propriety consumption data in a unified view
ii. Ability to give access (create a secondary account login) for other users such as a spouse, roommate, tenant, or property manager
iii. Deliver relevant and timely utility-specific news or resources.
iv. Ability to export consumption data into standard data display format (i.e. csv)

WaterSmart meets i-iv

Billing and Payments

i. Ability to offer a link from the Utility website and integrate with Utility's payment system.
ii. Ability to view bills securely directly through the Portal (PDFs available).
iii. Ability for end users to sign up for bill alerts including when a bill is available, due, or overdue.
iv. Proposer must provide sample format, design and content of the web-based application and functionality in the proposal. Proposer shall also provide information on safety and security features of online application (see Security and Privacy Controls).

WaterSmart meets i-iv.

Utility Dashboard

Data and Access

i. The ability to store and display at least 10 years of AMI data for immediate real-time access in both the reporting engine and the customer presentment interface
ii. Ability to export data in standard data presentment format (i.e. csv)
iii. Unlimited licenses for Utility staff members and the ability for a Utility administrator to provision or revoke access with viewer, editor, or administrator roles
iv. Consumption analytics across all meter types, regardless of meter type, the granularity of meter data, or frequency of meter data collection (allowing for concurrent analysis of AMR, and AMI data
v. Profiles for each account with the ability to search for a profile by partial or complete account number, meter number, customer name, address, or email address.
1. Ability to record communications with each account, and ability to send an email with relevant data and charts to an individual customer through their profile page
2. AMI data in the profile will be displayed and color-coded based on normal usage, suspected leaks, and suspected irrigation.
3. Customer use disaggregation, seasonal use analysis, temperature and precipitation information, an interface to view a satellite image of property, and ability to load the customer's view of their portal in impersonation mode

WaterSmart meets i-v.

Reports and Modules

i. Reports and maps showing top consumers by meter class and by period. Ability to download consumption into Excel for further analysis
ii. Group multiple meters (e.g. indoor and irrigation) associated with one master account
iii. Reports on customer portal use and customer profile statistics, including frequency of portal use, most popular actions taken by customers, method of visit (mobile vs *desktop*)
iv. Leak detection module that detects and defines types of leak events with thresholds that can be configured by the Utility.
v. Leak status report that estimates of leak start date, duration of leaks, volume of water lost in leak, whether or not customer has been notified, what actions the customer has taken to resolve, and information on resolution.
vi. Messaging module to allow for utility staff to mass customize customer communications over email, text, and automated voice

vii. List creation feature by meter or account id, polygon selected map interface, or external csv file upload
viii. Irrigation detection module that detects daily irrigation events at individual properties and flags properties that are violating utility day of week irrigation restrictions (where needed)

WaterSmart meets i-iv

Messaging and Communications

i. Ability to compose, send, and track messages to segments of customers within Dashboard
   1. Ability to create segments of customers based on drawing shape over map of accounts within service area
   2. Ability to create segments of customers based on popular reports
   3. Ability to support multiple communications channels, including SMS and automated voice calling.

ii. Ability to create, publish and deactivate custom forms for use internally or by end customers through Portal, and manage responses in report view.
iii. Ability to view each customer's up-to-date account balance, water bill, and billing history
iv. Help site and live chat feature with Proposer's customer service staff
v. Proposer must provide sample format, design and content of the web-based application and functionality in the proposal. Proposer shall also provide information on safety and security features of online application (see Security and Privacy Controls).

WaterSmart meets i-v. See Appendix for screenshots.

Alerts and Notifications

Proposer must provide sample format, design and content of the alerts including screenshots. Proposer must have the ability to send identify certain events and send alerts, including the following capabilities:

i. Ability to send any alert through email, SMS, or automated call based on the end user preferences

ii. Ability to detect irregular usage ("possible leak") for residential and irrigation-only accounts based on thresholds configurable by the Utility. Leak detection shall be available for hourly (AMI) data and monthly data.
iii. Digital leak alerts shall provide instructions and video content for finding and resolving the source of irregular use, regardless of whether or not the user has ever logged into the customer portal

iv. Option to send automated Print Leak Alerts to customers with continuous use detected from hourly meter reads (when email and phone numbers are not available)

v. Option to allow customers to set their own consumption threshold alerts based on usage compared to previous periods

vi. Ability to set threshold notifications based on monthly customer spend

vii. Ability to view mobile and web based hourly, monthly, and bi-monthly AMI/AMR consumption graphs including the ability to overlay weather data.

viii. For customers with daily or hourly (AMI) data, option to allow customer to set their own daily or billing period user-defined threshold alert

ix. Option to allow customer to choose to receive an alert when a bill is available, due or overdue
Proposer must provide sample format, design and content of the alerts including screenshots. Proposer must have the ability to send identify certain events and send alerts, including the following capabilities:

WaterSmart meets i-ix.

Payment Processing

Proposer must provide a convenient option for Utility customers who want to view and pay their bills online. If Proposer utilizes a secondary vendor to provide one of the solutions below, the vendor must be PCI compliant and ensure a secure method of payment.

Proposer shall configure this capability in one of the following ways:

i. Single Sign On between Utility's existing payment website (Infosend) and Customer Portal. See Section g. below for details on required Single Sign On capabilities.

WaterSmart meets this requirement. Additional fees apply.

i. Ability to include an embedded payment page within the Customer Portal. Customers shall be able to view and pay bills from within the Customer Portal including by credit card, debit card and ACH. Autopay and saving payment methods is also desired.

WaterSmart does have embedded payment options but only with a select list of vendors. InfoSend is not currently on that list. If selected we can engage InfoSend to see what additional options are available to enhance customer experience.

i. Redirect link to outside payments page. Customer Portal sends visitors to an outside payment website. Once customers arrive to the website, they will be prompted to log in as usual.

WaterSmart meets this requirement at no additional charge to the utility.

Water Reports

Proposer will customize Water Reports for Utility including Utility logo and contact information and utility programs.

Water Reports, whether electronic or print, shall contain the following content, and be configurable where deemed necessary by the Utility:

i. Water use consumption (gallons per day)

ii. Water use comparisons among similar size households and/or lot size (for residential customers)

iii. Historical water use comparisons

iv. Personalized ways to save – defined by Utility and Proposer

v. URL link to customer web application and unique registration code (if needed)

vi. Ways to save—water efficient tips with ranking/ sorting capabilities

vii. Sign-up/request capability

viii. Proposer shall provide detailed explanation on its capabilities to provide Water Reports with required components and customizability. If applicable, Proposer shall provide examples of sample Water Reports including call outs of configurable content.

WaterSmart meets i-viii. See Appendix for product screenshots.

Single Sign On

Proposer will have the ability to work with Utility or Utility's existing Proposers to implement a single sign on (SSO) capability using SAML 2.0 or OAUTH 2.0 protocols to existing Utility websites or portals. Utility or Utility's existing Proposer will function as SSO Identity Provider. The SSO shall allow for the following functionality:

i. Customers shall be able to log into utility bill pay website and be able to transfer to customer portal using same credentials

ii. Customers shall be able to log into customer portal directly with same and pre-existing credentials as they use with the utility bill pay website

WaterSmart meets i-ii. Fees included in pricing

Customer Letter

Proposer will have the ability to provide a print or digital letter that will reach the most customers and drive them to login to the online customer portal. Customer letters, whether electronic or print, shall contain the following content:

i. Configurable message from the relevant Utility or Utility administrator
ii. Utility logo and contact information and any Utility programs
iii. Explanation of benefits of customer portal including access to real-time water use data, ability to pay water bill online conveniently and securely, etc.
iv. Instructions on how to register for portal
v. Proposer must provide sample format, design and content of the letter in the proposal.

WaterSmart meets i-v. See appendix for a product screenshot.

Customer Survey

Proposer must design one survey and develop an implementation strategy for Utility customers. Must provide an explanation of average customer engagement and survey completion. Key deliverables for this task are:

i. Selection of pre-launch and post-launch questions and design of survey.
ii. Administration of survey, collection of aggregated data and interpretation of results.

WaterSmart meets i-v. A post-launch Satisfaction survey is available to Utilities that have selected Water Reports. For utilities that opt out of Water Reports, WaterSmart can design, administer, and present survey results for an additional charge. Alternatively, the district can choose to do-it-yourself using Forms available via the platform for no additional cost. With this option, the utility is expected to self-serve once the customer success manager helps with form creation. WaterSmart will still be available to answer questions and address issues.

Project Management

a. WaterSmart meets i-v. Project management details attached.

In order to ensure adherence to the agreed-upon schedule and budget the Proposer shall:

i. Provide staff training to orient staff to Program components
ii. Provide project status report updates
iii. Organize, coordinate with meter manufacturer, and attend meetings as required (in person, or by phone or web as appropriate)
iv. Designate an individual to serve as a Project Manager
v. Proposer shall provide information on project management capabilities and experience, in particular with Programs similar in scope. Proposer shall provide information on training capabilities of staff.

WaterSmart meets i-v. Project management details attached (see Overview of Solution and Program Design).

Program Measurement and Verification

Proposer shall include an outbound Water Report program, Proposer shall provide detailed information on how program will be measured and verified. Relevant details will include what information/specific metrics will be available to Utility (as relates to water savings, customer satisfaction, cost effectiveness, program participation, staff efficiency, etc.), time frames for availability and frequency of reporting, and statistical methods used to track program. Proposer shall also provide information on staff experience and expertise as relates to program measurement and verification.

Palmdale Water District has the option to include Water Reports with their WaterSmart program. If selected, a post-launch Satisfaction Survey is available. The dedicated Customer Success manager along with our data analyst will work with the utility to track and measure the program performance as relates to water savings, customer satisfaction, cost effectiveness, program participation, etc. Engagement and deliverability metrics are also available through the Utility Analytics Dashboard.

CUSTOMER SOFTWARE REFERENCES

Program Highlights:

City of Arcadia

The City of Arcadia began working with WaterSmart in November 2015. WaterSmart provides Water Reports 10,000 accounts and Portal access, as well as Utility Dashboard access for 14,000 accounts that include SFR and MFR accounts. The program was initially launched to support implementation of the City's drought goals, saving over 50 MG through teh WS program alone. The team now uses data from the analytics dashboard to support various research and reporting efforts. It also uses Group messenger to promote its various programs and has reaching its highest levels of participation.

Contact:
Mandy Jiang, Management Aide
mjiang@arcadiaca.gov | 626.254.2706

Rincon del Diablo Water District

Rincon's six-year WaterSmart program was initiated in May 2015. WaterSmart sends Home Water Reports and provides customer portal access to all of Rincon's 8,029 single-family residential customers. In addition, WaterSmart provides utility-facing analytics for all of Rincon's potable and recycled water accounts. WaterSmart tools and initiatives helped Rincon meet its 32% water reduction target during the drought. Rincon customers are particularly engaged with the alerting functionalities and leak resolution processes - over 60% leak resolution rate and 1 MG saved in 5 months - and the utility is soon expanding it's alerts to include telecommunication channels.

Contact:
Julia Escamilla, Public Services Information Officer
jescamilla@rinconwater.org | 760.745.5522

Sunny Slope Water Company

Sunny Slope Water Company (Sunny Slope) has been a customer with WaterSmart Software since May of 2018 serving a mixed-meter environment with a Customer Water-Use Portal available to about 7,000 customers and an Analytics Dashboard for use by the utility's Customer Service staff. WaterSmart provides information and education to Sunny Slope water customers about their water use, and encourages self-service, by directing them to the WaterSmart Software's Customer Portal. WaterSmart also provides paperless billing for Sunny Slope customers. Since the program's inception Sunny Slope has increasingly made use of the platform's communication tools, recently incorporating text and voice communications into its processes.

Contact:
Karen Maas, Office Manager/HR
karen@sunnyslopewatercompany.com,626.287.5238

Soquel Creek Water District

Soquel Creek Water District, in Capitola, CA, which serves 14,000 customers, has been working with WaterSmart since 2014. Initially, the partnership involved a residential Water Report program, designed to increase water use efficiency, strengthen the relationship between customers and the utility, and sharpen awareness of water supply issues and communal measures being taken to address those issues. After a hiatus, the Soquel Creek / WaterSmart partnership is continuing in 2020, leveraging data from newly installed AMI meters. The new goal is to increase self-service, decrease the number of calls to the utility and to provide customers with access to hourly data, leak alerts, predictive high bill notifications and related functionalities.

Contact:
Shelly Flock, Conservation and Customer Service Manager
shellyf@soquelcreekwater.org | 831.475.8501x156

City of Long Beach

Long Beach has been a customer since December of 2015. Their program launched without delay with the records of over 90,000 customer accounts included in their Utility Analytics Dashboard. Working with WaterSmart, Long Beach has sent out Home Water Reports since early 2016 with important messages about local conservation initiatives and reminders about watering restrictions and tips. The Water Report program includes delivery of bi-monthly Home Water Reports to 40,000 Single Family Residential customers. WaterSmart also includes staff training for the Utility, bi-monthly status meetings with the program manager, and a statistical program evaluation.

Contact:
Dean Wang, Water Conservation Specialist
dean.wang@lbwater.org | 562.570.2311

Complete list of Southern California Utility Partners:

City of Arcadia
City of Buena Park
Burbank Water & Power
City of Carlsbad

Coachella Valley Water District
Fallbrook Public Utility District
Glendale Water and Power
Indian Wells Valley Water District
Irvine Ranch Water District
City of Lakewood
City of Long Beach
Los Angeles Department of Water and Power
City of Oceanside
Pasadena Water and Power
Rincon del Diablo Water District
City of Santa Barbara
City of Santa Monica
Sunny Slope Water Company

KEY PERSONNEL AND RESUMES

 **Lindsey Fransen** **Director, Customer Success**	Lindsey is responsible for working with individual utility partners to ensure that the implementation process and ongoing program are seamless and successful. Since 2015, Lindsey has successfully launched and provided ongoing support to dozens of WaterSmart's customers, including utilities in California, Arizona and Florida. Lindsey's experience in the water sector began in graduate school at UC Berkeley, where she studied international water policy and interned with the California Public Utilities Commission (CPUC). Lindsey also has a BA from Wesleyan University.
 **David MacDonald** **Customer Support Associate**	David has been with WaterSmart Software since 2018. David is WaterSmart's dedicated full-time Customer Support Associate. He is responsible for supporting customers in real time using live chat. Along with customer support, he investigates utility data to solve data inconsistencies plus assists both WaterSmart's Engineering and Customer Success teams. David holds a B.A. from the University of North Carolina at Chapel Hill.
 **Chad Haynes** **SVP, Platform &** **Infrastructure Engineering**	Chad Haynes has been leading WaterSmart's engineering team since 2011. He is responsible for WaterSmart's server architecture, web applications, and data transformation, which allow WaterSmart to work with any water utility worldwide. He is also an expert in creatively using JavaScript to visualize water data. Chad has successfully managed the data onboarding of over 75 utilities in his time with WaterSmart. Prior to WaterSmart, Chad was responsible for building an analytics cluster for a world-class investment management platform. Chad has a Bachelor of Science from the University of North Carolina, Chapel Hill. Chad works from our San Francisco headquarters.
 **Will Holleran** **Data Scientist**	Will has been the head Data Scientist at WaterSmart since 2014. He spends his time designing experiments to improve the effectiveness of the WaterSmart program, applying machine learning techniques to inform WaterSmart's comparison algorithm, and providing insight to better inform individuals on how they use water. The efficiency studies for each client are run through the Data Science department, providing insight on how the program is performing. Will has run approximately 250 efficiency studies for over 50 utility partners over his 5 years with WaterSmart. Will graduated from

	Bucknell University with a BS in Mathematics and went on to get a Masters of Science in Applied Economics at the University of California, Santa Cruz. Will works from our San Francisco headquarters.
 **Data Engineer**	In addition, each utility is designated a data engineer to help during the implementation process. The Data Engineering team is responsible for onboarding WaterSmart's newest customers and creating custom solutions to enable utilities to get the most out of their data. They spend most of their time at WaterSmart wrangling data, building out backend processes, and working closely with new utility customers and third-party data providers to get their platform up and running smoothly. The Utility will be assigned one of our four data engineers upon signing contract.

Lindsey Fransen, Associate Director Customer Success

(202) 251-5342 • lindsey@watersmartsoftware.com

WATERSMART RESPONSIBILITIES

- Oversee the successful implementation and continuous operation of eight utility partnerships in four states.
- Ensure consistent and timely customer communications by coordinating content updates, mailing schedules, and quality control checks for over 100,000 Water Reports per month.
- Collaborate with Customer Success and other WaterSmart department team members to continually improve the quality of the utility partner experience.

EDUCATION

Bachelor of Arts **Graduated 2001**

Wesleyan University, Middletown, CT 06459

MS in Energy and Resources **Graduated 2008**

University of California, Berkeley, CA 94720

PAST EXPERIENCE

San Francisco Bay Conservation & Development Commission **2011–2014**

Led working group conducting sea level rise vulnerability and risk assessment for the Oakland International Airport; led development of internal guidance for implementation of the agency's sea level rise policies.

California Public Utilities Commission **2009-2011**

Analyzed privately owned water utilities' water conservation programs, rate designs, and rationing plans, and developed recommendations to improve cost-effectiveness and equity. Tracked water-related State legislation and developed agency positions on water conservation.

World Resources Institute **2003-2006**

Researched, published, and presented policy papers on land use, livelihoods, and biotechnology. Developed partnerships, coordinated workshops, and facilitated dialogue among stakeholders in agricultural biotechnology and natural resource policies in Southeast Asia.

David MacDonald, Customer Support Associate

(415) 366-8622 • dmacdonald@watersmartsoftware.com

WATERSMART RESPONSIBILITIES

- Support WaterSmart customers in real-time via Intercom's live chat platform
- Investigate utility data to locate discrepancies that can affect data presentation and or processing
- Provide internal support to Customer Success and Engineering as needed

EDUCATION

Bachelor of Arts

University of North Carolina, Chapel Hill, NC 27514

Graduated 2012

PAST EXPERIENCE

Qstream Inc. **2017**

Member of the Client Services team supporting clients with the use of a learning and sales enablement application. Utilized ZenDesk to provide online support to clients who did not have a dedicated client services consultant.

Optimized Aspects LLC dba Infuse **2015-2017**

As a project manager I managed the development and roll out of a customized point of sale application and its respective backend dashboard. Provided on-site, in person training to our customer's employees. Worked in the application's database to identify issues during development.

ICON International Inc. **2014-2015**

As a research analyst I helped manage ICON's CRM system, Microsoft Dynamics, and implemented the transition to a new platform, Pipeliner CRM. Facilitated the training of employees on Pipeliner CRM. Prepared weekly sales pipeline reports and researched prospects.

SKILLS

MySQL	Zendesk
Intercom	Microsoft Office

Chad Haynes, SVP of Engineering

(917) 375-3229 • chaynes@watersmart.com

WATERSMART RESPONSIBILITIES

- Oversee all aspects of WaterSmart's infrastructure and software development
- Data Ingest Engine, developed highly extensible engine for processing and loading water usage and residence data in non-standard formats.
- Home Water Report Generator, created process to select appropriate report recipients, generate content, provide QA samples, and send.
- Content Selection Engine, using characteristics of the household, select appropriate water saving recommendations in both the Home Water Reports and on the customer web portal.
- Customer Web Portal, developed and maintain customer web portal for residents to view their water use and find ways to save water.

EDUCATION

Bachelor of Science

University of North Carolina, Chapel Hill, NC 27599

Graduated 2002

SKILLS

C++	XML	Linux
Python	HTML	Chef
BASH	MySQL	Terraform
PHP	Oracle	AWS
JavaScript	SQL Server	

PAST EXPERIENCE

Thomson Reuters **2008-2011**

Worked with team of 10 developers to design and maintain legacy starmine.com websites and the associated backend data processes. Developed equation processing engine to calculate analytics on data pulled from company financial statements.

The Rockefeller University **2002-2007**

Designed and developed databases to store clinical and genomic data. Implemented a graphical user interface to require double-entry of all data points. Also served as system administrator maintaining the laboratories linux-based servers.

Will Holleran, Senior Data Scientist

(415) 366-8622 • wholleran@watersmart.com

WATERSMART RESPONSIBILITIES

- Program Evaluation, to verify water savings and behavioral impacts of the home water reports.
- Incorporating Machine Learning algorithms into the WaterSmart product. Specific projects include occupancy estimates, customer sentiment and Natural Language Processing work.
- Generate insight from data sources, leveraging available data to inform decisions for the company.
- Managing the Performance Watermark utility benchmarking product line.
- Evaluating adoption of WS Dashboard features
- Custom analysis projects leveraging large AMI data sets (50M rows+)
- Coordinate external research, by conducting jointly designed experiments and sharing anonymized data with interested research parties.

EDUCATION

Master of Science, Applied Econometrics

University of California, Santa Cruz, CA

Graduated 2010

Bachelor of Science, Mathematics

Bucknell University, Lewisburg, PA

Graduated 2008

SKILLS

AWS Sagemaker	Data Visualization	STATA
Econometric Modeling	R Python	Excel
Machine Learning	SAS	
Propensity Matching	SQL	

PAST EXPERIENCE

ADM Associates, Inc. **2010 - 2014**

Conducted analyses of energy efficiency programs, specifically Demand Response, Behavioral Modification and Weatherization programs. Utilized both hourly AMI (SmartMeter), Data logger and customer billing data to inform models that predict customer baseline usage.

University of California, Santa Cruz **2008-2010**

Conducted research and taught courses in Economics and Mathematics. Explored applied micro topics with a thesis project investigating the influence of personality characteristics on entrepreneurial success.

APPENDIX A: PRODUCT SCREENSHOTS

FIGURE 1: CUSTOMER PORTAL HOME PAGE ON WEB AND MOBILE

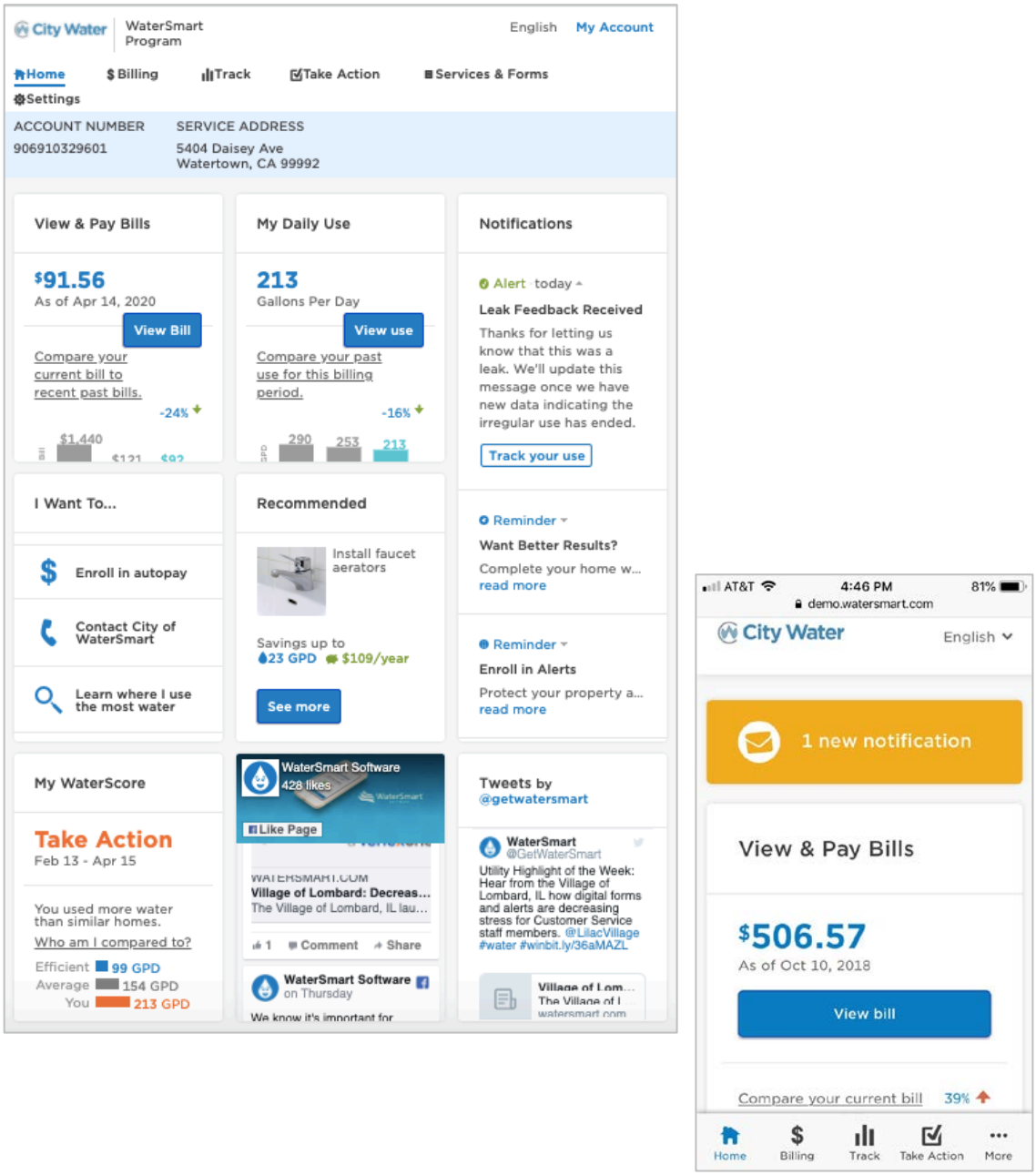


FIGURE 2: SPLASH NOTIFICATION IN THE CUSTOMER PORTAL

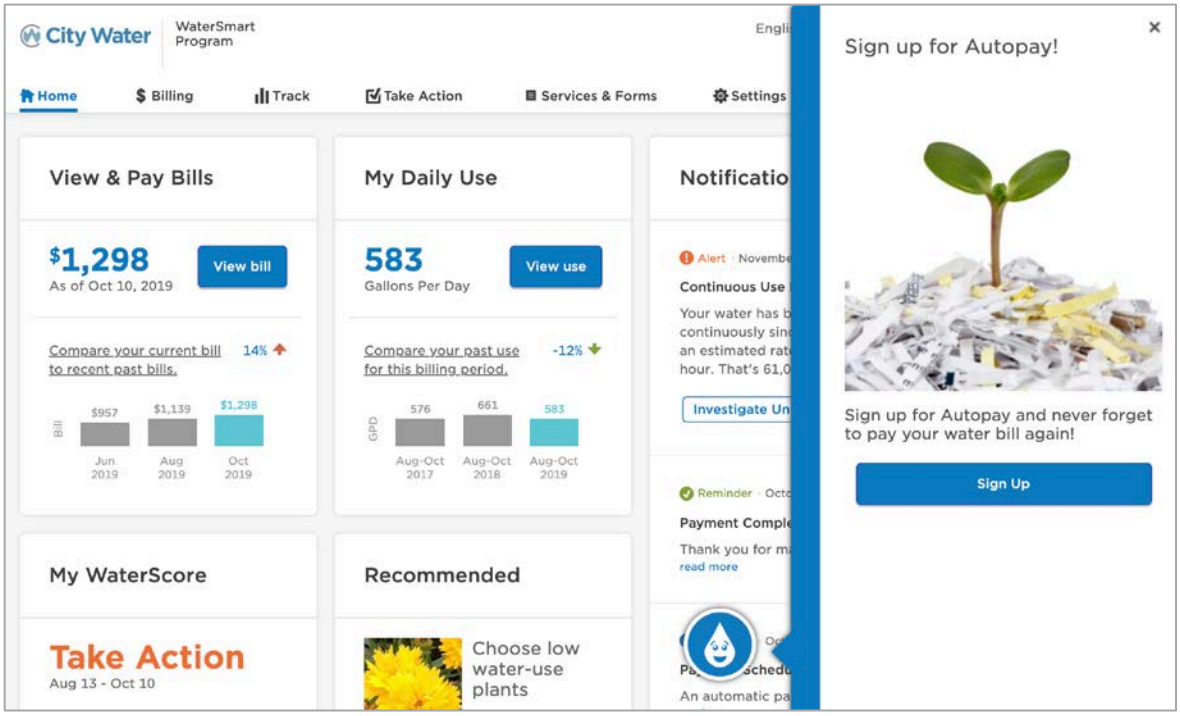


FIGURE 3: BILL PRESENTMENT IN THE CUSTOMER PORTAL ON WEB AND MOBILE

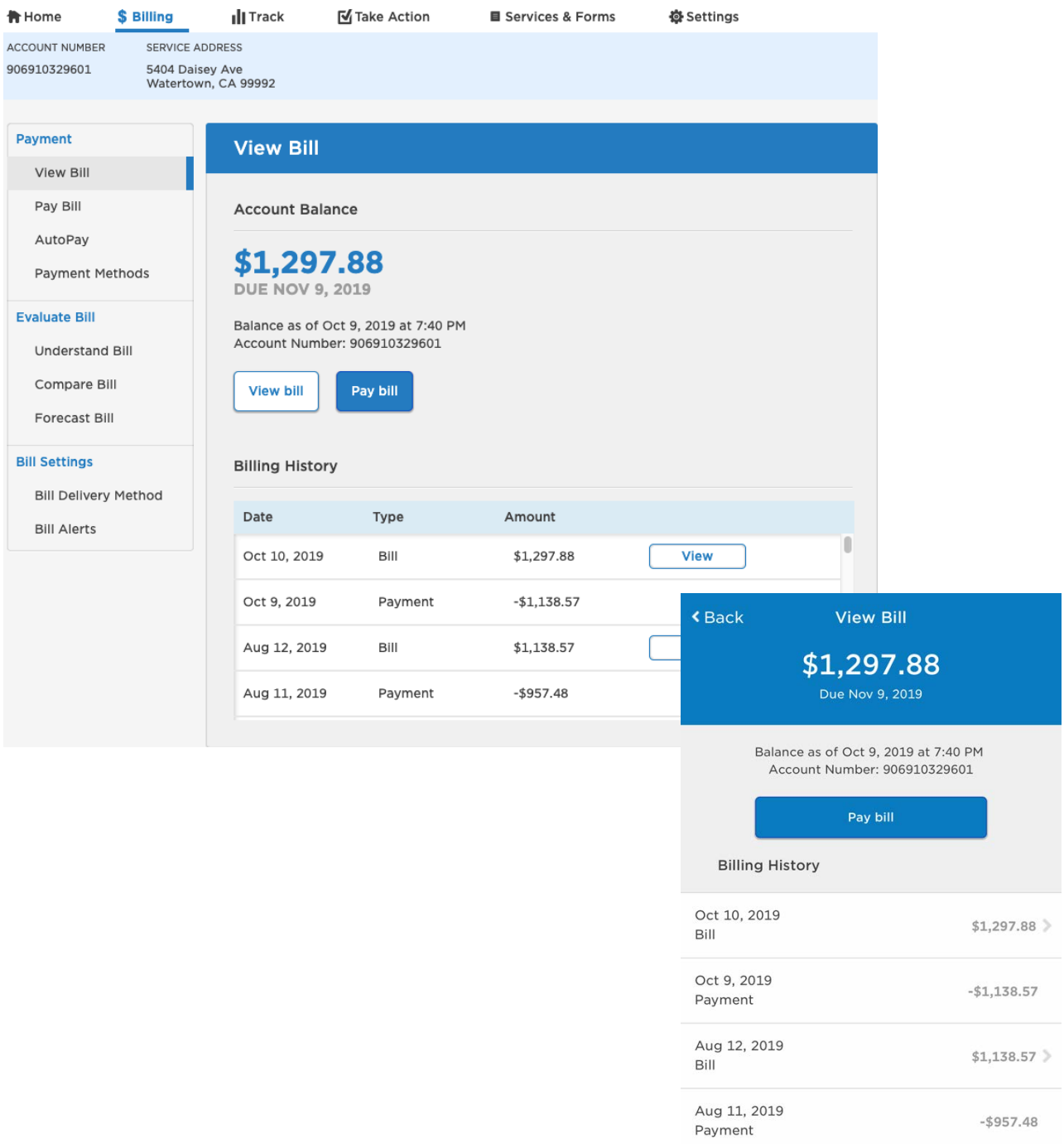


FIGURE 4: OPTIONAL EMBEDDED PAYMENTS IN THE CUSTOMER PORTAL ON WEB AND MOBILE

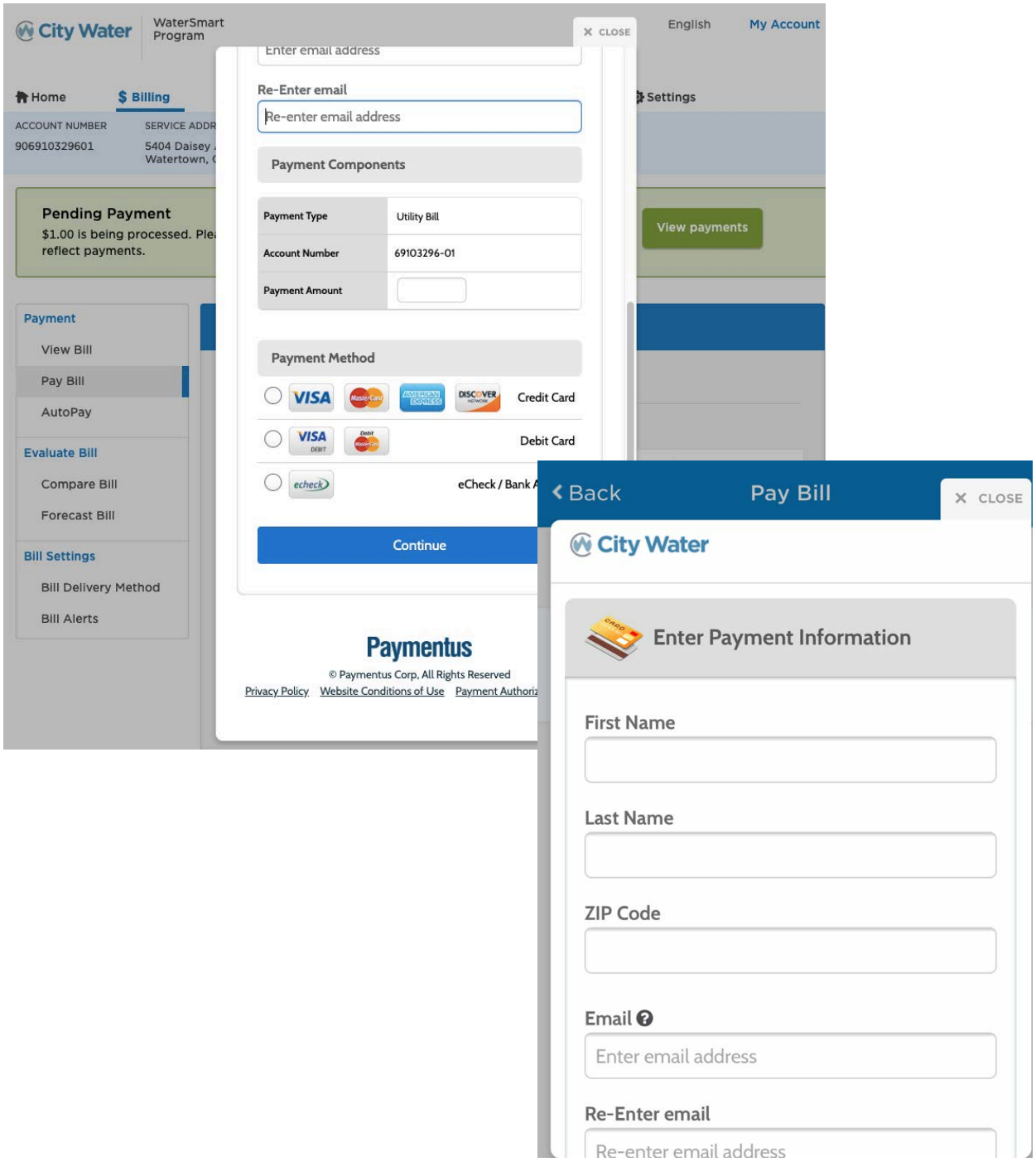


FIGURE 5: PREVIOUS YEARS AND PREVIOUS PERIODS + BILL EXPLAINER SELF-HELP SYSTEM IN THE CUSTOMER PORTAL

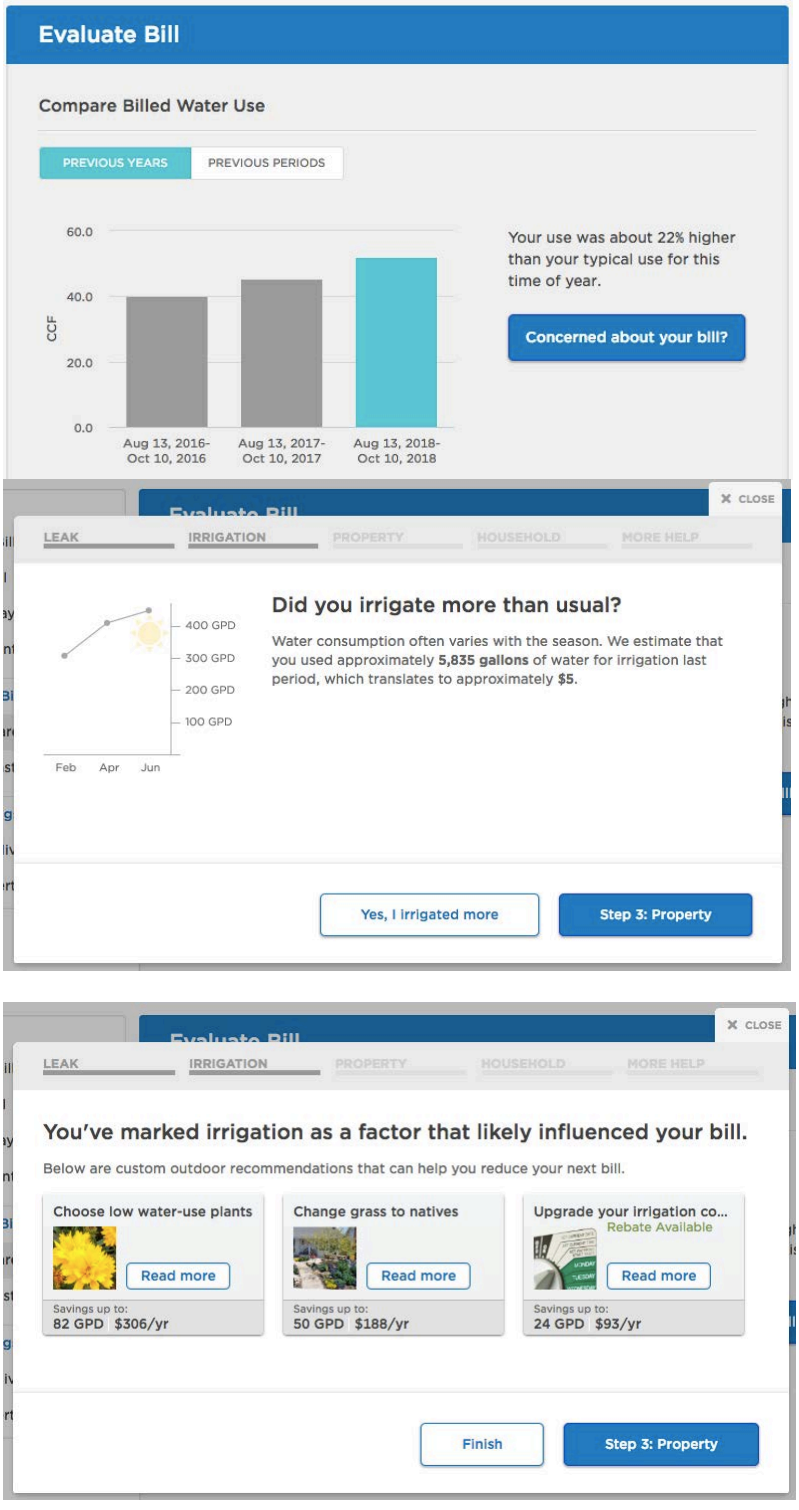


FIGURE 6: FIXED AND VARIABLE CHARGES PRESENTED IN THE PORTAL

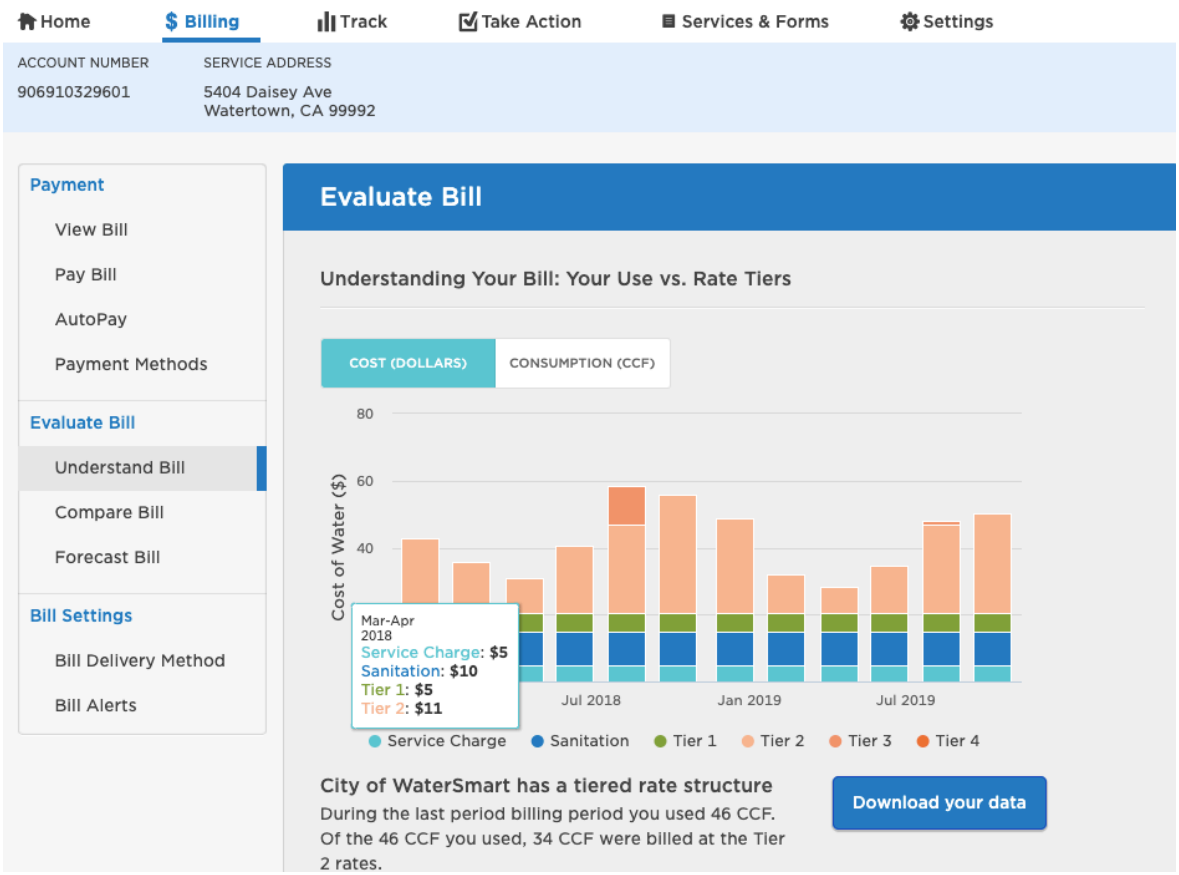


FIGURE 7: BILL PROJECTION FOR CURRENT BILLING PERIOD WITH RATE TIERS IDENTIFIED

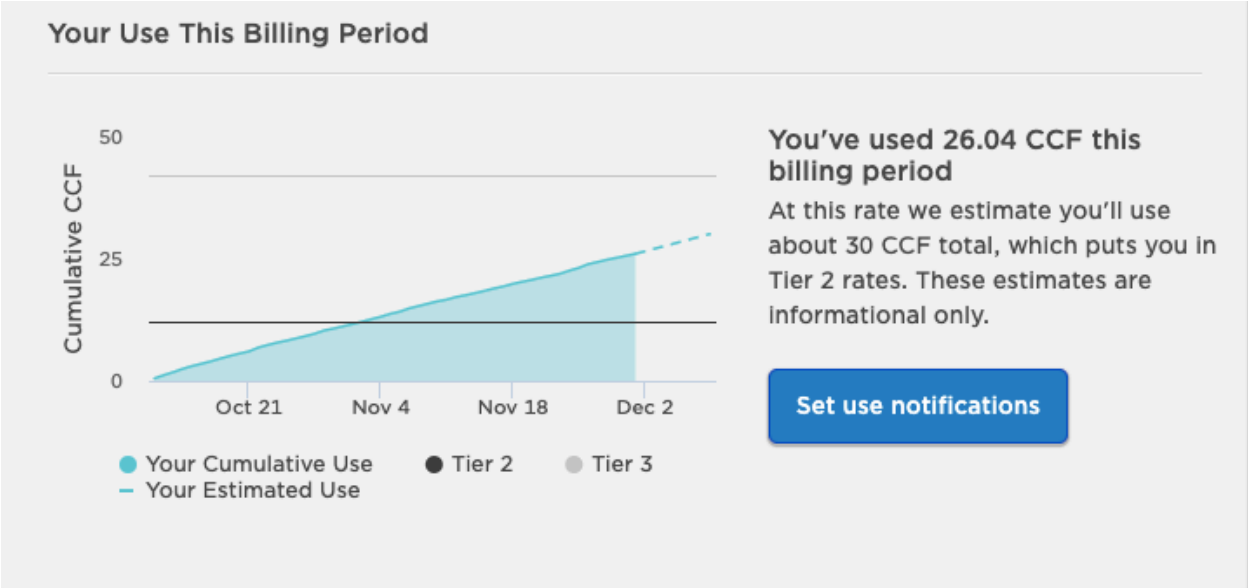


FIGURE 8: CUSTOMER PORTAL “TRACK” PAGE ON WEB AND MOBILE

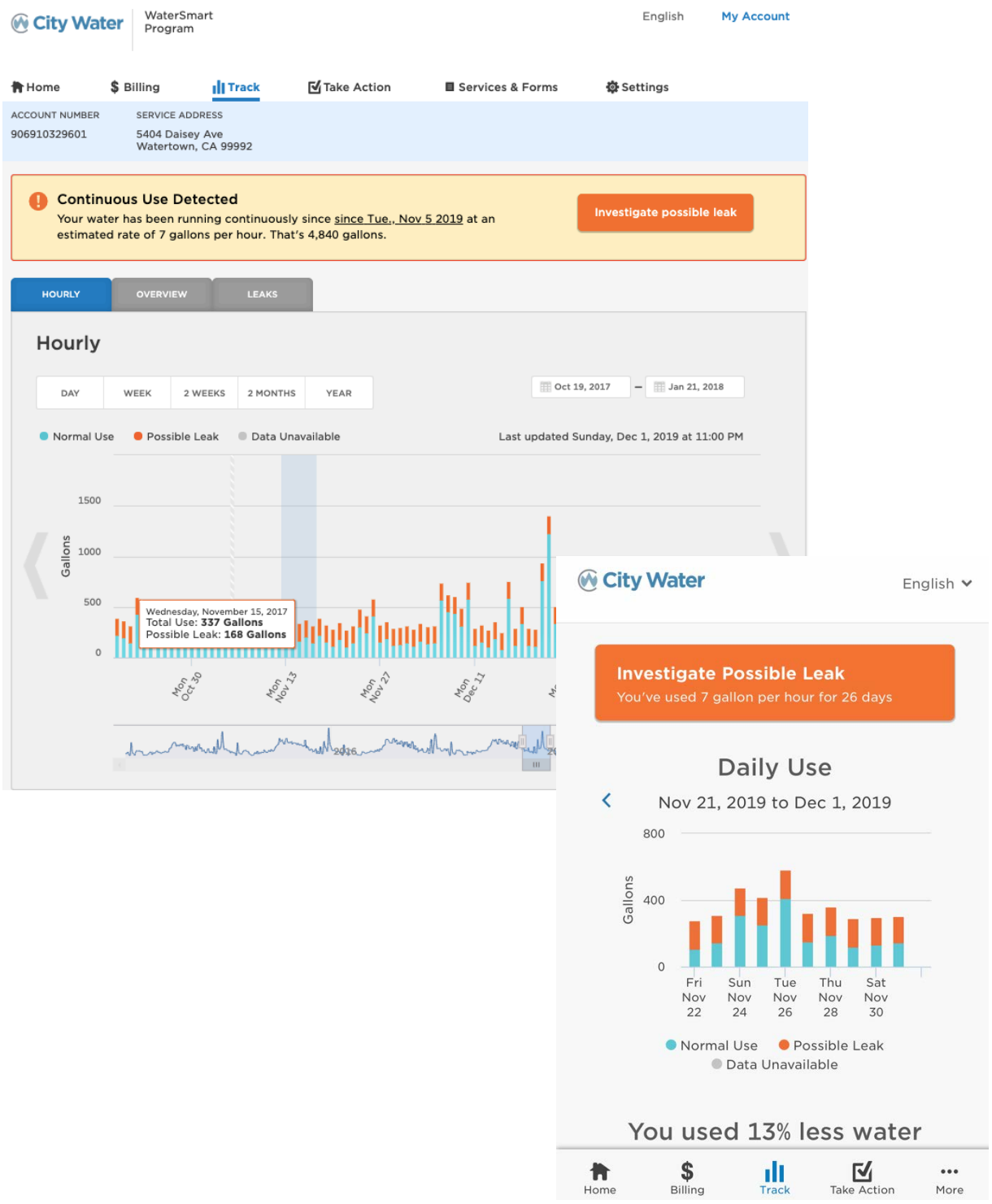


FIGURE 9: CUSTOMER PORTAL “TRACK” PAGE ON WEB AND MOBILE

FIGURE 10: ILLUSTRATION OF MISSING AMI DATA IN THE CUSTOMER PORTAL

FIGURE 11: ROLLED-UP VIEW OF CONSUMPTION IN THE PORTAL UPON LINKING MULTIPLE ACCOUNTS

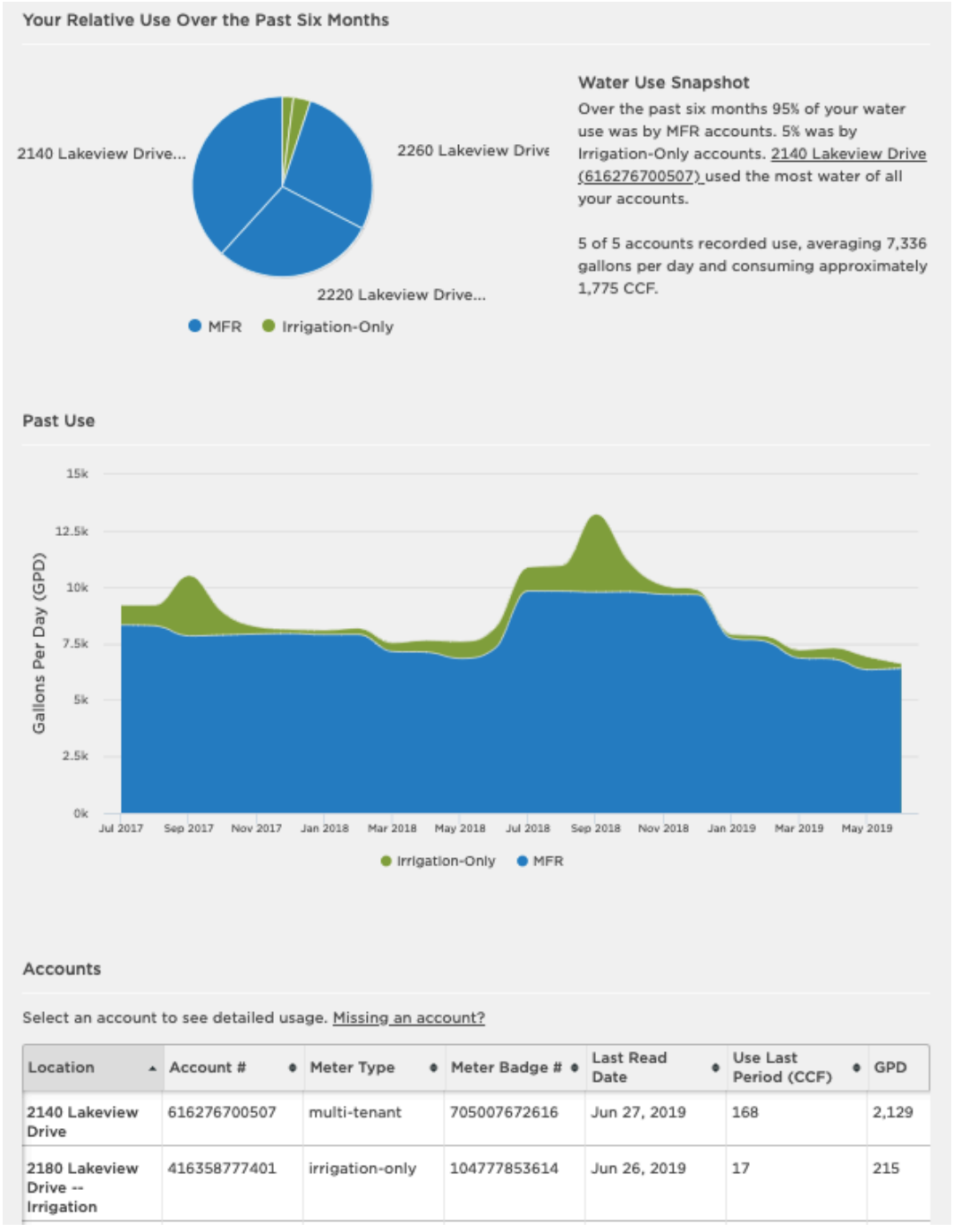


FIGURE 12: “TAKE ACTION” PERSONALIZED RECOMMENDATIONS IN THE CUSTOMER PORTAL ON WEB AND MOBILE

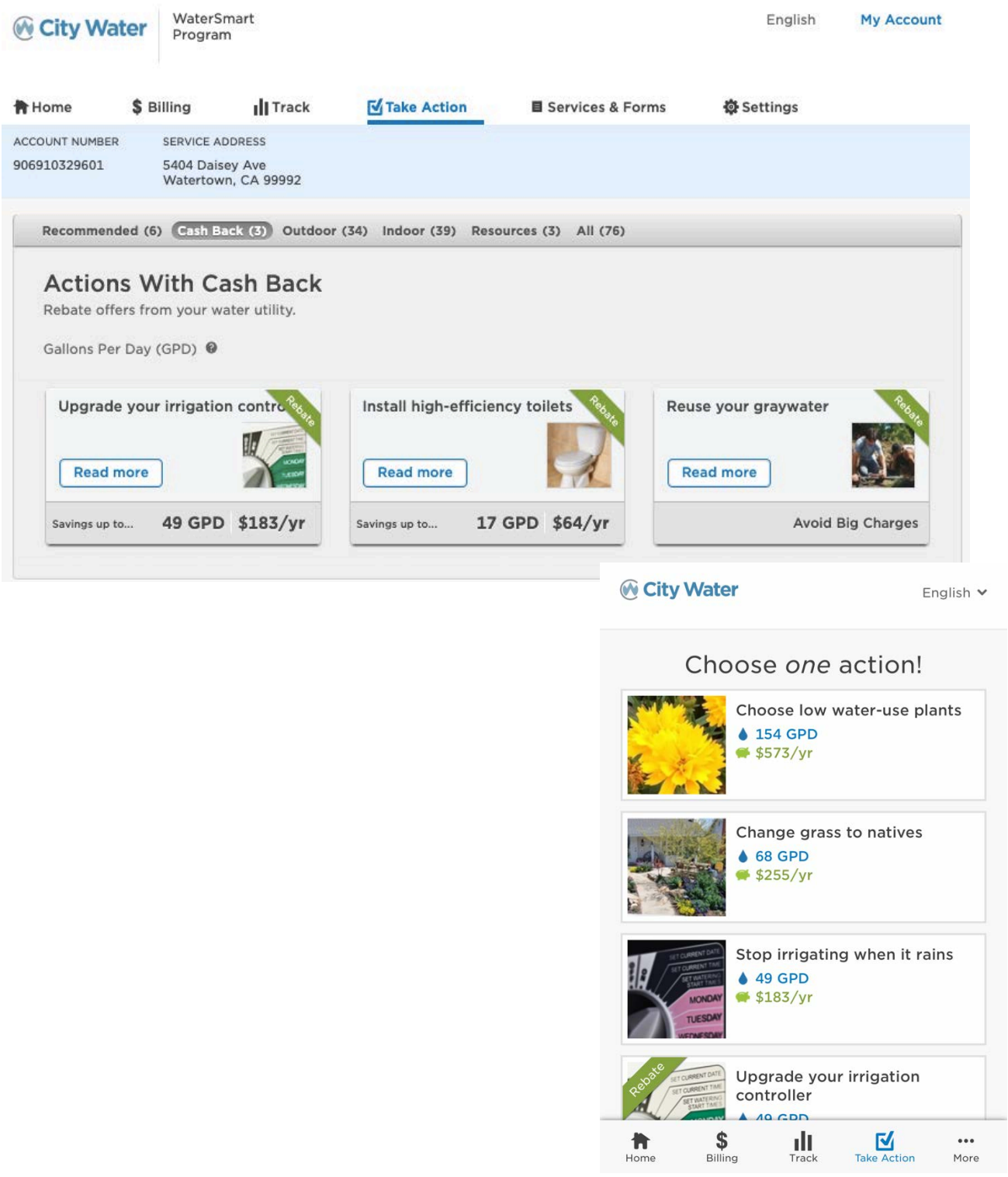


FIGURE 13: CUSTOMER PORTAL "SERVICES & FORMS" PAGE ON WEB AND MOBILE

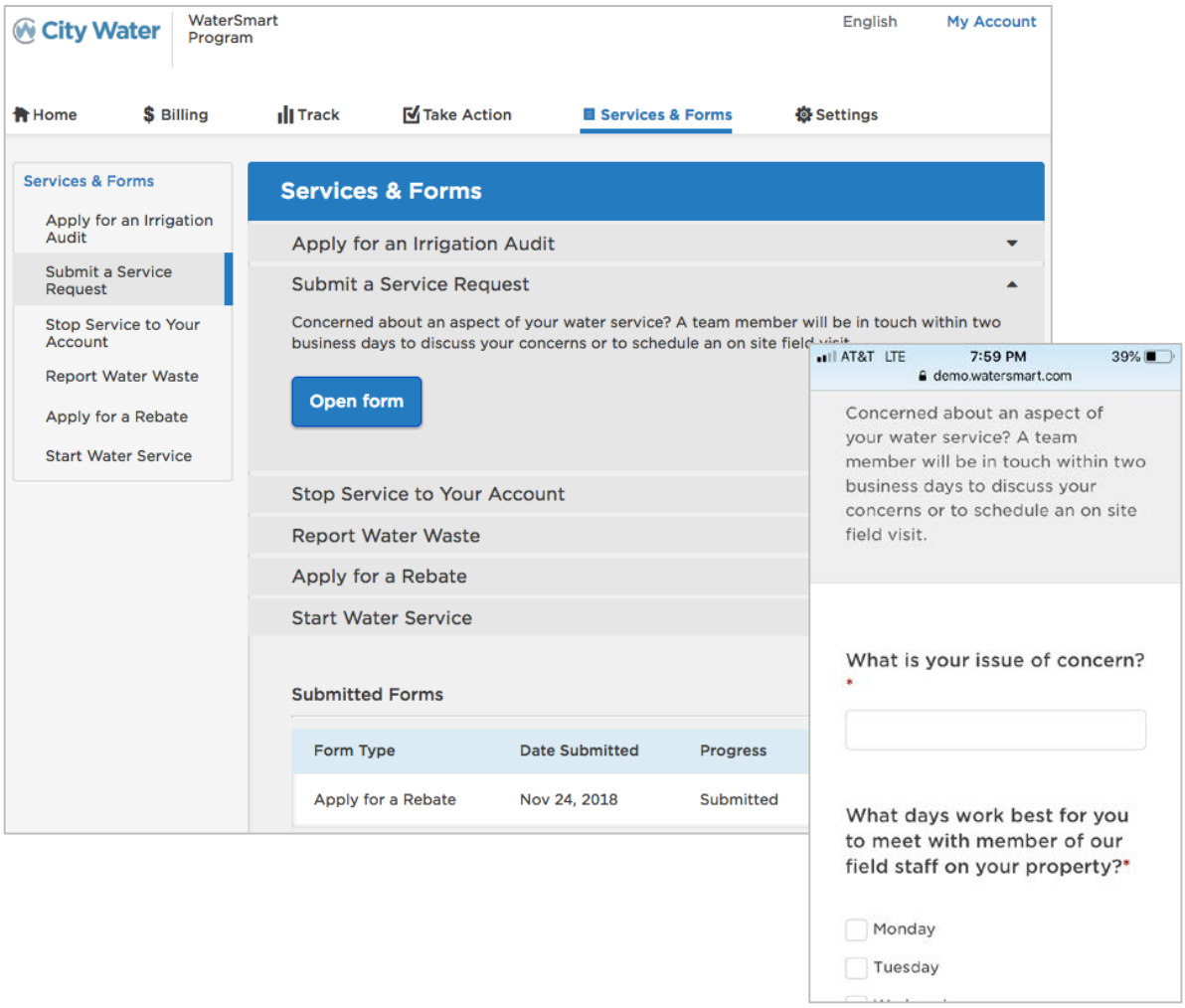


FIGURE 14: ADDING ADDITIONAL ACCOUNTS OR USERS TO THE CUSTOMER PORTAL

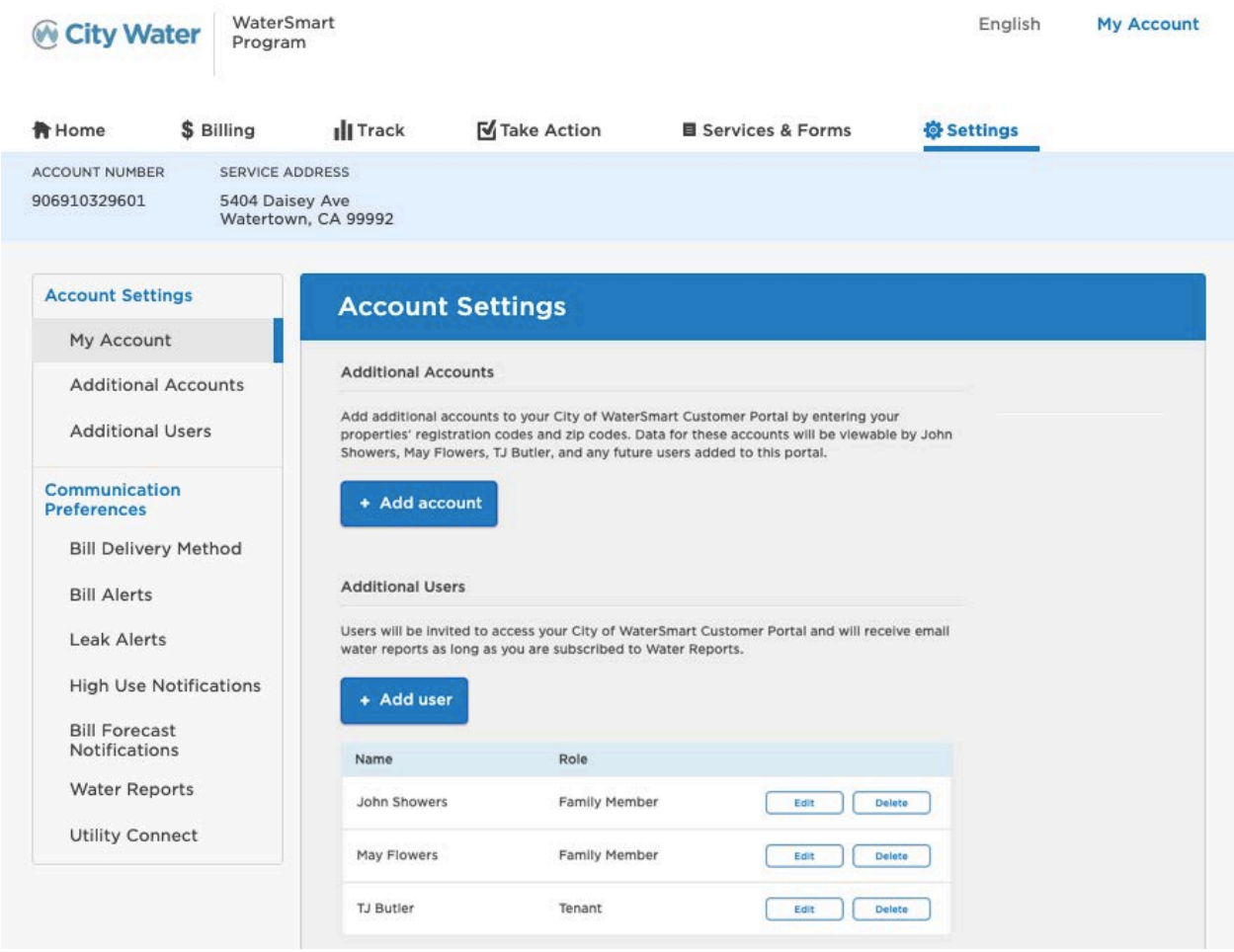


FIGURE 15: SETTING CUSTOMER COMMUNICATION PREFERENCES ON WEB

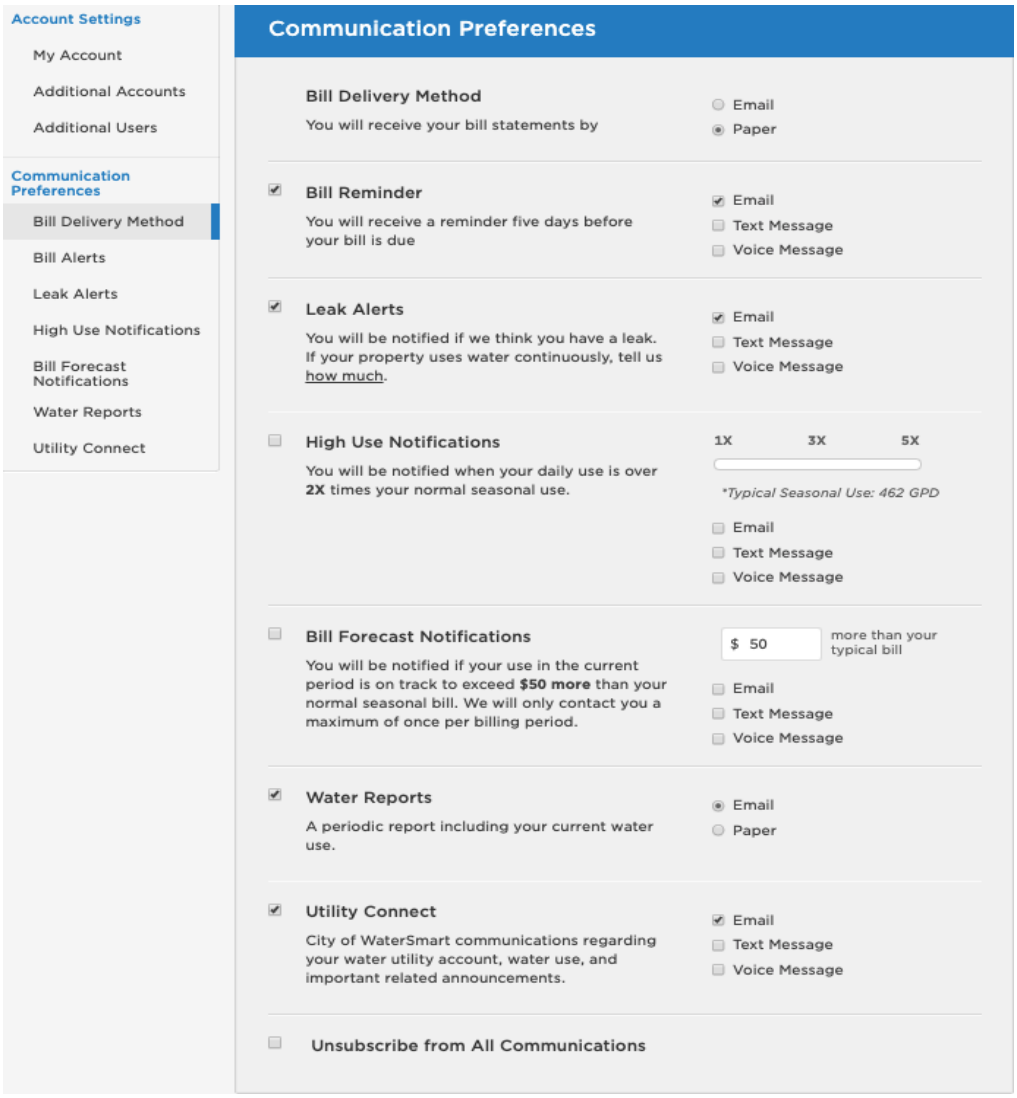


FIGURE 16: SETTING CUSTOMER COMMUNICATION PREFERENCES ON A MOBILE DEVICE

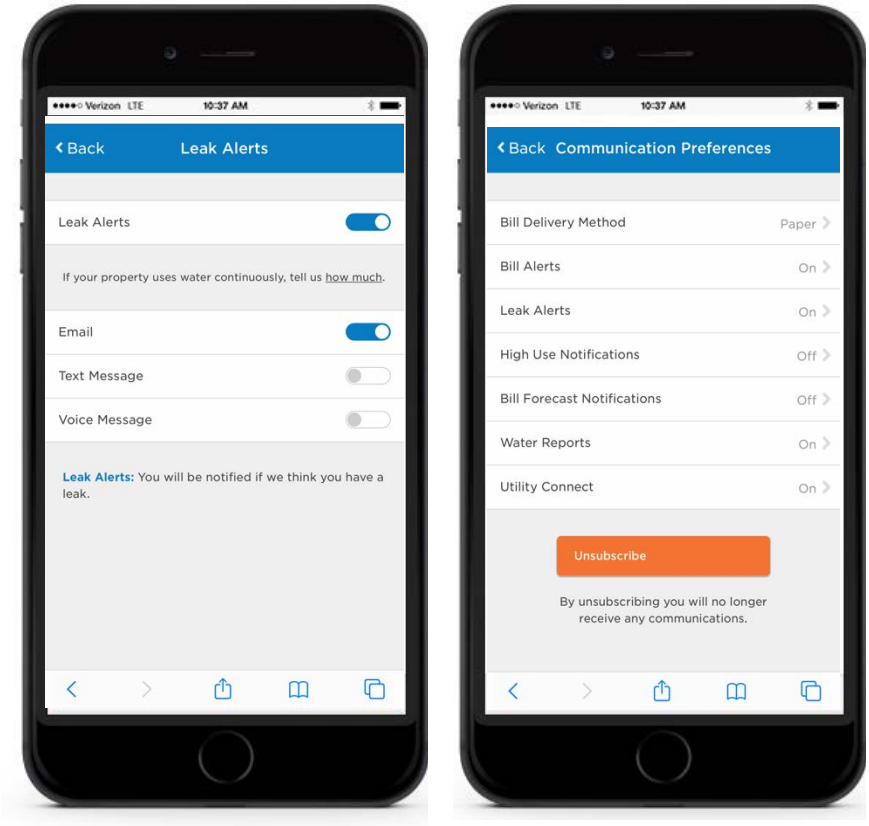


FIGURE 17: CLOSED-LOOP LEAK ALERTING AND RESOLUTION SYSTEM

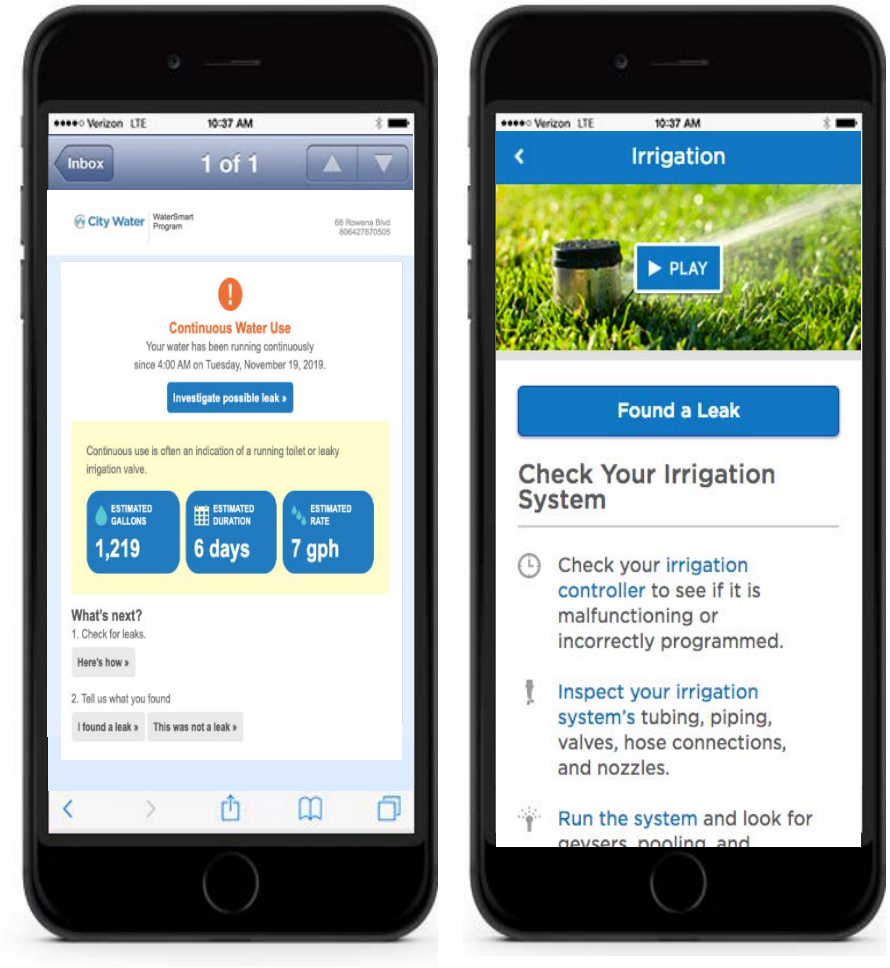


FIGURE 18: UTILITY ANALYTICS DASHBOARD HOME PAGE FOR UTILITY STAFF

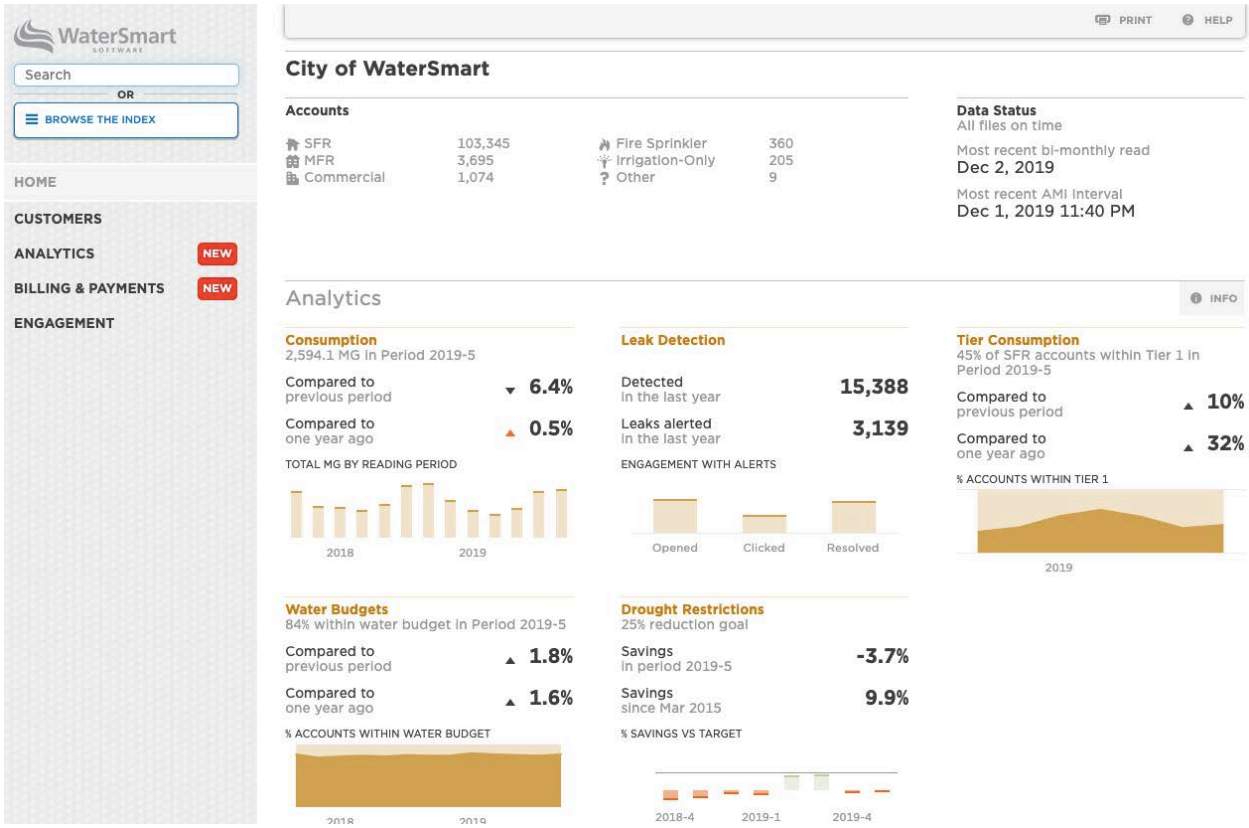
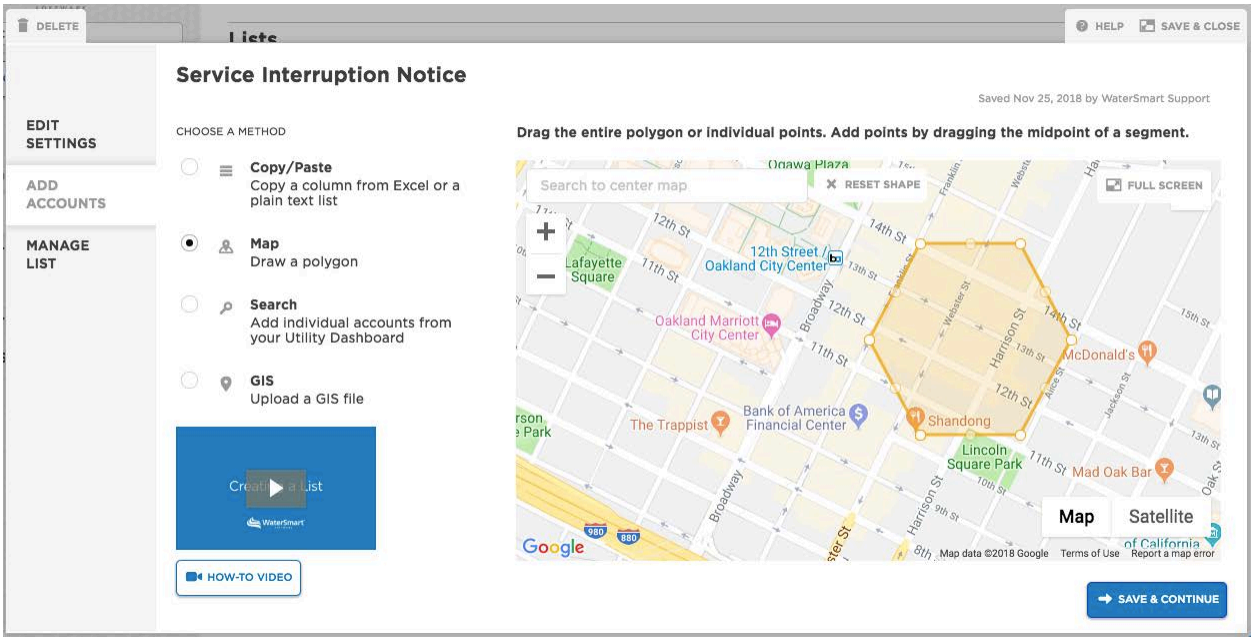


FIGURE 19: LIST BUILDER & GROUP MESSENGER SYSTEM



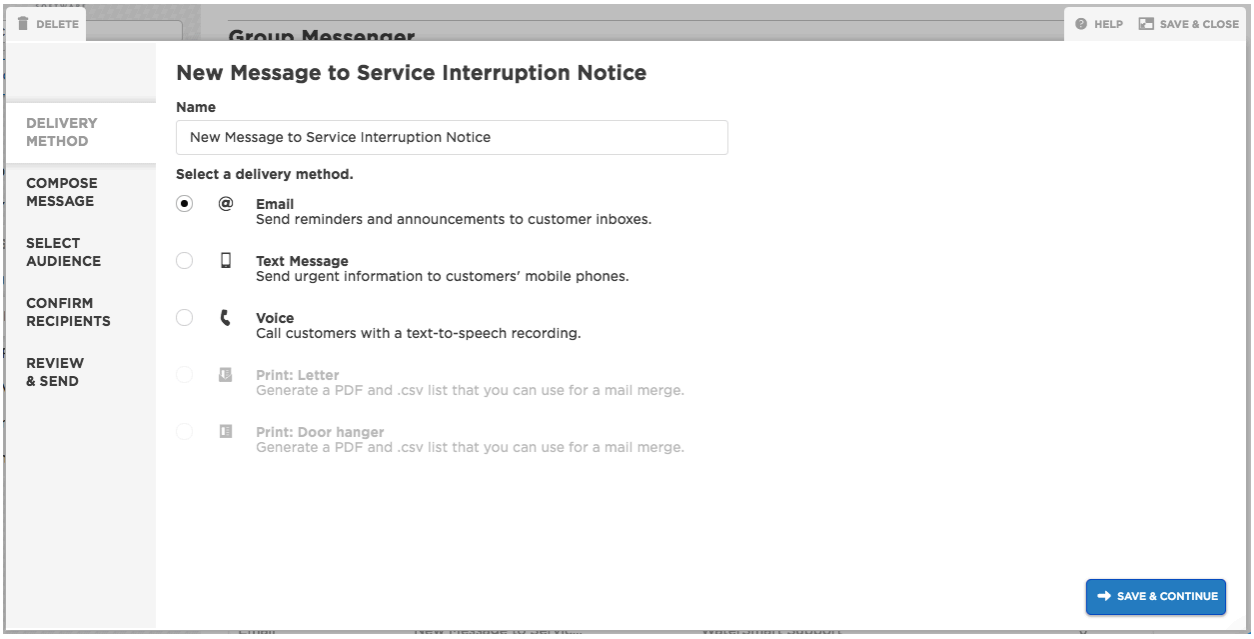


FIGURE 20: CUSTOMER SUPPORT STAFF INTERFACE

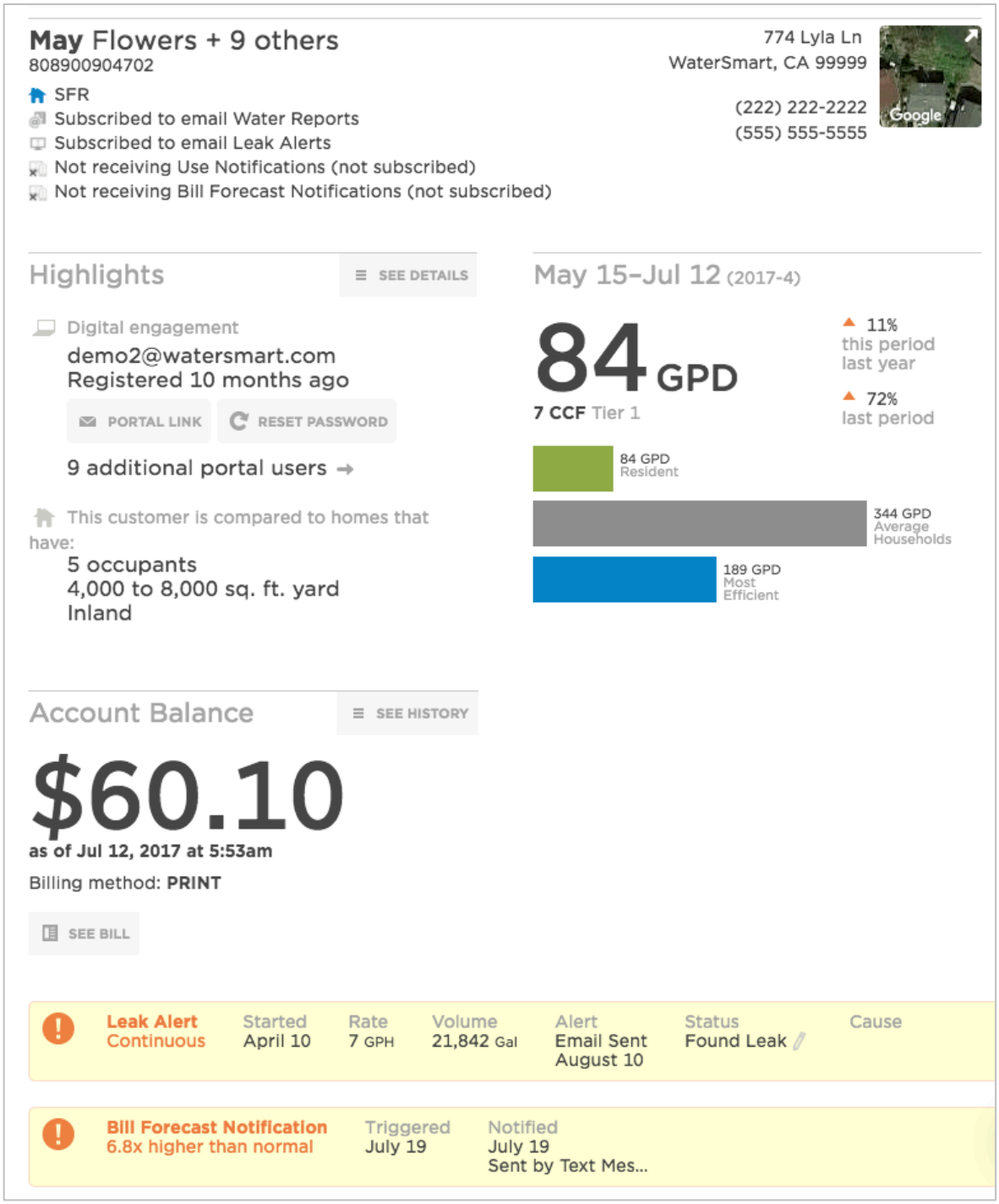


FIGURE 21: SUBSET OF CUSTOMER INTELLIGENCE AND ENGAGEMENT ANALYTICS

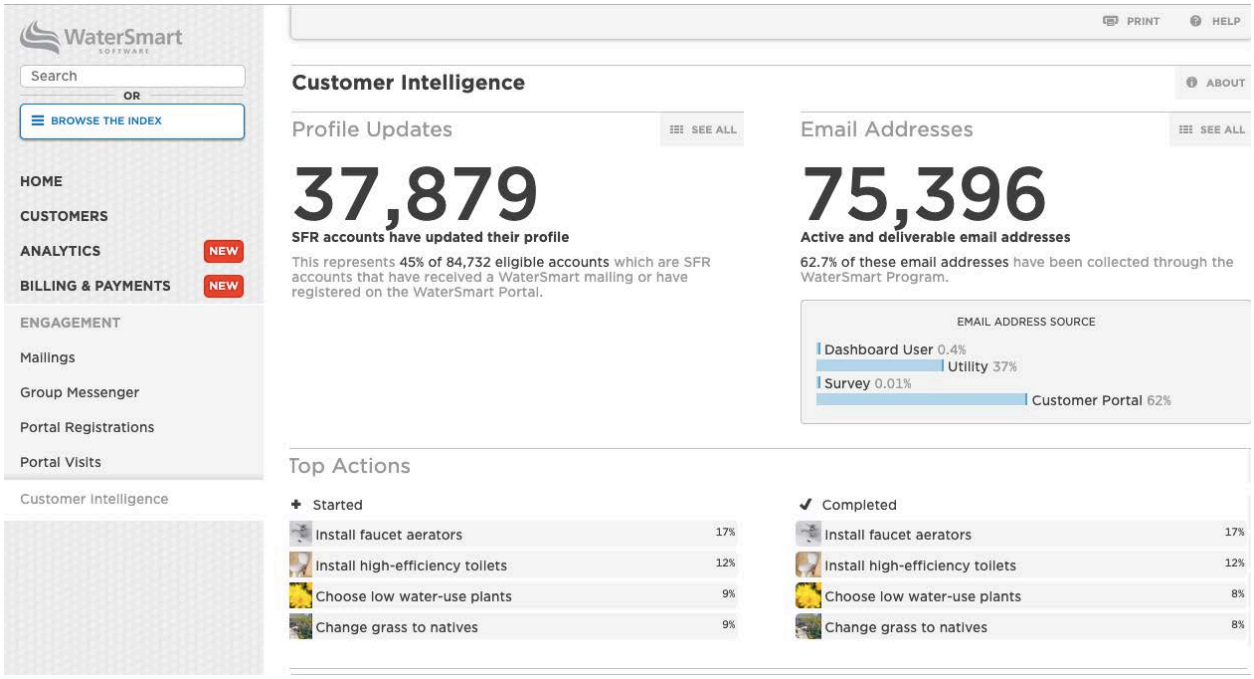


FIGURE 22: SAMPLE DASHBOARD REPORT: PROGRAM PARTICIPATION RESULTS FROM HIGH EFFICIENCY TOILET REPLACEMENT PROGRAM

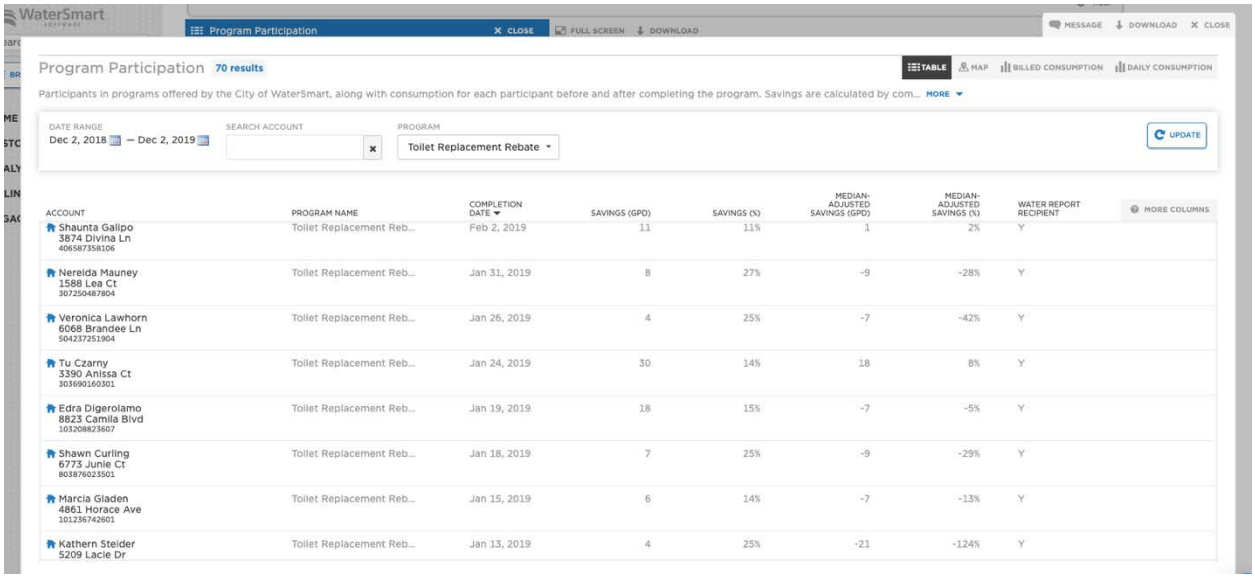
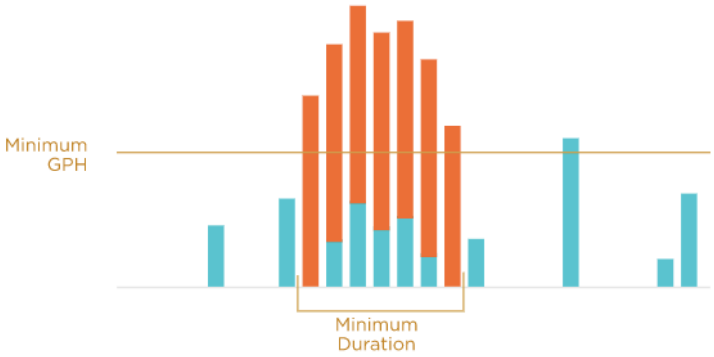


FIGURE 23: AMI LEAK SETTINGS VISIBLE TO UTILITY STAFF



Leaks are detected when hourly interval consumption exceeds both:

- Minimum Gallons Per Hour (GPH)
- Minimum Duration.

We detect two types of leaks this way: Burst and Continuous.

MORE HELP

Detection and Alerting

Enabled, Opt-out | Enabled, Opt-in | Disabled, Opt-out | Disabled, Opt-in

METER CLASS	LEAK TYPE	EXCEEDS MINIMUM GPH	EXCEEDS MINIMUM DURATION	EMAIL ALERTS	TEXT ALERTS	VOICE ALERTS	PRINT ALERTS
SFR	Continuous	0 GPH	144 HOURS	☑	✓	✓	☑
SFR	Burst	74.8 GPH	6 HOURS	☑	✓	✓	☑
Commercial	Continuous	0 GPH	96 HOURS	☑	✓	✓	☑
Irrigation-Only	Continuous	0 GPH	144 HOURS	☑	✓	✓	☑
Irrigation-Only	Burst	74.8 GPH	6 HOURS	☑	✓	✓	☑
MFR	Continuous	0 GPH	144 HOURS	☑	✓	✓	☑
Other	Continuous	0 GPH	144 HOURS	☑	✓	✓	☑

FIGURE 24: SAMPLE DASHBOARD REPORT OF ACCOUNTS ENROLLED IN USE NOTIFICATIONS

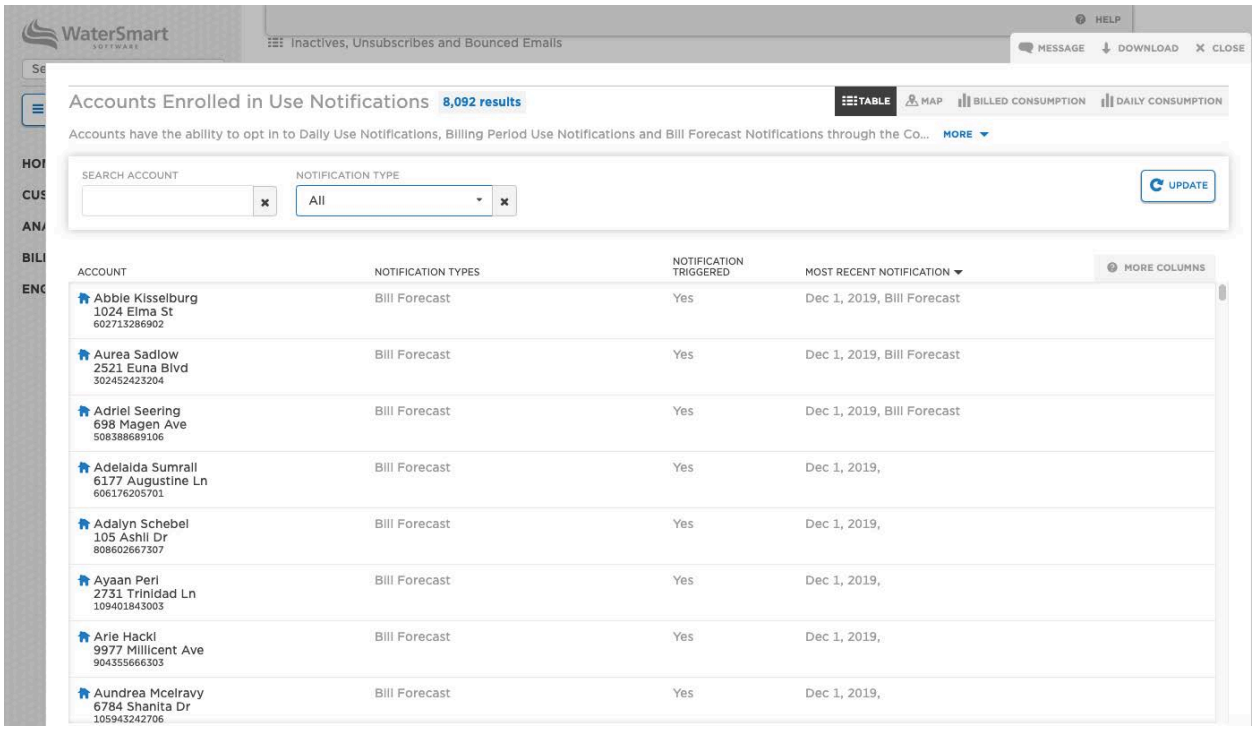


FIGURE 25: SAMPLE WELCOME LETTER

FIGURE 25: SAMPLE WATER REPORT

APPENDIX B: SAAS PROVISIONS

Software-as-a-Service (SaaS) Provisions

_____, [20__]

[NAME OF UTILITY / RESELLER CUSTOMER]
[ADDRESS]
[ADDRESS]
Attn: _____

Dear _____:

I am delighted to confirm certain services WaterSmart Software, Inc. ("WaterSmart" or "WATERSMART") will provide under a contract between [NAME OF UTILITY/RESELLER CUSTOMER] (Utility") and _____, [Inc.] ("Contractor") for a performance period of _____ months. The performance period is projected to be from _____, 2020, to _____, 20XX, but will begin on the Contract Effective Date, which will be confirmed in writing after WaterSmart receives a signed contract from the Contractor.

Program initialization and the Software-as-a-Service subscription begin as of the Contract Effective Date, and the subscription is renewable upon the Contract End Date. The Utility should move to set up data transfers with the quickest speed to make the most use of the subscription. Significant delay on the part of the Utility during launch may result in fewer months of access to the Customer Portal and Utility Analytics Dashboard and/or fewer than the planned number of communications to be sent during the subscription period.

Utility's Contract and primary legal relationship are with the Contractor, which has separately contracted with WaterSmart to re-sell WaterSmart Services to utilities. WaterSmart's Services are subject to its software-as-a-service provisions ("SaaS Provisions"), which are attached and incorporated herein. The SaaS Provisions include terms essential to WaterSmart's business model. The SaaS Provisions are not negotiable, except that WaterSmart may elect to consider on a case-by-case basis minor edits a utility deems essential.

By signing below on behalf of [NAME OF UTILITY/ RESELLER CUSTOMER], Utility acknowledges the above and agrees that WaterSmart's Services will be provided based on the Contractor terms, and Utility will be bound by these SaaS Provisions with respect to WaterSmart. Collectively, the Contractor terms, the SaaS Provisions, and this confirmation letter are referred to as the "WaterSmart Terms". Utility further agrees that the WaterSmart Terms will prevail over any other conflicting terms or documents regarding the WaterSmart Services.

Please return this letter to me countersigned no later than _____. We very much look forward to working with [NAME OF UTILITY/ RESELLER CUSTOMER].

Sincerely,

Erik Andersen
Head of Sales

(To Be Completed by WaterSmart and returned to Utility)

CONTRACT EFFECTIVE DATE: _____

CONTRACT END DATE: __ Months from Contract Effective Date

[NAME OF UTILITY/ RESELLER CUSTOMER]

By: _____

Name: _____

Title: _____

Date: _____

SOFTWARE-AS-A-SERVICE PROVISIONS

BACKGROUND: WATERSMART's customer engagement and data analytics services are to be provided primarily by utilization of WATERSMART's proprietary software hosted on WATERSMART's computer systems and accessed by authorized users over the Internet. This is a shared cost software utilization model which enables customers to achieve substantial cost savings versus commissioning custom development of software or licensing software for installation and maintenance on customers' computer systems. Companies like WATERSMART are commonly referred to as "SaaS" or "software-as-a-service" providers. Certain supplemental provisions which are customary within the SaaS sector and essential to enabling WATERSMART's SaaS service model and providing substantial cost savings for Utility, are set forth below and incorporated by reference in the Agreement.

A. WATERSMART's reservation of intellectual property rights

WATERSMART has created, acquired or otherwise currently has rights in, and may, in connection with the performance of this Agreement or otherwise develop, create, employ, provide, modify, acquire or otherwise obtain rights in various inventions, concepts, ideas, methods, methodologies, procedures, processes, know-how, techniques, models, templates, software, applications, documentation, user interfaces, screen and print designs, source code, object code, databases, algorithms, development framework repositories, system designs, processing techniques, tools, utilities, routines and other property or materials, including without limitation any and all subject matter protected or which may be protected under patent, copyright, mask work, trademark, trade secret, or other laws relating to intellectual property, whether existing now or in the future, whether statutory or common law, in any jurisdiction in the world ("WATERSMART IP"). Utility acknowledges that WATERSMART owns and shall own all intellectual property rights in and to deliverables hereunder, the WATERSMART IP and derivative works of WATERSMART IP (whether independently or jointly conceived), regardless of whether or not incorporated in any print or electronic Water Reports, Customer Portal, Utility Dashboard, or other software or deliverable provided to Utility by WATERSMART, and that Utility shall acquire no right or interest in the same.

Utility agrees to assign, and hereby does assign, any right, title and interest in any suggestions, enhancement requests, or other feedback provided by Utility relating to services offered by WATERSMART. If and to the extent any such assignment is ineffective, Utility hereby grants to WATERSMART a royalty-free, worldwide, irrevocable, perpetual license to use and incorporate into its services any such suggestions, enhancement requests, or other feedback provided by Utility.

Subject to the foregoing, authorized employees and customers of Utility may during the term of the Agreement access and use the WATERSMART SaaS services, print and electronic Water Reports, Customer Portal, Utility Dashboard, and other deliverables provided to Utility by WATERSMART, and applicable bill presentment and payment services for purposes of Utility's customer engagement program, customer billing, and for Utility's internal purposes, so long as Utility is current with respect to its financial and other obligations under the Agreement. Such authorization is limited to Utility's service territory and is non-exclusive, non-transferable, and non-sublicenseable. If Utility enters into an agreement with a third party contractor of WaterSmart related to bill payment services, the intellectual property provisions of such agreement shall apply with respect to intellectual property owned or controlled by such third party. Any rights not expressly granted herein are reserved by WATERSMART and its licensors.

B. Utility's cooperation in providing necessary inputs

Deliverables to be provided by WATERSMART via its proprietary software require certain data from Utility. Utility shall provide WATERSMART with those data, records, reports, approvals and other inputs identified for Utility to provide to WATERSMART. Utility shall ensure that such inputs are accurate and within Utility's legal rights to share with WATERSMART subject to the confidentiality and other applicable provisions of the Agreement. Time is of the essence, and Utility shall provide its inputs within the timeframes specified for Utility. If bill payment services are included, Utility shall cooperate with WATERSMART and its applicable third party partner(s) in timely providing the data, records, reports, approvals and other inputs requested for such services. WATERSMART shall not be responsible for delays outside WATERSMART's control, and deadlines for WATERSMART's performance shall be adjusted, if necessary, to accommodate delays by Utility.

C. Confidentiality and WATERSMART's use of aggregated data

All data, documents and other information received or accessed by one party ("Receiver") from the other party or its end users (collectively, "Discloser") for performance of this Agreement, including without limitation personally identifiable information and financial information, are deemed confidential. Such information shall not be used or disclosed by the Receiver without the prior written consent of the Discloser or owner (which may include without limitation consent by end users to share any information with additional users they authorize), except to the Receiver's employees and contractors on a need-to-know basis for performance of this Agreement with appropriate confidentiality protections. For this purpose, protected confidential information shall not include (i) information that, at the time of disclosure, is publicly available or

generally known or available to third parties, or information that later becomes publicly available or generally known or available to third parties through no act or omission by the Receiver; (ii) information that the Receiver can demonstrate was in its possession prior to receipt from the Discloser; (iii) information received by the Receiver from a third party who, to the Receiver's knowledge and reasonable belief, did not acquire such information on a confidential basis from the Discloser; (iv) information the Receiver can demonstrate was independently developed by it or a third party; or (v) information that the Receiver is legally required or compelled by a court to disclose.

The foregoing confidentiality obligations are subject to the following clarification of the parties' rights and obligations with respect to aggregated and anonymous data. Utility hereby gives its permission to WATERSMART to use and disclose on an anonymous and/or aggregated basis (excluding any personally identifiable information) any data pertaining to Utility end customers and their water consumption, including without limitation derivative data and data combined with the data of other utilities, for purposes of project evaluation and any research, product development, marketing, or other legitimate business purposes. This Section C shall survive any termination or expiration of the Agreement.

Each party shall post and comply with its applicable privacy policy.

D. Software corrections and third party acts; limitation of liability for SaaS services

In the event that WATERSMART's services fail to meet specifications or other requirements, Utility shall promptly notify WATERSMART and WATERSMART shall promptly correct any defect or substitute services, software, or products to achieve the functionality and benefits originally specified. If WATERSMART promptly makes such correction or substitution, WATERSMART shall have no further liability with respect to said defect(s), notwithstanding any other provision of the Agreement. All warranties not expressly stated in the Agreement are disclaimed. Utility understands that Utility's use of WATERSMART's services provided online may be interrupted by circumstances beyond WATERSMART's control involving third parties, including without limitation computer, telecommunications, network, Internet service provider or hosting facility failures or delays involving hardware, software, networks, or power systems not within WATERSMART's possession or direct control, and network intrusions or denial of service attacks (collectively, "Third Party Acts"). WATERSMART shall not be responsible or otherwise liable for any Third Party Acts, including, without limitation, any delays, failures, or security breaches and damages resulting from or due to any Third Party Acts, provided that WATERSMART has exercised due care. However, in the case of any Third Party Act which will delay or prevent WATERSMART from providing online services to Utility, WATERSMART will promptly notify Utility and assist in mitigating any impact. Neither party will be liable to the other, under any claim relating to this Agreement, for any indirect, incidental, exemplary, special, reliance or consequential damages, including loss of profits or loss of data, even if advised of the possibility of these damages. Under no circumstances or event shall WATERSMART's total cumulative liability for losses or damages of any kind arising under or relating to this Agreement and under any theory (contract, tort, defense and indemnity, or otherwise), exceed (i) the fees received by WATERSMART for the services that give rise to the liability in the twelve months preceding the accrual of such liability, or (ii) available insurance proceeds from WATERSMART's carriers, whichever is higher. If Utility enters into an agreement with a third party contractor of WaterSmart related to bill payment services which specifies a lower limit of liability with respect to such services, the same limit shall apply to WATERSMART's liability (if any) with respect to such services. The foregoing limited remedy and limitation of liability provisions shall apply notwithstanding any conflicting provisions or any failure of essential purpose with respect to a limited remedy or limitation of liability, and shall survive any termination or expiration of the Agreement. Utility acknowledges that pricing for WATERSMART's services would be substantially higher without the aforementioned limitations.

E. Technology and services infrastructure vendors WATERSMART as a SaaS provider utilizes the secure cloud hosting platform of a third party industry leader in cloud computing with state-of-the art security to host the data of all WATERSMART customers. WATERSMART utilizes a reputable third party vendor to perform printing and mailing services when included within the scope of WATERSMART's work. For bill payment services, including credit card, debit card, and ACH payments and authentication, WATERSMART works with leading edge, reputable third party vendors specializing in such functions. Since the referenced cloud hosting platform, printing and mailing vendors, bill payment services providers, and certain other vendors performing similar or related functions, are integral components of WATERSMART's technology and services infrastructure used across its pertinent customer base and are not specific to Utility and services under this Agreement, Utility acknowledges that such utilization or collaboration is not considered subcontracting of WATERSMART's services under this Agreement.

If Utility elects to make bill payment services available to its end customers, the pertinent end users and Utility assume all risks associated with such services, and no indemnity provisions in favor of Utility shall apply to such services, except in the event of WATERSMART's willful misconduct. In the absence of willful misconduct by WATERSMART, Utility's sole remedies related to bill payment services shall be from the independent third party provider of such services in accordance with any contract between Utility and such

provider. If Utility enters into an agreement with any third party contractor of WATERSMART for any other services ancillary or related to the services provided by WATERSMART during the term of this Agreement, Utility shall first seek and exhaust all remedies from such third party contractor prior to seeking any remedy from WATERSMART with respect to such services.

With respect to all bill payment services, as well as any services provided by independent third party contractors not in contract with WATERSMART, including without limitation any such services which at Utility's request or direction are integrated by WATERSMART into its electronic interfaces for Utility, WATERSMART shall not be responsible for services provided by such third parties. In furtherance of the foregoing, Utility shall hold harmless, defend and indemnify WATERSMART and its officers, directors, employees, contractors, representatives and volunteers from and against all claims, damages, losses and expenses, including without limitation any statutory damages, penalties, and attorney's fees, arising out of or relating to such third party services, except in the event of WATERSMART's willful misconduct.

F. Compliance With Laws WaterSmart shall comply with all federal, state and local laws, regulations, regulatory rulings, and ordinances as may be applicable to the performance of its services under this Agreement. Utility shall comply with all federal, state and local laws, regulations, regulatory rulings, and ordinances related to this Agreement, and shall have sole responsibility for securing any necessary regulatory approvals, if any, for this Agreement and/or the services hereunder.

Utility shall be responsible for obtaining from its end customers any consents and providing any notices, if any are legally required, for the services to be provided by WaterSmart hereunder, as well as any bill payment or other third party services elected by Utility.

G. Extended Messaging Services If Utility elects to utilize WATERSMART's leak alert or group messenger services, certain supplemental legal terms shall apply. These supplemental terms ("Extended Messaging Terms") are set forth below and shall prevail in the event of any conflict or inconsistency. For avoidance of doubt, the Extended Messaging Terms apply to all WATERSMART services involving automated phone calls (conventional and mobile), pre-recorded messages, text messages, and other such bulk communications (including emails outside of WATERSMART's core customer engagement offerings) (collectively, "Extended Messaging Services").

1. Utility shall be solely responsible for the content of any messages or communications to end customers which Utility initiates or authorizes in connection with the Extended Messaging Services, as well as Utility's selection of any vehicle (ie., conventional phone, mobile phone, text, email) for such messages or communications. WATERSMART shall have no responsibility or liability of any kind with respect to messages or communications initiated or authorized by Utility or its representatives. In furtherance of the foregoing, Utility shall hold harmless, defend and indemnify WATERSMART and its officers, directors, employees, contractors, representatives and volunteers from and against all claims, damages, losses and expenses including without limitation any statutory damages, penalties, and attorney's fees, arising out of or relating to the Extended Messaging Services or any breach by Utility of the Agreement including without limitation these Extended Messaging Terms, except in the event of WATERSMART's willful misconduct. For avoidance of doubt, if the Agreement has other indemnity provisions in favor of Utility such provisions shall not apply to the Extended Messaging Services, except in the event of WATERSMART's willful misconduct.
2. If Utility elects to make available to its end customers Extended Messaging Services offered by WATERSMART to alert end users of potential leaks or high water usage, the pertinent end users and Utility assume all risks associated with such alerts, and no indemnity provisions in favor of Utility shall apply to such risks (including without limitation any liability claims for failure to alert or inaccurate alerts), except in the event of WATERSMART's willful misconduct.
3. With respect to Extended Messaging Services, WATERSMART's role is limited to delivering via its technology platform Utility's communications through vehicles selected by Utility; accordingly, compliance with applicable laws (which may vary by state and locale) is strictly Utility's responsibility with respect to Extended Messaging Services notwithstanding any provision to the contrary.
4. Utility is encouraged to consult legal counsel of its own with respect to this Agreement and in reference to Federal Communications Commission Declaratory Ruling FCC 16-88 (released August 4, 2016), any Extended Messaging Services, and compliance with applicable federal, state and local laws, regulations and regulatory rulings, and ordinances. Utility shall not rely on WATERSMART or WATERSMART's representatives for legal advice or guidance concerning the content or appropriate vehicles (ie., conventional phone, mobile phone, text, email) for communications with Utility end customers.

In order to provide the Extended Messaging Services at efficient cost and with optimal levels of security and reliability, WATERSMART may utilize one or more third party communications technology and communications services providers. Since such providers are utilized across WATERSMART's pertinent customer base and are not specific to Utility and service choices by Utility under the Agreement, Utility

acknowledges that such utilization is not considered subcontracting of WATERSMART's services under the Agreement

APPENDIX C: WATERSMART DATA SPECIFICATION

The following data types are needed to create your WaterSmart platform[1]. If you have any questions, please ask!

- **Account and Consumption data:** The basic customer information used to populate the WaterSmart platform is very similar to information you may already have in the billing file you use to generate bills. We'll need this information for all customers, whether they receive print or paperless bills. Send once per billing cycle.
- **Billing and Payment data**: If you wish to show daily account balances and payments, you will send that data, if there is no real-time integration between WaterSmart and your CIS or payments vendor. Send daily.
- **AMI Interval data:** For utilities with AMI, hourly reads typically will be extracted directly by WaterSmart in coordination with your cloud-based meter data management system vendor.

Field	Description
Required for all implementations	
Account Number	Utility account number (one or more fields that uniquely identifies this customer at this premise).
Class Code	Identifies the class of account or rate such as single family residential, multi-tenant, irrigation only, etc. May be separated into fields such as class_code and fee_code
Service Address	Complete premise address, city, state and zip. Needed to identify where consumption occurs.
Mailing Address	Complete mailing address, city, state and zip of the customer. Needed for any print mailings to customer.
Customer Name	Ideally broken down into first and last name fields for residential customers
Customer Email Address	Optional, but highly recommended for alerts and messages
Customer Phone Number(s)	Optional, but highly recommended
Read Date	Date of meter read
Billed Consumption	Volume of water used during read period. Alternatively, beginning and ending meter read values can be provided. It is optional but recommended to provide 1-2 years of historical consumption files.
Meter ID (AMI utilities only)	If AMI vendor files don't include account number, this field is needed to map the AMI data to the account number
Optional, needed to present billing data	
Bill Date	The date the bill was created
Due Date	The date the bill is due
Total Due	The total amount due by the due date, including any prior unpaid charges. May be sent daily or once per billing period
Payment Date	The date the customer made a payment
Payment Amount	The amount the customer paid
Current Balance	The current unpaid account balance at the time the file is generated
Bill PDF	Bill image. Provided by utility or extracted via bill printer API.
Document ID	If needed, to map PDF to bill data

[1] A detailed description of files and fields is available upon request and post-sale

Attachment 3
SPECIFICATIONS
Water Meters and Meter Reading Technology

1. General

Recently, the District has experience significant issues with its current meter and radio meter reading system, which has necessitated this RFP for meter, meter reading technology. The District's system consists of Hersey 430 and 450 nutating disc and Zenner PMN multi-jet meters with Itron 50W. 60W and 100W encoder receiver transmitters. As part of the specification will be to provide the necessary equipment to transition from the existing equipment both meters and the radio meter reading system.

Supplier and Manufacture will provide meters, and future meter reading technology that meets the latest requirements of the American Water Works Association (AWWA) and related standards for meters proposed to be supplied as part of this specification. Additionally, vendor and supplier shall supply a roadmap to maintain the District's system with the latest advancements in meters and technology.

The District's financial and customer service software is Great Plains and TruePoint, respectively. The manufacturer must provide the necessary API for the meter data can be easily transferred to this system.

Meters shall be manufactured by a company with a minimum of twenty-five (25) years' experience in manufacturing of water meters. All water meters shall be manufacturer, assembled and tested within the Continental United States of America. Manufacturer shall be doing business as (d.b.a.) a registered corporation in the United States

Customer Portal Service Firm

Customer Portal Service Firm (Firm) must provide at least five references for water utility customers where similar programs have been implemented for one year or longer. References must include Utility, program manager name, title, and contact information as well as the specific project dates, short description of program and results. References shall have at least 20,000 water meters under management.

Firm must provide the time to launch (contract signing to program start) for five programs implemented for water utility customers in past two years. Proposer shall include Utility, program manager name, title, and contact information.

Firm must provide third party verified results of similar program implementation including impact on water conservation, customer engagement, and program participation compared to a control group.

Firm must provide evidence it has sent at least 75,000 abnormal use ("leak") alerts, and have statistics showing the end result of these leak alerts (whether or not they were resolved, and what the leak source was).

Firm and Project Team Information
Firm must provide relevant information on team including resumes for key team members who will work on the project, name, role, location, and tenure of all other employees who will have access to data.

Security and Privacy Controls
Firm must provide short description of security and privacy controls for all personally identifiable information provided to Proposer in service of project. Proposer shall include evidence of information security consistent with industry standards via a written third-party assessment. Assessment shall include evaluation of external network penetration testing and a web application security assessment consistent with OWASP Top Ten principles.

Export Control: Keeping utility data secure and private is a primary concern. To that end, data shall not be exported outside of the United States. Specifically,

i. Data shall not be transferred offshore for software development, testing, storage, support or any other purpose.
ii. Employees with access to the data shall be employees located within the United States of America.
iii. Employees with access to the data shall be bound by a non-disclosure agreement and acceptable use policy.
iv. Customer data shall not be transferred across system boundaries in an unencrypted fashion.
v. All data transmitted between Proposer and a customer or cloud partner shall always be transferred in an encrypted fashion, using either TLS or higher as appropriate for the channel.
vi. Proposer shall use a certified third-party security firm to test external network vulnerability.

Neptune's Head End Software (HES) utilizes many industry standard security practices to ensure that system and data integrity is maintained at all points throughout the system. [redacted]

[redacted]

[redacted]

Neptune's Disaster Recovery plan is broken into three (3) sets of procedures:

1. Emergency Response Procedures – These procedures exist as emergency response to a fire, natural disaster, or any other activity to protect lives and limit damage.

2. Backup Operations Procedures - These procedures ensure that essential data processing

operational tasks can be conducted after the disruption.

3. Recovery Actions Procedures - These procedures exist to facilitate the rapid restoration of a data processing system following a disaster.

2. Water Meters

Water Meters shall meet or exceed the latest water meter standards as set by American Water Work Association (AWWA). The minimum specification requirements are presented below in Table 1.

Table 1 – Meter Sizes 5/8-inch to 2-inch

	Multi-Jet	**Ultrasonic**	**Positive Displacement**
AWWA Standard **(Minimum Standard)**	AWWA Standard C-708 for Cold Water Meters - Multi-jet Type	AWWA Standard C715 Electromagnetic and Ultrasonic Type	AWWA Standard C-708 for Cold Water Meters – Positive Displacement Type
Meter Main Case	For small meters 5/8" – 1", the main case shall be a solid case with removable bottom plate. For Intermediate size meters 1 ½" or 2", the main case shall be designed for easy removal of the chamber assembly without disturbing the connections to the pipeline. The main case will be manufactured of cast unleaded bronze containing a nominal copper content of 86% certified to meet NSF 372. The main case shall be constructed in such a way that it will withstand internal pressure and external stress to eliminate distortion, cracking, or breaking that could cause leakage or possible damage to other components or interfere with the proper operation of the meter in general. All meter cases shall be machine finished, with no sharp edges. Removable bottom plates shall be manufactured of cast bronze containing a nominal copper content of 86%, epoxy-coated cast iron, or engineered plastic. If removable covers are used, they shall be constructed of waterworks bronze containing a nominal copper content of 86%. Bottom or cover plates, if applicable, shall be attached to the main case with stainless steel or silicon bronze bolts. All external bolts, nuts and washers shall be of bronze, stainless steel or other non-corrosive metal. Main case connection for 5/8-inch, 3/4-inch and 1-inch meters shall be spuds having external water meter threads with dimension as indicated by AWWA Standards. One and one-half inch (1-1/2") meters and two-inch (2") meters shall be external straight threaded or have 2-bolt oval flanges. The meter serial number shall be imprinted permanently on the main case as well as clearly on the register lid if so equipped. The register box shall be made of a suitable synthetic polymer. The size, model number of the meter and direction of the flow through the meter shall be imprinted permanently on the outer case of all meters. All meter cases shall include a calibration port located under the register shroud or on an external boss in the main case if protected by an acceptable tamper device	Meter flow tube shall provide full compliance with ANSI/NSF 372 (AB1953 or NSF61 G) and be made of high-performance glass reinforced polymer or bronze. The meter flow tube shall withstand a working pressure of 175 PSI without leakage, seepage in the castings, or distortion affecting the free and accurate operation of the measuring unit. The size, model, manufacturer's meter serial number, and direction of flow through the meter shall be permanently marked on the outer surface of the meter. Meter sizes 5/8" through 2" shall operate at a water temperature range of +33°F to +122°F (+0.5°C to +50°C) The meter shall operate at an ambient temperature range of +14°F to +149°F (-10°C to +65°C) and with a storage temperature of -40°F to +158°F (-40°C to +70°C) The meter shall be of common lay lengths to easily retrofit to existing installed turbine and compound meters where the it requires zero to half an hour to install.	For small meters 5/8" – 1" The meter main case shall be made from NSF/ANSI 61 certified lead-free alloy containing a minimum of 85% copper. Plastic main cases or flow tubes are not acceptable as the spuds are susceptible to cross-threading or breaking during installation, or from pipe stress over time. The serial number should be displayed in a permanent location on the register. Meter markings shall indicate size, model, direction of flow, and NSF 61 certification. All lead-free main cases shall be guaranteed free from manufacturing defects in workmanship and material for the warranted life of the meter. Meters shall be made of "lead free" alloy as defined by NSF/ANSI 61 and NSF/ANSI 372. Main cases for 5⁄8", 3⁄4", and 1" meters shall be of the removable bottom cap type with the bottom cap secured by bolts. Intermediate meter main cases shall also be made of the same lead-free brass material in sizes 1 1⁄2" and 2" with a cover secured to the main case with bolts. All main case screws or bolts shall be of 300 series non-magnetic stainless steel to prevent corrosion Meters with a frost plug, a screw-on design, or no bottom cap shall not be accepted in 5⁄8"- 1" sizes. The 5⁄8" meters shall have a synthetic polymer or cast-iron bottom cap option.
Register Cover	Cover shall be made of a suitable synthetic polymer same as the register box.	The register box shall be made of an engineering plastic with the manufacturer's serial number inside the register lid. Serial number of the meter shall also be permanently programmed in the electronic register.	Cover shall be made of a suitable synthetic polymer same as the register box.

Table 1 – Meter Sizes 5/8-inch to 2-inch

	Multi-Jet	**Ultrasonic**	**Positive Displacement**
		The register cover box shall be equipped with a hinged lid that will overlap the register to protect the reading area.	
Register	The factory sealed register shall be magnetically driven and shall be furnished with a low flow leak detector and with a large test hand with 100 equally divided graduations marked near the periphery of the register face. The register shall be identical and completely interchangeable within a given size or model. An effectively tamper-proof register, as determined by the District, is required. The register shall read in cubic feet as ordered by the utility. The register dial face should have the manufacture date in month and year stamped on it. The register housing shall be made from a 3-part assembly of a glass lens, an L-shaped elastomeric gasket and a stainless-steel cup to protect from external corrosion. The register is permanently sealed by a roll-over, flange-forming action compressing the L-shaped gasket between the lens and stainless-steel cup to prevent moisture intrusion. Register assemblies are to be closed in a vacuum to completely eliminate the possibility of trapping moisture during the manufacturing process; random flooding with an inert gas or operating in a silicone oil environment are not acceptable alternatives. The transparent register lens shall be made of molded convex heat-treated borosilicate glass to ensure against scratching and breakage, and to provide drainage off of the lens. Flat lenses or recessed lens will not be acceptable. As defined in these specifications, a "factory sealed" register shall mean a non-fogging, moisture and dust-proof register, magnetically driven by the measuring chamber. The register must be able to be removed from the meter without destroying the moisture and dust-proof seals. Registers must be warranted against moisture, fogging, condensation or other trapped liquids for a period of 25 years. The register shall be secured to the maincase in an acceptable tamper proof manner. Change gears are not acceptable. All register of particular registration and meter size shall be identical and completely interchangeable. If meters are requested with encoded registers and electronics for radio system applications, please see enclosed Encoder and/or Radio Based AMR System Specifications attached as addendums if needed.	The factory sealed register shall be electronically driven only and shall be furnished with a low flow leak detection symbol and with a reverse flow notification symbol. The register shall be identical within a given size or model subject to the programming of appropriate flow factors for the particular meter. The register shall be programmed initially to read in cubic feet as ordered by the District. Serial number shall be permanently programmed in the electronic register. As defined in these specifications, a "factory sealed" register shall mean an NEMA 6P / IP68 rating which protects the meter and register against fogging, moisture, and dust, and is electronically driven by the measuring section transit time sensors. Registers and meters must be fully submersible, therefore meters that do not meet an NEMA 6P / IP68 rating shall not be considered. Appearance of any fogging or moisture inside the register within the warranty period shall constitute component failure and will require a factory replacement. The register shall have a multi-line display with a minimum of 9 digits on the totalizer with a stationary decimal separating single billable units from fractional billing units. The register shall have a 4-digit rate of flow indicator with a floating decimal to allow high resolution flow measurement. The register shall have high resolution for low flow meter testing or on-site inspections. The LCD shall indicate reverse flow, rate of flow, low battery indication, leak alert, as well as no flow condition. For encoder output (as described in Section 6A), the LCD shall clearly distinguish the digits for the encoder output reading by displaying lines above the encoder reading.	All meters shall be equipped with encoder remote registers per AWWA C707 and meet all AWWA C700 performance standards. Magnetic-driven, positive displacement meters of the flat nutating disc type will be accepted. As defined in these specifications, a "factory sealed" register shall mean a non-fogging, moisture and dust-proof register, magnetically driven by the measuring chamber. The register must be able to be removed from the meter without destroying the moisture and dust-proof seals. Registers must be warranted against moisture, fogging, condensation or other trapped liquids for a period of 25 years. **Clarification:** [redacted] The register shall be secured to the main case in an acceptable tamper proof manner.
Measuring Section	The measuring chamber shall be made of a suitable synthetic polymer material, which equals or exceeds AWWA Standards. It shall be secured in a position in the main case in such a manner that slight distortion of the main case will not affect sensitivity or registration of the meter. The measuring chamber shall be of the velocity type and designed as to allow the flow of water to pass through precise, converging orifices	The measuring unit shall not include any moving parts and the measuring section shall have an unobstructed flow passage area. All transducers and reflectors must be mounted in the side walls of the flow tube. The measuring section shall be secured in a position in the main case in such a manner that slight distortion of the outer meter case will not affect the sensitivity or registration of the meter.	The measuring chamber shall be of a two-piece, snap-joint type with no fasteners allowed. The chamber shall be made of a non-hydrolyzing synthetic polymer. Magnetic-driven, positive displacement meters of the flat nutating disc type will be accepted. The control block shall be the same material as the measuring chamber and be located on the top of the chamber. The control block shall be located after the strainer.

Table 1 – Meter Sizes 5/8-inch to 2-inch

	Multi-Jet	**Ultrasonic**	**Positive Displacement**
	causing the impeller to rotate thereby providing a synchronous relationship between the impeller velocity and the water registered that passed through the chamber. The measuring chamber shall be constructed in such a manner as to facilitate easy removal from the main case. As an indication of longevity of service, the performance of the measuring chamber shall be guaranteed to meet the new meter minimum standards of AWWA manual M-6 as follows: 5/8” 5 years or 750,000 gallons 3/4” 5 years or 750,000 gallons 1" 5 years or 1,100,000 gallons 1.5” 5 years or 1,600,000 gallons 2" 5 years or 2,100,000 gallons To ensure longevity of service, the performance of the measuring chamber shall be guaranteed to meet the repaired meter standards of AWWA manual M-6 as follows: 5/8" 20 years or 2,500,000 gallons 3/4” 20 years or 2,500,000 gallons 1" 20 years or 3,250,000 gallons 1.5” 20 years or 5,600,000 gallons 2" 20 years or 10,400,000 gallons The measuring chamber shall be covered for this period by written warranty as required or mentioned elsewhere in these specifications.	To ensure longevity of service, the performance of the measuring chamber shall be minimum guaranteed to meet required accuracy standards of AWWA C715 for a period of ten years from date of manufacturer’s shipment.	The measuring chamber outlet port shall be sealed to the main case outlet port by means of an O-ring gasket. The flat nutating disc shall be a single piece made from non-hydrolyzing synthetic polymer and shall contain a type 316 stainless steel spindle. The nutating disc shall be equipped with a synthetic polymer thrust roller located within the disc slot. The thrust roller head shall roll on the buttressed track provided by the diaphragm. The chamber shall be warranted for ten (10) years against freeze damage if the meter has been equipped with a frost-proof cast iron or synthetic polymer bottom cap. To ensure accuracy, each meter must be accompanied by a factory test tag certifying the accuracy at the flows required by AWWA C700.
Magnetic Couplings	There shall be no stuffing box. The motion of the multi-vaned rotor shall be transmitted to the sealed register through the use of a direct magnetic coupling. Magnets shall be a permanent magnet material to avoid accidental demagnetization.	Not Applicable	??
Strainers	All meters must be provided with a corrosion resistant strainer that is easily removed from the meter	Strainer not required.	All meters shall contain a removable polypropylene plastic strainer screen. The strainer shall be located near the main case inlet port, before the measuring chamber. The strainer shall also function as the device that holds the measuring chamber in place within the main case. Straps or other types of fasteners shall not be accepted.
Signal Processing	Not applicable	Paired transducers are to be mounted in the chordal direct configuration in the measuring section to measure the actual transit time of the initiated and reception-generated ultrasonic sound pulses. Transit time measurements for a single pass of initiated and return pulses are to be accurate to within 300 pico-seconds for a loop time. Multiple measurements are sampled at a minimum of 1 second intervals of these transit time loops that are made to significantly improve accuracy over a single pass transit time measurements to achieve low flow rate measuring accuracy. Ultrasonic meters using transducers mounted in the top of the flow tube or ultrasonic meters that utilize reflectors that block the center of the pipe	Not applicable

Table 1 – Meter Sizes 5/8-inch to 2-inch

<table>
<tr><th></th><th>Multi-Jet</th><th>Ultrasonic</th><th>Positive Displacement</th></tr>
<tr><td></td><td></td><td>are not acceptable. Meters that use measurement principals based on Faraday’s Law are not permitted.</td><td></td></tr>
<tr><td>Signal Output</td><td>Not applicable</td><td>The Encoder Output is to be serial communication collector utilizing UI1203 or UI1204 communication protocol. The 3-wire cable exiting the meter body cable shall be available, upon request by the utility, as 1) bare colored wires, 2) Nicor compatible connector, 3) Itron compatible connector, or 4) magnetic coupled TouchPad. Encoder output provides the following data through the output cable.
Meter ID
Meter Totalizer Reading (up to 8 digits maximum)</td><td>Not Applicable</td></tr>
<tr><td>Installation Requirements</td><td>??</td><td>Meters shall be designed so that no strainer or straightening vanes are required. There shall be no internal parts blocking the waterway. No straight runs of pipe shall be necessary before or after the meter. The meter installation shall adhere to the recommended AWWA equivalent mechanical meter pipe lengths before and after the meter location.</td><td>??</td></tr>
<tr><td>Accuracy and Head Loss Tests</td><td>Meters shall conform to or exceed the current AWWA test flow, head loss and accuracy standards.</td><td>Meters shall EXCEED current AWWA C715 test flow, head loss and accuracy standards as follows.
<table>
<tr><th>Size</th><th>Safe Maximum Flow Rate (gpm)</th><th>Normal Flow Range Accuracy ± 1.5 % (gpm)</th><th>Extended Low Flow Range Accuracy ± 5 % (gpm)</th></tr>
<tr><td>5/8” x ½”</td><td>25</td><td>0.1 - 25</td><td>0.03</td></tr>
<tr><td>5/8” x ¾”</td><td>35</td><td>0.1 - 35</td><td>0.05</td></tr>
<tr><td>¾”</td><td>35</td><td>0.1 - 35</td><td>0.05</td></tr>
<tr><td>1”</td><td>55</td><td>0.38 - 55</td><td>0.11</td></tr>
</table></td><td>To ensure accuracy, each meter must be accompanied by a factory test tag certifying the accuracy at the flows required by AWWA C700.</td></tr>
<tr><td>Real Time Clock</td><td>Not Applicable</td><td>Meters shall have a real time clock and be capable of providing data logging direct from the meter, without the requirement of an RF endpoint. The data logger shall provide data logging in hourly readings with a minimum of 1,400 data points. Each log shall be configurable by the Utility. Data logger shall also log system events, tamper, low battery, and reverse flow measurement.</td><td>Not applicable</td></tr>
<tr><td>Working Pressure Requirements</td><td>Meters shall operate up to a working pressure of one hundred fifty (150) pounds per square inch and to a temperature of 105 degrees Fahrenheit (with short excursions to a maximum of 120 degrees Fahrenheit), without leakage or damage to any parts. The accuracy shall not be affected when operating at this pressure due to possible distortion and severe dimensional changes.</td><td>Meters shall operate up to a working pressure of one hundred seventy-five (175) pounds per square inch (PSI) and to a temperature of 122 degrees Fahrenheit, without leakage or damage to any parts. The accuracy shall not be affected when operating at this pressure to possible distortion.</td><td>Meters shall operate up to a working pressure of one hundred fifty (150) pounds per square inch and to a temperature of 105 degrees Fahrenheit (with short excursions to a maximum of 120 degrees Fahrenheit), without leakage or damage to any parts. The accuracy shall not be affected when operating at this pressure due to possible distortion and severe dimensional changes.</td></tr>
<tr><td>Warranty Requirement</td><td>The manufacturer's meter guarantee will be required with this bid and shall cover the meter main case’s pressure integrity for a period not less than twenty-five (25) years according to the date of purchase or order.

Bidder must include with his bid, a copy of terms and conditions from the manufacturer for the meters including typical accuracy and headloss.</td><td>The manufacturer's meter guarantee will be required with this bid and shall cover the meter main case’s pressure integrity for a period not less than twenty-five (25) years according to the date of purchase or order.

Bidder must include with his bid, a copy of terms and conditions from the manufacturer for the meters including typical accuracy and headloss.</td><td>The manufacturer's meter guarantee will be required with this bid and shall cover the meter main case’s pressure integrity for a period not less than twenty-five (25) years according to the date of purchase or order.

Bidder must include with his bid, a copy of terms and conditions from the manufacturer for the meters including typical accuracy and headloss.</td></tr>
</table>

3. Radio Based Automatic Meter Reading (AMR) System

a. General

The AMR system is understood to consist of:

i. Meters with direct read registers and integrated Meter Interface Units (MIUs) capable of output that can be captured by RF reading devices.

ii. Mobile and/or fixed location data collection units (DCUs) capable of capturing the radio signals from the MIUs.

iii. A communication system or data transfer system capable of transferring the data from the data collection units to the meter reading system control computer.

iv. The Route Management Software necessary to operate the system and interface to the customer information and billing system.

v. Installation, training and documentation sufficient to enable the personnel to adequately operate and maintain the system.

b. **Communication channels.** Must support two-way communications over the platform identified below with the MIU and provide such functionality as priority alarms, over-the-air programming, and remote firmware upgrades. Transceiver shall utilize one of the following communication options.

i. Licensed frequency on a specific band, per either FCC Part 90 or Part 42-licensed frequency.

ii. Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee.

iii. Cellular. Cellular communications must be verified with company providing service for coverage area.

c. **Accuracy and Security**. The system shall include provisions to ensure data accuracy (for example, error checking) and security to prevent accidental loss of data.

d. System integrity. The system must ensure data integrity, accuracy (so that the reading on the meter, ID numbers, and other data are always correct) and data security (e.g., so transmissions of meter reading and customer data cannot be intercepted or accessed by unauthorized parties). The MIUs must ensure against loss of data.

e. **Environmental tolerances.** All electronic system components must operate within a temperature range of 4º F to +140º F, and a humidity range of 0% to 100% non-condensing.

4. Meter Interface Unit

a. **Operation Specifications**.

i. The MIU shall operate on one of the following.

1. The output power of the device shall be no less than 20mw and will be governed by their conformance to these relevant FCC standards.
2. Licensed frequency band, per FCC Part 42 or 90-licensed frequency.

3. Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee. With the following output power of no less than 15 mw.
4. Cellular

ii. No programming of the MIU must be necessary during field installation. The MIU must be shipped pre-programmed to the customer and must be able to be initialized via flow or magnetic reboot.

iii. The MIU:

1. Must utilize two-way communications with the Mobile Data Collector Unit to allow for over-the-air communications for reprogramming, time synchronization, firmware upgrades, alarm notifications, and mode migration to fixed network mode.

Clarification: [redacted]

2. Must utilize data logging to deliver usage data in 15-minute intervals. **Clarification:** The R900 MIU can store [redacted] as part of the standard RF activated data logging operations. Further, as part of the standard fixed network operations, the MIU stores up to [redacted] readings that are transmitted with each meter reading.

b. **Physical Characteristics – Integrated Unit.**

i. Meter Interface Units (MIUs) must be integrated and permanently sealed within the meter register using a stainless-steel register base, wrap around gasket and tempered glass lens. The unit must be battery operated using two 3.6volt Lithium Thionyl Chloride batteries for long operational life greater than 10 years.

ii. The MIU must transmit the meter reading and other information via:

1. A specific band in MHz FCC Part 42 or 90 licensed frequency to a Mobile Data Collector Unit.
2. An Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee.
3. Cellular.

iii. The MIU must be capable of being configured to transmit priority alarms for leak, reverse flow events, low battery, and magnetic tamper.

Clarification: No Programming is required with Neptune R900 MIU

iv. The MIU must be capable of two-way communication for field programming of a user selected ID number or for resetting specific alarm codes.

v. Unit must be able to be programmed remotely and programming must be accomplished without removing the MIU from a pit, basement or wall application.

vi. The MIU:

1. Must be capable of operating at temperatures of (-4°F to +149°F) and operating humidity of 0 to 95% condensing.

   -30°C to 65° C (-22ºF to +149ºF)

   0% to 100% non-condensing relative humidity

   Refer to Product Sheets.

2. Must incorporate a dual band antenna capable of providing consistent and reliable connections while the pit environment is flooded or dry.

3. Range will not be affected substantially when the pit is partially flooded.

4. Must have an integrated unit option where the power source, RF circuitry, meter register, and antenna are fully enclosed in a single IP-68 rated ruggedized enclosure.

   Clarification: The antenna is not included.

5. Must have an integrated unit option where the power source, RF circuitry, and meter register are connected to an external antenna in an IP-68 rated ruggedized solution.

6. The MIU must be compatible with use on multiple brands of water meters. These units must have programmable gear ratios and available with LCD displays. LCDs must permanently display consumption status and alarms: Totalization, Rate of flow, Unit of Measure, Billable Units, Low Battery Alarm, Direction of flow.
   Clarification: Neptune MIUs are compatible with Neptune absolute encoders (ProRead, E-CODER, ProCoder, and MACH 10). Additionally, Neptune MIUs are also compatible with competitive registers that use the Sensus UI-1203 protocol via the 3-wire interface.

7. Each unit must be supplied with an appropriate register housing and adapter to retrofit the current make and model of 5/8” through 2” meters of the following meter manufacturers: Zenner and Hersey with nonintegrated unit from Itron.

c. **Physical Characteristics – Non-Integrated (external) Unit**.

i. Non-integrated or wired MIUs are acceptable for commercial meters or to provide connectivity to meter brands other than the brand proposed.

ii. The MIUs shall be housed within a high-density ABS plastic enclosure.

iii. The unit shall be battery operated using two 3.6volt Lithium Thionyl Chloride batteries for long operational life greater than 10 years.

iv. The MIU must transmit the meter reading and other information via:

1. A 450-470 MHz FCC Part 90 licensed frequency to a Mobile Data Collector Unit.

2. An Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa

modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee.

3. Cellular

v. The MIU must be capable of being configured to transmit priority alarms for leak, reverse flow events, and low battery.

Clarification: [redacted]

vi. The MIU must be capable of two-way communication for field programming and for resetting specific alarm codes.

Clarification: The R900 MIU never has to be programmed for installation or changing the mode of operation of the MIU.

vii. Unit must be able to be programmed remotely and programming must be accomplished without removing the MIU from a basement or wall application.

Clarification: [redacted]

viii. The MIU:

1. Must be capable of operating at temperatures of (-22°F to 176°F) with operating humidity of 0 to 95% condensing.

   -30°C to 65° C (-22ºF to +149ºF)

   0% to 100% non-condensing relative humidity

   Refer to Product Sheets.

2. Circuit board and the battery will be fully enclosed and permanently sealed in a weatherproof enclosure.

3. Unit must be able to retrofit to existing meter installations.
   Clarification: Neptune MIUs are compatible with Neptune absolute encoders (ProRead, E-CODER, ProCoder, and MACH 10). Additionally, Neptune MIUs are also compatible with competitive registers that use the Sensus UI-1203 protocol via the 3-wire interface.

4. The non-integrated MIU must be able to interface the Mobile Data Collector Unit with multiple brands of water meters via a 2-wire or 3-wire connection to the register.

5. Mobile Data Collection Unit (MDCU)

a. **Mounting and power**. The MDCU must be a portable interrogator designed to operate from within a vehicle. The unit must be capable of transfer between vehicles without difficulty. The mobile interrogator shall be powered from the vehicle battery. There must be a back-up battery to preserve internal memory.

b. **System Operation**. The MDCU will provide signals such as audible tones to the driver during the reading of a route so that the driver will not have to take his or her eyes off the road. The reading software shall process all incoming RF data within range of the Receiver. Readings shall be automatically inserted into the correct account records based upon a MIU/Meter ID search. Once started, the reading software shall not require user intervention.

c. **Reading System Software.** System will have the ability to stream meter reading data, work orders, meter pictures, location pictures, and GPS coordinates in real time with Wi-Fi or Cellular data connection back to the route management software. Route data and incoming reading data shall be optionally displayed in a text format or, graphically displayed on maps showing water utility streets and roads. The reading system software shall provide a function to determine meter latitude & longitude based on meter service address. Read and unread meters shall be displayed at the same time. The reading system software shall flag all problem codes such as tamper detection, no-reads, etc.

d. **Route Management Software.** The route management software will be web based. The route management software will have the ability to send and receive meter reading data, work orders, meter pictures, location pictures, and GPS coordinates in real time to and from the reading systems while they are in the field. The route management software will have the ability to track the reading systems in real time and show their current locations on a map.

Clarification: [redacted]

e. **System Reports.** The reading system software must provide the ability to create and modify system reports. Standard reports shall include but not be limited to the following:

i. **Reading Master Report.** Master list showing Customer Name, Service Address, Meter ID, Previous Reading and High Read Limit.
ii. **Reading Exception Report.** A list showing all readings that failed the high/low limit test, zero usage test or unread meter.
iii. **Meter Alert Report.** A report designed to list problem meters. Problems reported shall include Leak Alarms, Back Flow or Tamper.
iv. **Orphan Read Report.** A listing of radio readings received but not found in reading route.
v. **Report Status Report.**
vi. **Tampered Report.** A listing of meters where possible tampering has occurred.
vii. **Missed Read Report.** A listing of meters that were not read during collection of reads by route.
viii. **Audit Report.**
Clarification: [redacted]
ix. **Reading Times Report.** A listing of meters by date and time of read.

f. **Control Tablet.** The system shall operate using a standard tablet with Bluetooth and a 3-Year manufactures warranty. Additional interfaces shall include a wired, wireless and cellular network interface. The system shall include current operating system.

g. **Transceiver.** The transceiver shall connect to the control computer through the use of either a standard serial or USB port. It shall be powered by the vehicle's 12volt cigarette lighter adapter with a reserve battery life of approximately 3 hours. The transceiver shall be furnished with all cables and suitable magnetic mount antenna. The transceiver shall

be capable of communicating with the control computer using Bluetooth. The MDCU shall utilize a transceiver that must operate in either:

Clarification: The MRX920 and R900 Belt Clip Transmitted connect to the table via Bluetooth

i. A frequency band that is licensed under FCC Part 42 or 90 licensed frequency.
ii. Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee.
iii. Cellular

h. **Field Programming and Testing.** The MDCU shall include software for field programming and testing of the MIUs. The system must allow for single unit or batch programming. Please indicate if additional equipment is required for programming and testing MIUs.

Clarification: No additional equipment is needed for testing, but a programmer mouse is required for reprograming.

i. **Manual entry**. The system must permit manual entry of meter readings and comments.

j. **Software documentation**. Documentation shall be and shall include at a minimum: system overview description, record layouts, description of program function and logic, operating procedures, screen layouts, data entry procedures, report descriptions and descriptions of all user options.

k. **Software license and support**. All software must be supplied with a perpetual license indicating the software's designer, owner and licenser, and detailing the manufacturers terms and conditions, including annual cost of maintenance by the Vendor.

l. **Mobile Interrogator Warranty.** The control computer and data collection unit shall be covered by a manufactures warranty for a period of no less than one year.

6. Training

a. **Prerequisite to installation.** The District requires that its staff be trained prior to the commencement of installations. No installations will be permitted until systems training is completed.

b. **Training on installed equipment**. Vendor shall perform all training using the District AMR system equipment. This includes the control computer, mobile data collection unit (MDCU) and several meters with MIUs.

c. **Location.** All training shall be performed at the District office located at 2029 East Avenue Q, Palmdale, CA.

d. **Curriculum.** The Vendor shall provide thorough training for all aspects of AMR system operation and must include the following.

i. Obtaining readings and consumption data from the system.

ii. Transferring readings and other information between the AMR system and billing system.

iii. Creating reports.

iv. Troubleshooting and diagnostic procedures for all AMR system components.

v. Changing or adding customer accounts/MIU/meters to the system.

vi. AMR installation procedures based on manufacturer documents and requirements.

e. **Training Checklist**. Vendor shall provide training checklist in order to review training topics covered. Upon completion of review both vendor and appropriate utility personnel shall initial checklist.

f. **Videotaping.** The District may desire and shall be permitted to videotape training sessions for internal use. Vender shall cooperate to ensure quality video records of classroom and field training sessions. The Town shall be responsible for all cost associated with videotaping.

7. **Support**

a. **Telephone support.** Vendor shall provide trained persons to answer technical questions and guide the District employees through the use or diagnosis of the system through a toll-free number. Telephone support shall be available at a minimum from 8:00 a.m. through 7:00 p.m with after-hours numbers available as needed. Eastern Standard Time. Indicate telephone support hours proposed and response time expected throughout the duration of the agreement.

i. A list of required services to be provided by the help desk includes but is not limited to the following:

1. Answer and resolve hardware/operation/maintenance questions and problems.

2. Answer and resolve software operation questions and problems.

3. Evaluate information for updates or revisions.

4. Evaluate personnel for training needs.

ii. The customer support department of the vendor must provide metrics demonstrating that it routinely meets or exceeds the following minimum support performance metrics:

1. 95% Same Call Resolution

2. 95% Same Day Resolution

b. **On-site support and additional training.** The District requires that a manufacturer's representative visit the appropriate utility personnel on no less than a quarterly basis to provide service and support for the life of the system throughout the duration of the contract. Additional on-site training shall also be available for a daily fee if necessary.

8. Advanced Meter Infrastructure

a. Scope of Work

The AMI Fixed Base solution, issued through this RFP, must meet all of the current and future needs within the defined service area. The scope of work involves, but is not limited to, providing and installing the major components of a fixed network system which includes software, hardware, and all necessary training and installation support. The fixed network system must be capable of receiving meter readings over fixed network Advanced Metering Infrastructure (AMI) system architectures.

For reliability and meter reading integrity, all system components (Meter Interface Units (MIU's), base stations, repeaters, host software, and meter registers), shall be purchased

through a single vendor in order to provide a turnkey system offering to the utility with verified compatibility. Available system parts furnished shall include meters, Radio Frequency (RF) transmitter MIU, with and without, integrated register, base station / network infrastructure, and fixed network host software.

b. System Overview

The fixed base solution must provide secure two-way communications from the fixed network host software/head end to the base station and to the RF MIUs, allowing for remote configuration and firmware updates of the MIUs over the air. The RF communication method from the base station to the RF MIUs must utilize an FCC-licensed, two-way frequency to assure reliable, extended range, and interference free communications between the RF MIU and the base station. The system must be capable of automatically migrating between data delivery modes and operating in a hybrid mode to allow for the transition from mobile read system devices to fixed network devices or vice versa.

Clarification: [redacted]

The fixed network system must provide hourly system-wide, time-synchronized readings from all MIUs – to support Non-Revenue Water and conservation initiatives and eliminate off-cycle readings for high water bill complaints and/or move-ins/move-outs. The network must utilize smart sensing activation of the MIUs, allowing for auto-discovery of the MIUs throughout the network.

The fixed network host software must be designed to support key departments within the utility organization (customer service, billing, operations) by providing data in user-friendly, function- specific screens as well as reports to help utility personnel manage their day-to-day operations. The fixed network host software must provide users with easy system monitoring and control, over-the-air system upgrades, auto-discovery throughout the network, hourly time-synchronized meter readings, monthly/daily/hourly/15 minute customer usage graphs, enhanced reporting, priority alarms, customizable security and administrative user levels, and mapping functionality.

Clarification: [redacted]

Definitions:

i. Fixed Network System (the "system"): The fixed network system is comprised of fixed network host software, wide area network (WAN), base station and repeater, and radio frequency meter interface unit (MIU) with integrated register, to enable the remote collection of metering data from water meters or other compatible devices.

ii. Fixed Network Host Software: The host software package is installed on an offsite server. The host software must manage the communication with the base station and MIUs, issue configuration commands to the base stations and MIUs, and transfer collected meter data to the billing/CIS system via a transfer file. The host software must also provide an easy-to-use graphical user interface (GUI) allowing utility personnel to manage the system and analyze the resulting data. The utility will be responsible for the transfer file that links the host software with the utility's billing and customer information systems (CIS).

iii. Wide Area Network (WAN): The WAN is the communications link between the host software and fixed network base station. The standard WANs utilized in the fixed network base station are GPRS and Ethernet.

iv. Base Station: The hardware/software that enables communication between the MIU installed at the meter site and the host software. The base station must have two-way communication capabilities to receive, store, and transmit meter data and commands.
Clarification: [redacted]

v. Repeater: The hardware/software that enables communication between the base station and the MIUs (if required). The repeater must have two-way communication capabilities to transmit and receive meter data and commands and must be housed in a NEMA-4X environmentally-rated enclosure.

vi. Radio Frequency MIU: The MIU must be a high-power, two-way communication device designed to transmit the meter reading data associated to a unique register ID number to the base station. The standard mode of operation of the MIU is to transmit twice daily, hourly time- synchronized meter readings and daily consumption data comprised of 12 hourly consumption intervals to host software. The MIU must be capable of being configured to transmit priority alarms for leak and reverse flow events within 5 minutes of the event. MIU must be capable of On Demand reads which deliver the requested information within 10 minutes. The MIU must be able to have its firmware upgraded remotely from the host software. The RF MIU must transmit on:
    1. A FCC-licensed frequency.
    2. An Unlicensed FCC frequency.
    3. Cellular

Clarification: The R900® MIU computes and transmits all flags and meter alarms as part of the standard messaging transmission every [redacted] Neptune's R900® MIU operates within FCC Part 15.247 regulations for

devices operating in the 902MHz to 928MHz ISM unlicensed band.

vii. ID Number - Each MIU must have a unique, non-programmable permanent ID number.

viii. Programmability - Register integrated MIUs must be ground shipped programmed. However, the MIU must be capable of two-way communication for field re-programming of a user selected ID number or for resetting specific alarm codes and updating customizable attributes. Programming must be accomplished without removing the MIU from a pit, basement or wall application.

Clarification: The R900 MIU never has to be programmed for installation or changing the mode of operation of the MIU. [redacted]

ix. Leak Detection - The MIUs within the system shall monitor water consumption through the meter and must specifically indicate possible leaks, as alarm flags to the host software, whenever the meter has not detected zero consumption for 15 minutes (programmable) within a single twenty-four hour time period.
Clarification: The R900 MIU transmits a perioding reading message every [redacted] containing [redacted] readings and events such as leaks, reverse flow, and tamper to provide the HES with actionable information.

x. Tamper Detection - The MIUs within the system must contain tamper detection circuitry and software, which identifies tamper as alarm flags to the route management software, whenever the MIU has been tampered with magnetically.
Clarification: The R900 MIU transmits the following events/alerts: intermittent leak, continuous leak, minor reverse flow, major reverse flow, and tamper. [redacted]

xi. Back Flow Detection - The MIUs within the system shall specifically indicate, as alarm flags to the route management software, whenever there is an unusual amount of counterclockwise registration or back flow.

xii. Data Logging - All MIUs must possess data logging capabilities with a minimum of 5760 data points. Data must be downloaded from the MIU through the base station to the host software without the need for physical contact or connection with the MIU.
Clarification: The R900 MIU provides storage of [redacted] days of [redacted] consumption data. This is stored in the MIU for retrieval via RF activated data logging.

xiii. Environmental tolerance - The MIUs must operate in conditions subject to water submergence (i.e., meter boxes or vaults) with a water submergence rating consistent with IP68. External or wired MIU enclosures must be

composed of UV-inhibiting ABS or similar material further sealed and totally encapsulated with an electrostatic gel that eliminates moisture intrusion.

xiv. Labeling - The MIU must be permanently labeled with manufacturer's name, model number, Identification Number, required FCC labeling. External or wired MIUs must also include input/output connections and date of manufacture.

xv. Mounting - The external MIU must include features to facilitate mounting to masonry, wood, pipe or any other building materials.

xvi. Meter box installation - The MIU must operate from within a meter vault box. Standard installation will require that no antenna or other portion of the MIU may project through the lid or cover unless the pit is continually submerged in water or dirt or there exists a harsh "RF interference" environment. The system must provide for optional external antennas for any "hard to read" units that meet these conditions.

Clarification: The R900 pit MIU requires a through-the-lid (TTL) external pit antenna for all pit and vault applications.

c. Fixed Network Host Software Overview

The host software must have the basic capability of supplying the following features to the end user:

i. Employ thin-client (browser-based) architecture wherein the database is centralized, and the host application requires no local install, but is accessed through an Internet browser.

ii. Utilize a standard file layout format to interface with the utility's Customer Information System (CIS) for both on-cycle and off-cycle meter reading.

iii. Interface with third-party applications such as work order systems via a standard interface (e.g., web services).

iv. Customizable reporting engine which provides key reports on advanced usage analysis included within the application: district metering, consumption reporting, troubleshooting, leak report, tamper report, reverse flow report, and non-billable report. A list of all reports and a brief description of each report included within the application are provided in the Reporting Section.

Clarification: [redacted]. Reports can be exported to excel for needed modifications.

v. Customizable dashboard that provides key performance indicators (KPIs) to allow for proactive monitoring of system health and performance. Provides a wizard-driven priority alarm configuration capable of sending information directly to key utility personnel (via email or SMS) based on predefined triggers and thresholds.

vi. Able to export data to Microsoft Excel and Word applications.

vii. Designed to hold two (2) years of history for direct access, with an option for secondary direct access storage and reporting of older usage history.

viii. Provide an export of key data for third-party meter data management or customer web presentment.

ix. Provide an embedded mapping tool that enables visual interpretation and analysis of data within the fixed network system to reveal relationship patterns and usage trends. The map-based interface component provides viewing, selecting, managing, and reporting options on all assets that are managed by the system.

General mapping component features:

i. Highly interactive (drag-and drop) mapping interface.
ii. Auto-zoom to map display result set.
iii. Ability to display MIUs, base stations, and other system components on the same map interface.
iv. Ability to display other maps managed by the utility, such as pipe distribution networks, laterals, etc.
v. Polygon selection capabilities for all entities displayed on the map.
vi. Ability to send selected items from the mapping component directly to the customer service screen for display.
vii. Ability to create groups from map queries and polygon selections.
viii. Ability to view all MIUs, base stations, and compatible leak monitoring devices contained within the fixed network software on a map.
ix. Ability to display MIUs based on unique device attributes such as continuous/intermittent leak, major/minor backflow, no consumption, inactive status, etc.
x. Ability to query and display MIUs based on MIU's conditions such as owned, data pending, last heard time, inactive with usage, etc.
xi. Ability to add date or value ranges and tolerances to specific queries, such as inactive usage, zero consumption, etc.
xii. Ability to generate queries based on specialized conditions such as soft or virtual disconnects.
xiii. Ability to auto-generate (geocode) map coordinates for above assets (requires complete address information or additional GPS hardware).
xiv. Ability to display all relevant dashboard KPI items on a map.
xv. Ability to display groups of MIUs on a map, either from a specialized search, by predefined group indicators, or by list upload.
xvi. Ability to generate result queries to display on a map from events and alert lists.
xvii. Ability to create customized queries to display MIUs based on attributes and save them for future use.
xviii. Ability to publish defined map queries for use by other map component uses (administrative rights required).
xix. Ability to layer multiple map queries onto a common base map.
xx. Ability to print maps, including any attributes and/or MIUs displayed.
xxi. Ability to export any MIUs or attributes displayed on the map to MS Excel.

Clarification: [redacted].

The host software must have the basic capability of providing the following data to utility on a twice daily basis:

i. An hourly time-synchronized meter reading from all water meters for monthly billing purposes.
ii. 12 hourly usage/consumption readings delivered twice daily for resolution of customer billing disputes and improved customer service.
Clarification: Delivery of data is based on the R900 MIU reading interval.

d. Fixed Network Host Software Requirements

The host software must provide all the control needed in the network and provide for the essential functions of network management, meter communications, reporting, database configuration, and alarm monitoring. It must comply with prevailing industry standards and shall run on a Windows-compatible PC.

For a locally hosted system, proposer shall propose the PC system requirements based on the number of endpoints, frequency of readings, and added features utilized. Utility will be responsible for providing hardware to meet those specific needs.

Clarification: Neptune 360™ is a Cloud-Based meter reading platform that allows meter readers the ability to use mobile devices such as cellphones and small tablets to perform their meter reading duties., eliminating the task of handling large and heavy handhelds that would require to be loaded and unloaded via docking stations.

Neptune 360™ Hardware and System Recommendations

- A PC running Windows 7 or Windows 10
- I Microsoft Edge or Google Chrome (latest version) browsers
- I Minimum recommended screen resolution of 1280 x 720
- Adobe Flash Player is required to access some features

Neptune® 360™ Mobile Hardware and System Recommendations

Neptune 360 Mobile supports Android,
iPhone, and iPad devices running the following operating systems:
- Android: 5.1.X Lollipop, 6.0.X, Marshmallow, 7.0.X Nougat, 7.1.X Nougat, 8.1.X Oreo
- iOS: 10.3.1 and higher, 11

The host software must be able to interface with mobile, and fixed network meter reading software to enable a hybrid meter reading approach.

The host software must interface to utility's CIS/billing software via the proposed software suite. The meter reading data communicated to the CIS system must be provided in an ASCII flat file format.

e. Network Management

The system must allow for MIU message success rate and base station performance to be monitored daily with system diagnostic information readily available on a "system health" or dashboard-type screen. The host software must produce a base station download report for all base station units in the network. The report must list each base station unit by ID number, name and summary of the download statistics. The system must allow utility personnel to configure key system critical alarms such as reverse flow, 24-hour continuous leak, and distribution main leak. The software must be able to forward these alarms via email or text message to maintenance personnel assigned by the utility.

Clarification: [redacted]

Report listing each base station unit by ID number, name and summary of the download

[redacted]

f. Rate and Fee Management Specifications

Creation, maintenance and application of all utility rates and fees.

Host software must provide:

i. Ability to define, add, change, and delete an unlimited number of rate code types and amounts.
ii. Ability to define, add, change, and delete an unlimited number of service types.
iii. Ability to define an effective date for rate tables and prorate charges based on the effective date. Also, the ability to have rate codes or fees automatically begin and expire on a user-set effective date.
iv. Ability to define service rates that are based on consumption, fixed amounts, percentages, budget assistance, tiered, and/or seasonally averaged.
v. Ability to change or modify fees based on a percentage.
vi. Ability to base charges for non-metered service such as sewer on metered services, such as water.
vii. Ability to define distribution of fees to multiple general ledger accounts based on user- defined account types, fees categories, service types or other criteria.

Clarification to i-vii: Service types are managed in the billing software.

g. Meter Data Management Specifications

Meter data management including meter inventory, meter reading, and meter reading and consumption history.

Host software must provide:

i. Ability to define, add, change and delete and unlimited number of meters and meter types.
ii. Ability to identify a meter by type, size, serial number, electronic ID, manufacturer, location, tested date and install date.
Clarification: [redacted]
iii. Ability to enter meter reading data through data entry screens or from handheld devices or wireless automated meter reading systems by Master Meter or others.
iv. Ability to automatically calculate consumption upon entry or import of meter readings; including the ability to edit readings.
Clarification: [redacted]
v. Ability to automatically truncate, round, or add zeroes to meter readings.
vi. Ability to allow concurrent meter reading data entry of one route while processing billing for another.
vii. Ability to maintain meter readings and dates independent of customer or account changes.
viii. Ability to enter a meter change without interruption of the billing cycle or final billing.
Clarification: Meter changed should be passed in the transfer file from the billing system.
ix. Ability to generate work orders based on meter readings exception reports and/or actions entered along with meter readings.

Clarification: [redacted]

x. Ability to include meter location notes in order to communicate the location of the meter at the service location to the meter reader.

xi. Ability to view history of all meters that have been installed at a particular service location.

xii. Ability to record unlimited notes for a meter.

xiii. Ability to define meter reading types, such as manual, radio read, etc.; and differentiate between actual reads and estimated readings.

xiv. Ability to automatically identify roll-over readings based on meter setup.

Clarification: [redacted]

xv. Flexible high/low feature that allows the user to set a range of parameters that estimates “normal” consumption range for comparison to actual read in order to screen for variables such as high/low consumption, no reading, zero consumption, etc.

xvi. Ability to change out meters at any time. Where meters have been changed out and the ability to show separate individual meter readings and consumption to show total consumption and billing amount on the same bill.

xvii. Ability to change meter reading sequence without changing the customer account number.

xviii. Ability to graphically display consumption history for an account.

xix. Ability to display average consumption by month for an account or all accounts both graphically and numerically.

xx. Ability to maintain reading instructions or location notes, prints the instructions/notes on meter reading sheets, and provides this information in the meter reading interface.

xxi. Ability for the user to flag individual accounts for which zero consumption is not considered to be an exception. This would cause the account not to show on a Reading Exception Report.

xxii. Ability to search for meters using the following criteria: Meter Serial Number, Meter Electronic Number, Reading Device, Meter Interface (Booster), Hours Since Last Read, Service Type, Route-Site Name, Meter Interface Status, Only Meters With Alarms, Include Scrapped/Removed Meters.

Clarification: Searches can only be done by customer name, customer address, MIU ID and customer account number.

xxiii. Ability to Import and Export Route/Site Data through custom interfaces that are configurable by the user.

xxiv. Ability to setup, configure, and review DMA Leak Zones.

Clarification: [redacted]

xxv. Ability to search for meter testing results using Meter Serial Number, Meter Electronic Number and a Testing Date Range.

xxvi. Ability to track mobile devices using GPS and a mapping product.

xxvii. Ability to report all meter readings that were uploaded to the system within a given time frame for a specific meter.

Clarification: [redacted]

xxviii. Ability to generate a Manual Reading Worksheet based on the following criteria: Route, Cycle, Service Type, Last Read Date, Location Number, and Location Status.

xxix. Ability to generate a Meter Reading Report showing the most recent reading in

the system using the following criteria: Reading Date, Meter Serial Number, Meter Electronic Number, Reading Device, Service Type, Route-Site Name, and Include RF Meters Only.

xxx. Ability to generate a Consumption Report showing individual and combined usage using the following criteria: Reading Date, Meter Serial Number, Meter Electronic Number, Reading Device, Service Type, Route-Site Name, and Include RF Meters Only.

xxxi. Ability to generate an Inactive Location with Usage Report using the following criteria: Reading Date, Meter Serial Number, Meter Electronic Number, Reading Device, Service Type, Route-Site Name, and Include RF Meters Only.

xxxii. Ability to generate Reading Exception Reports showing anything that is out of the ordinary, such as a reading that has not changed since the last reading cycle (stopped meter), a reading that is missing (unread meter), or a reading that includes a Dialog 3G® AMR alert like “leak” or “tamper” using the following criteria: Reading Date, Reading Device, Service Type, Route-Site Name, Alarm Type, and Include RF Meters Only.

xxxiii. Ability to generate a meter list from the system using a Meter Query & Report option with the following criteria: Meter Serial, Electronic or Booster Numbers, AMR Type codes, Meter Readings, Purchased Date, First/Last Installed Date, Last Tested Date, Scrapped, Removed Meters, and/or DMA leak zone Service Meters, Service Type, Street Address, Electronic Meter Type, Physical Meter Type, Meter Size, Meter Manufacturer, Check Valves installed, or Meters with No GPS Coordinates on file. Using this criteria the following report formats are available: Meter Listing showing one Meter per line, Meter Detailed Report showing most information on file, and Meter Count Report.

Clarification: [redacted]

xxxiv. Ability to generate a Meter Change Report using the following criteria: Change Out Start and End Dates, Service Type and Route.

Clarification: [redacted]

xxxv. Ability to generate System Health Reports showing Meters assigned to multiple Locations, Meters not assigned to a Leak Zone, and Locations with multiple Meters assigned to them, using the following criteria: Service Type, Route, Include Scrapped Meters, Include Subtraction Meters, Included Removed Meters.

Clarification: [redacted]

xxxvi. Ability to generate a Meter Test Required Report showing which meters need to be retested and certified, based on age or accumulated usage using the following criteria: Electronic Meter Type

Clarification: [redacted]

xxxvii. Ability to generate a Quarterly Meter Test Report showing the information required for your state’s public service commission including the number of metered and no metered services by customer class, Test Year, Meter Test Program, Approval Agency, Test Quarter, Sample Method Plan, Date Submitted, Meters to be tested this year, Meters actually tested this year, and Meters remaining to be tested this year.

xxxviii. Ability to Manage Backflow Devices using a Check Valve Report to show customers that have check valve assemblies installed and will need them inspected soon using the following criteria: Billing Cycle and Check Valve Inspection Required By Date.

Clarification: [redacted]

xxxix. Ability to Manage Backflow Devices by printing form letters informing customers about the upcoming check valve inspections using the following criteria and sorting those letters for proper postal automation: Billing Cycle and Check Valve Inspection Required By Date.

Clarification: [redacted]

xl. Ability to Manage Backflow Devices by printing mailing labels for the purpose of informing customers about the upcoming check valve inspections using the following criteria and sorting those labels for proper postal automation: Billing Cycle and Check Valve Inspection Required By Date.

Clarification: [redacted]

xli. Ability to Manage Backflow Devices by allowing the utility to add fees to the customer accounts for the purpose of paying for the upcoming check valve inspections using the following criteria: Billing Cycle and Check Valve Inspection Required By Date.

Clarification: [redacted]

xlii. Ability to Setup and Manage Route Information using the following information: Route or Site Description, Route Number, Current Assigned Device, Current Status, Export Only Meters with Alarms for Route, Change Status on Export, Billing Import and Export File Format (Bridge), Billing File Name, Service Types, Documents Assigned to Route, Meters Assigned to Route, and Mobile Read Age.

Clarification: [redacted]

xliii. Ability to Audit Route Status Changes using the following information: Changed Date, Changed From, Changed To, Device Assigned, Deleted (Y/N).

Clarification: [redacted]

xliv. Ability to Specify what Information will show on the Screen of Mobile Meter Reading Devices.

Clarification: [redacted]

xlv. Ability to Setup and Manage DMA Leak Zone Information using the following information: DMA Leak Zone Name, Monitoring Period in Minutes, Minutes Between Monitoring Periods, Days to Retain DMA History Records, Time and Date to Begin Saving Readings, Deviation For Low Use Warning, Deviation For High Use Warning, Deviation For Possible Leak Warning, Fixed Network Processing Time Allowance and Zone Color.

Clarification: [redacted]

h. Training

i. **Prerequisite to installation.** The District requires that its staff be trained prior to the commencement of installations. No installations will be permitted until systems training is completed.

ii. **Training on installed equipment**. Vendor shall perform all training using the District AMR system equipment. This includes the control computer, mobile data collection unit (MDCU) and several meters with MIUs.

iii. **Location.** All training shall be performed at the District office located at 2029 East Avenue Q, Palmdale, CA.

iv. **Curriculum.** The Vendor shall provide thorough training for all aspects of AMR system operation and must include the following.

1. Obtaining readings and consumption data from the system.
2. Transferring readings and other information between the AMR system and billing system.
3. Creating reports.
4. Troubleshooting and diagnostic procedures for all AMR system components.
5. Changing or adding customer accounts/MIU/meters to the system.
6. AMR installation procedures based on manufacturer documents and requirements.

v. **Training Checklist**. Vendor shall provide training checklist in order to review training topics covered. Upon completion of review both vendor and appropriate utility personnel shall initial checklist.

vi. **Videotaping.** The District may desire and shall be permitted to videotape training sessions for internal use. Vender shall cooperate to ensure quality video records of classroom and field training sessions. The Town shall be responsible for all cost associated with videotaping.

i. **Support**

i. **Telephone support.** Vendor shall provide trained persons to answer technical questions and guide the District employees through the use or diagnosis of the system through a toll-free number. Telephone support shall be available at a minimum from 8:00 a.m. through 7:00 p.m with after-hours numbers available as needed. Eastern Standard Timet. Indicate telephone support hours proposed and response time expected throughout the duration of the agreement.

ii. A list of required services to be provided by the help desk includes but is not limited to the following:

1. Answer and resolve hardware/operation/maintenance questions and problems.
2. Answer and resolve software operation questions and problems.
3. Evaluate information for updates or revisions.
4. Evaluate personnel for training needs.

iii. The customer support department of the vendor must provide metrics demonstrating that it routinely meets or exceeds the following minimum support performance metrics:

1. 95% Same Call Resolution
2. 95% Same Day Resolution

iv. **On-site support and additional training.** The District requires that a manufacturer's representative visit the appropriate utility personnel on no less than a quarterly basis to provide service and support for the life of the system throughout the duration of the contract. Additional on-site training shall also be available for a daily fee if necessary.

9. Customer Portal

a. Overview of Solution and Program Design

Proposer shall provide an overview of their proposed program, including information on how the program will be designed. Proposer shall include descriptions with the necessary information of:

i. Program goals
ii. Implementation approach, program launch timeline and responsibilities
iii. What accounts will be involved in program and what they will receive
iv. What utility staff will receive
v. Training and support
vi. Ongoing program responsibilities
vii. How program results are tracked and measured

b. Web Based Application for Customers

Proposer will configure and host a customer portal that is available online and through mobile interfaces (both iOS and Andriod) for residential, multi-family, commercial, industrial, and irrigation accounts. The application shall include the features below:

Registration and Basic Information

i. Secure registration and login for each utility account, regardless of meter type, the granularity of meter data or frequency of meter data collection (allowing for use with AMR, and AMI data).
ii. Ability to configure the main tiles of the Home Page based on Utility priorities.
iii. Ability to add items to the Home Page based on common requests to the Utility.
iv. Ability to communicate AMI data interruptions to your customers through their data feed to decrease the number of customer calls.
v. Dynamic customer profile that customers can update 24x7 to personalize their portal and recommendations
vi. Provide customers the ability to enter information about home size, square footage, number of persons in home and other useful information in comparing water usage of similar properties
vii. Ability to fill out web forms designed by the Utility from within the Customer Portal and view previously submitted forms

Notifications and Alerts

i. Easily customizable communication preferences – customers shall be able to determine how they receive outgoing communications including by text/SMS, email, automated call and mail
ii. Account management module to set communication preferences for alerts (see Alerts section)
iii. Ability to automatically detect leak events using AMI or Non-AMI data, automatically notify the customer of suspected leaks, engage the customer to investigate and resolve the leak with step-by-step instructions and resources, and provide resolution details to Utility through the Dashboard
iv. Ability to view dynamic, personalized information on why a bill might be high and what can be done to reduce future consumption

Personalized Data and Insights

i. Personalized consumption displays in gallons per day, seasonal consumption trends, year-over-year usage, and ability to compare use to utility goals. Residential accounts shall include water use consumption comparisons to similar households based on occupancy and outdoor area characteristics and residential end-use disaggregation

ii. Disaggregated water consumption estimates for indoor and outdoor usage

iii. Display water consumption data in context of temperature and precipitation data to inform users of how weather impacts water use

iv. Ability to view water consumption by rate tiers and to forecast end-of-period total consumption levels

v. Ability to view current and prior period consumption relative to a utility determined water budget, consumption goal, or usage allocation

vi. The ability to display missed meter reads

vii. The ability to estimate and display irrigation events in the consumption graph view

viii. Interactive money-saving recommendation library, customized for each account profile and configurable by the Utility with step-by-step implementation instructions, informational links and videos, dynamic estimates of savings potential in GPD and dollars per year, and ability to sign up for, and keep track of, money saving activities. Library shall highlight and rotate most relevant savings actions for customers based on the customer's profile and the season

Multiple Users and Accounts

i. Users or managers of multiple properties or commercial properties with multiple meters, can view a roll-up of all propriety consumption data in a unified view

ii. Ability to give access (create a secondary account login) for other users such as a spouse, roommate, tenant, or property manager

iii. Deliver relevant and timely utility-specific news or resources.

iv. Ability to export consumption data into standard data display format (i.e. csv)

Billing and Payments

i. Ability to offer a link from the Utility website and integrate with Utility's payment system.

ii. Ability to view bills securely directly through the Portal (PDFs available).

iii. Ability for end users to sign up for bill alerts including when a bill is available, due, or overdue.

iv. Proposer must provide sample format, design and content of the web-based application and functionality in the proposal. Proposer shall also provide information on safety and security features of online application (see Security and Privacy Controls).

c. Utility Dashboard

Proposer will configure and host a utility analytics dashboard with data from all meter classes and types within the utility: residential, multi-family, commercial, industrial, and irrigation accounts. The application shall initially include the features below:

Data and Access

i. The ability to store and display at least 10 years of AMI data for immediate real-time access in both the reporting engine and the customer presentment interface

Clarification: The software stores [redacted] of online data. Additional years of online storage can be provided for an additional cost.

ii. Ability to export data in standard data presentment format (i.e. csv)

iii. Unlimited licenses for Utility staff members and the ability for a Utility administrator to provision or revoke access with viewer, editor, or administrator roles

iv. Consumption analytics across all meter types, regardless of meter type, the granularity of meter data, or frequency of meter data collection (allowing for concurrent analysis of AMR, and AMI data

v. Profiles for each account with the ability to search for a profile by partial or complete account number, meter number, customer name, address, or email address.

1. Ability to record communications with each account, and ability to send an email with relevant data and charts to an individual customer through their profile page
2. AMI data in the profile will be displayed and color-coded based on normal usage, suspected leaks, and suspected irrigation.
3. Customer use disaggregation, seasonal use analysis, temperature and precipitation information, an interface to view a satellite image of property, and ability to load the customer's view of their portal in impersonation mode

Reports and Modules

i. Reports and maps showing top consumers by meter class and by period. Ability to download consumption into Excel for further analysis

ii. Group multiple meters (e.g. indoor and irrigation) associated with one master account

iii. Reports on customer portal use and customer profile statistics, including frequency of portal use, most popular actions taken by customers, method of visit (mobile vs *desktop*)

iv. Leak detection module that detects and defines types of leak events with thresholds that can be configured by the Utility.

v. Leak status report that estimates of leak start date, duration of leaks, volume of water lost in leak, whether or not customer has been notified, what actions the customer has taken to resolve, and information on resolution.

vi. Messaging module to allow for utility staff to mass customize customer communications over email, text, and automated voice

vii. List creation feature by meter or account id, polygon selected map interface, or external csv file upload

viii. Irrigation detection module that detects daily irrigation events at individual properties and flags properties that are violating utility day of week irrigation restrictions (where needed)

Messaging and Communications

i. Ability to compose, send, and track messages to segments of customers within Dashboard

1. Ability to create segments of customers based on drawing shape over map of accounts within service area
2. Ability to create segments of customers based on popular reports
3. Ability to support multiple communications channels, including SMS and automated voice calling.

ii. Ability to create, publish and deactivate custom forms for use internally or by end customers through Portal, and manage responses in report view.

iii. Ability to view each customer's up-to-date account balance, water bill, and billing history

iv. Help site and live chat feature with Proposer's customer service staff

v. Proposer must provide sample format, design and content of the web-based application and functionality in the proposal. Proposer shall also provide information on safety and security features of online application (see Security and Privacy Controls).

Neptune's cloud-based platform is a powerful platform that is critical to leveraging all metering assets for the utility. The platform includes out of the box functionality to automatically analyze usage and alarm data from the endpoint.

Neptune's HES provides a complete view of metering data and analytics while delivering the highest level of performance and application stability. The HES utilizes a [redacted] which will allow utilities to migrate to new features at their own pace, while only paying for the features they currently need. With its intuitive and modern design, Neptune HES is built upon the most advanced technological infrastructure, while focusing on data integrity and state-of-the-art data security.

[redacted]

The HES utilizes many industry standard security practices to ensure that system and data integrity is maintained at all points throughout the system. [redacted]

Access to the HES application is only permitted to authorized users. Users will login with a username and password.

d. Alerts and Notifications

Proposer must provide sample format, design and content of the alerts including screenshots. Proposer must have the ability to send identify certain events and send alerts, including the following capabilities:

i. Ability to send any alert through email, SMS, or automated call based on the end user preferences

ii. Ability to detect irregular usage (“possible leak”) for residential and irrigation-only accounts based on thresholds configurable by the Utility. Leak detection shall be available for hourly (AMI) data and monthly data.

iii. Digital leak alerts shall provide instructions and video content for finding and resolving the source of irregular use, regardless of whether or not the user has ever logged into the customer portal

iv. Option to send automated Print Leak Alerts to customers with continuous use detected from hourly meter reads (when email and phone numbers are not available)

v. Option to allow customers to set their own consumption threshold alerts based on usage compared to previous periods

vi. Ability to set threshold notifications based on monthly customer spend

vii. Ability to view mobile and web based hourly, monthly, and bi-monthly AMI/AMR consumption graphs including the ability to overlay weather data.

viii. For customers with daily or hourly (AMI) data, option to allow customer to set their own daily or billing period user-defined threshold alert

ix. Option to allow customer to choose to receive an alert when a bill is available, due or overdue

Neptune’s Cloud Platform Management Software includes several dashboard metrics that provides reporting analysis for System Consumption, Top 10 Accounts, Complete, Incomplete and skipped meters, Continuous and Intermittent consumption, Major and Minor Reverse Flow, as well as claim and found meters. Each report can be exported to PDF
or CSV for sharing throughout the utility.

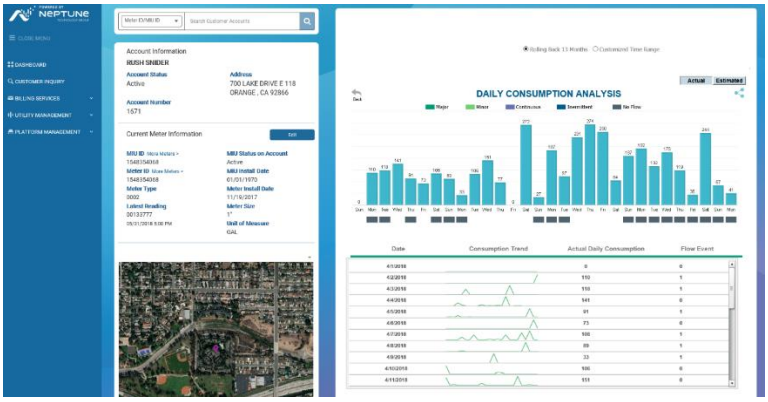
In addition, dashboard views can be created on system wide exception to provide system users with actionable data to assist with issue resolution. A graphical interface is available per account of all consumption data as well as a mapping module for viewing geographically the location of meter assets.

Additional Reports/Notification of the Neptune HES

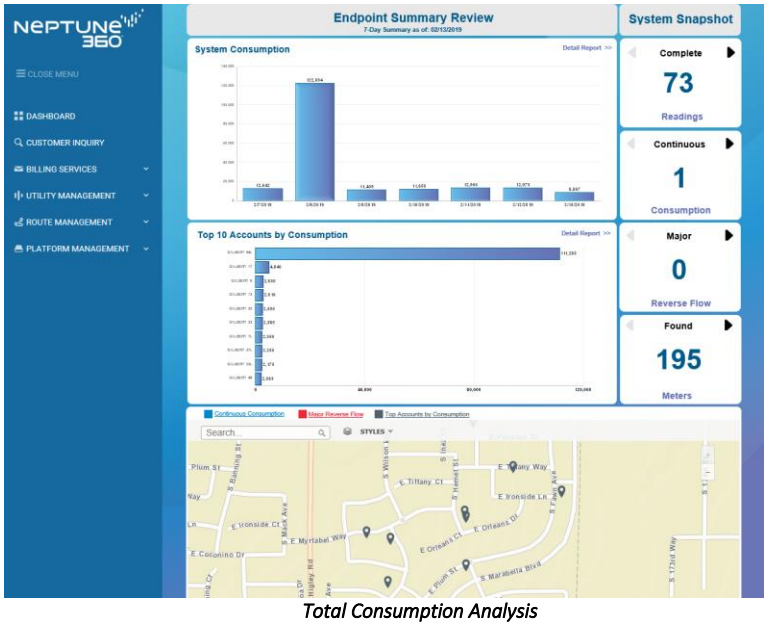
- *Virtual Disconnect* – [redacted]
- *Alarm Notification-* [redacted]
- *Top Ten Consumption Accounts* – [redacted]

- *Total Consumption Analysis* – [redacted]
- *Complete & Incomplete Readings* - [redacted]
- *Continuous and Intermittent Consumption* - [redacted]
- *Major and Minor Reverse Flow* - [redacted]
- *Gateway Status*- [redacted]
- *Invalid Read Report*- [redacted]
- Mach 10 Battery Status- [redacted]
- *Comment Codes Reports*- [redacted]

Sample Screenshots of Neptune® 360™



Top Ten Consumption Accounts



Total Consumption Analysis

e. Payment Processing

Proposer must provide a convenient option for Utility customers who want to view and pay their bills online. If Proposer utilizes a secondary vendor to provide one of the solutions below, the vendor must be PCI compliant and ensure a secure method of payment.

Proposer shall configure this capability in one of the following ways:

i. Single Sign On between Utility's existing payment website (Infosend) and Customer Portal. See Section g. below for details on required Single Sign On capabilities.

ii. Ability to include an embedded payment page within the Customer Portal. Customers shall be able to view and pay bills from within the Customer Portal including by credit card, debit card and ACH. Autopay and saving payment methods is also desired.

iii. Redirect link to outside payments page. Customer Portal sends visitors to an outside payment website. Once customers arrive to the website, they will be prompted to log in as usual.

f. Water Reports

Proposer will customize Water Reports for Utility including Utility logo and contact information and utility programs. Water Reports, whether electronic or print, shall contain the following content, and be configurable where deemed necessary by the Utility:

i. Water use consumption (gallons per day)

ii. Water use comparisons among similar size households and/or lot size (for residential customers)

iii. Historical water use comparisons

iv. Personalized ways to save – defined by Utility and Proposer

v. URL link to customer web application and unique registration code (if needed)

vi. Ways to save—water efficient tips with ranking/ sorting capabilities

vii. Sign-up/request capability

viii. Proposer shall provide detailed explanation on its capabilities to provide Water Reports with required components and customizability. If applicable, Proposer shall provide examples of sample Water Reports including call outs of configurable content.

g. **Single Sign On**
Proposer will have the ability to work with Utility or Utility's existing Proposers to implement a single sign on (SSO) capability using SAML 2.0 or OAUTH 2.0 protocols to existing Utility websites or portals. Utility or Utility's existing Proposer will function as SSO Identity Provider. The SSO shall allow for the following functionality:

i. Customers shall be able to log into utility bill pay website and be able to transfer to customer portal using same credentials

ii. Customers shall be able to log into customer portal directly with same and pre-existing credentials as they use with the utility bill pay website

h. Customer Letter
Proposer will have the ability to provide a print or digital letter that will reach the most customers and drive them to login to the online customer portal. Customer letters, whether electronic or print, shall contain the following content:

i. Configurable message from the relevant Utility or Utility administrator

ii. Utility logo and contact information and any Utility programs

iii. Explanation of benefits of customer portal including access to real-time water use data, ability to pay water bill online conveniently and securely, etc.

iv. Instructions on how to register for portal

v. Proposer must provide sample format, design and content of the letter in the proposal.

i. Customer Survey
Proposer must design one survey and develop an implementation strategy for Utility customers. Must provide an explanation of average customer engagement and survey completion. Key deliverables for this task are:

i. Selection of pre-launch and post-launch questions and design of survey.

ii. Administration of survey, collection of aggregated data and interpretation of results.

j. Project Management
In order to ensure adherence to the agreed-upon schedule and budget the Proposer shall:

i. Provide staff training to orient staff to Program components

ii. Provide project status report updates

iii. Organize, coordinate with meter manufacturer, and attend meetings as required (in person, or by phone or web as appropriate)

iv. Designate an individual to serve as a Project Manager

v. Proposer shall provide information on project management capabilities and experience, in particular with Programs similar in scope. Proposer shall provide information on training capabilities of staff.

Neptune is proposing its Cloud-Based Data Management Platform, Neptune 360, where all the installation efforts and onboarding activities are conducted by Neptune personnel. Neptune also assigns an implementation specialist that will work to ensure successful integration with CIS/Billing software and if applicable any third party integration efforts through our Application Programming Interfaces. The implementation specialist also works with the utility to ensure all configurations are complete prior to the customer handoff

k. Program Measurement and Verification
Proposer shall include an outbound Water Report program, Proposer shall provide detailed information on how program will be measured and verified. Relevant details will include what information/specific metrics will be available to Utility (as relates to water savings, customer satisfaction, cost effectiveness, program participation, staff efficiency, etc.), time frames for availability and frequency of reporting, and statistical methods used to track program. Proposer shall also provide information on staff experience and expertise as relates to program measurement and verification.
Clarification: [redacted]

10. Utility Data Repository

The system must:

i. Be able to store up to ten (10) years of once daily reads of AMI data for immediate real- time access and must provide this data within the data repository, reporting, and customer web presentment environments.
Clarification: Neptune 360 provides [redacted] of online data storage. Additional years of storage can be added with an additional cost.
ii. Be able to display data graphically and in tabular form to both utility's users and customers.
iii. Be able to export data in Adobe PDF and MS Excel formats.
iv. Allow the data repository and web presentment application to not impact the performance of the operational AMI data collection system.
v. Allow the data repository to provide custom reporting and data analysis.
Clarification: [redacted]
vi. Provide a method for the utility to load customized reports without vendor assistance.
vii. Provide a method of performing District Metered Area (DMA) analysis.
Clarification: [redacted]
viii. Be able to support network meters, deduct meters, and compound meters.
Clarification: [redacted]
ix. Be able to store additional forms of data other than consumption data for long-term reporting and analysis purposes.
Clarification: The Software provides [redacted] online data storage capability.

x. Allow the vendor to promptly demonstrate all required and offered features of the utility data repository via live onsite or remote use of the actual system if requested.
xi. Provide consumption analysis of daily, monthly, and yearly data.
xii. Provide alarm notification for events such as leaks and reverse flow events for water utility customers.
xiii. Provide a consumer web portal for utility customers to view consumption data and configure leak and/or reverse flow alerts.
Clarification: [redacted].
xiv. Contain a customer self-enrollment process.
Clarification: [redacted].
xv. Be able to allow the customer the ability to configure consumption thresholds based on daily water budget values and receive alerts when that consumption has been exceeded.
Clarification: [redacted]
xvi. Be able to deliver alerts via email.
xvii. Provide a list of standard reports.

11. FIXED NETWORK DATA COLLECTORS – BASE STATION AND REPEATER

a. Basic Requirements:

The fixed network must be comprised of a main base station for covering large areas and a smaller repeater or extender, designed to cover minor gaps in coverage to be used in pole- mount applications.

The base station must demonstrate the capability to read the MIU in the system and communicate back to the host software.

The Base Station:

i. Must support two-way communications over an over an
    1. FCC Part 90-licensed frequency with the MIU and provide such functionality as priority alarms, over-the-air programming, and remote firmware upgrades.
    2. Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee.
ii. Must have an available UPS that can provide at least four (4) hours of battery backup.
Clarification: he R900 IoT Gateway UPS provides [redacted] of battery backup.
iii. Must store a minimum of seven (7) days of meter reading data.

Clarification: [redacted]

iv. Transceiver must utilize either a 450 – 470 MHz FCC Part 90-licensed frequency or Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee.

v. Must utilize a Linux operating system running on an industrial Small Form Factor PC with an Intel Processor.
Clarification: [redacted]

vi. Must be able to register and serve up to 50,000 MIUs with twice daily Transmissions of 12 hourly reads sent back.
Clarification: The R900 IoT Gateway can receive millions of fixed network AMI messages per day.

vii. Must support over-the-air firmware upgrades to the MIUs.

[redacted]

The repeater must demonstrate the capability to read the MIU in the system and communicate back to the base station.

The Repeater:

i. Must support two-way communications over an FCC Part 90-licensed frequency between the base station and the MIU.
ii. Must provide flexible mounting options such as pole-mounts, stand-alone configuration, and wall mounts.
iii. Must provide an AC-power option.
iv. Must have an internal battery that can provide at least eight (8) hours of battery backup.
v. Transceiver must utilize either a 450 – 470 MHz FCC Part 90-licensed frequency or Unlicensed frequency from 902-928 MHz, operate within FCC Part 15.247 regulations, minimize the potential for RF interference from other devices, use frequency hopping, spread spectrum technique comprised of alternating pseudo-random frequencies or transmit using LoRa modulation using spread spectrum modulation, and LoRaWAN™ Certified Product as defined by the LoRa Alliance Certification Committee.
vi. Transceiver must be able to register and serve up to 1,000 MIUs.

b. Wide Area Network (WAN) Backhaul Requirements

The base station must be capable of using the following as WAN backhauls for data:

i. GPRS
ii. CDMA
iii. Ethernet Based

c. Power Requirements

i. The base station must be powered via 110V AC.
ii. Upon start-up after power failure, the base station must restore databases, tables, and logs to the previous operational state.
iii. Upon power failure, the base station must retain the past seven (7) days of meter data in non-volatile memory.
Clarification: [redacted]. The R900 MIU stores [redacted] reading interval data which can be retrieved in the field via RF activated data logging
iv. The repeater must be powered via 110-220V AC.
v. Upon start-up after power failure, the repeater must return to the previous operational state.

d. Communication Requirements

Base Station

i. The base station must have a transmitter capable of sending out 20-Watt transmissions.
Clarification: The R900 IoT Gateway supports up to [redacted] transmit power
ii. The base station must log all events mentioned below and communicate to the host computer.
iii. Link failures:
    1. The base station link failure time and date to the host must be logged and all data must be saved for seven (7) days.
    Clarification: The R900 IoT Gateway complies, [redacted]
    2. The base station must try continuously to reestablish a link to the host software.
iv. Reset:
    1. The base station must be able to be reset by the host software.
    2. Manual reset functionality must be available.
    Clarification: The R900 IoT Gateway can only be reset [redacted]
v. The base station must transfer the past three (3) days of data stored in non-volatile memory to the host software upon power-up reset.
Clarification: The LoRaWAN network architecture is designed to stream data from the end-point meters/MIUs via the cloud architecture to the Neptune HES exchange server where data is stored. [redacted]
vi. Other alarms and status changes

vii. The base station will communicate to the host software if any of these events are detected:
   1. New MIUs and Repeaters are discovered and resynchronized.
      Clarification: The R900 IoT Gateway continuously transmits all received message from MIUs to the HES, but the MIUs will only show up in the host software if included in the import file
   2. Power-up reset.
   3. Failure Alarms.
      Clarification: [redacted]

Repeater

i. The repeater must have a transmitter capable of sending out 4 Watt transmissions.
ii. The repeater must be able to serve up to 1,000 MIUs.
iii. The repeater must be able to automatically communicate with the base station it is supporting.
iv. The repeater must be able to provide a non-obtrusive communication path so as not to degrade the 2-way communication between base station and MIU.

e. Installation / Mounting Requirements

The base station antenna shall be capable of being mounted on the top of utility water towers. If water towers are not available, cell towers, tall buildings, billboards, and/or utility poles may be acceptable. The base station must be powered by 110V AC.

The repeater shall be capable of being mounted on poles, walls, towers, tall buildings, and cell towers. The repeater shall be powered by 110-220V AC (and a solar panel option available or planned for production).

Clarification: [redacted]

f. Environmental Characteristics

i. The base station and repeater must have an operating temperature of (+15°F to+120°F).
ii. The base station and repeater must have an operating humidity of 0 to 95% non- condensing.

Clarification: TheR900 IoT Gateway is designed to operate in temperatures of -40°F to 131°F and 10% to 100% condensing. Please refer to Product Sheets for details.

REFERENCES FORM

(References must be within the past five (5) years for customers who have purchased in excess of 1,000 residential meters in a single year.)

Owner / Business / Agency Name: Los Angeles County Waterworks (Lancaster/Palmdale/Malibu)		
Location / Address: 260 E. Avenue K-8		
City: Lancaster	State:CA	Zip Code:93535
Point of Contact: [redacted]	Contract / Purchase Dates: 2005-to date	
Phone Number: [redacted]	[redacted]	
[redacted]		Contract Amount: [redacted]

Owner / Business / Agency Name: Los Angeles Department of Water & Power		
Location / Address: 413 E. Temple St.		
City: Los Angeles	State: CA	Zip Code: 90012
Point of Contact: [redacted]	Contract / Purchase Dates: May 2019-to date	
Phone Number: [redacted]	Fax Number:	
E-mail Address: [redacted]		Contract Amount: [redacted]

Owner / Business / Agency Name: City of Victorville		
Location / Address: 13575 Hesperia Rd		
City: Victorville	State: CA	Zip Code: 92395
Point of Contact: [redacted]	Contract / Purchase Dates: 2015 – to date	
Phone Number: [redacted]	Fax Number:	
E-mail Address: [redacted]		Contract Amount: [redacted]

Owner / Business / Agency Name: Indio Water Authority		
Location / Address: 83-101 Avenue 45		
City: Indio	State: CA	Zip Code: 92201
Point of Contact: [redacted]	[redacted]	
[redacted]	Fax Number:	
E-mail Address: [redacted]		Contract Amount: [redacted]

Owner / Business / Agency Name: City of Ventura		
Location / Address: 336 Sanjon Rd.		
City: [redacted]	State: CA	Zip Code: 93001
Point of Contact: [redacted]	Contract / Purchase Dates: 2016 – to date	
Phone Number: [redacted]	Fax Number:	
E-mail Address: [redacted]		Contract Amount: [redacted]

This document must be completed and returned with your Submittal

Miscellaneous Conditions

Item	Answer
Please indicate and describe any additional conditions, pricing fees or charges which may affect this proposal. Use additional sheets if necessary.	[redacted] -
At the Supplier's option, an alternate warranty may be presented to the District for consideration. Please indicate and describe it here if an alternate warranty has been attached.	[redacted]
Will Proposer be able to provide a local representative within 60-mile radius for warranty, technical support, and service issues on an emergency or "as needed" basis? Where is service available? Provide location, contact name, response time for requests.	[redacted]

We have either identified the above conditions that will provide additional value to the District or not identified any of the above conditions, that will provide additional value to the District.

Signature E D. 2 Date: 6/18/2020

Print Name: Eric Tracy

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
Wolseley Investments, Inc

2 Business name/disregarded entity name, if different from above
Ferguson Enterprises, LLC (FEIN: 54-1211771)

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) 5

Exemption from FATCA reporting code (if any) E

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
12500 Jefferson Avenue

Requester's name and address (optional)

6 City, state, and ZIP code
Newport News, VA 23602

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number
[ ][ ][ ] - [ ][ ] - [ ][ ][ ][ ]

or

Employer identification number
5 4 - 1 4 7 3 3 3 8

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person ▶ [signature] Date ▶ 4.1.19

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Ferguson Enterprises, LLC utilizes the following DBA names:

Current and Former dba Names

Entity Name	Tax ID No.
Action Automation	54-1211741
ADI.	54-1211771
Alaska Pipe & Supply	54-1211771
Andrews Lighting & Hardware Gallery	54-1211771
The Ar-Jay Center	54-1211771
BAC Appliance Center	54-1211771
Bath + Beyond	54-1211771
Blackman Plumbing Supply	54-1211771
Brock-McVey	54-1211771
Bruce-Rogers Company	54-1211771
Cal-Steam	54-1211771
Capital Distributing	54-1211771
City Lights Design Showroom	54-1211771
CFP	54-1211771
Cline Contract Sales	54-1211771
Custom Lighting & Hardware	54-1211771
Davies Water	54-1211771
Dealernet	54-1211771
Duhig Stainless	54-1211771
Equarius Waterworks, Meter & Automation Group	54-1211771
Factory Direct Appliance	54-1211771
Ferguson Bath & Kitchen Gallery	54-1211771
Ferguson Bath, Kitchen and Lighting Gallery	54-1211771
Ferguson.com	54-1211771
Ferguson Direct	54-1211771
Ferguson Facilities Supply	54-1211771
Ferguson Fire & Fabrication International	54-1211771
Ferguson Heating & Cooling	54-1211771
Ferguson Hospitality Sales	54-1211771
Ferguson HVAC - Air Cold	54-1211771
Ferguson HVAC - EastWest Air	54-1211771
Ferguson HVAC - Lyon Conklin	54-1211771
Ferguson Integrated Services	54-1211771
Ferguson International	54-1211771
Ferguson Parts & Packaging	54-1211771
Ferguson Valve & Automation	54-1211771
Ferguson Waterworks	54-1211771
Ferguson Waterworks- Municipal Pipe	54-1211771
Ferguson Waterworks- Red Head	54-1211771
Ferguson Waterworks EPPCO	54-1211771
Ferguson Waterworks International	54-1211771
Gallerla Bath & Kitchen Showplace	54-1211771
Grand Junction Pipe	54-1211771

Entity Name	Tax ID No.
Industrial Hub of the Carolinas	54-1211771
J & G Products	54-1211771
J.D. Daddario Company	54-1211771
Joseph G. Pollard Co	54-1211771
Karl's Appliances	54-1211771
Kitchen Art	54-1211771
Lighting Design Center	54-1211771
Lighting Unlimited	54-1211771
Lincoln Products	54-1211771
Linwood Pipe and Supply	54-1211771
Louisiana Utilities Supply Company	54-1211771
LUSCO	54-1211771
McFarland Supply	54-1211771
Michigan Meter	54-1211771
Mississippi Utility Supply Co. (MUSCO)	54-1211771
PL Sourcing	54-1211771
Plumb Source	54-1211771
Plumbing Décor	54-1211771
Pollardwater	54-1211771
Powell Pipe & Supply Co.	54-1211771
Professional's Bath Source	54-1211771
PV Sullivan Supply	54-1211771
Ramapo Wholesalers	54-1211771
Renwes Sales	54-1211771
Redlon & Johnson	54-1211771
Reese Kitchen, Bath & Lighting Gallery	54-1211771
Robertson Supply	54-1211771
SG Supply Co.	54-1211771
SOS Sales	54-1211771
Tarpon Wholesale Supplies	54-1211771
The Plumbing Source	54-1211771
The Stock Market	54-1211771
TPW Kitchen & Bath	54-1211771
Wallwork	54-1211771
Waterworks Industries	54-1211771
Webb Distributors	54-1211771
Western Air Supply	54-1211771
Westfield Lighting	54-1211771
Wolseley Financial Services	54-1211771
Wolseley Industrial Group	54-1211771
WPCC Forwarding	54-1211771
Wright Plumbing Supply	54-1211771

*****updated 03/14/19

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

T-10 Meter

SIZES ⅝", ¾", AND 1"

Every T-10® water meter meets or exceeds the latest AWWA C700 Standard. Its nutating disc, positive displacement principle has been time-proven for accuracy and dependability since 1892, ensuring maximum utility revenue.

Construction

The T-10 water meter consists of three major assemblies: a register, a lead free, high-copper alloy maincase, and a nutating disc measuring chamber.

The T-10 meter is available with a variety of register types. For reading convenience, the register can be mounted in one of four positions on the meter.

The corrosion-resistant, lead-free, high-copper alloy maincase will withstand most service conditions; internal water pressure, rough handling, and in-line piping stress.

The innovative floating chamber design of the nutating disc measuring element is unaffected by meter position of in-line piping stresses while the unique chamber seal extends the low-flow accuracy by sealing the chamber outlet port to the maincase outlet port. The nutating disc measuring element utilizes corrosion-resistant materials throughout and a thrust roller to minimize wear.

Warranty

Neptune® provides a limited warranty with respect to its T-10 water meters for performance, materials, and workmanship.

When desired, maintenance is easily accomplished either by replacement of major assemblies or individual components.

Guaranteed Systems Compatibility

All T-10 water meters are guaranteed adaptable to our ARB®V, ProRead™ (ARB VI) AutoDetect, ProCoder™, E-CODER® (ARB VII), E-CODER®)R900*i*™, E-CODER®)R450*i*™, E-CODER®)L900*i*™, TRICON®/S, TRICON/E®3, and Neptune meter reading systems without removing the meter from service.

Systems Compatibility

Adaptability to all present and future systems for flexibility is available only with Neptune's ARB® Utility Management Systems™.

KEY FEATURES

REGISTER

- Magnetic-driven, low-torque registration ensures accuracy
- Impact-resistant register
- High-resolution, low-flow leak detection
- Bayonet-style register mount allows in-line serviceability
- Tamperproof seal pin deters theft
- Date of manufacture, size, and model stamped on dial face

LEAD FREE MAINCASE

- Made from lead free, high-copper alloy
- NSF/ANSI 372, NSF/ANSI 61
- Lifetime guarantee
- Resists internal pressure stresses and external damage
- Handles in-line piping variations and stresses
- Lead free, high-copper alloy provides residual value vs. plastic or composite
- Electrical grounding continuity

NUTATING DISC MEASURING CHAMBER

- Positive displacement
- Widest effective flow range for maximum revenue
- Proprietary polymer materials maximize long-term accuracy
- Floating chamber design is unaffected by meter position or in-line piping stresses

Specifications

- NSF/ANSI 372, NSF/ANSI 61
- National Type Evaluation Program (NTEP) certification

Application

- Cold water measurement of flow in one direction in residential service applications

Maximum Operating Water Pressure

- 150 psi (1034 kPa)

Maximum Operating Water Temperature

- 80°F

Measuring Chamber

- Nutating disc technology design made from proprietary synthetic polymer

Options

Sizes

- 5/8", 5/8" x 3/4"
- 3/4", 3/4" SL, 3/4" x 1"
- 1", 1" x 1 1/4"

Units of Measure:

- U.S. gallons, imperial gallons, cubic feet, cubic metres

Register Types

- Direct reading: bronze box and cover (standard)

Remote Reading:

- ProRead, ProCoder, E-CODER, E-CODER)R900*i*, E-CODER)R450*i*, E-CODER)L900*i*, TRICON/S, TRICON/E3
- Reclaim

Bottom Caps

- Synthetic polymer (5/8" only)
- Cast iron
- Lead free, high-copper alloy

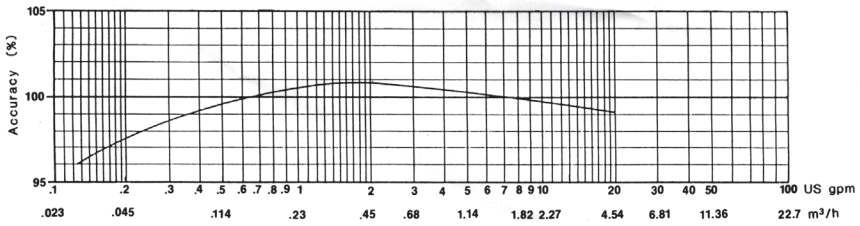
Connections

- Lead free, high-copper alloy, straight or bent

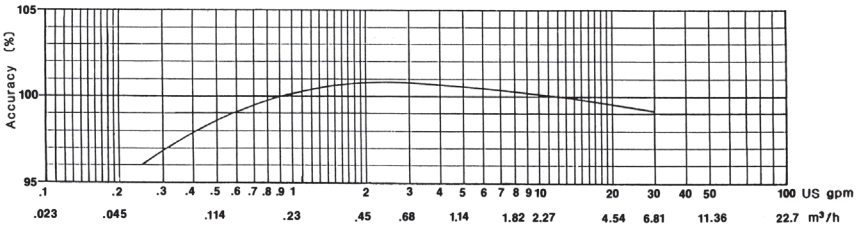
Environmental Conditions

- Operating temperature: +33° F to +149° F (0° C to +65° C)
- Storage temperature: +33° F to +158° F (0° C to +70° C)

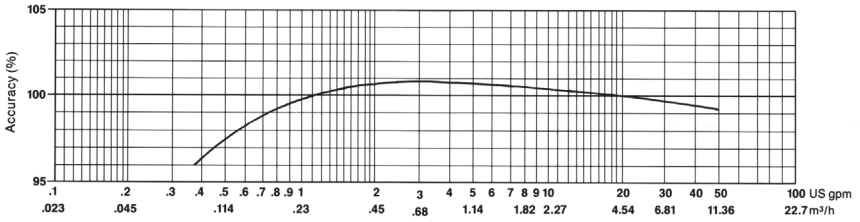
5/8" ACCURACY



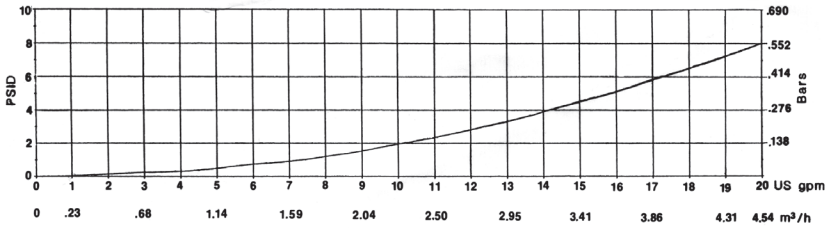
3/4" ACCURACY



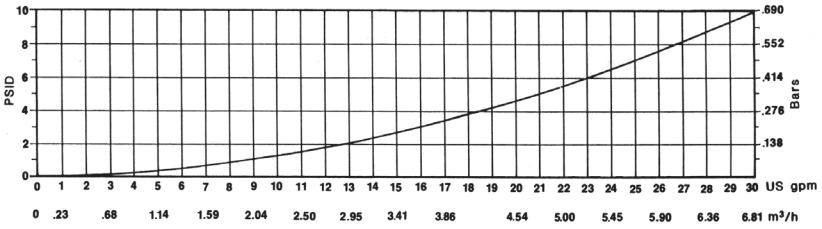
1" ACCURACY



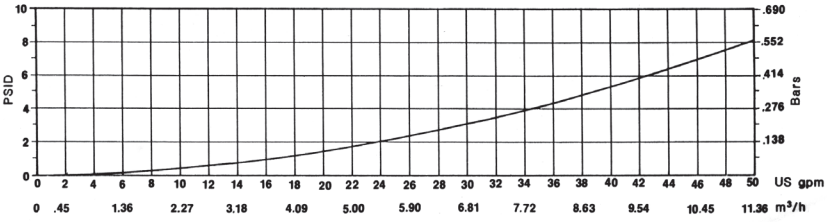
5/8" PRESSURE LOSS



3/4" PRESSURE LOSS

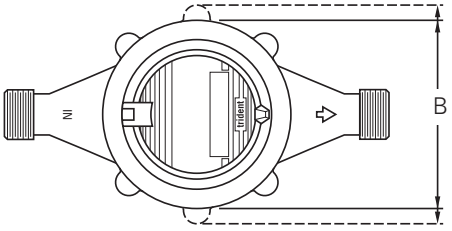


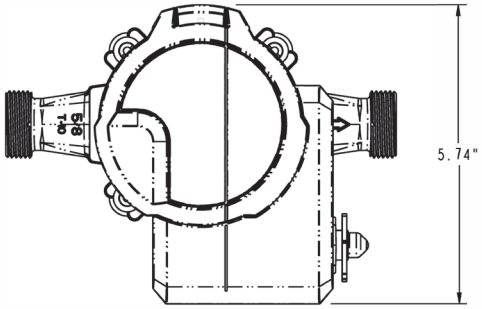
1" PRESSURE LOSS

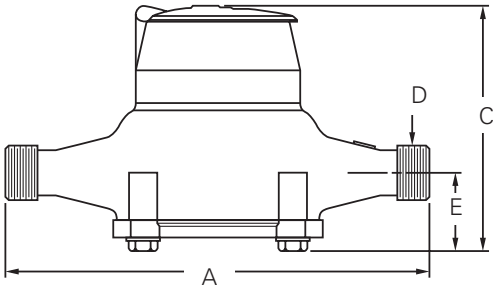


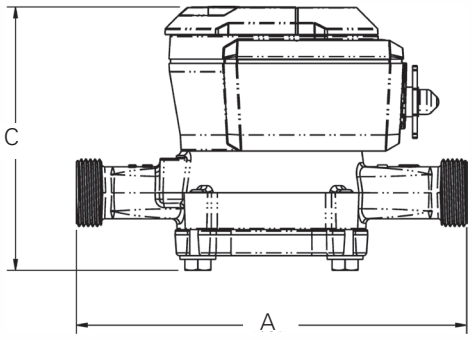
Dimensions

Meter Size	A	B	C					D-	E-	Weight lbs/kg
	in/ mm	in/ mm	Std. in/mm	ARB in/mm	ProCoder™ or E-CODER®	ProCoder™) R900*i*™ or ProCoder™) R450*i*™	E-CODER®) R900*i*™or E-CODER®) R450*i*™	NPSM Thread	in/ mm	
5/8	7½ 191	3⅜ 92	4⅜ 111	5¼ 133	5¼ 133	5¼ 133	5¼ 133	¾" - 14	1½ 38	3¼ 1.4
5/8 x ¾	7½ 191	3⅜ 92	4⅜ 111	5¼ 133	5¼ 133	5¼ 133	5¼ 133	1" - 11½	1½ 38	3⅜ 1.5
Pre 2011 ⅝	7½ 191	3⅜ 92	4⅞ 124	5½ 146	5½ 139	5½ 139	5½ 139	¾" - 14	1⅝ 41	3¾ 1.7
Pre 2011 ⅝ x ¾	7½ 191	3⅜ 92	4⅞ 124	5½ 146	5½ 139	5½ 139	5½ 139	1" - 11½	1⅝ 41	4 1.8
3/4	9 229	4⅜ 111	5½ 140	6¼ 159	6¼ 159	6¼ 159	6¼ 159	1" - 11½	1⅞ 48	6 2.7
¾" SL	7½ 911	4⅜ 111	5½ 140	6¼ 159	6¼ 159	6¼ 159	6¼ 159	1" - 11½	1⅞ 48	5½ 2.5
¾ x 1"	9 229	4⅜ 111	5½ 140	6¼ 159	6¼ 159	6¼ 159	6¼ 159	1¼" - 11½	1⅞ 48	6½ 2.9
1"	10¾ 273	6½ 165	6⅜ 162	7 178	7 178	7 178	7 178	1¼" - 11½	2⅛ 54	9¾ 4.4
1" x 1¼	10¾ 273	6½ 165	6⅜ 162	7 178	7 178	7 178	7 178	1½" - 11½	2⅛ 54	10¼ 4.6









Operating Characteristics

Meter Size	Normal Operating Range @ 100% Accuracy (+/- 1.5%)	AWWA Standard	Low Flow @ 95% Accuracy
5/8"	1/2 to 20 US gpm 0.11 to 4.55 m^3/h	1 to 20 US gpm 0.23 to 4.5 m^3/h	1/8 US gpm 0.03 m^3/h
3/4"	3/4 to 30 US gpm 0.17 to 6.82 m^3/h	2 to 30 US gpm 0.45 to 6.8 m^3/h	1/4 US gpm 0.06 m^3/h
1"	1 to 50 US gpm 0.23 to 11.36 m^3/h	3 to 50 US gpm 0.68 to 11.4 m^3/h	3/8 US gpm 0.09 m^3/h

Registration

ProRead Registration (per sweep hand revolution)		**5/8"**	**3/4" & 1"**
10	US Gallons	√	√
10	Imperial Gallons	√	√
1	Cubic Foot	√	√
0.1	Cubic Metre	√	√
Register Capacity ProRead, ProCoder, and E-CODER		**5/8"**	**3/4" & 1"**
10,000,000	US Gallons	√	√
10,000,000	Imperial Gallons	√	√
1,000,000	Cubic Feet	√	√
100,000	Cubic Metres	√	√
ProCoder and E-CODER High Resolution (8-digit reading)		**5/8"**	**3/4" & 1"**
0.1	US Gallons	√	√
0.1	Imperial Gallons	√	√
0.01	Cubic Feet	√	√
0.001	Cubic Metres	√	√

NEPTUNE TECHNOLOGY GROUP

#winyourday
neptunetg.com

Neptune Technology Group
1600 Alabama Highway 229
Tallassee, AL 36078
800-633-8754 f 334-283-7293

A PRODUCT SHEET OF NEPTUNE TECHNOLOGY GROUP

T-10® METER

SIZES: 1 ½" and 2"

Construction

Every Neptune® T-10® water meter meets or exceeds the latest AWWA C700 Standard. Its nutating disc, positive displacement principle has been time-proven for accuracy and dependability since 1892, ensuring maximum utility revenue.

The T-10 water meter consists of three major assemblies: a register, a lead free, high-copper alloy maincase, and a nutating disc measuring chamber.

The T-10 meter is available with a variety of register types. For reading convenience, the register can be mounted in one of four positions on the meter.

The corrosion-resistant, lead-free, high-copper alloy maincase will withstand most service conditions: internal water pressure, rough handling, and in-line piping stress.

The innovative floating chamber design of the nutating disc measuring element protects the chamber from frost damage while the unique chamber seal extends the low-flow accuracy by sealing the chamber outlet port to the maincase outlet port. The nutating disc measuring element utilizes corrosion-resistant materials throughout and a thrust roller to minimize wear.

Warranty

See Neptune Meter Warranty Statement for warranty details.

When desired, maintenance is easily accomplished either by replacement of major assemblies or individual components.

KEY FEATURES

Register

- Magnetic-driven, low-torque registration ensures accuracy
- Impact-resistant register
- High-resolution, low-flow leak detection
- Bayonet-style register mount allows in-line serviceability
- Tamperproof seal pin deters theft
- Date of manufacture, size, and model stamped on dial face

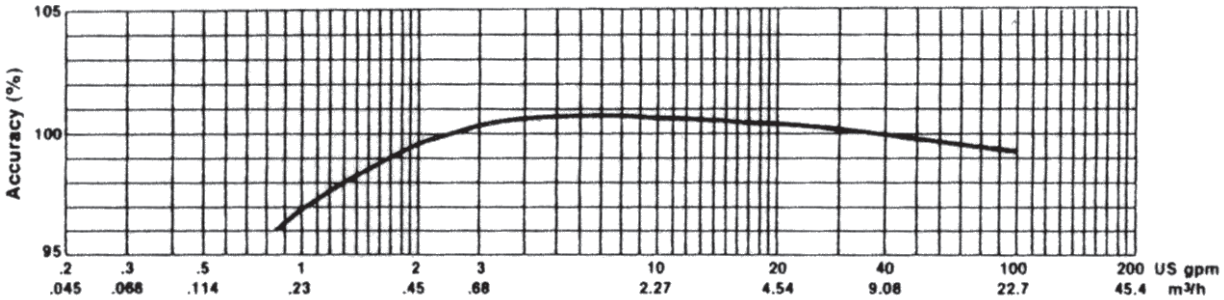
Lead Free Maincase

- Made from lead free, high-copper alloy
- NSF/ANSI 61 Certified
- NSF/ANSI 372 Certified
- Lifetime guarantee
- Resists internal pressure stresses and external damage
- Handles in-line piping variations and stresses
- Lead free, high-copper alloy provides residual value vs. plastic
- Electrical grounding continuity

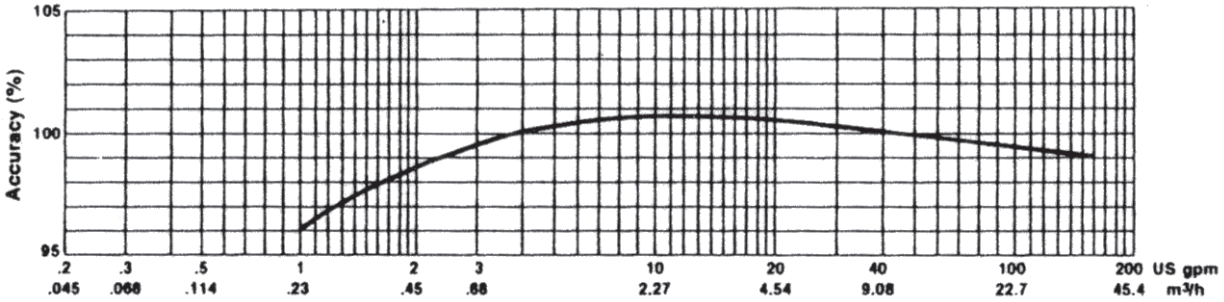
Nutating Disc Measuring Chamber

- Positive displacement
- Widest effective flow range for maximum revenue
- Proprietary polymer materials maximize long-term accuracy
- Floating chamber design is unaffected by meter position or in-line piping stresses

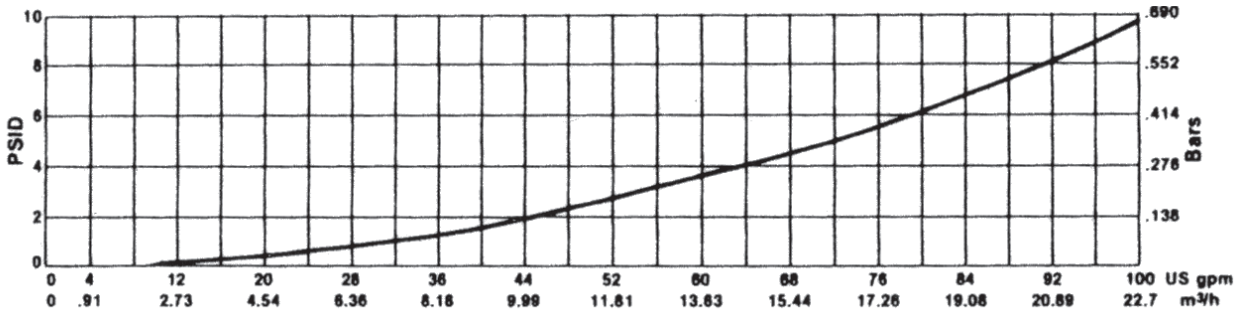
1 ½" Accuracy



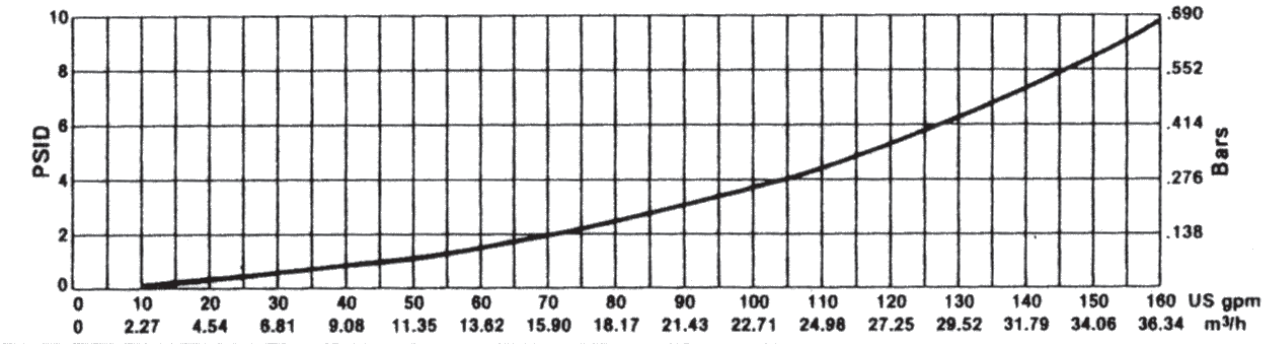
2" Accuracy



1 ½" Pressure Loss



2" Pressure Loss



These charts show typical meter performance. Individual results may vary.

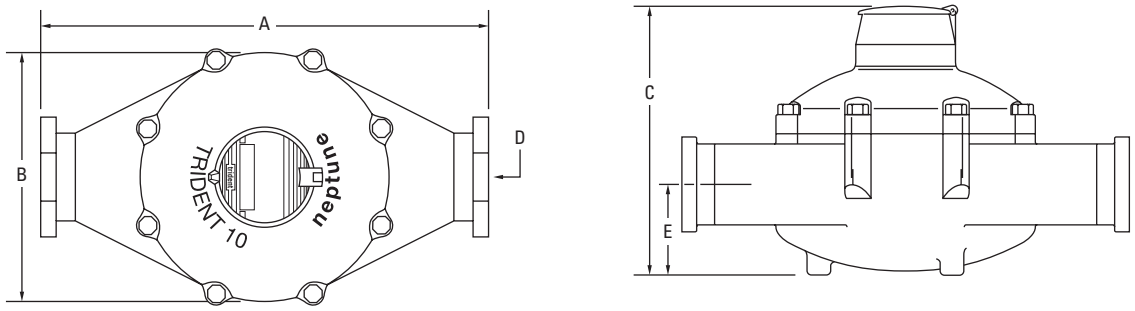
Operating Characteristics

Meter Size	Normal Operating Range @100% Accuracy (±1.5%)	AWWA Standard	Low Flow @ 95% Accuracy
1 ½″	2 to 100 US gpm 0.46 to 22.73 m³/h	5 to 100 US gpm 1.1 to 22.7 m³/h	¾ US gpm 0.17 m³/h
2″	2 ½ to 160 US gpm 0.57 to 36.36 m³/h	8 to 160 US gpm 1.8 to 36.3 m³/h	1 US gpm 0.23 m³/h

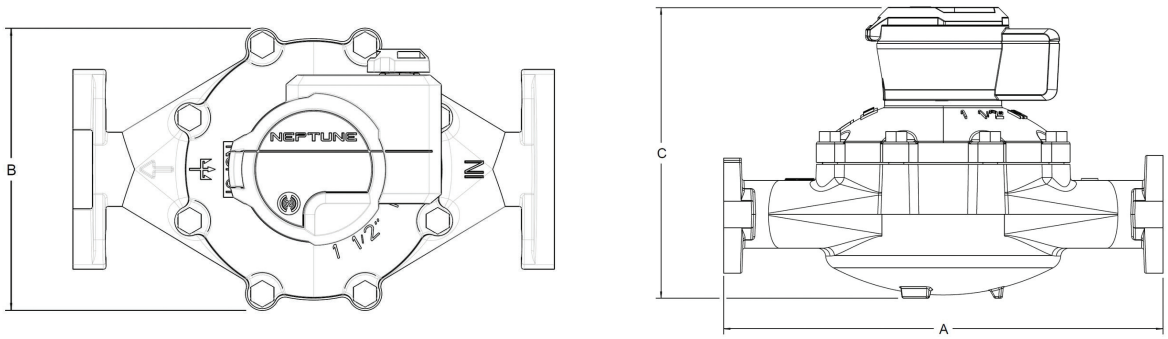
Dimensions

Meter Size	A in/mm	B in/mm	C-Std. in/mm	C-ARB in/mm	C- E-CODER®) R900*i*™ or ProCoder™) R900*i*™	D- Threads per inch	D- Thread Type	E in/mm	Weight lbs/kg
1 ½″ Screw End	12 5/8 321	8 1/16 205	8 1/8 206	8 13/16 220.3	8 3/8 213	11 1/2	1 1/2 NPT	2 9/16 65	31 14.1
1 ½″ Flanged End	13 330	8 1/16 205	8 1/8 206	8 13/16 220.3	8 3/8 213	—	—	2 9/16 65	35 15.9
2″ Screw End	15 1/4 387	9 7/16 240	9 5/16 237	9 15/16 248.4	9 1/2 241	11 1/2	2″ NPT	3 1/8 79	40 18.1
2″ Flanged End	17 432	9 7/16 240	9 5/16 237	9 15/16 248.4	9 1/2 241	—	—	3 1/8 79	44 20.0

T-10 With Standard Register



T-10 With E-CODER®)R900*i*™ or ProCoder™)R900*i*™ Pit Register



Guaranteed Systems Compatibility

All T-10 meters are guaranteed adaptable to our ARB®V, ProRead™ (ARB VI), ProCoder™, E-CODER® (ARB VII), E-CODER®)R900*i*™,E-CODER®)R450*i*™, E-CODER®)L900*i*™, TRICON®/S, TRICON/E®3, and Neptune ARB® Utility Systems™ without removing the meter from service.

Specifications

Certification

- NSF/ANSI 61, NSF/ANSI 372

Application

- Cold water measurement of flow in one direction

Maximum Operating Water Pressure

- 150 psi (1,034 kPa)

Maximum Operating Water Temperature

- 80°F

Measuring Chamber

- Nutating disc technology design made from proprietary synthetic polymer

Registration

ProRead Registration (per sweep hand revolution)		**1 ½"**	**2"**
100	US Gallons	✓	✓
100	Imperial Gallons	✓	✓
10	Cubic Feet	✓	✓
1	Cubic Metre		✓
.01	Cubic Metre	✓	
Register Capacity ProRead, ProCoder, and E-CODER		**1 ½"**	**2"**
100,000,000	US Gallons	✓	✓
100,000,000	Imperial Gallons	✓	✓
10,000,000	Cubic Feet	✓	✓
100,000	Cubic Metres	✓*	
1,000,000	Cubic Metres	✓**	✓
E-CODER High Resolution (8-digit reading)		**1 ½"**	**2"**
1	US Gallons	✓	✓
1	Imperial Gallons	✓	✓
0.1	Cubic Feet	✓	✓
0.01	Cubic Metres		✓
0.001	Cubic Metres	✓	
ProCoder High Resolution (8-digit reading)		**1 ½"**	**2"**
1	US Gallons	✓	✓
1	Imperial Gallons	✓	✓
0.1	Cubic Feet	✓	✓
0.01	Cubic Metres	✓	✓

**ProRead and E-CODER only **ProCoder only*

Options

Sizes

- 1 ½" flanged or threaded end
- 2" flanged or threaded end

Units of Measure

- U.S. gallons, imperial gallons, cubic feet, cubic metres

Register Types

- Direct reading: Bronze box and cover
- Remote reading: ProRead Absolute Encoder, ProCoder, E-CODER, E-CODER)R900*i*, E-CODER)R450*i*, E-CODER)L900*i*, TRICON/S, TRICON/E3
- Reclaim

Measuring Chamber

- Synthetic polymer

Companion Flanges

- Lead free, high-copper alloy

Environmental Conditions

- Operating temperature: +33°F to +49°F (0°C to +65°C)
- Storage temperature:
- +33°F to +158°F (0°C to +70°C)

Test Ports

- 1" (optional)

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ProCoder™)R900*i*™

Eliminate Infrastructure Costs and Ongoing Network Maintenance

As part of the Neptune® Managed Services platform, the R900® was designed to eliminate the costs, frustrations, and maintenance of deploying your own AMI network infrastructure. Leveraging LoRa® Network-as-a-Service (NaaS) technology, your utility can now cover your service area with no operational burden, free to focus on water delivery and billing. Mobile and fixed network messages are interleaved and continuously transmitted, allowing your utility to maintain backup mobile reading capability of the same endpoints.

Streamline Operations And Manage Resources

In addition to eliminating the need for programming, the ProCoder™)R900*i*™ has no external wires, making installation easier, faster, and less costly; plus it reduces potential vandalism or tamper. As with the rest of the R900 System, the design of the unit is intuitive and user-friendly so that minimal training is required for operation. It's designed to help manage time, labor, and other resources. The radio frequency transmission of the ProCoder)R900*i* can save your utility significant amounts of time in terms of both meter reading and billing, and provide flexibility to reallocate personnel to different tasks depending on your changing workforce needs.

Do More With Detailed, Actionable Data

The types of data your utility can generate through the ProCoder)R900*i* can take you far beyond a simple meter reading for monthly billing. Hourly consumption profile information over an account's last 96 days, along with alerts for leak or backflow, help to proactively identify and resolve customer issues – heading off high bill complaints, reducing delinquent payments, and eliminating write-offs. Using Neptune® 360™ host software, your utility can leverage detailed data from the ProCoder)R900*i* to balance water produced versus water consumed, group accounts for District Metered Area analysis, and track and manage Non-Revenue Water. From increasing efficiencies to pinpointing possible tamper or water theft to aiding customer service, the data supplied by the ProCoder)R900*i* can help your utility make better, more informed decisions.

KEY BENEFITS

Facilitates Migration to AMI

- Eliminate the maintenance and burdens of deploying AMI network infrastructure with Network-as-a-Service using LoRaWAN™ technology.
- Interleaved mobile and fixed network messages facilitate migration without changing the "modes" in the MIU

Reduces Non-Revenue Water

- Provides leak history/diagnostics
- Enables proactive leak notification
- Provides hourly consumption data
- Improves meter reading accuracy
- Eliminates estimated reads

Identifies Potential Theft

- Tamper detection
- Reverse flow detection
- Identifies significant periods of zero consumption

Simplifies Installation Process

- Easy to install/no programming required
- No external wires
- Reduces labor cost
- Reduces potential wire vandalism and damage

Technical Specifications

Electrical Specifications

- MIU power: Lithium battery with capacitor

Transmitter Specifications

- Two-way MIU
- Transmit Options (interleaved mobile and fixed network messages):
  - R900 mobile message
  - R900 fixed network message
  - LoRa fixed network message
- FCC verification: Part 15.247:
  - Transmitter channels: 50 (R900 mobile and fixed network messages) and 64 (LoRa fixed network message); frequency-hopping, spread-spectrum
  - Channel frequency: 902 to 928 MHz
- Encoder register reading interval:
  - Every 15 minutes
- Data logging interval:
  - 96 days of hourly data

Environmental Conditions

- Operating temperature: -22°F to +149°F (-30°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)
- Operating humidity: Pit set - 100% submersible

Materials

- Register housing: Pit set: roll-sealed copper shell
- Lens: Pit set: glass

Antennas

- Through-the-lid antenna:
  - 18" Coax
  - 6' Coax
  - 20' Coax

Options

Compatibility

- Available for all sizes and makes of current Neptune meters
- Handhelds with R900® Belt Clip Transceiver - mobile RF
- MRX920™ - mobile RF
- R900® Gateways - fixed network RF
- LoRa LPWA IoT Network

Units of Measure: U.S. Gallons, Cubic Feet, Imperial Gallons, Cubic Metres

LoRa Alliance Certified™

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R900® Wall or Pit Meter Interface Unit (MIU)

Build Onto Your Existing Technology Investment

As part of Neptune's R900® System, the R900® meter interface unit (MIU) was designed for flexibility. Like its fellow system components, the R900 MIU works seamlessly with prior generations of equipment. At the same time, it allows your utility to incorporate innovations as you need. A single radio frequency unit that can transmit meter reading data using any reading method – mobile or fixed network – the R900 MIU never has to be reprogrammed. That makes migrating to new technologies simple whenever your utility is ready to implement them. When it's time to add new features or functionality, you can do it at your own pace, confident of continual system support without stranded assets.

Conserve Resources, Simplify Operations

With the pressures your utility faces, Neptune knows you don't have time, personnel, water, or revenue to waste. That's why we designed the R900 MIU and the rest of the system for ease of use. In addition, the R900 MIU's interleaved, high-power, 1 Watt fixed network message reduces infrastructure costs while allowing reading in any mode – without separate reading systems, site visits, or any type of MIU reconfiguration. The R900 MIU provides fixed network transmission capability at all times, while it also transmits readings for walk-by or mobile methods. Making operations even easier, the user-friendly, intuitive R900 System design requires only minimal training, providing you flexibility to adapt to changes in your workforce and reallocate staff to different departments as needed.

Reduce Complaints, Delinquencies, And Write-Offs

Neptune's R900 MIU greatly improves access to meter readings, while delivering detailed consumption profile information as well as alerts for leak or backflow, helping your utility more proactively identify and resolve customers' questions. This accurate, timely data can be used to head off high bill complaints, reduce delinquent payments, and eliminate write-offs.

Because detailed data logging information from the last 96 days is always available, just waiting to be transmitted by the R900 MIU when needed, personnel can take care of a customer's issue then and there, in a single site visit. Not only can the data boost efficiency and customer service, but it will also help your utility make better-informed decisions going forward.

KEY BENEFITS

Facilitates Migration to AMI

- 1 Watt fixed network message reduces infrastructure costs
- Interleaved mobile and fixed network messages facilitate migration without changing the "modes" in the MIU

Reduces Non-Revenue Water

- Provides leak history/diagnostics
- Enables proactive leak notification
- Provides hourly consumption data
- Improves meter reading accuracy
- Eliminates estimated reads

Identifies Potential Theft

- Tamper detection
- Reverse flow detection
- Identifies significant periods of zero consumption

Simplifies Installation Process

- Easy to install/no programming required
- Reduces labor cost

Technical Specifications

Electrical Specifications:

- MIU power: Lithium battery with capacitor

Transmitter Specifications:

- Two-way MIU
- Transmit period (interleaved mobile and fixed network messages):
  - Standard mobile message every 14 seconds at 100 mW
  - Standard fixed network message every 7½ minutes at 1 Watt
- FCC verification: Part 15.247
  - Transmitter channels: 50; frequency-hopping, spread-spectrum
  - Channel frequency: 910 to 920 MHz
- Encoder register reading interval:
  - Every 15 minutes
- Data logging interval:
  - 96 days of hourly data

Environmental Conditions:

- Operating temperature: -22°F to +149°F (-30°C to +65°C)
- Storage temperature: -40°F to +158°F (-40°C to +70°C)
- Operating humidity: 100% condensing

Antennas:

- Wall MIU: standard internal antenna
- Pit MIU: standard through-the-lid antenna
  - 18" Coax
  - 6' Coax
  - 20' Coax

Encoded Register Compatibility:

- Neptune ARB® V, ProRead™, and E-CODER®
- Sensus ECR II, ICE, iPerl, Electronic Register and OMNI
- Hersey/Mueller Translator
- Badger ADE and HR E|LCD
- Elster/AMCO InVision (Sensus protocol version)

Options

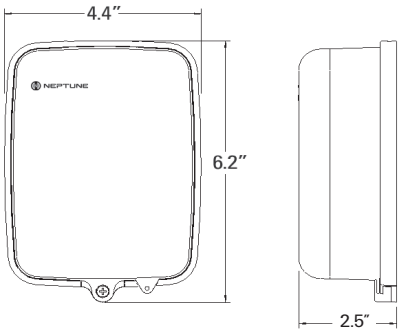
System Compatibility:

- Handhelds with R900® Belt Clip Transceiver - mobile RF
- MRX920™ - mobile RF
- R900® Gateways - fixed network RF

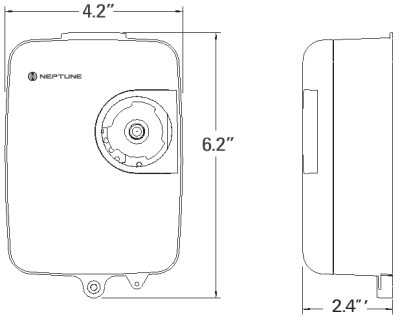
Warranty

20 years (10/10); refer to specific Warranty Statement

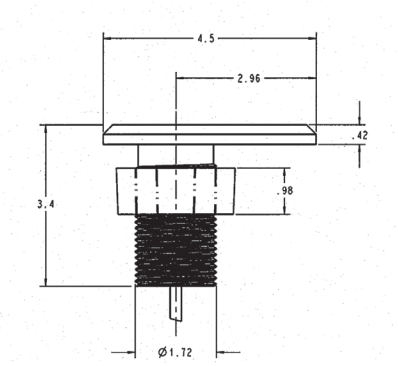
Dimensions



R900 Wall MIU



R900 Pit MIU



R900 Pit Antenna

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R900® Belt Clip Transceiver

Automate Measurement to Activate Operational Efficiency

As part of the Neptune® R900® System, the R900® Belt Clip Transceiver (R900 BCT) is your utility personnel's partner in mobile meter reading and in-field customer support and is now iOS compatible.

The R900 BCT's two-way communications to the R900® MIU eliminate meter access issues and speed up retrieval of valuable data logging information – up to 96 days of historical hourly consumption data from an individual account. In addition, its exceptional radio frequency (RF) throughput reduces meter reading time, especially in high-density environments. Field personnel can even read R900s while performing maintenance or other tasks when taking advantage of the R900 BCT's unattended operations mode. These automated features ensure you collect accurate data that can be turned into meaningful information – to help improve accuracy, identify hidden causes of loss, and optimize the efficiency of your operations.

Move Ahead with Backward Compatibility and Forward Innovation

The R900 BCT, as with the rest of the Neptune R900 System, works with past generations of equipment while remaining flexible to incorporate innovations as needed. The R900 BCT maintains support to read previous generations of R900 MIUs yet introduces powerful software-defined radio (SDR) technology to support the new advanced two-way features of the R900 System. Now, the R900 BCT is capable of reading electric, bubble-up ERT® devices and processing SCM or SCM+ message files that these ERT devices transmit. This gives utilities the freedom of equipping with just the R900 BCT to read both water and electric meters.

So, go ahead and phase in new features and equipment at your own pace with confidence that Neptune will support your future needs without leaving you with stranded assets.

Present Consumption Data in the Field for Proactive Customer Service

Simplified access to critical information means your utility can provide even more proactive customer service. Pairing the R900 BCT with a handheld device or a mobile device running the Neptune NGO™ app, your personnel can maximize their efficiency in the field, with the flexibility to perform impromptu service calls and address customer service issues on-site without a separate truck roll[1]. With the data literally in hand, they can share data logging graph information with homeowners. This on-the-spot, on-site presentment of how much water they used and when, helps head off customer complaints regarding high water bills, reduce delinquencies, and avoid write-offs.

KEY BENEFITS

Increases meter reading efficiency

- Increased RF throughput capabilities which reduce reading time in high-density R900 environments
- Two-way communications to R900 MIU which reduces time required to retrieve data logging information
- Unattended operations mode allows utility personnel to read R900s while performing other non-meter-reading-related job functions

No stranded assets

- Compatible with all generations of R900 MIUs
- Probe compatibility with Advantage and Pocket ProReader
- Connects via Bluetooth to Trimble Nomad or Trimble Ranger for meter reading
- Connects via Bluetooth to Android or iOS mobile devices for in-field customer support
- Software-defined radio technology enables the R900 BCT to be updated for compatibility with future products

KEY BENEFITS CONTINUED

Reads ERT devices

- Compatible with Itron electric ERT technology (bubble-up ERTs only)
- Processes SCM and SCM+ message format

Analyze data at the source with either a smart phone or tablet via NGO app

- Test-read R900s in the field or before installation to obtain reading and E-CODER® flag events
- Retrieve 96 days of hourly interval data logging information
- View graph of data logging intervals in the field
- Share data logging graph information with homeowner to address high bill complaints

[1]Contact Neptune Customer Support for the latest device and operating system compatibilities.

Specifications

Communication: Bluetooth 2.1 or later and USB

Handheld Software Compatibility: N_SIGHT® version 4.7 or later

Power Supply

- Rechargeable lithium-ion battery pack – 5000 mAh capacity
- Field-replaceable, recommended replacement every 2 years

Memory: 4GB SD card

Device Compatibility

- Trimble Nomad 900B/900LE/1050B/1050LE, Trimble Ranger 3, and Android/iOS mobile devices[1]

Indicators

- Four LEDs identify Bluetooth communication, RF status, mode status, and battery status

Dimensions

- Height: 3.58” (9.1 cm)
- Width: 1.66” (4.22 cm)
- Length: 5.75” (14.6 cm)

Weight: 1.1 lbs. (499g) including rechargeable battery

Temperature Range

- Operating: -4°F to +122°F (-20°C to +50°C)
- Storage: -40°F to +185°F (-40°C to +85°C)

Accessories

- Spare battery
- Spare battery charger
- Belt clip
- SD card
- 12V USB vehicle power cable

Warranty

- One-year comprehensive warranty
- Hardware maintenance contracts available

Receiver Channels: 50

Number of Simultaneous Channels: 8

Approvals

- FCC Class B
- IC

Mode Overview

	Normal	Unattended Operations	USB Mass Storage
Bluetooth Pairing to Devices	Required	N/A	No. Used for firmware updates and transfer of data via USB from SD card to N_SIGHT® host PC
Trimble Nomad 900B/900LE/ 1050B/1050LE Compatible	Yes	N/A	
iOS App Compatible	Yes	N/A	
Android App Compatible	Yes*	N/A	
R900 Compatible	Yes	Yes	
Advantage / Pocket ProReader Compatible	Yes	No	
Data Logging Compatible	Yes	No	
SD Card Data Storage	Yes	Yes	

**Advantage/Pocket ProReader and data logging not supported in Android NGO app.*

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MRX920™ Mobile Data Collector and MX900™ Software

Make Reading Success and Efficiency Automatic

Reliable, accurate, and field-proven, Neptune's MRX920™ mobile data collector – along with its MX900™ meter routes and mapping software – has helped water utilities across North America streamline, automate, and increase operational efficiencies. As part of Neptune's R900® System, the MRX920 helps transform data into actionable information that helps identify hidden causes of loss and optimize operational efficiency.

Strapped to the seat of your utility vehicle, the MRX920 reads up to fifty (50) meters simultaneously as your meter reader cruises down the streets. And in conjunction with the routes-integrated/Esri®-powered MX900 mapping, meter reading is automatic, fast, and effortless for your meter readers, accurate with less manpower deployed for your utility.

The MRX920 comes with Bluetooth capability, so your meter readers have the option of wirelessly updating routes and uploading the latest readings to the host system remotely and in near real-time without having to return to the office[1,2].

Additionally, Neptune has ported its well-established R900 radio frequency (RF) architecture to the latest release of MRX920 using software-defined radio (SDR) technology. This means all Neptune data collection systems have a common, core code base which translates to faster availability of new features and functionalities for your utility.

Make Migration to Other Technology Simple

The R900 System is designed to easily accommodate and support past generations of meters, encoder registers, and data collectors – while at the same time giving your utility the flexibility to incorporate future innovations as needed. The MRX920 is no exception, providing seamless compatibility with all generations of R900 MIUs. Its industry-leading performance can save days or even weeks for your meter reading routes, and new features within its MX900 software, such as Esri-powered mapping and wireless mobility, make valuable data available in real time as you read your system. Feel free to phase in these new features and equipment at your own pace, secure in the knowledge that Neptune will support your future needs without leaving you with stranded assets.

KEY BENEFITS

Reduced Meter Reading Time

- Reads up to fifty (50) meters simultaneously

Simple Access to Actionable Data

- Esri-powered GIS maps[1] show meter reading and flag status
- Wireless mobility – communicate meter reading data back to N_SIGHT® in real time[1]
- User-configurable advanced filtering shows you only the information you need
- Data logging and off-cycle reads without physical access to the meters[2]

Analyze Data at the Source

- View data logging graphs in the field and share with homeowner to address high bill complaints
- Identify high/low audit status failures
- Receive leak, reverse flow, and days of no flow alerts from E-CODER®-equipped meters

[1] *Optional MX900™ Mapping and Mobility module required. Mobile computing device recommended and not included.*
[2] *Cellular or Internet connection required.*

Save Your Utility – and Your Customers – Time and Money

While the R900 System always allows your utility to migrate forward to implement fixed network data collectors, or backward to use RF technology for individual off-cycle readings or data logging, using the MRX920 and MX900 software as a part of your system makes for fast and simple access to information that can provide effective resolutions to customers' water-related issues. With detailed consumption data in hand while working in the field, along with proactive alerts of leaks and backflow conditions, you can enhance customer service. In the process, you can even preempt high bill complaints, reduce delinquent payments, and eliminate write-offs.

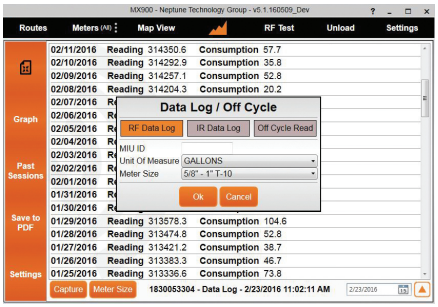
Specifications

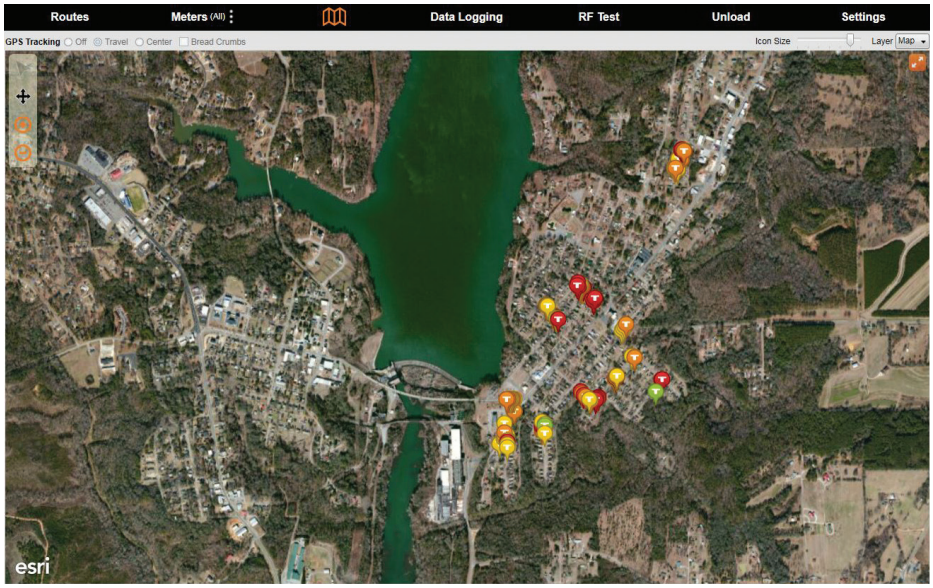
Physical Specifications

- Dimensions:
  8" (width) x 3.15" (height) x 11" (length excluding connections and handle)
- Weight: ~5 lbs

Electrical Specifications

- Power consumption: < 1A
- Power supply: 12V DC via vehicle power source adapter





Neptune recommends the following mobile computing hardware specifications for optimal performance:

- 12.1" XGA (800 x 600) minimum
- 89-key keyboard
- Operating System:
  - Windows® 7 Professional 32 & 64
  - Windows® 8 Professional 32 & 64
  - Windows® 8.1 Professional 64
  - Windows® 10 Professional 64
- .Net Framework 4.5 or higher
- Processor: Intel Pentium 1.7 Ghz or faster processor
- Memory: 1 GB minimum
- Communication
  - Internal 802.11 b/g wireless LAN
  - Windows Wireless Connection Manager (if Bluetooth connection to the receiver is desired, Bluetooth v2.1 + EDR required)
- USB 2.0
- GPS receiver (required for the mapping and mobility module)
- Minimum of 2 GB of available hard drive space

Environmental Conditions

- Operating temperature:
  -4°F to +122°F (-20°C to +50°C)
- Storage temperature:
  -40°F to +185°F (-40°C to +85°C)
- Operating humidity: 5 to 95% non-condensing relative humidity

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R900® IoT Gateway

Deploy a Smart Water AMI Network with LoRaWAN™ IoT

Water utilities can quickly deploy and operate their own Smart Water AMI Network with a ruggedized LoRaWAN™ gateway that employs the open-standards LoRaWAN protocol and network architecture. Leveraging the R900® System, utilities can easily view collected metering data to improve operations, quickly resolve customer questions and complaints, and optimize distribution system management.

Deploy with Confidence

Get the most value from your current endpoint infrastructure and workforce through Neptune R900 Systems that allow you to migrate at your own pace from walk-by and mobile Automatic Meter Reading (AMR) to Advanced Metering Infrastructure (AMI). Providing fixed network functionality, the R900® IoT Gateway is easily integrated into the R900 System. You can choose the optimal reading solution as needed – without the requirement for special reprogramming of R900 endpoints. The R900 IoT Gateway supports the R900 System's 1-Watt LoRa® fixed network endpoint messaging, extending coverage while reducing AMI infrastructure costs.

Ease of Deployment and Scalability

The R900 IoT Gateway and compatible LoRaWAN network provide a secure and scalable IoT network for Smart Water automation, incorporating the Neptune R900® endpoint. Support of AMI functionality can be achieved rapidly. The R900 IoT Gateway comes in a compact, ruggedized enclosure for easy deployment for wide-area-network (WAN) connectivity for Smart Water AMI applications. The gateway and R900 System provide a scalable IoT solution to support millions of messages per day using LoRa's adaptive data rate (ADR) technology to optimize data rates, connectivity, and capacity of the network.

KEY BENEFITS

Facilitates Migration to AMI with LoRa®

- Supports the LoRa 1-Watt fixed network messaging from R900® endpoints, extending coverage, reducing infrastructure costs, and supports a LoRa IoT deployment
- Migrate at your own pace – your R900 System can be read by any combination of walk-by, mobile, and fixed network reading systems
- No reprogramming of R900 endpoints required to migrate from mobile to fixed network AMI reading

Supports LoRaWAN™ Open-Standards Protocol

- Support for open-standards LoRaWAN network architecture
- The LoRaWAN network incorporates several standardized features and algorithms, including AES encryption, to ensure end-to-end security and confidentiality

KEY BENEFITS (continued)

Network Reliability, Capacity, and Security

- LoRa technology provides for long range communications and superior coverage
- LoRaWAN network architecture and ADR functionality provide broad scalability from rural to dense urban AMI applications
- LoRaWAN protocol and gateway provide for bi-directional end-to-end communications and encryption of meter reading data
- LoRa chirp spread-spectrum technology and gateway result in high immunity to interference

Access to Powerful Data

- Daily leak, reverse flow, and days of no flow alerts from E-CODER®- or ProCoder™-equipped meters

Specifications

LoRa® Radio Parameters

- 902 - 915 MHz (Rx)
- 923 - 928 MHz (Tx)
- 72 channels
- 2 x 1W (Tx Power)

Installation Options

- Rooftop
- Pole 2” - 16” diameter (5cm – 40cm)
- Wall
- Water towers
- Street lights

Power Supply

- 100 - 140 VAC

Battery Backup

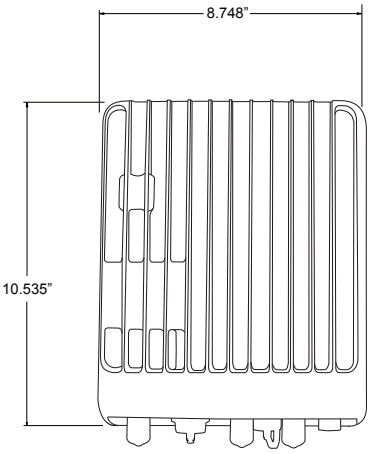
- UPS provides up to 18 hours of battery backup

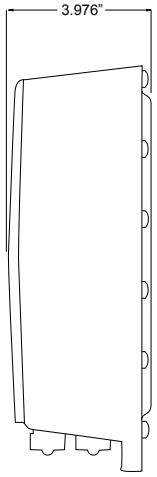
Backhaul Options

- Multi-Carrier 4G LTE cellular modem
- Ethernet

Environmental

- IP67 enclosure
- Operating temperature: -40°F to +131°F (-40°C to +55°C)
- 10 - 100% condensing operational humidity
- Weight 11 lbs (5 Kg)





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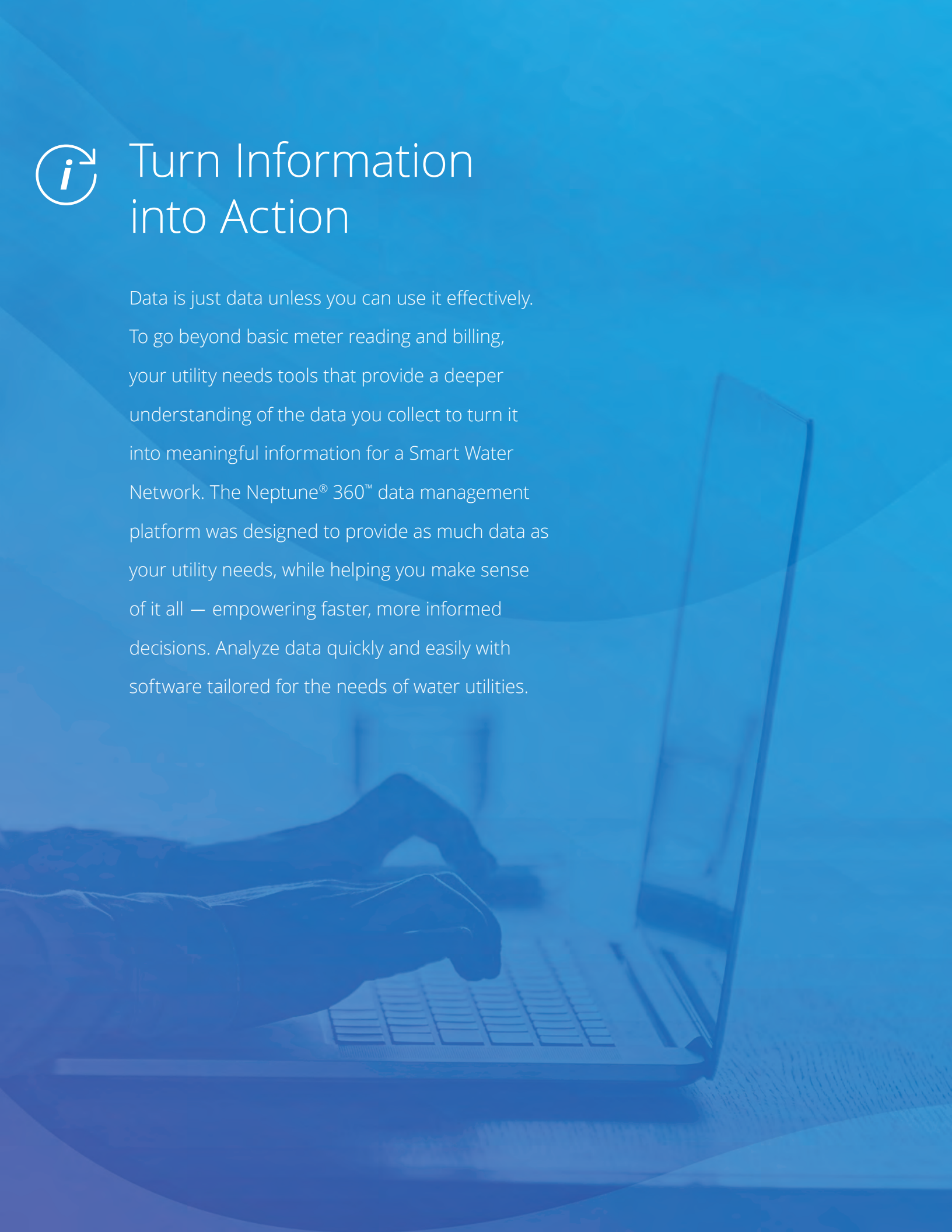
Turn Information into Action

Data is just data unless you can use it effectively. To go beyond basic meter reading and billing, your utility needs tools that provide a deeper understanding of the data you collect to turn it into meaningful information for a Smart Water Network. The Neptune® 360™ data management platform was designed to provide as much data as your utility needs, while helping you make sense of it all — empowering faster, more informed decisions. Analyze data quickly and easily with software tailored for the needs of water utilities.



Putting Your Data in View

Having the data is one thing, seeing the data and making sense of it is another. Neptune 360 delivers an intuitive, user-friendly design, making the data clear and easy to interpret. Examining your entire AMI network using system-wide Key Performance Indicators and geographical views assists with identifying areas of concern and finding ways to maximize operational efficiencies.

Quickly access a dashboard view of your largest water consumers, providing you with information needed to take action. Analysis of individual trends and usage patterns helps resolve customer service calls with confidence. Detailed reporting of consumption activity, potential leaks, and reverse flow will keep you ahead of issues that could impact your utility's revenue.

Lift Your IT Burden with a Cloud-Based Solution

Boost utility efficiency with Neptune 360 delivered as a service. No longer install servers or perform upgrades. All that is needed is an Internet browser. Just log on to access anywhere at any time.

A True Sense of Security

Ease your security concerns and stay focused on the business of water. Continuously-monitored Neptune 360 operates from a world-class data center, providing the highest level of security, redundancy, and disaster recovery services.

Share Information Across the Smart Water Network

Your management, maintenance, customer service, water quality, and other departments all need fast, easy access to information. Share and leverage actionable data captured by Neptune 360, empowering collaboration and helping predict impacts on your utility. The platform seamlessly integrates meter data, event data, and alerts directly with third party work order systems, customer portals, hydraulic modeling applications, and other systems through Application Programming Interfaces (APIs).

An Application that Grows as You Grow

From mobile meter reading today, to moving to an AMI network tomorrow, the same software platform is utilized. Apply trend analysis in rate structure planning and usage initiatives. The modular-based platform makes it easy to turn on new features as your needs evolve, bringing you critical data to proactively plan for tomorrow.

Trust the Data

Data accuracy and dependability matter. By implementing the highest-level architecture, Neptune ensures data integrity with processes and tools to maintain quality from the meter to the platform as part of routine business operation.

NEPTUNE 360™

Analyze and share meaningful data with a platform that empowers utilities. Actionable insights help you achieve your goals and objectives.

METERS MATTER

Stream critical actionable data right into Neptune® 360™.

WALK-BY DATA

Sync collected data easily.

FUTURE PROOF AMI

Connect AMI network data.

MOBILE

Incorporate mobile data collection.

BRING YOUR OWN DEVICE

Eliminate specialized devices and communicate efficiently.

THIRD PARTY SOFTWARE

Link data with third party applications (such as CIS and ESRI).

CUSTOMER RELATIONSHIPS

Streamline utility data management and provide exceptional customer service.

+ ACT QUICKLY
+ PLAN FOR THE FUTURE
+ MANAGE GROWTH

Neptune® 360™ Benefits

- Neptune-managed system with no installation required
- Cloud-based solution in a world-class data center with the highest level of security and disaster recovery/redundancy
- 24/7 software system monitoring
- Retain data ownership in a system designed exclusively for water utilities
- Integrate and access Data Analytics across departments — helping your utility achieve goals and objectives
- Identify potential leaks, excessive consumption, and reverse flow to proactively resolve issues faster
- Migrate easily from mobile to fixed network
- Aid Non-Revenue Water reduction, conservation, and rate planning
- A single platform across devices that can be accessed anywhere at any time

Specifications

Neptune 360

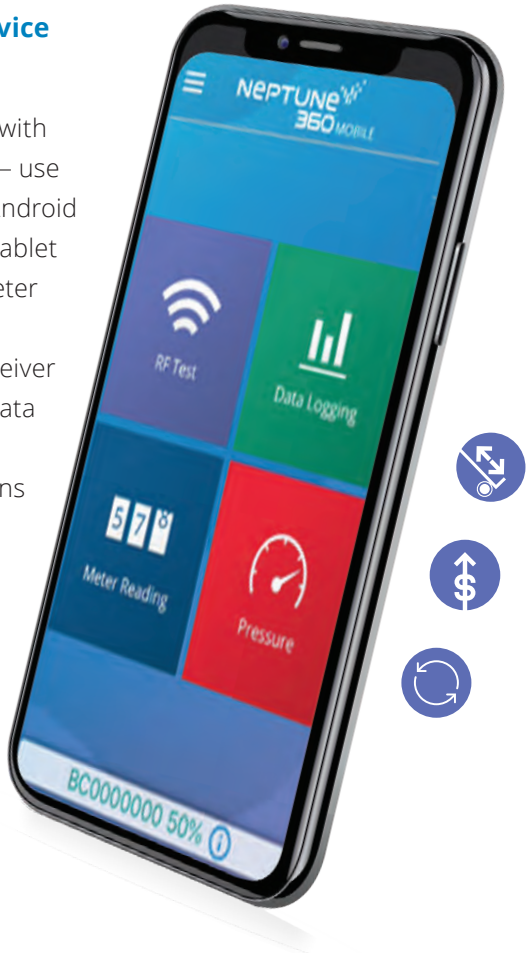
- Google Chrome and Microsoft Edge web browsers supported
- When using touch screen monitors, Neptune recommends Microsoft Edge web browser for optimal viewing and performance

Neptune 360 Mobile

- Neptune 360 Mobile supports Android, iPhone, and iPad devices running the following operating systems:
  - Android: 5.1.X Lollipop, 6.0.X Marshmallow, 7.0.X Nougat, 7.1.X Nougat, 8.1.X Oreo
  - iOS: 10.3.1 and higher, 11

Bring Your Own Device to Field Operations

Save money and time with Neptune 360 Mobile — use your utility's existing Android or iOS cell phones or tablet devices to perform meter reading. Pair with an R900® Belt Clip Transceiver or MRX920™ Mobile Data Collector and expand your field device options when performing re-reads, reading monthly routes or even responding to high water bill complaints.



96

days of hourly historical consumption

Neptune 360 Mobile provides direct communication via wireless from the field without the need to bring your mobile device back into the office, yielding data on demand for more efficient customer service. Other application capabilities include RF Test, Off-Cycle Read, and Data Log to capture 96 days of hourly historical consumption — addressing customer issues faster.

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Confidently Manage, Share, and Secure Your Data with Software-as-a-Service

A WHITE PAPER BY NEPTUNE TECHNOLOGY GROUP INC.

How can a water utility, especially a smaller or mid-sized one, afford the time and resources needed to support, collect, and analyze their large volumes of meter data? Today with Software-as-a-Service (SaaS), utilities can gain a deeper understanding of their information, while also managing, sharing, and securing their data more easily than ever. With SaaS, a water utility can gather and analyze data from more sources to empower faster, more informed decisions. It can also mean going far beyond a monthly meter reading and bill to lead the way to a Smart City.

EXPAND CAPABILITIES WHEN THE TIME IS RIGHT

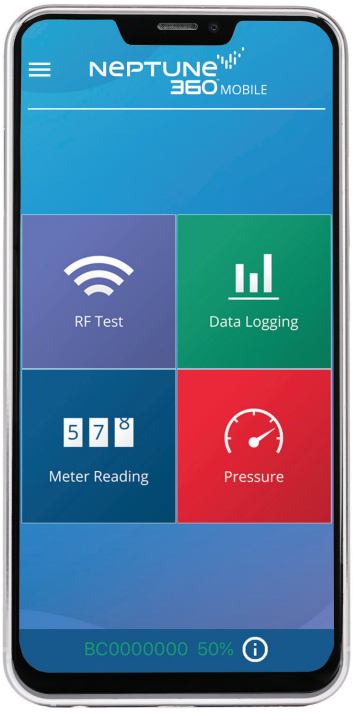
As utilities' needs change they often require new technology or different capabilities. A software application that grows along with the utility can be a major advantage. The move from mobile meter reading to an AMI network, and beyond, can be virtually seamless with SaaS. A modular-based platform makes it simple to turn on new features as needs evolve, enabling critical data to proactively plan for tomorrow.

A SaaS solution for a Smart Water Network also gives utilities more freedom to build upon existing assets. It provides a single source of secure, accurate data entry and access for all meter reading system types — AMR, AMI or hybrid. And ultimately, utilities can spend less time and money on network infrastructure, while still being ready to grow into future needs.

The total cost of ownership is typically lower with SaaS than on-premise server deployment, and a SaaS solution also means less strain on limited budgets and IT resources. Utilities of any size can have the flexibility to expand their system as their needs change, but only pay for the services they need, as they need them.

GET CRUCIAL DATA, SHARE AND ANALYZE IT QUICKLY

AMI is just the beginning of a Smart Water Network. Management, maintenance, customer service, water quality, and other departments all need fast, easy access to information. With cloud-based SaaS, utilities can share and leverage the large volumes of data they capture, empowering collaboration and helping predict impacts. This type of platform can utilize APIs (Application Programming Interfaces)



to seamlessly integrate meter data, event data, and alerts directly with existing systems or applications, such as work order systems, customer portals, billing systems, or hydraulic modeling applications.

A utility can also use the software to share information directly with water consumers. Through direct communication via wireless, field

personnel can provide data on-demand, responding to high water bill complaints and showing the time and date when a possible leak started. Usage for individual accounts is easily translated into simple graphs and charts that can be emailed. A mobile version of the software can do the same for face-to-face presentation. In addition to pinpointing locations of possible leaks, backflows, or unauthorized water consumption, a utility can analyze a specific customer's consumption activity history for issues such as reverse flow conditions or unexplained continuous flows. Trending chart views provide a convenient way to visualize usage for a given time span and customer service calls can be resolved with confidence.

Detailed reporting of consumption activity, potential leaks, and reverse flow also enables a utility to stay on top of issues that could impact revenue. Users can quickly identify areas of concern or look for trends in order to maximize operational efficiencies. Looking to the future, utilities can leverage this type of software for trend analysis in rate structure planning and usage initiatives. Finally, the robust information collected can be utilized to help reduce Non-Revenue Water and aid utility conservation initiatives.

OWN YOUR DATA, KEEP IT SECURE

A subscription-based solution can free a utility from having to host and update software and worry about server maintenance and data security. It is widely acknowledged that the water sector is an attractive target for both physical and online assaults. Ransomware attacks on cities are happening regularly, and a cloud-based SaaS solution can provide greater security than on-premise servers. Data is stored in the cloud, backed by a large-scale data center, with staff dedicated to identifying, deterring, and combatting these threats. Software versions are tested before release to check for exploitable vulnerabilities such as un-sanitized inputs susceptible to cyberattacks.

Along with added security, SaaS solutions offer a higher level of convenience and support to utilities. The software is hosted and managed by a third party, with no installation required. All that's needed is an Internet browser to log on and utilities are able to access their data anywhere, at any time. Utilities can be confident that their data is accessible 24 x 7 without having to supply the resource to monitor and maintain it. SaaS also removes the burden of implementing disaster recovery plans, leaving the coordination and resolution to the data center.

ELIMINATE SPECIALIZED DEVICES, COMMUNICATE MORE EFFICIENTLY

Thanks to incredible strides in communication technology, water utilities no longer have to send meter readers out into the field for weeks at a time to capture data. When water utility personnel go out to perform a radio frequency test for signal strength, or exception readings on site, they can now do so without having to purchase single-use, specialized devices. Employees are able to use their existing Android or iOS cell phones or tablets for those tasks. They can then connect to the cloud and sync up stored data online, in real-time, without having to go back into the office.

ALWAYS READY FOR ACTION

With SaaS technology, utilities can concentrate on providing their consumers with clean drinking water while knowing that the utility is equipped to:

- Migrate easily from mobile to fixed network or add capabilities as needed when the time is right, while using and only paying for the features that are relevant now.
- Access and share data seamlessly across utility departments – help the utility achieve goals and objectives and make informed decisions faster.
- Ensure the security of the utility's data, while lessening the burden on IT departments or other internal resources.
- Use existing devices to gather and share information remotely, in real-time.

Win your day for your utility using a cloud-based SaaS platform. Learn more about Neptune's SaaS solution, Neptune® 360™, at neptunetg.com/neptune360.

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*For technology that works for you, learn more at **neptunetg.com** and connect to what's next in water.*

NEPTUNE TECHNOLOGY GROUP

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A NEPTUNE TECHNOLOGY GROUP WARRANTY STATEMENT

Neptune T-10®, HP Turbine, TRU/FLO® Compound Cold Water Meters

1. TERMS OF LIMITED WARRANTY

With respect to its Neptune T-10®, HP TURBINE, TRU/FLO® Compound Water Meters (collectively the "Water Meters"), Neptune Technology Group Inc. ("Neptune") warrants the following on meters sold on or after 11/1/92:

The Water Meters will be, at the later of (i) the date of original purchase from Neptune or (ii) the date of original shipment from Neptune-authorized distributor of Water Meters (that later date is referred to as "the Date of Shipment") and will remain for a period of eighteen (18) months from the Date of Shipment, or twelve (12) months from date of installation, whichever comes first, free from manufacturing defects in workmanship and material.

(a) Maincase. The no-lead high copper alloy or Brass maincase of the Water Meters will be at the Date of Shipment free from manufacturing defects in workmanship and material for the life of the Water Meter.

(b) Frost Protection. All Neptune T-10 Cold Water Meters shipped with a synthetic polymer or cast-iron bottom cap will, commencing upon the Date of Shipment, be warranted against chamber damage for a period of ten (10) years.

(c) Registers. Standard, roll sealed registers of the Water Meters will be at the Date of Shipment, and shall remain for the following periods, free from manufacturing defects in workmanship and material for a period of ten (10) years. The ARB®, ProRead™ (ARB VI), E-CODER® (ARB VII), and ProCoder™ system registers are warranted for ten (10) years from Date of Shipment. All ProRead encoder receptacles shipped after January 1, 2001, shall be warranted for five years from the Date of Shipment. All other components and parts are covered under Neptune's standard one-year material and workmanship guarantee.

(d) Meter Accuracy for Neptune T-10. Neptune T-10 Meters and Neptune T-10 nutating disc chambers in TRU/FLO Compound Water Meters are warranted to meet or exceed, as listed herein, accuracy standards of the AWWA Standard C700-95 for a period of: (i) five (5) years from Date of Shipment for 5/8", 3/4" and 1" meters; (ii) for a period of two (2) years from the Date of Shipment for 1 1/2" and 2" meters; or (iii) the applicable registration shown below, whichever occurs first. Neptune further guarantees that the Neptune T-10 and Neptune T-10 nutating disc chambers in TRU/FLO Compound Water Meters will perform to at least Repaired Meter Accuracy Standards, according to AWWA Manual M-6 Chapter 5 (1999) Table 5.3 for an additional ten (10) years or the registration shown below, whichever occurs first.

SIZE	EXTENDED LOW FLOW ACCURACY	NEW METER ACCURACY	REPAIRED METER ACCURACY
⅝ & ⅝" x ¾"	⅛ US gpm @ 95% 5 years or 500,000 gallons	500,000 gallons	1,500,000 gallons
¾"	¼ US gpm @ 95% 5 years or 750,000 gallons	750,000 gallons	2,250,000 gallons
1"	⅜ US gpm @ 95% 5 years or 1,000,000 gallons	1,000,000 gallons	3,000,000 gallons
1 ½"	¾ US gpm@ 95% 2 years or 1,600,000 gallons	1,600,000 gallons	5,000,000 gallons
2"	1 US gpm @ 95% 2 years or 2,700,000 gallons	2,700,000 gallons	8,000,000 gallons

(e) Meter Accuracy for HP Turbine and TRU/FLO. The HP Turbine and TRU/FLO Compound Cold Water Meters will perform, for a period of one (1) year from the Date of Shipment, to American Water Works Association ("AWWA") accuracy standards for new water meters.

2. WARRANTY RETURN

If a Neptune Water Meter fails an accuracy test during an applicable warranty period, it may be returned to Neptune for repair or replacement at Neptune's option. An accuracy test shall be conducted by the customer according to AWWA standards. Any meter being returned for repair to Neptune under this performance guarantee must be returned with a copy of the customer's test results. If the meter is returned to Neptune without a copy of the test results or if Neptune's factory test shows the meter to meet current AWWA standards, the customer will be charged a nominal testing fee by Neptune in such cases. Neptune will repair or replace the meter at Neptune's option after the meter has been tested by Neptune. Meters repaired or replaced under the performance guarantee will be guaranteed to perform to AWWA repaired meter accuracy standards.

3. WARRANTIES ARE EXCLUSIVE

The warranties set forth in this certificate of warranty are in lieu of any other warranty, guarantee, or representation, whether expressed or implied, including without limitation, the warranty of merchantability and the warranty of fitness for a particular purpose.

4. DAMAGES LIMITED TO COSTS OF REPLACEMENT AND REPAIR

If the Water Meter fails to meet the warranties set forth in Paragraph 1 of this Certificate of Warranty, Neptune, at its option shall, without charge of labor or materials, repair or replace the Water Meter or part thereof, provided that (a) the Water Meter is delivered to a Neptune representative, (b) the Water Meter is accompanied by a Return Material Authorization (RMA), and (c) all costs of delivery to Neptune are assumed by the purchaser of the Water Meter. Neptune's liability is limited to its costs of replacement and repair of the defective water meter. Damages resulting from miscalculation of water usage or lost revenue or profit are not recoverable from Neptune. It is the responsibility of the customer to periodically verify the operation and accuracy of its meters.

5. WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS

The warranties set forth in this Certificate of Warranty do not apply to any Water Meter that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the Water Meter's ability of performance, including but not limited to: misuse; improper handling, application or installation; excessive operating conditions; foreign materials in the water; aggressive water conditions; tampering or unauthorized repairs or modifications; accidental or intentional damage; acts of God. This Certificate of Warranty shall not apply if product is placed in non-recommended installation, is connected or altered by other than Neptune recommended procedures, is used with other than genuine Neptune meter registers and components, or read by equipment not approved or licensed by Neptune. Neptune makes no claims concerning operability and/or compatibility or third party reading systems. In addition, this Certificate of Warranty shall not apply if third party reading equipment is believed to have caused damage to the meter or register. In order to determine its liability, if any, under this Certificate of Warranty, Neptune shall have the right to inspect any Water Meter or part thereof that is claimed to be defective at Neptune or other location designated by Neptune.

NEPTUNE'S LIABILITY WITH RESPECT TO BREACHES OF THE FOREGOING LIMITED WARRANTY SHALL BE LIMITED AS STATED HEREIN. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACT OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

A NEPTUNE TECHNOLOGY GROUP WARRANTY STATEMENT

ProCoder™)R900*i*™

1. WARRANTY EFFECTIVE DATE
This warranty will be effective for any ProCoder™)R900*i*™ that has shipped since product introduction.

2. PROCODER)R900*i*
Neptune Technology Group Inc. warrants that the ProCoder)R900*i* (which includes a Neptune-supplied battery that is not intended to be removable or replaceable) shall be free from defects in manufacture and design for a period of twenty (20) years from the "date of shipment" (such period being the "Warranty Period"). Neptune shall not be responsible for any defects in the ProCoder)R900*i* (whether due to design, materials, manufacture, or otherwise) which manifest themselves after the expiration of the Warranty Period. Neptune will repair or replace a non-performing ProCoder)R900*i* free of charge for the first ten (10) years and at a discount off of the then- current contract price or the then-current list price, whichever is less, during the remaining ten (10) years according to the discount schedule at the right.

Year of Failure	ProCoder)R900*i* Replacement Price Discount*
1-10	Full replacement: 100%
11	50%
12	50%
13	40%
14	40%
15	30%
16	30%
17	20%
18	20%
19	10%
20	10%

*Replacement price discount percentages will be applied towards then-current contract prices or then-current list prices, whichever is less, in effect for the year product is accepted by Neptune under warranty conditions. Replacement ProCoder)R900*i* registers are warranted for one (1) year after date of shipment or balance of original ProCoder)R900*i* warranty, whichever is greater.

3. WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS.
This warranty does not include field replacement labor or materials costs, which are the responsibility of the utility. This warranty does not apply if product is placed in non-recommended installations; may have been repaired with parts not recommended by Neptune; converted, altered, or connected by other than Neptune recommended procedures; is used with other than genuine Neptune meter registers and components or read by equipment not approved or licensed by Neptune; or damaged due to improper care or maintenance, or improper periodic testing (please refer to ProCoder™)R900*i*™ Installation and Maintenance Guide). This warranty does not apply to any ProCoder)R900*i* that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the ProCoder)R900*i* register's ability of performance, including but not limited to: misuse; improper handling; application or installation; excessive operating conditions; tampering or unauthorized repairs and modifications; accidental or intentional damage; or acts of God. In no event shall Neptune be liable for special, incidental, indirect, or consequential damages, including, without limitation, lost revenue.

THE ABOVE WARRANTY FOR THE PROCODER)R900*i* IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY NEPTUNE WITH RESPECT TO THE PROCODER)R900i . ALL OTHER WARRANTIES, CONDITIONS, TERMS, REPRESENTATIONS, OR OTHER LEGALLY OPERATIVE PROVISIONS CONCERNING THE PROCODER)R900*i* ARE HEREBY EXPRESSLY EXCLUDED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY, CONDITION, TERM, AND REPRESENTATIONOR OTHER LEGALLY OPERATIVE PROVISION AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS PARAGRAPH ISEXPRESSLY INTENDED TO EXCLUDE FROM

THIS CONTRACT ALL STATUTORY AND COMMON LAW WARRANTIES TO THE MAXIMUM EXTENT PERMITTED BY LAW. TO AVOID ANY AMBIGUITY OR MISUNDERSTANDING, ALL PROBLEMS ARISING WITH AN PROCODER)R900*i* AFTER THIS POINT ARE BUYER'S RESPONSIBILITY. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE PROCODER)R900i. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACHOF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

A NEPTUNE TECHNOLOGY GROUP WARRANTY STATEMENT

R900® Meter Interface Unit (MIU)

1. **WARRANTY EFFECTIVE DATE**
   This warranty will be effective for any R900® meter interface unit (MIU) that is shipped on or after October 1, 2004 (R900 v3 or later).

2. **R900 METER INTERFACE UNIT**
   Neptune Technology Group Inc. warrants that the R900 MIU (the "MIU") (which includes a Neptune®-supplied battery that is not intended to be removable or replaceable) shall be free from defects in manufacture and design for a period of twenty (20) years from the "Date of Shipment" (such period being the "Warranty Period"). Neptune shall not be responsible for any defects in the MIU (whether due to design, materials, manufacture, or otherwise) which manifest themselves after the expiration of the Warranty Period. Neptune will repair or replace a non-performing MIU free of charge for the first ten (10) years and at discount off of the then-current contract price or the then-current list price, whichever is less, during the remaining ten (10) years according to the discount schedule at the right.

3. **WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS**
   This warranty does not include field replacement labor or materials costs, which are the responsibility of the utility. This warranty does not apply if product is placed in non-recommended installations; may have been repaired with parts not recommended by Neptune; converted, altered, or connected by other than Neptune recommended procedures; is used with other than genuine Neptune meter registers and components or read by equipment not approved or licensed by Neptune; or damaged due to improper care or maintenance, or improper periodic testing (please refer to *R900 Installation and Maintenance Guide*). This warranty does not apply to any MIU that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the R900 MIU's ability of performance, including but not limited to: misuse; improper handling; application or installation; excessive operating conditions; tampering or unauthorized repairs and modifications; accidental or intentional damage; or acts of God. In no event shall Neptune be liable for special, incidental, indirect, or consequential damages, including, without limitation, lost revenue.

THE ABOVE WARRANTY FOR THE MIU IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY NEPTUNE WITH RESPECT TO THE MIU. ALL OTHER WARRANTIES, CONDITIONS, TERMS, REPRESENTATIONS, OR OTHER LEGALLY OPERATIVE PROVISIONS CONCERNING THE MIU ARE HEREBY EXPRESSLY EXCLUDED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY, CONDITION, TERM, AND REPRESENTATION OR OTHER LEGALLY OPERATIVE PROVISION AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS PARAGRAPH IS EXPRESSLY INTENDED TO EXCLUDE FROM THIS CONTRACT ALL STATUTORY AND COMMON LAW WARRANTIES TO THE MAXIMUM EXTENT PERMITTED BY LAW. TO AVOID ANY AMBIGUITY OR MISUNDERSTANDING, ALL PROBLEMS ARISING WITH AN MIU AFTER THIS POINT ARE BUYER'S RESPONSIBILITY. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE MIU. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

ProRead™/E-CODER®/ProCoder™ Encoder

1. PRODUCTS COVERED

This warranty shall apply to the ProRead™ Absolute Encoder, E-CODER® Solid State Absolute Encoder Register, and ProCoder™ Absolute Encoder Register, hereinafter referred to as "Product", sold by Neptune Technology Group Inc. The warranty is extended only to utilities, municipalities, other commercial users, and authorized distributors, hereinafter referred to as "Customer", and does NOT apply to consumers.

2. MATERIALS AND WORKMANSHIP

Neptune Technology Group Inc. ("Neptune") warrants that the product shall be free from defects in manufacture and design for a period of ten (10) years from the date of shipment (such period being the "Warranty Period") when installed, serviced and operated according to Neptune's instructions. Neptune shall not be responsible for any defects in the product (whether due to design, materials, manufacture, or otherwise) which manifest themselves after the expiration of the Warranty Period. Neptune will repair or replace a non-performing product free of charge for ten (10) years.

3. WARRANTIES ARE INAPPLICABLE UNDER CERTAIN CONDITIONS

This warranty does not include field replacement labor or materials costs, which are the responsibility of the Customer. This warranty does not apply if product is placed in non-recommended installations; may have been repaired with parts not recommended by Neptune; is converted, altered or connected by other than Neptune recommended procedures; is used with other than genuine Neptune components or read by equipment not approved or licensed by Neptune; or damaged due to improper care or maintenance, or improper periodic testing (please refer to Encoder Quick Install Guide). This warranty does not apply to any Product that has been damaged by, or subjected to, conditions which, in the opinion of Neptune, have affected the Product's ability of performance, including but not limited to; misuse; improper handling; application or installation; excessive operating conditions; tampering or unauthorized repairs and modifications; accidental or intentional damage; or acts of God. In no event shall Neptune be liable for special, incidental, indirect or consequential damages, including, without limitation, lost revenue.

THE ABOVE WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY NEPTUNE WITH RESPECT TO THE PRODUCT. ALL OTHER WARRANTIES, CONDITIONS, TERMS, REPRESENTATIONS, OR OTHER LEGALLY OPERATIVE PROVISIONS CONCERNING THE PRODUCT ARE HEREBY EXPRESSLY EXCLUDED. INCLUDING WITHOUT LIMITATION, ANY WARRANTY, CONDITION, TERM, AND REPRESENTATION OR OTHER LEGALLY OPERATIVE PROVISION AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS PARAGRAPH IS EXPRESSLY INTENDED TO EXCLUDE FROM THIS CONTRACT ALL STATUTORY AND COMMON LAW WARRANTIES TO THE MAXIMUM EXTENT PERMITTED BY LAW. TO AVOID ANY AMBIGUITY OR MISUNDERSTANDING, ALL PROBLEMS ARISING WITH THE PRODUCT AFTER THIS POINT ARE CUSTOMER'S RESPONSIBILITY. NEPTUNE'S LIABILITY SHALL IN NO EVENT EXCEED THE PURCHASE PRICE. NEPTUNE SHALL NOT BE SUBJECT TO AND DISCLAIMS THE FOLLOWING: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY; (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY NEPTUNE, OR ANY UNDERTAKINGS, ACTS, OR OMISSIONS RELATING THERETO; AND (3) ALL CONSEQUENTIAL, INCIDENTAL, SPECIAL, MULTIPLE, EXEMPLARY, AND PUNITIVE DAMAGES WHATSOEVER.

Encoder Compatibility Guarantee

Automatic Reading and Billing (ARB®) System (ARB V, ProRead, E-CODER, and ProCoder)

With the purchase of the ARB encoder metering system, Neptune will provide the assurance that the ARB System purchased today can be expanded from reading with Neptune handheld devices to reading with Neptune mobile products and fixed network systems.

4. GUARANTEE OF COMPATIBILITY

The Pocket ProReader RF, Advantage Probe, R900®, E-CODER®)R900*i*™, ProCoder)R900*i*, DAP handhelds (PC9300, 9800 & CE5320B) and Neptune mobile systems are designed and built by Neptune. This guarantees the utility compatibility between these systems and the ARB encoder registers.

For Probed Reads: When reading ARB encoders with the Pocket ProReader RF, Advantage Probe, or DAP handhelds (PC9300, 9800 and CE5320B), Neptune guarantees that the meter reading obtained will match the mechanical odometer reading.

For RF Reads: When reading ARB encoders connected to an R900 where the R900 reads a ProRead or ARB V encoder hourly, or in the case of E-CODER or ProCoder where the R900 reads the E-CODER or ProCoder every 15 minutes, Neptune guarantees the encoder reading and the remote reading will match upon manual activation of the R900 with a magnet to force an immediate read and transmission. In the event of the E-CODER)R900*i* or ProCoder)R900*i* where the R900 transmission is updated every 15 minutes, Neptune will guarantee the encoder reading and remote reading to match upon this update.

Damage Guarantee

The Pocket ProReader RF, Advantage Probe, R900, E-CODER)R900*i*, ProCoder)R900*i*, DAP handhelds (PC9300 & 9800, CE5320B) and Neptune mobile systems are warranted against causing damage to any ARB encoder register during interrogation. If it is found that the Pocket ProReader RF, Advantage Probe, R900, DAP handhelds (PC9300 & 9800, CE5320B) or Neptune mobile systems caused damage to an ARB encoder register during interrogation, Neptune will either repair or replace the register at no charge to the utility. If there are any questions concerning this Meter & Reading Information Systems Guarantee, please write to: Manager of Consumer Relations, Neptune Technology Group Inc., 1600 Alabama Hwy. 229, Tallassee, Alabama 36078.

If a Neptune water meter fails an accuracy test during an applicable warranty period, it may be returned to Neptune for repair or replacement at Neptune's option. An accuracy test shall be conducted by the customer according to AWWA standards. If foreign material causes the meter not to perform appropriately, all such materials shall be removed prior to the customer conducting the test. Any meter being returned for repair to Neptune under this performance guarantee must be returned with a copy of the customer's test results. If the meter is returned to Neptune without a copy of the test results or if Neptune's factory test shows the meter to meet current AWWA standards, the customer will be charged a nominal testing fee by Neptune in such cases. Neptune will repair or replace the meter at Neptune's option after the meter has been tested by Neptune. Meters repaired or replaced under the performance guarantee will be guaranteed to perform to AWWA repaired meter accuracy standards. This guarantee is void if components have not been maintained or installed according to Neptune installation and maintenance guidelines, or are otherwise damaged or defective. The accuracy guarantee will not apply where a properly formatted electronic meter reading cannot be obtained on six-digit encoders. The last digit will be displayed only as a zero (0) or five (5) when read remotely. As part of the encoder technology, the electronic reading from the R900 is guaranteed to match the reading on the encoder register upon manual activation of the R900 with a magnet to force an immediate read and transmission (one per hour). System damage as a result of vandalism or acts of God are not covered. Additional warranties may also apply to individual system components. Neptune's liability with respect to breaches of the foregoing warranty shall be limited as stated herein. Neptune's liability shall in no event exceed the purchase price. Neptune shall not be subject to and disclaims the following: (1) any other obligations or liabilities arising out of breach of contract or of warranty; (2) any obligations whatsoever arising from tort claims (including negligence and strict liability) or arising under other theories of law with respect to products sold or services rendered by Neptune, or any undertakings, acts, or omissions relating thereto; and (3) all consequential, incidental, special, multiple, exemplary, and punitive damages whatsoever.

THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES, WHETHER EXPRESSED, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

A NEPTUNE TECHNOLOGY GROUP WARRANTY STATEMENT

R900® IoT Gateway

1. WARRANTY

Neptune warrants that the Neptune R900 IoT Gateway data collector (the "Gateway") will be free from defects in materials and workmanship, provided the Gateway is subject to normal use and service. The warranty period for the Gateway is 12 months from the shipment date from Neptune. Warranty services provided during warranty period are:

- For a unit defective in materials or workmanship, free repair (including parts and labor), or at Neptune's discretion, replacement of the defective unit
- Return shipment of repaired product via pre-paid ground service
- Toll-free assistance at Customer Support 1-800-647-4832
- These services are purchaser's exclusive remedy for warranty issues
- Repair turnaround time of 10 working days, excluding transit time

2. NOT INCLUDED IN THE WARRANTY

Accessories and peripherals including battery, cables, USB thumb drives, UPS or other back up power supplies, antennas, etc.

- Equipment damaged by abuse or negligence, or environmental damage as a fault of fires and storms
- Firmware modifications
- Priority Overnight return shipment of repaired units

3. WARRANTY EXCLUSIONS

The warranty above does not apply to:

- Gateways that have been modified by anyone other than Neptune without Neptune's prior written consent, and/or that have been subjected to improper handling, storage, installation, operation, or maintenance
- Damage to Gateways caused by abrasive materials, corrosion due to aggressive fluids, lightning, improper voltage supply, mishandling, or misapplication

4. EXTENDED MAINTENANCE ENTITLEMENT

Maintenance entitlement is available from your authorized Neptune sales representative. Maintenance entitlement during the extended period include:

- Free repair of unit, including parts and labor
- Return shipment of repaired product is pre-paid ground service
- Free inspection and preventative maintenance
- Repair turnaround time of 10 working days, excluding transit time
- Toll-free assistance at Customer Support 1-800-647-4832

5. NOT INCLUDED IN EXTENDED MAINTENANCE ENTITLEMENT

- Accessories and peripherals including battery, cables, USB thumb drives, UPS, or other back up power supplies, antennas, etc.
- Equipment damaged by abuse or negligence or environmental damage as a result of fires and storms
- Firmware modifications
- Priority Overnight return shipment of repaired units

6. REPAIR NOTES

A Return Material Authorization (RMA) number MUST accompany all incoming repairs. This RMA number may be obtained by contacting Customer Support at support@neptunetg.com or 1-800-647-4832.

- Customer pays all incoming shipment charges
- All outgoing repairs are shipped ground service
- Requested Priority Overnight return shipment is paid by the customer
- Repair warranty is 90 days from shipment date
- Warranty and maintenance contract repair turnaround time of 10 working days, excluding transit time
- Non-warranty and non-maintenance contract repair turnaround time of 20 working days, excluding transit time

NEPTUNE DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

DISCLOSURE OF SUBCONTRACTORS, SUBCONSULTANTS AND SUPPLIERS

PRIME CONTRACTOR

Name of Firm: Ferguson Waterworks
License Number and Class: CA Contractor State License Class A 870926
DIR Registration Number: PW-LR-1000401934
Business Address: 11909 Tech Center Ct. Poway, CA 92064
Contact: Adam Milauskas
Phone No.: (949) 467-4758
Email: Adam.Milauskas@ferguson.com

SUBCONTRACTOR (AMI Infrastructure Installer)

Name of Firm: JM Electrical Services
License Number and Class: CA C-10 Electrical License Number: 1056901
DIR Registration Number: PW-LR-1000453270
Business Address: 2581 Union Ave. La Habra, CA 90631
Contact: Jeff Mandell
Phone No.: (714) 488-1970
Email: jmandellelectric@gmail.com

SUBCONSULTANT (Customer Portal)

Name of Firm: WaterSmart Software
Business Address: 20 California St. #200 San Francisco, CA 94111
Contact: Brandon Sherman
Phone No.: (925) 708-3224
Email: bsherman@watersmartsoftware.com

SUPPLIER (Water Meters, Endpoints, AMI Infrastructure)

Name of Firm: Neptune Technology Group
Business Address: 1600 AL-229 S, Tallassee, AL 36078
Contact: Andy Bohn
Phone No.: (415) 710-2046
Email: abohn@neptunetg.com

ADDENDUM NO. 1

TO

CONTRACT DOCUMENTS AND SPECIFICATIONS FOR

METER PROCUREMENT AND FUTRE TECHNOLOGY ENHANCEMENTS

SPECIFICATION NO. 20-611

MAY 18, 2020

Received 5/15/2020
Eric Tracy - Ferguson WW B.D.M.
E.B.T.

ITEM NO. 1

BIDDING REQUIREMENT CHANGES

1. The Question Submission deadline is changes from **May 19, 2020 at 2 pm to June 2, 2020 at 2 pm.**
2. The Bid Date for the project changes from **June 4, 2020 at 5 pm** to **June 18, 2020 at 5 pm.** All bids must be received before the time and date noted above.
3. The Team Interview Date will be changes from **June 15, 2020** to **June 23, 2020**.
4. The Contractor Selection Date will change from **June 22, 2020** to **July 13, 2020**.

DRAWINGS CHANGES/ADDITIONS

1. Miscellaneous Condition Form is hereby added to the Bid documents.
2. SCADA Tower Height (Maximum and Set Heights) List is hereby added to the Bid documents.

QUESTIONS OR REQUESTS

ITEM NO. 2

Question: Attachment A, Page 14 of the General Conditions references Port of Morrow and being registered with the OREGON CONSTRUCTION CONTRACTORS REGISTRATION BOARD. Was the attachment included by mistake? Can you confirm?

Response: Attachment A and B are hereby deleted from the bid documents.

ITEM NO. 3

Question: Would the District you accept a submission from Customer Portal vendor direct if the firm works with any metering technology?

Response: No, the proposal will be deemed unresponsive. The District is looking for a single team for implementation. After implementation the District, intends to enter into service contracts with the firm after the initial year. Previous experience with other metering technology will be important.

ITEM NO. 4

Question: 1. To perform a propagation analysis, can the City provide service location information stating the complete address with latitude and longitude, as an excel document? 2. Can the City provide a list of approved assets to place infrastructure? 3. Can the City provide a territory boundary map?

Response: The information on the existing locations, service area boundary can be provided in a GIS shapefile. Please send your request to srogers@palmdalewater.org.

ITEM NO. 5

Question: How do we mark a copy / original on an electronic RFP Submission? Are you requiring both electronic and hard copy?

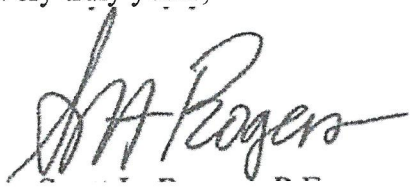
Response: A hard copy will not be required. Please submit your electronic proposal file through the proposal website.

ITEM NO. 6

Question: Section 4 A I.3 and 4 B II.2, shows 450-470mHz is allowed in the non-integrated endpoints but only 902-928mHz is allowed for the integrated, will the district allow 450-470mHz for these sections additional to the 902-228mHz?

Response: The District will allow 450-470 mHz for integrated endpoints.

Very truly yours,



Scott L. Rogers, P.E.
Engineering Manager Engineer
Palmdale Water District

ADDENDUM NO. 2

TO

CONTRACT DOCUMENTS AND SPECIFICATIONS FOR

METER PROCUREMENT AND FUTRE TECHNOLOGY ENHANCEMENTS

SPECIFICATION NO. 20-611

June 3, 2020

Received 6/3/2020

Eric Tracy - Ferguson WW

B.D.M.

E.J.T.

ITEM NO. 1

BIDDING REQUIREMENT CHANGES

1. Proposing vendors shall provide the District four meters from the manufacturer to test in the field by no later than Monday, June 8, 2020. If meters were provided earlier, vendors do not need to supply additional meters.
2. District is working with the City of Palmdale to potentially locate repeaters on streetlights. Vendors can propose on locating repeaters on streetlights in areas where coverage may not be optimal.
3. DELETE sentence in specification which reads, "Meters that use measurement principals based on Faraday's Law are not permitted" and ADD "Meter measurement shall meet or exceed the accuracy requirements for each type as required by American Water Works Association (AWWA)."
4. Vendors shall address in their proposal the capability of the AMI/AMR system to process 20,000 meter points' data into hourly, daily, monthly consumption. Additionally, vendors shall address in the proposal the ability of the AMI/AMR system to identify the meter points by pressure zones of the District.

BID DOCUMENT ADDITIONS

1. The Existing Account Information spreadsheet, which shows the existing accounts with the associated addresses and Itron ID's is hereby added to the Bid Documents.

PRICING PROPOSAL ADDITIONS

1. The web-based price proposal was modified to add meters by type of meter for each size. Vendor will be responsible for ensuring the total quantities of each type totals to the quantity for each size. For example, here are the total meter replacements and an example of the price proposal.
2.

Meter Size	Quantity
¾ Short	1,575
1	808
1 1/2	49
2	39

Meter Size	Type	Quantity
¾ Short	Multi-Jet	
	Ultra-Sonic	
	Positive Displacement	
	Total	**1,575**
1	Multi-Jet	
	Ultra-Sonic	
	Positive Displacement	
	Total	**808**

Meter Size	Type	Quantity
1 1/2	Multi-Jet	
	Ultra-Sonic	
	Positive Displacement	
	Total	**49**
2	Multi-Jet	
	Ultra-Sonic	
	Positive Displacement	
	Total	**39**

3. The pricing proposal is adjusted to provide a vendor to propose on non-integrated or integrated registers/radios or a combination of both. Vendor will be required to ensure the quantity proposed totals up to the number of meters to be replaced.

QUESTIONS OR REQUESTS

ITEM NO. 2

Question: After requesting these files, how will the GIS files be sent over to us? Thank you

Response: Please send an email to Scott Rogers at srogers@palmdalewater.org and files will be transmitted to you electronic by a link in the email.

ITEM NO. 3

Question: Does the City require water meter installation services as a part of the RFP?

Response: The District does not require installations services of the meters as part of the RFP.

ITEM NO. 4

Question: The City's RFP specifications state, "Meters that use measurement principals based on Faraday's Law are not permitted" however, electromagnetic meters are an approved meter type. It is our understanding that all electromagnetic meters use this principle for measurement. Will the City allow this type of measurement?

Response: The specification with regarding meters that use measurement principals based on Faraday's Law is removed from the specification. Accuracy along the life of a meter is the most important part of the meter specification.

ITEM NO. 5

Question: Line Items 1-6 of the Pricing Proposal are currently listed for non-integrated register/radios. Since the integrated registers/radios are approved for this project, how would you like us to price these out in our proposals?

Response: Vendors are not be required to meet Section VII.DD since this bid is a procurement. However, vendors must comply with prevailing wage laws for any installation work over $1,000.

ITEM NO. 6

Question: Line Items 1-6 of the Pricing Proposal are currently listed for non-integrated register/radios. Since the integrated registers/radios are approved for this project, how would you like us to price these out in our proposals?

Response: A line item will be added to the pricing proposal to include the cost of integrated registers/radios.

ITEM NO. 7

Question: We believe the current RFP specification reads as such, that any proposing vendor must read the Districts existing Itron AMR system. We can currently connect our own radio to any existing encoded register in the District and also manually read it through our software, but Itron has a proprietary radio system where they are the only vendor that can read the District's current Itron radios. (every vendor has proprietary radio systems) Can the District clarify its expectations for a proposer reading the District's existing radio system?

Response: The vendor shall propose a system that will continue to read the existing Itron system in addition to the vendor's proposed system. For example, if the vendor proposes an AMI system, the vendor must address the continuation of the existing Itron system reads. If the vendor proposes an AMR system that is non-Itron, both systems (Itron and proposed) must be read and the data file sent to Truepoint. The vendor must develop a long-term plan for the transition from Itron to the proposed system including maintaining the Itron system until the transition is complete.

ITEM NO. 8

Request: Can we review our propagation study with the District before the bid submittal?

Response: If vendor desires to review a propagation study with the District, Vendor can contact Scott Rogers, at srogers@palmdalewater.org to set up a web meeting before June 11, 2020.

Very truly yours,

Scott L. Rogers, P.E.
Engineering Manager Engineer
Palmdale Water District

STATEMENT OF TERMS, CONDITIONS, EXCEPTIONS & CLARIFICATIONS

Exceptions

Attachment 3 - Specifications
- Exception: Contractor does not provide any performance guarantees. Manufacturer's responsibility.

Attachment H - Agreement
- Section 6 Indemnity Subsection (a). Take exception. Contractor will provide indemnity to the extent caused by our negligence only and in no event to the extent caused by the negligence of an indemnified party
- 4th paragraph - delete "defects or" as Contractor will not provide an indemnity for repairs, damages or injury that are the result of defective materials

General Conditions
- Section 12 - This requires a resident Superintendent. Delete if we are not designating such a person.
- Section 15.4.2 - add "pandemics" and "epidemics" to that list
- Section 18.2 - delete "and indirect"
- Section 19.6 - take exception. To the extent we have been paid, we will indemnify for any liens
- Section 20.1 - take exception. Insert "payment" before "claims and all liability to the CONTRACTOR"
- Section 24.1 - delete "and is" and replace with "to the extent" prior to "caused in whole or in part by any negligent or willful act or omission"
- Section 29.1 - Take exception to the extent a product warranty is implied from the Contractor. All meters and materials are covered by manufacturer warranties. Contractor will provide warranty service under the manufacturer's warranty. Contractor warrants installation.

General Provisions
- Section 4-13 - Contractor warrants workmanship and the warranty for materials is provided by the manufacturer.
- Section 6-10 - at the end of the first paragraph add "but only to the extent caused by the Contractor's negligence
    - 3rd paragraph - delete "sole and exclusive"
    - 4th paragraph - take exception to indemnification for breach of contract. Breach is covered elsewhere
- Section 6-12 - note the prevailing wage requirements
- Section 9-19 - third paragraph. Delete "and indirect"
- Section 7-1 We will not provide builders' risk insurance Our deductible ($500,000) must be declared. Ferguson will not reduce or eliminate our deductible nor will we procure a bond guaranteeing payment of losses, etc.
Ferguson will not provide copies of our policies nor paid premium receipts
- Section 7-3 - strike ", or of policies of insurance" and "or policies" in the first paragraph
- Section 7-4 - strike this entire section

Clarifications

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
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- [redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

E D. 2

Authorized signature and affirmation of no conflict of interest/non-collusion

Eric Tracy
Business Development Manager
Ferguson Waterworks Meter & Automation
11909 Tech Center Dr. Poway, CA 92064
(415) 309-2702
Eric.Tracy@Ferguson.com

STATE OF CALIFORNIA

DRUG-FREE WORKPLACE CERTIFICATION

STD. 21 (REV. 12-93)

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized legally to bind the contractor or grant recipient to the certification described below. I am fully aware that this certification, executed on the date below, is made under penalty of perjury under the laws of the State of California.

CONTRACTOR/BIDDER FIRM NAME	FEDERAL ID NUMBER
Ferguson Enterprises, LLC dba Fergsuon Waterworks	54-1211771
BY *(Authorized Signature)*	DATE EXECUTED
	06/17/2020
PRINTED NAME AND TITLE OF PERSON SIGNING	TELEPHONE NUMBER *(Include Area Code)*
Jon P. Price, General Manager	(858) 391-3700
TITLE	
General Manger	
CONTRACTOR/BIDDER FIRM'S MAILING ADDRESS	
11909 Tech Center Ct. Poway CA 92029	

The contractor or grant recipient named above hereby certifies compliance with Government Code Section 8355 in matters relating to providing a drug-free workplace. The above named contractor or grant recipient will:

1. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations, as required by Government Code Section 8355(a).

2. Establish a Drug-Free Awareness Program as required by Government Code Section 8355(b), to inform employees about all of the following:

   (a) The dangers of drug abuse in the workplace,

   (b) The person's or organization's policy of maintaining a drug-free workplace,

   (c) Any available counseling, rehabilitation and employee assistance programs, and

   (d) Penalties that may be imposed upon employees for drug abuse violations.

3. Provide as required by Government Code Section 8355(c), that every employee who works on the proposed contract or grant:

   (a) Will receive a copy of the company's drug-free workplace policy statement, and

   (b) Will agree to abide by the terms of the company's statement as a condition of employment on the contract or grant.

4. At the election of the contractor or grantee, from and after the "Date Executed" and until 6-16-2023 (DATE) (NOT TO EXCEED 36 MONTHS), the state will regard this certificate as valid for all contracts or grants entered into between the contractor or grantee and this state agency without requiring the contractor or grantee to provide a new and individual certificate for each contract or grant. If the contractor or grantee elects to fill in the blank date, then the terms and conditions of this certificate shall have the same force, meaning, effect and enforceability as if a certificate were separately, specifically, and individually provided for each contract or grant between the contractor or grantee and this state agency.

CALIFORNIA JURAT WITH AFFIANT STATEMENT **GOVERNMENT CODE § 8202**

☑ See Attached Document (Notary to cross out lines 1–6 below)
☐ See Statement Below (Lines 1–6 to be completed only by document signer[s], *not* Notary)

1.
2.
3.
4.
5.
6.

Signature of Document Signer No. 1 *Signature of Document Signer No. 2 (if any)*

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of San Diego

Subscribed and sworn to (or affirmed) before me on this 17th day of June, 2020
Date *Month* *Year*
by
(1) Jane P. Price
(and (2)_____),
Name(s) of Signer(s)

proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

JANE A. PRICE
Notary Public - California
San Diego County
Commission # 2172358
My Comm. Expires Dec 5, 2020

Signature Jane A Price
Signature of Notary Public

Seal
Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: Drug-Free Workplace Cert Document Date: 06/17/2020

Number of Pages: 1 Signer(s) Other Than Named Above: NA

Palmdale Water District

Meter Procurement and Future Technology Enhancements

Phase 1 - Qualifications Evaluation Summary

Vendor	Frank Gonzales	Adam Ly	Tara Rosati	Jim Stanton	Gene Taylor	Total Score
Aqua-Metric Sales Company	95.19%	95.38%	93.08%	88.27%	84.42%	91.27%
Core & Main	97.12%	91.92%	92.31%	92.31%	80.38%	90.81%
Ferguson Waterworks	95.19%	96.35%	99.23%	82.69%	81.92%	91.08%
Inland Water Works Supply Co	83.08%	84.04%	88.08%	67.12%	77.50%	79.96%
Zenner Performance Meters,Inc.	89.42%	84.23%	84.23%	69.23%	71.15%	79.65%

Palmdale Water District

Meter Procurement and Future Technology Enhancements

Phase 2 - Pricing and Qualification Evaluation Summary

Vendor	Frank Gonzales	Adam Ly	Tara Rosati	Jim Stanton	Gene Taylor	Total Score
Ferguson Waterworks	90.44%	91.32%	93.53%	80.74%	80.29%	87.26%
Aqua-Metric Sales Company	88.48%	88.63%	86.86%	82.94%	80.25%	85.43%
Core & Main	89.95%	85.98%	86.27%	86.18%	77.16%	85.11%

REQUEST FOR PROPOSAL

METER PROCUREMENT AND FUTURE TECHNOLOGY ENHANCEMENTS

PALMDALE WATER DISTRICT

A CENTURY OF SERVICE

Palmdale Water District
2029 E Avenue Q
Palmdale, CA 93550

https://www.palmdalewater.org/

RELEASE DATE: May 1, 2020
DEADLINE FOR QUESTIONS: June 9, 2020
RESPONSE DEADLINE: June 18, 2020, 5:00 pm

RESPONSES MUST BE SUBMITTED ELECTRONICALLY TO:
https://secure.procurenow.com/portal/palmdalewater

Palmdale Water District
REQUEST FOR PROPOSAL
Meter Procurement and Future Technology Enhancements

Attachments:
C - W9 BLANK
D - Scope of Work
E - Specifications
F - Reference Form
G - No Proposal Response
H - Agreement
I - GeneralProvisions

I. INTRODUCTION

I.A Summary

Procure meters and system capable of meeting the current and future meter reading needs within the District's service area. The scope of work involves but not limited to providing and installing the system which includes equipment, software, hardware, and all necessary training and installation support for the implementation of the proposed meters, AMR, AMI and customer portal.

I.B Background

The Palmdale Water District (District) was formed in 1918 under the provisions of Division 11 of the Water Code of the State of California to supply irrigation water to the approximately 4,500 acres of agricultural land within its boundaries. Under this Code, the District's primary functions were, and continue to be, to acquire, control, conserve, store, and distribute water for the beneficial use of inhabitants and water users within the District.

The District is an independent special district governed by a five-member Board of Directors who serve the public by division. Special districts provide accountability and a means to vote selectively and provide customers the opportunity to express their preferences more precisely. The most basic virtue of a special district is to allow citizens to customize government to suit their needs.

The District meets the demands of nearly 28,000 accounts or a population of 115,000 by providing water from both groundwater and surface water treatment plant that receives local and State Water Project surface water. Increasing conservation through monitoring usage, leakage and promoting conservation programs is important strategic initiative for the District.

The District issues this RFP to procure meters and implement a system capable of meeting the current and future meter reading needs within its service area. The scope of work involves, but is not limited to, providing and installing the system which includes software, hardware, and all necessary training and installation support. The reading equipment shall be capable of receiving meter readings while utilizing a mobile reading unit (collectively as Advanced Meter Reading "AMR" or "mobile") and permanently mounted data collector units (collectively Advanced Metering Infrastructure "AMI" or "fixed network") in the future.

The system must have the capability to improve meter reading efficiency, increase meter reader safety, and provide data that facilitates resolution of customer bill complaints, water conservation initiatives, and distribution system management efforts. The Proposer shall describe the upgrade requirements to incorporate radio frequency (RF) or cellular technology.

During upgrade to proposed meter reading system, both the Proposer's recommended system shall still be able to radio read the District's existing water meters, and the system proposed by the manufacturer/supplier and the ability direct read water meters via manual keyed entry.

All System components furnished (software, reading equipment, meter interface units, meters with absolute encoders) shall be produced from an ISO 9001 certified manufacturing facility.

Additionally, the District is seeking the ability to engage customer usage via a customer portal where both consumption and cost would be analyzed and presented on a customer facing web portal with a backend facing customer service portal. The portal will provide the necessary information and analytics required to show customers the usage and costs by tier, leaks, and customer outreach.

The District's current customer service system consists of receiving usage data through Itron which goes into TruePoint (Customer Service Portal). The usage totals are exported into Great Plains (Financial System). Infosend is the billing presentment and customer portal. Customers have a variety of ways to make payments through EPX (automated payment through phone and customer service), Jack system (kiosk) process through EPX, Accurant Remit Plus (Paper payment stubs) and Paymentus Pay near me (7-11, Family Dollar stores). In 2021, the District will have a Data Warehouse or Business Intelligence server to store data for access by the TruePoint and others. The District used a water budget tiered rate structure thast uses the number of people in the household (default set at four) and landscaped or potentially landscaped area (viewable in ESRI ArcGIS) for single family residences.

See the Scope of Work, Attachment D

I.C Contact Information

Scott Rogers
Enigneering/Grants Manager
2029 East Ave Q
Palmdale, CA 93550
Email: srogers@palmdalewater.org
Phone: (661) 456-1020

Department:
Engineering

I.D Timeline

Release Project Date
May 1, 2020

Question Submission Deadline
June 2, 2020, 2:00pm

Question Response Deadline
June 9, 2020, 2:00pm

Proposal Submission Deadline
June 18, 2020, 5:00pm

Team Interviews

June 23, 2020

Location: 2029 East Avenue Q, Palmdale, CA 93550, PWD Engineering Conference Room

Contractor Selection Date

July 7, 2020

II. BID ADVERTISEMENT

Meter Procurement and Future Technology Enhancements

Bids Due: Jun 18, 2020

Bids submitted for Meter Procurement and Future Technology Enhancements must be submitted not later than 5:00 pm, local time, on Jun 18, 2020. At that time, they will be publicly opened. Bids will not be accepted after this hour and date. Palmdale Water District will be acting as the General Contractor for this project.

Palmdale Water District reserves the right to award or reject for good cause, any or all bids, or to postpone the award of the contract upon finding that it is in the public interest to do so.

A copy of the scope of work may be obtained on May 1, 2020.

III. PROJECT DETAILS

III.A Scope of Work

Palmdale Water District is requesting proposals for the purchase of water meters, meter accessories, Advanced Metering Infrastructure (AMI), and Customer Portal. Qualified firms wishing to respond to this Request for Proposal (RFP) must provide all equipment, materials and services described in this document, whether directly or through sub-contractors or sub consultants. This does not limit the use of subcontractors or subconsultants.

Below in Table 1 are the total number of meters in the District's system by size.

Table 1 - Total Number of Meters in System

Meter Size (inches)	Quantity
5/8 x 3/4	3,749
3/4	18,216
1	4,383
1 1/2	337
2	362
3	34
4	12
6	7
8	10
10	2
Compound	57
Total	**27,225**

Compound Sizes	Quantity
1x4	1
1x4x8	10
2x6	2
2x8	2
3x6	8
4x8	26
5/8x3x6	3
6x10	5
Totals	**57**

Below in Table 2 are the annual estimated quantities of meters to be purchase over the next five years.

Table 2 – Five Year Replacement Quantities

Meter Size (inches)	Estimated Quantities by Year					Totals
	2020	2021	2022*	2023*	2024*	
5/8 x 3/4**	1,575	2,137				3,749
3/4	0	0	1,000	1,000	1,000	3,000
1	808	113				921
1 1/2	49	22				71
2	39	17				56
Totals by Year	2,471	2,289	1,000	1,000	1,000	7,760

Note: * For year 2022-2024, for bidding purposes assume ¾ inch meters will be replaced but sized ordered may vary based on District needs for replacement

** District is current transitioning 5/8x3/4 meters to 3/4 short meters

It is the intention of the District to award the RFP to a single supplier/manufacturer and a separate award for the software firm. Both parties must include coordination costs as part of the implementation.

See the Attachment D for full scope of work.

III.B Specifications 20-611 Meter Procurement and Future Technology Enhancements

The specifications for this bid are added as Attachment E for more details.

III.C No proposal Response

Please provide a no proposal response if no bid will be provide for the project. See Attachment G. Please email to srogers@palmdalewater.org

III.D Reference Form

Please provide the number of references on Attachment F as required within the RFP Attachment F

III.E GIS Data

GIS Data is provided in a shapefile which identifies District owned properties, exisitng facilities and location of District meters.

III.F Proposal Format

The Proposals shall be neat, professional. The original document shall have original signatures and clearly noted with ORIGINAL on the cover. All proposals shall be uploaded to the website, by the date and time set forth herein.

PROPOSAL DOCUMENTS REQUIRED The following documents and forms in the following arrangement must accompany each proposal or alternate proposal submitted:

- Proposal Cover Page. This is to be used as the first page of the RFP. This form must be fully completed and signed by an authorized officer of the supplier.
- Detailed description of system for implementing the transition to new AMR, AMR to AMI, and customer portal, see scope of work attachment
- Proposal Form(s)
- Warranty Certificate(s)
- Disclosure of Subcontractors, Subconsultants and Suppliers
- Proposer's Certification / Addenda Acknowledgement Form.

- Statement of Terms and Conditions must be signed and returned with the proposal form.
- A sworn, notarized Drug Free Workplace Certificate must accompany each proposal or alternate proposal.

Any and all applicable licenses or certifications must be included.

Evaluation of Proposals:

The following areas of evaluation are identified herein. The evaluation will process will be completed in two separate steps. First step in the evaluation process will be the technical proposals. No costs shall be included in the technical proposal. Technical proposal scores under 80-percent will not move on to the second step. If necessary, interviews between manufacturer/suppliers and the District will take place. Interviews will be scheduled after review of proposals.

III.G District Standard Agreement

The District's standard agreement is added as Attachment H .

III.H District General Provisions

The District's General Provisions is added as Attachment I.

IV. VENDOR QUESTIONNAIRE

IV.A Addenda Acknowledgement*

Please type the number for the Addenda you have read (i.e "1, 2, 3"). If you did not receive and read an Addendum, please type "N/A".

*Response required

IV.B Technical Proposal Response*

Please upload your complete technical proposal here. Technical proposal must address all portions of the RFP, include necessary information on previous experience with meter technology projects, grant funding applications, and previous work experience with project team, team members and lessons learned.

*Response required

IV.C References*

Please upload references forms attached to this solicitation for in the Attachments.

*Response required

IV.D Confirmation of Review of RFP Documents and Attachments*

We have reviewed all the documentation (Attachments) provided within this RFP and have noted missing items not included in the RFP on the attached miscellaneous conditions form.

☐ Please confirm

*Response required

IV.E Miscellaneous Conditions Form*

Upload your miscellaneous conditions (Attachments) form here.

*Response required

IV.F District Standard Agreement and General Provisions*

Confirm that you have read and understand the Agreement and General Provisions found in Attachments

☐ Please confirm

*Response required

V. PRICING PROPOSAL

BASE BID

All meters shall include the outside bracket that securely holds the meter sensor. All proposed meters must meet or exceed the technical specifications attached. 5/8”x3/4” meters shall be replaced by 3/4" short meters. The successful Proposer (Supplier) must provide a price for all items listed above. If proposing multiple types of meters, note the guidance on quantity. All price information to be used in the RFP evaluation must be on this Proposal Form. All prices are inclusive of freight and tax exempt. District reserves the right to adjust any quantity upward or downward as may be warranted or necessary. The District maintains the right to utilize other vendors/suppliers/Proposers to address conditions outside of the scope of work as they may arise.

No.	Description	Quantity	Unit of Measure	Unit Cost	Total
1.	3/4” Short Meter (replacement of 5/8”x3/4”) Multi-Jet: (3/4" short meters must total to 1,575)		Each		
2.	3/4” Short Meter (replacement of 5/8”x3/4”) Positive Displacement: (3/4" short meters must total to 1,575)		Each		
3.	3/4” Short Meter (replacement of 5/8”x3/4”) Ultra Sonic: (3/4" short meters must total to 1,575)		Each		
4.	1” Meter Multi-Jet: (1" meters must total to 808)		Each		
5.	1” Meter Positive Displacement: (1" meters must total to 808)		Each		
6.	1” Meter Ultra Sonic: (1" meters must total to 808)		Each		
7.	1-1/2" Meter Multi-Jet: (1 1/2" meters must total to 49)		Each		
8.	1-1/2" Meter		Each		

	Positive Displacement: 1-1/2" Meter Multi-Jet: (1 1/2" meters must total to 49)				
9.	1-1/2" Meter Ultra Sonic: 1-1/2" Meter Multi-Jet: (1 1/2" meters must total to 49)		Each		
10.	2" Meter Mutli-Jet: (2" meters must total to 39)		Each		
11.	2" Meter Positive Dispacement: (2" meters must total to 39)		Each		
12.	2" Meter Uitra Sonic: (2" meters must total to 39)		Each		
13.	Non integral Meter Interface Unit: (If proposing either one type of meter interface or combination of both, the meter interface units must total 2,471.)		Each		
14.	Integral Meter Interface Unit: (If proposing either one type of meter interface or combination of both, the meter interface units must total 2,471.)		Each		
15.	Existing Meter Transition Cost	1	Lump Sum		
16.	Existing Advanced Meter Reading Transition Cost	1	Lump Sum		
17.	Miscellaneous Costs (needed by proposer)	1	Lump Sum		
TOTAL					

TECHNOLOGY BID

Proposed Future Technology bid items shall include the cost of the Proposed system. Proposer shall include all costs and labor so the system will shall be complete, and operational. Existing Meter System Transition Cost, if Proposer identify costs are not necessary enter a zero-dollar amount.

No.	Description	Quantity	Unit of Measure	Unit Cost	Total
1.	Existing System Transition Costs - All costs shall include all labor and materials for the implementation of the transition from the existing system to proposed AMR system. Proposal must include costs to update existing non integral meter interfaces to proposed system. Vendor must specify items include. If vendor proposed, AMI transition and no cost associate with maintain existing system, enter zero dollar amount.	1	Lump Sum		
2.	Advance Meter Infrastructure Equipment Cost - All costs shall include all labor and materials for the for the installation of the proposed system that may include but not limited to the following: Base stations, collectors, or other proposed communication methodology and other equipment necessary to have a complete system	1	Lump Sum		
3.	Advance Meter Infrastructure	1	Lump Sum		

	Service Costs - All costs shall include labor and materials for vendor implementation configurations, training, project management, coordination with other suppliers and firms, and ongoing support for one year.				
4.	Customer Service Portal Implementation Costs - All costs shall include labor and materials for the implementation, configuration, training, project management, training, customer roll out, and one year of customer support.	1	Lump Sum		
TOTAL					

ANNUAL SERVICE COSTS

Technology Service Annual Costs

No.	Description	Quantity	Unit of Measure	Unit Cost	Total
1.	AMI Annual Service Cost - All costs shall include labor and materials for servicing, maintaining, updating and training (two times per year) of the AMI system in additional one year increments beyond the first year of the initial implementation year.	1	Lump Sum		
2.	Customer Portal Annual Service Cost - All costs shall include labor and materials	1	Lump Sum		

	for servicing, maintaining, updating and training (two times per year) of the customer portal in additional one year increments beyond the first year of the initial implementation year				
TOTAL					

VI. EVALUATION CRITERIA

No.	Evaluation Criteria	Scoring Method	Weight (Points)
1.	**Technical Proposal - Quality of References** Are the references for customers who have purchased in excess of 2,000 residential meters within the past five years? How was the proposer rated on delivery times, emergency situations, warranty issues and quality of product?	Points Based	40 *(5.9% of Total)*
2.	**Technical Proposal - Approach to Scope of Services** Did the Proposer clearly establish their approach to the specified scope? Did the Proposer detail delivery times, delivery method and approach to handling potential issues? Does the Proposer have experience with grant funding?	Points Based	40 *(5.9% of Total)*
3.	**Technical Proposal - Warranty** Did the Proposer clearly establish warranty information? Will the Proposer adhere to the specified warranty requirements or was an alternative warranty proposed?	Points Based	40 *(5.9% of Total)*
4.	**Technical Proposal - Manufacturer Transition** Did the Proposer clearly establish how to transition the existing system to proposed system? How easy was the transition?	Points Based	40 *(5.9% of Total)*
5.	**Technical Proposal - Responsiveness** Did the Proposer clearly establish how responsive each will be to District requests for delivery of meter, technology assistance and warranty obligations?	Points Based	40 *(5.9% of Total)*
6.	**Meter Performance and Demonstration - Performance** How was the ease of use for installation? Did the meter communicate with the meter reading equipment as desired? Upon inspection of the meter, did the meter meet the District's expectations and specifications?	Points Based	40 *(5.9% of Total)*
7.	**Meter Performance and Demonstration - Labor Effort Required to Replace** Evaluate the Proposer's price for transition from existing meter to the meter offered by the Proposer.	Points Based	40 *(5.9% of Total)*
8.	**Interviews - Team (if necessary)** Did team present overall experience and how implementation will be efficient and effective	Points Based	40 *(5.9% of Total)*

9.	**Interviews - Q&A** Did team answer District's questions and clarifications of the team's proposal	Points Based	40 *(5.9% of Total)*
10.	**Future Tecchnology - AMI Transition** Did the Proposer adequately describe the necessary steps to transition from AMR to AMI? Was the transition labor intensive? Does Proposer have direct experience with grant funding of similar projects?	Points Based	40 *(5.9% of Total)*
11.	**Future Technology - Customer Portal** Did the Proposer adequately describe the features offered to the customer? Did they describe the ease of implementation and rollout to customers? Did the Proposer identify the user friendliness of the portal to the customers and District staff	Points Based	40 *(5.9% of Total)*
12.	**Thoroughness of Proposal - Specific and Detailed** How detailed are the various elements of the proposal? Did Proposer provide details to provide a clear understanding of all the elements?	Points Based	40 *(5.9% of Total)*
13.	**Thoroughness of Proposal - Value Add** Did Proposer offer any options not considered within the request for proposal that offers value to the District?	Points Based	40 *(5.9% of Total)*
14.	**Price Evaluation - Price of Meters** Evaluate the Proposer's price for all types and size of meters	Points Based	40 *(5.9% of Total)*
15.	**Price Evaluation - Transition Cost** Evaluate the Proposer's price for transition from current system to proposed system.	Points Based	40 *(5.9% of Total)*
16.	**Price Evaluation - AMI System** Evaluate the Proposer's price for complete AMI system and Annual Service Cost	Points Based	40 *(5.9% of Total)*
17.	**Price Evaluation - Customer Portal** Evaluate the Proposer's price for full customer portal system, training, roll-out, and annual service cost.	Points Based	40 *(5.9% of Total)*

VII. REQUEST TERMS & CONDITIONS

VII.A Best Qualified Person Or Firm

The award, if any, will be made to the best qualified person or firm(s). In evaluating whether a proposer(s) is (are) the best qualified person or firm(s). Staff may utilize some or all of the following criteria:

1. The training, credentials and experience of the person or firm;
2. The demonstrated competence, ability, capacity and skill of the person or firm to perform the contract or provide the services;
3. The capacity of the person or firm to perform the contract or provide the service promptly, within the time specified, and without delay;
4. The sufficiency of the person's or firm's financial and other resources;
5. The character, integrity, reputation and judgment of the person or firm;
6. The ability of the person or firm to provide such future service as may be needed;
7. The price which the person or firm proposes to charge, including whether the price is fair, reasonable and competitive; and
8. Any other factor which will further the intent set forth in the Palmdale Water District's authority.

Palmdale Water District shall have absolute discretion in determining the applicability and weight or relative weight of some or all of the criteria listed above and is not required to select the lowest monetary proposer.

VII.B Receiving Time / Late Proposals

It is the responsibility of proposer to see that their proposal is submitted with sufficient time to be received by the Palmdale Water District prior to the proposal closing time. The receiving time in the Palmdale Water District's time zone will be the governing time for acceptability of proposals.

Late proposals are not accepted.

VII.C Acceptance of Conditions Governing this solicitation

Submission of a proposal constitutes acceptance of the Evaluation Factors contained in this solicitation.

VII.D Incurring Cost

Any cost incurred by the proposer in preparation, transmittal, presentation of any proposal or material submitted in response to this solicitation shall be borne solely by the proposer.

VII.E Prime Proposer Responsibility

Any agreement that may result from the solicitation shall specify that the prime consultant is solely responsible for fulfillment of the agreement with Palmdale Water District. Palmdale Water District will make agreement payments only to the prime proposer.

VII.F Sub-Proposers

Use of sub-proposers must be clearly explained in the proposal, and major sub-proposers must be identified by name. Prime proposers shall be wholly responsible for the entire performance whether or not sub-proposers are used.

VII.G Amended Proposals

A proposer may submit an amended proposal before the deadline for receipt of proposals. Such amended proposals must be complete replacements for a previously submitted proposal and must be clearly identified as such in the transmittal letter. Palmdale Water District personnel will not merge, collate, or assemble proposal materials.

VII.H Proposer's Rights to Withdraw Proposal

Proposers will be allowed to withdraw their proposals at any time prior to the deadline for receipt of proposals. The proposer must submit a written withdrawal request signed by the proposer's duly authorized representative addressed to the Palmdale Water District Contact.

VII.I Proposal Offer Firm

Responses to this solicitation, including proposal prices, will be considered firm for ninety (90) days after the due date for receipt of proposals or sixty (60) days after receipt of a best and final offer, if one is requested.

VII.J Best and Final Offer

Palmdale Water District reserves the right to request Best and Final Offers from any or all proposers. This will be the only opportunity to amend or modify proposals based on feedback from Palmdale Water District. Information from competing proposals will not be disclosed to other proposers prior to submission of a Best and Final Offer.

VII.K Prevailing Wage Requirement

Any agreement issued as a result of this solicitation may be subject to Palmdale Water District's State of California's Wage requirements for public works projects as defined in Labor Code Section 1720(a)(2).

VII.L Disclosure of Proposal Contents

All proposals are subject to the provisions of the governing Public Records rules, and any information submitted with a response is a public record subject to disclosure, unless a specific exemption applies.

VII.M No Obligation

This solicitation in no manner obligates Palmdale Water District to the eventual rental, lease, purchase, etc., of any goods or services offered until a valid written agreement is executed by Palmdale Water District and the selected proposer.

VII.N Termination

This solicitation may be canceled at any time and any and all proposals may be rejected in whole or in part when Palmdale Water District determines such action to be in the best interest of Palmdale Water District.

VII.O Sufficient Appropriation

Any agreement awarded for multiple years as a result of this solicitation may be terminated if sufficient appropriations or authorizations do not exist. Such termination will be effected by sending written notice to the selected proposer. Palmdale Water District's decision as to whether sufficient appropriations and authorizations are available will be accepted by the selected proposer as final.

VII.P Errors and Restrictive Specifications

If a proposer discovers any ambiguity, conflict, discrepancy, omission, or other error in the solicitation, the proposer should immediately notify the Palmdale Water District Contact. Without disclosing the source of the request,Palmdale Water District may issue a written addendum to clarify the ambiguity, or to correct the problem, omission, or other error.

If prior to the submission date, a proposer knows of or should have known of an error in the solicitation but fails to notify the Palmdale Water District Contact of the error, the proposer shall submit their proposal at his, her or its own risk, and, if awarded an agreement, shall not be entitled to additional compensation or time by reason of error or its later correction.

VII.Q Legal Review

The Palmdale Water District requires that all proposers agree to be bound by the General Requirements contained in this solicitation.

VII.R Governing Law

This solicitation, and any agreement entered into pursuant to this solicitation, are governed by the laws of the State of CA.

VII.S Oral Changes and Basis for Proposal

Proposers may not rely upon oral explanations. All changes and addenda will be issued in writing. Only information supplied by Palmdale Water District in writing through the Palmdale Water District's Contact, or in this solicitation should be used as the basis for the preparation of proposals.

VII.T Agreement Terms and Conditions

The agreement between Palmdale Water District and the selected proposer(s) will follow the format specified by Palmdale Water District and contain the terms and conditions set forth in the Attachment titled Agreement. However, Palmdale Water District **reserves the right to negotiate with a successful proposer the final provisions or provisions in addition to those contained in this solicitation.** The contents of this solicitation, as revised and/or supplemented, and the successful proposal will be incorporated into and become part of the agreement.

Should a proposer object to any of Palmdale Water District's general contract terms and conditions, that proposer must propose specific alternative language in his, her, or its proposal. Proposer must provide a brief discussion of the purpose and impact, if any, of each proposed changed followed by the specific proposed alternate wording. The Palmdale Water District may or may not accept the alternative language. General references to the proposer's terms and conditions or attempts at complete substitutions are not acceptable to Palmdale Water District and may result in disqualification of the proposer.

VII.U Proposer's Terms and Conditions

Proposers must submit with the proposal a complete set of any additional terms and conditions that they expect to have included in an agreement negotiated with Palmdale Water District.

VII.V Proposer Qualifications

Palmdale Water District may make such investigations as necessary to determine the ability of the proposer to adhere to the requirements specified within this solicitation.

VII.W Right to Waive Minor Irregularities

Palmdale Water District reserves the right to waive minor irregularities and the right to waive mandatory requirements, provided that all of the otherwise responsive proposals fail to meet the same mandatory requirements and/or doing so does not otherwise materially affect the procurement. This right is at the sole discretion of Palmdale Water District .

VII.X Change in Agreement or Representatives

Palmdale Water District reserves the right to require a change in the selected proposer or representatives if the assigned representatives are not, in the opinion of Palmdale Water District , meeting its needs adequately.

VII.Y Buyer's Rights

Palmdale Water District reserves the right to award the proposal to separate proposers on any of the services as set forth in the proposer's proposal. It is further understood that if the proposer to whom any recommended award is made fails to enter into an agreement with Palmdale Water District, award may be made to the next best qualified person or firm, who shall be bound to perform as if she, he or it received the award in the first instance.

VII.Z Right to Publish

Throughout the duration of this procurement process and agreement term, potential proposers, and proposers, must secure from Palmdale Water District written approval prior to the release of any information that pertains to the potential work or activities covered by this procurement or the subsequent agreement. Failure to adhere to this requirement may result in disqualification of the proposer or termination of the agreement.

VII.AA Ownership of Proposals

All documents submitted in response to the solicitation shall be become the property of Palmdale Water District and are subject to the provisions of the applicable Public Records rules.

VII.BB Agreement Award

Proposals will be evaluated by a committee comprised of Palmdale Water District staff and may include outside consultants (the "Evaluation Committee"). The Evaluation Committee will make an award recommendation to Palmdale Water District staff. Palmdale Water District's Board of Directors (Board) will approve the agreement and/or direct staff to negotiate the final terms and execute the agreement.

This agreement shall be awarded to the proposer or proposers whose proposal is best qualified, taking into consideration the evaluation factors set forth in the solicitation. The most qualified proposal may or may not have received the most points or be the lowest cost proposal. Proposers will be notified when the award is being made or an award recommendation goes to the Board for approval.

VII.CC Protest Deadline

All parties wishing to file a protest shall comply with the procedures set forth in the governing laws. Proposer may file a written protest with the District Contact no more than seven calendar days following the posting of award recommendation on Palmdale Water District's online vendor

portal website.
Protests received after the deadline will not be accepted.

VII.DDCommunity Workforce Agreement

All proposers of construction of rehabilitation work exceeds $250,000 or specialty contracts that exceed $100,000, must accept the goals of the Community Workforce Agreement (CWA) where 30-percent of all labor is from local residents and 10-percent of labor is disadvantaged or Veterans within the Tier 1 or 2 zip codes. Please refer to the attached CWA for details.

AGENDA ITEM NO. 4.3

PALMDALE WATER DISTRICT

BOARD MEMORANDUM

DATE:	August 26, 2020	**September 1, 2020**
TO:	RESOURCE AND FACILITIES COMMITTEE	**Committee Meeting**
FROM:	Mynor V. Masaya, Operations Manager	
VIA:	Mr. Dennis LaMoreaux, General Manager Mr. Adam Ly, Assistant General Manager	
RE:	***AGENDA ITEM NO. 4.3 – CONSIDERATION AND POSSIBLE ACTION ON AUTHORIZING THE GENERAL MANAGER TO EXECUTE CHANGE ORDER NO. 1 TO CALIFORNIA COMPACTION CORPORATION FOR INSTALLING NEW LINE TO THE LESLIE O. CARTER TREATMENT PLANT MAIN BUILDING. ($9,793.26 – BUDGETED – BUDGET ITEM NO. 1-05-4235-415 – OPERATIONS MANAGER MASAYA).***	

Recommendation:
Staff recommends that the Committee recommend the Board approve and authorize the General Manager to execute Change Order No. 1 to the contract with California Compaction Corporation for installing the new line to the Leslie O. Carter Treatment Plant main building in the amount of $9,793.26.

Alternative Options:
There is no alternative option.

Impact of Taking No Action:
Financial harm to the contractor would result from taking no action. The line connection will not be completed.

Background:
California Compaction Corporation was given a contract to install a new 2" pipeline into the administration building at the Leslie O. Carter Treatment Plant. The pipeline is needed to bring fresh water into the building and abandon the old iron pipeline. The potholing work shows it is not feasible to connect the line as designed because of the tight space between piping and cables in the area. The contractor is asked to help find a suitable connection point to tap a new 2-inch water service for the treatment plant main building. It is critically important to find a connection that is not a cross-connection hazard. All the costs for the extra work are included in the change order for $9,793.26. As required by the District's Procurement and Bid Policy, any change order over 10% requires Board approval. The contract total will increase from $25,433.00 to $35,226.26 with this change order.

Strategic Plan Initiative/Mission Statement:
This item is under Strategic Initiative No. 1- Water Resource Reliability.
This item directly relates to the District's Mission Statement.

Budget:
This item is under Work Order No. 20-604

Supporting Documents:
- California Compaction Corporation itemized invoice

CHANGE ORDER NO. 1

,DATE OF ISSUANCE	August 24, 2020
EFFECTIVE DATE	Upon Execution
OWNER's Contract No.	20-604
CONTRACTOR:	California Compaction
OWNER:	Palmdale Water District
ENGINEER:	N.A.

Contractor is directed to make the following changes in the Contract Documents.

Description: {Locate water main prior to installing 2 inch water service for WTP main building}

Reason for Change Order: *Unable to locate main to tap new service*

Attachments: *Contractor's Cost Proposals dated {4/13/2020 (s) of proposal(s).*

CHANGE IN CONTRACT PRICE: Original Contract Price	CHANGE IN CONTRACT TIMES: Original Contract Times
$ 25,433	**30 Day**
Net Changes from previous Change Orders	Net Changes from previous Change Orders
$9,793.26	**0**
Contract Price prior to this Change Order	Contract Times prior to this Change order
$25,433	**0**
Contract Price prior to this Change Order:	Contract Times prior to this Change order
$	**0**
Net Increase (decrease of this Change Order)	Net Increase (decrease of this Change Order)
$9,793.26	**0**
Contract Price with all approved Change Orders	Contract Times with all approved Change Orders
$35,226.26	**30 days**

RECOMMENDED	APPROVED	ACCEPTED
By: Myrna V. Marroquin	By:_____	By:_____
{Enter Department} Manager	PWD, General Manager	Contractor, President
Date: 8-24-2020	Date:_____	Date:_____

CAL007 **Payment Application Form** SL21-281

From:	CALIFORNIA COMPACTION CORP 42851 N. Sierra Hwy Lancaster CA 93534	**Contact Name:** **Phone No.:**	Rodney Casaus 661-949-9799
To:	PALMDALE WATER DISTRICT 2029 EAST AVENUE Q PALMDALE CA 93550	**Date of Application:** **Invoice Number:**	February 25, 2020 7231
Project:	PWD 2" Water Service at Treatment Plant 700 East Avenue S Palmdale CA 93550	**End Date of Work:**	2/29/2020
Owner Project No:	W/O 20-604		

Original Contract Amount	25,433.00
Net Change by Change Orders (+/-)	0.00
Adjusted Current Contract Value	25,433.00
Total Work Completed (and stored) to-date	9,793.26
Less Retainage (per Agreement) 5%	0.00
Total Work Completed (and stored) to-date less retainage	9,793.26
Less Previous Applications for Payment	0.00
Total Amount Due This Application	9,793.26

ok to pay MVA 3-18-20

CK# 61383

Subcontractor Signature Sue Christiansen

Name and Title Sue Christiansen, Office Manager

Date February 25, 2020

PAYMENT APPLICATION BREAKDOWN
PWD 2" Water Service at Treatment Plant

Subcontractor

CALIFORNIA COMPACTION CORP
42851 N. Sierra Hwy
Lancaster CA 93534

Application for Payment No.: 2
Payment Application Date: 8/19/2020
Period To: 8/31/2020

A	B	C	D	E	F	G	H	I
Item Number	Description of Work	Value	Previous Payment Application	This Period	Total Completed To Date (D+E)	% (F/C)	Balance To Finish (C-F)	Retainage Held
001	2" Water Service	21,029.00	0.00	21,029.00	21,029.00	100.00	0.00	1,051.45
002	2" Backflow w/Pad & Enclosure	4,404.00	0.00	4,404.00	4,404.00	100.00	0.00	220.20
CO001	Pothole for 8" Water Main	9,793.26	9,793.26	0.00	9,793.26	100.00	0.00	0.00
	TOTAL:	35,226.26	9,793.26	25,433.00	35,226.26	100.00	0.00	1,271.65

August 24, 2020

Time and Materials for:

- Additional pot holing to find location of service tap
- Remove 2 inch backflow and enclosure installation
- Time and Materials for locating service tap

Change order summary

T&M	$9,793.26
Backflow	$4,404.00
T&M	$4,404.00
	$9793.26