Interactive Water Use Portal and Consumption Notifications Software System

Functional Requirements

Contents

1. Customer Portal

Objective: It is important for customers to be informed about their water use and access conservation tools to help educate them to help them reduce their water use. This information should be delivered through a variety of methods including fully featured interfaces like online portal or app, and information pushed to the over different communication channels, such as email and text.

1.1. Customer facing functionality shall be made available via an online portal. This customer portal will make all customer facing functionality found in these requirements available, including: Water Consumption Information, Manage Account Profile, Water Budgets, Alerts, Customer Engagement History, Communication tools, Conservation Tools, Customer reports.

1.2. The customer facing portal must be able to exclude staff-only functionality and other items specifically noted in the requirements.

1.3. Customers need to be able to use Single Sign On (SSO) to access all online functionality. The vendor should support:

1.3.1. SSO login process using EBMUD's Single Sign on to access the customer portal.

1.3.2. Additionally, the vendor can describe their own Preferred SSO solution for EBMUD's Consideration.

1.4. Users must be able to view and interact with online functionality using a variety of devices.

1.4.1. There should be an online portal accessible via a web browser. The online portal must have a responsive interface allowing customer facing functionality to be easily accessible from personal computers, tablets, and smartphones.

1.4.2. Ideally there is an option for customer-facing functionality accessible through a native app available for iOS and Android devices.

1.5. Users with multiple accounts linked to their login credential need to have all user functionality available for individual accounts (unless noted otherwise). Additionally, these users should be able to:

1.5.1. Log in to the customer portal once and switch between accounts

1.5.2. View their accounts separately and in a combined profile.

1.5.2.1. Ideally customers can create their own custom groups of accounts

1.5.3. Access the portal regardless of the number of accounts linked to their user ID.

1.5.4. Download water use data as a spreadsheet for one account or for the group of accounts.

1.5.5. Ideally the account owner can delegate account access to other authorized users and specify different levels of access for different delegates.

1.6. Accounts should be accessible by multiple users with different logins.

1.7. Staff need to be able to view customer facing functionality and assist customers with making any changes in the customer system.

1.8. Ability to provide terms and conditions for user to accept.

2. Staff Administrative Functionality

Objective: It is important for staff to have the ability to learn about customer water use, send recommendations, and provide conservation tools to help educate customers to help them reduce their water use. To support this need, staff need to be able to perform the same functions as the customer and administer configurations and settings in the system.

2.1. Staff must be able to search by customer, account, and property information to find an account quickly and easily. Search criteria should include: Account number, address, customer name, phone number, email address, meter number.
2.2. Staff must be able to access to all customer portal functionality and manage data on behalf of the customer.
2.3. Staff must be able to configure all conservation services including account profiles settings, water budgets, alerts, customer engagement tools, recommendations, reports and analytics.
2.4. The staff portal should be useable in the office from desktop computer, laptop, or mobile device in the field.
2.5. System should have ability to set different permission levels for different staff. For example, role based, group based, view only, edit, and administrator permissions.
2.6. Ideally the staff portal allows for user impersonation to allow staff to see the customer view of the portal and provide better customer service.

3. View Water Consumption Data

Objective: It is important for users to access water consumption information to understand customer water use and easily identify ways to save water. Consumption should be viewable on interactive and customizable charts that inspire customers to use them often and make opportunities to save water easy to see.

3.1. The user must be able to view water consumption data graphically in interactive chart(s). The system will provide one or more interactive charts that allow users to easily:
    3.1.1. select different windows of time to display consumption information, such as one day, one week, one month, one year.
    3.1.2. select custom time range, for instance between two dates.
    3.1.3. navigate forward or backward in time to browse their consumption history.
    3.1.4. view up to ten plus years of billing consumption data can be accessed.
    3.1.5. Ideally the system can present the consumption data in a way to highlight weekly and or seasonal irrigation patterns.
    3.1.6. Ideally the system can show all available consumption data back to 2012 or prior.
3.2. Billed water consumption data will be based on information provided to customers in their water bill.
    3.2.1. The user should be able to see read dates and consumption values.
    3.2.2. The system needs to be able to show water consumption in one-hundred cubic feet (CCF) or gallons used per day (GPD).

3.2.3. Users need to be able to view updates to billed water consumption in the portal. For example, if there was a billing error that was later corrected, the system should be able present users the updated consumption data.

3.2.4. For accounts with multiple meters, users should be able to view the total consumption from all meters associated with the account.

3.2.4.1. Ideally the system can be configured to combine and show consumption from multiple meters on one account even when the read end dates are off slightly, e.g. by one day.

3.3. View water consumption at intervals

3.3.1. Ability to show customer water consumption data at intervals available to EBMUD such as hourly for accounts with AMI meters. The AMI consumption can be combined in the same chart or presented in separate charts from the billing consumption.

3.3.2. Ideally, for accounts with AMI data the portal can indicate what volumetric billing tier the usage is currently in.

3.3.2.1. Ideally the system can estimate the next bill dollar amount, including tiered rates, based on the consumption pattern to date.

3.3.2.2. Ideally the user can configure an alert notifying them if they are on track to be in a higher tier in the upcoming bill.

3.3.3. Ideally the system can present the customer consumption intervals smaller than 1 hour, such as fifteen-minute intervals, when available. Sub-hour intervals could be enabled on a individual meter or individual account basis, either temporarily or on an ongoing basis.

3.3.4. Users need to be able to view updates to AMI water consumption in the portal. For example, if some AMI data comes in day(s) late, the system should be able to present users the new or AMI consumption data.

3.4. Water budgets will provide customers an indication if their water use is appropriate for the time period that they are looking at. The user needs to be able to view a water budget presented on the same chart, table, or report as their actual water use.

3.4.1. The system should be able to show water budgets for any customer type (Single-Family, Multi-Family, etc.) that the vendor or utility can calculate budgets for.

3.4.2. Ideally the system could also show gallons used per person per day, percent over/under a target (such as budget drought requirement), or other key indicators.

3.4.3. Ideally water budgets should be able to present the dollar savings or additional dollar cost from meeting or exceeding a water budget.

3.5. Ability for customers to download the consumption history as a spreadsheet.

3.5.1. Ideally this report will include: water budget (if present), meter reads, leak flags, date and time as applicable, consumption values

3.6. Ideally users can:

3.6.1. View a comparison of their consumption and with actual weather data on the same chart

3.6.2. Set and view a water use goal, separate from a water budget. View this goal on the chart, and receive notifications related to exceeding the goal.

3.6.3. View potential dollar savings to customers if they meet their water goal.

3.6.4. View their water consumption compared to past and current water use. For example, bar charts showing the past year's use compared to current year's use.

3.6.5. Add dated notes that are presented with the consumption data so it is easy to see a note that relates to a spike or decrease in water use. Example, a spike can be logged as a leak, fill pool, or extra guests. A drop in water use could be logged as "out of town" or "adjusted irrigation controller."

3.6.5.1. Ideally staff can import participation data and automatically place notes when participating in Water Conservation programs such as "irrigation audit," "toilet replacement," etc., in the consumption history.

4. Account Profile Settings

Objective: In order to communicate water conservation messages to customers effectively, services and messaging need to tailored to the customer and property. It is important for customers and staff to be able to update specific customer details and property details to improve customer messaging and system analytics.

4.1. Configurable data attributes should include:

4.1.1. Occupancy information, including number of people per household for Single-Family, or occupancy for multi-family or other customer types.

4.1.2. Landscape areas and Irrigation types.

4.1.3. Indoor fixtures (e.g., plumbing fixtures and appliances)

4.1.4. Outdoor water features (e.g., pools/spas/fountains/ponds)

4.1.5. Normal amount of continuous use to ignore for leak related alerts

4.1.6. Additional data points as defined by utility

4.2. Users need to be able to manage communication preferences. For all communication preferences in the system:

4.2.1. Both customers and staff must be able to update preferences.

4.2.2. Utility should be able to determine default communication preference settings.

4.2.3. Users should be able to select different contact preferences for different communication services, e.g. set text as preference for leak alerts, and email for other notifications or messages.

4.2.4. Users can select more than one communication preference per communication service (e.g. receive a leak alert by email and text).

4.2.5. System should log changes to communication preferences.

4.2.6. Ideally user can add multiple recipient email addresses or text message phone numbers per account to receive communication services.

4.3. The system should provide an easy-to-use method, such as an online survey that guides customers through setting up their account profile data.

4.3.1. Ideally, this tool would assist customers in determining the irrigated areas for their property.

4.4. The system should also provide ways for both customers and staff to individually configure data attributes, outside of an online survey (E.g., an organized "settings" page).

5. Water Budget Calculations

Objective: Water budgets will provide customers an indication if their water use is appropriate for the time period that they are looking at. It is important for the system to be able to import water budgets or calculate the water budgets directly. The budget calculations inform the view water consumption and consumption-based summary reports sections of this document.

5.1. The system must be able to either:
- 5.1.1. Present water budgets that are either calculated by the vendor using the standard water budget equations as outlined and utility configurable variables, or
- 5.1.2. Present water budgets that are either calculated by the District and provided every billing period to the vendor using a system integration.
- 5.1.3. Water Budgets calculations should use:
  - 5.1.3.1. Daily ET data matching the days in each water budgets billing or more frequently for hourly customers.
  - 5.1.3.2. Irrigated area for each site. Some sites may have multiple irrigated areas.
  - 5.1.3.3. ETAF for each irrigated areas. A site can have multiple ETAF values. Example ETAFs include 1, 0.8, 0.7, 0.45.
  - 5.1.3.4. Person per household. Person per household/account should allow utility determined default values when customer provided data is not available.
  - 5.1.3.5. Ideally users could also define an additional daily use (e.g. 15 gpd) per account to allow for types of use that are not relative to person per household or landscaping area metrics.

5.2. Water budgets calculations should be available for all single-family and dedicated irrigation accounts.

5.3. Ideally water budgets can be calculated for Multi-Family accounts when sufficient data is available.

5.4. Customers should be able to update water budget prolife criteria, such as persons per household or irrigable area, in the customer portal and have future water budgets use the updated numbers to calculate the budget.
- 5.4.1. The system should allow staff to review the customer entered water budget profile criteria and decide if the data should be used as part of the water budget calculation or not. For example: A customer enters landscape area data, the utility can view a report of updated customer updated water budget criteria and review the customer data. After reviewing, staff can tell the system to use the data in water budgets or not.
  - 5.4.1.1. Ideally instead of staff reviewing all customer submitted water budget profile data, the system can automatically flag customer submitted values that deviate substantially for the existing default data, e.g., if the customer entered value is +/- % of default value. For instance, if the customer provides landscape values greater than the parcel area minus the building footprint, that could be flagged.

5.5. Users should be able to view water budgets in the customer portal or through water budget reports that are delivered (email, mail, etc.) to the customer.

5.6. Staff should be able to export budget data for accounts.

5.7. Ideally the vendor system will be robust enough to replace and expand EBMUD's existing Landscape Water Budget Program (Irrigation Reduction Information System - IRIS Program).

5.7.1. Ability to import existing Water Budget data including Landscape Area, Occupancy, and ETAF.

5.7.2. Expanding the program will make use of account and premise profile data to account for estimated indoor water use.

5.7.3. Ability for District to selectively which customer types (single family, multi-family, commercial, etc.) receive budgets

5.7.4. Ability to show two years of consumption data in the delivered summary reports.

5.7.5. Show aerial image of site with the water budget landscape area polygon overlayed on top of aerial image.

5.7.6. Show dollar savings for meeting budget, or cost for exceeding budget per cycle.

5.8. Ideally the system can import the following data types to support vendor calculated water budgets: 1) daily et data to calculate budgets from DWR CIMIS stations (preferred); 2) landscape areas.

5.9. Ideally the system can simplify or automate creating landscape area measurement data to be used in informational water budgets. Such as by using AI or an automated method for analyzing imagery or geographic information.

6. Leak Detection & Consumption Analytics

Objective: The solution should be able to analyze water consumption data, both hourly data for AMI customers as well as bimonthly billing data and detect leaks or unusual usage. The system should be able to use consumption data to estimate customer profile characteristics and estimate customer end uses of water. Ideally, the solution has a robust set of data analytics tools, including AI and ML, that glean valuable insights from consumption data to support water conservation initiatives.

6.1. Detect Leaks: The system needs to be able to detect leaks and unusual consumption patterns based on customizable parameters.

6.1.1. Parameters can be set for different customer classes (e.g. single-family, multi-family, commercial, institutional, industrial, irrigation) for both billing/manual accounts and hourly/interval accounts.

6.1.2. For manual read customers, the alerts will be triggered using a comparison of current read comparison to previous consumption period. The system should have customizable parameters. A sample leak alert calculation could be: alert if: (Current consumption)/(Prior Consumption period)>(Alert %) and (Current consumption)/(Prior Consumption period)>(Minimum Threshold).

6.1.2.1. Customizable parameters include:

6.1.2.1.1. Consumption periods: Current Consumption period should be the current billing period. Past consumption period should adjust based on data available. Ideally this would include options for two-year average of bills from the same time of year. The system should have options to send alerts when less than 2 years data is available.

6.1.2.1.2. Minimum Threshold: Ideally a minimum threshold can be configured that prevents use from being flagged as a leak when water use is below a set GPD. Ideally this value could vary per account based on the account's water budget.

6.1.2.1.3. Alert % : A percent increase used to determine if the change in use may be a leak.

6.1.2.2. Ideally these can be sent to customers with interval data as well if the interval leak alerts are not being sent for technical reasons (like poor reception).

6.1.3. For hourly customers, leak can be defined by customizable parameters, including leak duration, and leak threshold.

6.1.3.1. Ideally multiple types of leak alerts can be setup per customer class with different leak durations and threshold

6.1.3.2. Leak duration: smallest number of hours of continuous usage that define a leak event

6.1.3.2.1. Ideally the system can be configured to send leak alerts that are not 100% continuous, such as those that have usage above the leak threshold for 46 out of 48 hours.

6.1.3.3. Leak Threshold: the minimum number of gallons per hour used to define a leak.

6.1.4. A list of detected leaks (not necessarily same as alerted leaks) should be visible in the customer and staff portal per account.

6.2. Customer Analytics: System should have the ability to estimate a customer's water use profile characteristics. This should include:

6.2.1. Determine if customer is an irrigator using billing or AMI data.

6.2.2. Estimate breakdown of end uses for an account.

6.2.3. Summarize the customer's watering schedule, such as 3 days a week.

6.2.4. Analyze profile information and water use information to provide customized recommendations for customers.

6.2.5. Ability to create cohorts of similar customers with similar account profile and consumption information.

6.2.5.1. Ability for staff to download these cohorts for internal analytics purposes.

6.2.5.2. Ability to use these cohorts to create custom messaging for online presentation and to be pushed to customers showing how their water use compares with peers in the group.

6.3. Advanced Water Consumption Analytics:

6.3.1. Ideally the system can provide advanced business intelligence tools, including a Utility Data Lake with SQL based querying.

6.3.2. System ideally uses innovative data analytics and/or artificial intelligence or machine learning techniques to analyze consumption patterns of individual customers and the utility system as a whole to glean new insights (E.g. demand forecasting, identifying faulty meters early, determining customized leak alert thresholds for commercial accounts, etc.)

7. Automated Alerts

Objective: The system should automatically push out alerts to customer to make them aware of high or unusual water use as described in "leak detection & analytics" section. These alerts should be clear and designed to inspire customers to go to the portal, correct the problem and continue to pay attention to them. Alerts should be able to be both "opt in" and "opt out" and ideally be customizable by customers and the utility.

7.1. When a leak or high use is detected, the system should send automated alerts based on alert configurations and communication preferences.

7.2. Customers need to be able to set their own 'usage alerts' for each account, independent of the utility set leak detection settings.

- 7.2.1. Customer should be able to receive an alert that they have exceed their water budget.
- 7.2.2. For manually read customers, customers can create a usage alerts and adjust their own alert % as defined in leak detection section.
- 7.2.3. For AMI customers, alert can be sent when continuous water use over a certain configurable threshold is detected.
  - 7.2.3.1. High use alerts based on daily consumption customizable by user and District.
  - 7.2.3.2. High use alerts based on set number of hourly consumption above threshold
  - 7.2.3.3. User defined consumption within billing period.

7.3. Utility configured leaks alerts and user configured usage alerts should:

- 7.3.1. Be sent to following customer communication channel (e.g. email, voice, mail, text) preferences – see Account Profile settings.
- 7.3.2. Be visible in the customer and staff facing portal for the alerted account.
- 7.3.3. Ideally have customizable templates for each communication channel (email, text, print, voice).

7.4. Ability for customers and staff to respond to the potential leak from the portal.

- 7.4.1. Customers and staff can report several details about alerted water use, including: if it was a leak, if the leak was found, types of leak (including not a leak), when a leak was repaired, and notes.
- 7.4.2. Customers should be able to report on a leak alert without logging in to the portal (i.e. clicking a link in an email) to report on potential leak;

7.5. Ideally the system can import past leak alerts not generated from the vendor system into the accounts leak history.

8. Recurring Consumption Report Emails

Objective: The system should have the ability to send automated emails and letters detailing consumption information to all customer types (including SFR, MFR, CII) on a recurring basis, such as billing cycle. These reports should summarize and contextualize the customer's water use and should be tailored to the recipient based on their water use and account type. These reports should also display relevant conservation content.

8.1. System should send “Reports” to customers that display consumption information and conservation messaging.
8.2. Reports should be tailored to recipient based on customer type, account profile attributes, and consumption.
8.3. Reports should be automated and sent on a recurring basis. Ideally, these reports could also be generated ad hoc.
8.4. Report content should be readily customizable by utility to allow for seasonal messaging or timely notifications (E.g., upcoming events, drought updates, etc.)
8.5. Customers should be able to configure communication preferences for reports.
    8.5.1. Reports should be sent via email;
    8.5.2. Reports should be able to be sent to multiple recipient email addresses per account;
    8.5.3. ideally, they could additionally be sent via print mail.
8.6. System should have ability to hold outlier reports for staff review before sending. Outlier report criteria could include:
    8.6.1. Very high-water use in the current billing period, as compared to historic use.
    8.6.2. Zero water use in the current billing period.
8.7. Customers with multiple accounts could ideally opt to receive a single aggregated report.
8.8. Reports should correspond with online portal content.
    8.8.1. The emailed and mailed reports should align with the portal content and data.
    8.8.2. The content in emailed reports should link to the corresponding online functionality.
8.9. Reports should ideally display:
    8.9.1. Customer information including account name, number, address, meter number, estimated number of occupants and estimated irrigated area.
    8.9.2. Historic water consumption in a chart.
        8.9.2.1. Ideally the chart can show two years of consumption history to communicate historic seasonal trends.
    8.9.3. Water budgets, as defined in “water budget” section 5.
        8.9.3.1. Difference between actual water use and budgeted water use.
        8.9.3.2. Estimated maximum applied water allowance (MAWA) and usage for landscape accounts.
    8.9.4. Relevant messaging content created by the Utility (E.g., a message promoting an upcoming workshop or event).
8.10. Ideally the reports could also display:
    8.10.1. Potential dollar savings from reduced water use, include both water and wastewater charges in savings calculation. These calculations should also include billing tiers, if applicable.
    8.10.2. Water consumption compared to weather data.
    8.10.3. Comparison in water consumption between report period and prior years.
    8.10.4. Comparison between customer usage and average usage of a similar households/customers.
    8.10.5. Customer conservation content defined in Section 10.

8.11. Allow staff the following functions:

8.11.1. See if the customer is signed up to receive delivered water reports (e-mail, print).

8.11.2. Access history of delivered water reports, see copies of each delivered report and print or PDF individual reports.

8.11.3. Provide report of all accounts receiving delivered water reports, or logging in, and viewing online reports.

8.11.4. Customize and update water report messages, content and delivery schedule.

8.12. Reports should be delivered within 10 days of meter read receipt to ensure the information is current and matches online content as much as possible.

9. Communications and Public Engagement

Objective: It is useful to communicate water consumption and conservation services to customers. The system should facilitate customer communication and engagement. Since customers are not a homogenous group, the system should be able to assist with selecting targeted groups of customers to engage with.

9.1. Send multi-channel communications. Ideally the system can:

9.1.1. send communications across various channels including email, text, voice, mail, push notifications, direct mail, etc.

9.1.2. contact single customers as well as groups of customers.

9.1.3. message more than one contact per account.

9.1.4. send messages to contact using contact information provided by the District.

9.1.5. Staff should be able to be copied on correspondence (E.g. cc'd on emails, etc.)

9.2. Automate communications. Ideally the system can:

9.2.1. automatically send correspondence to customers upon certain triggers and target customers based on profile characteristics. Examples of triggers include: new account opening or similar date based automation: send message to customer when new account opens, on one year anniversary of account opening, or six months after participating in utility program.

9.3. Track communications. Ideally the system can:

9.3.1. track all customer correspondence, both per account profile and per type of communication.

9.3.2. allow easy export of communication history data. For example: export history of all communications sent to an account.

9.4. Create customized customer lists. Ideally the system can:

9.4.1. allow creation of lists of contacts for various outreach needs.

9.4.2. allow several filters to be applied to create a custom contact list.

9.4.2.1. For instance, single family customers who use more than x GPD and have not participated in a previous program.

9.4.3. save and organize contact lists for future use.

9.5. Ideally the system can create subscription-based lists and allow for customers to manage subscription to these lists.

9.6. Ideally the system will allow customers to be able to configure communication preferences for all communication and engagement services. Utility should be able to set default communication preferences for these communications.

9.7. Ideally the system will allow staff to create recommendations, Including recommendation name, descriptive text, image, and links.

9.7.1. Allow recommendations to be included in billing cycle reports and the online portal

9.7.2. Recommendations should be able to target specific customer profile information, such as customer type, property information, and water consumption data

9.7.3. Ideally the system should have the ability to analyze customer profile characteristics and determine what conservation content and messaging should be served to the customer. The system should be able to:

9.7.3.1. Provide recommendations online or in messages based on customer characteristics. If the customer is an irrigator, the system could show a pop-up about District irrigation rebates; or if the customer has a leak it could show a recommendation to conduct a self audit.

9.7.3.2. Automatically push messages to target audiences based on triggers (E.g. water consumption, season, irrigation amounts). Example: At the start of the irrigation season, send custom messages about tuning up irrigation systems as they are turned on for the season.

9.8. Template Correspondence. Ideally the system can:

9.8.1. Allow staff to create customizable templates to correspond with individual customers, or to distribute to groups of customers based on account characteristics (i.e., BCC, water consumption data).

9.8.2. Create and customize template used in correspondence sent to contacts.

9.8.3. Use template correspondence for multi-channel delivery – e-mail, print and mail, automated voice messaging, etc. Example: Send a contact an e-mail starting with a template letter.

9.8.4. Automatically add custom information to template letters - mail merge. Field should include: User information such as name, account number, service address, usage information; A link or file(s), such as a survey, or customer report; Staff information.

9.8.5. Template letters should be able to use standard business letter formatting, including letterhead, Staff signature (name, contact info, etc.), and allow custom backgrounds.

9.8.6. Template letters should allow user to send a copy of correspondence to staff members when sending by email.

9.9. Allow customers to engage with utility staff. Ideally the system can:

9.9.1. Customers should be able to reply to messages sent by the system and reach a District water conservation inbox. Messages received by conservation in this way can be responded to by staff and be received by the customer.

9.9.2. Ideally customers and staff could engage via text messages or online chat features if enabled.

10. Conservation Tools

Objective: System messaging will alert customers to leaks or high use at their property, and the customer may not know how to resolve the issue. It is useful to provide the customers basic conservation tools such as self-guided audits to help customers resolve common issues on their own or find related resources and services.

10.1. The system should provide customer self-guided tools, including:

- 10.1.1. Self-guided audit tool to determine the efficiency of indoor fixtures. Survey tools should include indoor elements such as plumbing fixtures and appliances.
- 10.1.2. Self-guided audit tool to determine the efficiency of their outdoor water consumption. Survey tool should include outdoor elements such as landscaping and water features, irrigation equipment/method, and irrigation schedules.
  - 10.1.2.1. Irrigation Scheduling Tool: Ideally, there would be tools to help suggest irrigation scheduling, by allowing customers to enter site-specific data such as geographic location, plant type data, sun exposure, wind, slope, soil, and irrigation type.
- 10.1.3. Self-guided leak detection / leak locating tool. Survey tool should prompt customers to follow a step-by-step guide including both indoor and outdoor elements to identify leaks and provide resources or service recommendations for repair.
- 10.1.4. Ideally the system would have an AI chatbot tool that would lead customers through audits, irrigation scheduling, and leak detection and answer other common conservation questions.
- 10.1.5. Self-guided survey tools results should be visible by the customer and staff for future reference.

11. Reporting

Objective: The customer portal contains a large amount of customer and consumption information that has many business purposes, including conservation outreach, regulatory compliance, internal tracking. This section describes some of the needs for users to find and view the information needed to support data-based decision making.

11.1. Customers must be able to download consumption data. Including:

- 11.1.1. Billing data and Interval data
- 11.1.2. By account, or for all linked accounts at one time.

11.2. Available standard reports in the system should include:

- 11.2.1. Consumption for an account, group of accounts, including consumption, date information, water budget information, and leak information.
- 11.2.2. Summary water consumption statistics by customer class
- 11.2.3. Water budget summary report
- 11.2.4. Leaks detected and leaks alerted
- 11.2.5. Messages and engagement sent from the system with basic delivery and recipient information

11.2.6. Account profile information and contact information used by the system

11.2.7. Customer updates to account profiles. Should include any account profile data associated with Water Budgets.

11.2.8. List of Irrigators – See account profile section of requirements

11.2.9. List of accounts irrigating multiple times a week

11.2.10. List of customer initiated self audits with summary information

11.2.11. Customer engagement including a list of all communications sent in a given period or to a specific account

11.2.12. Data transfer summary report of files imported into the system with file name, date uploaded, date loaded and load comments.

11.2.13. System Wide and Regulatory

11.2.13.1. Drought reduction estimates

11.2.13.2. CII communications sent by business type

11.2.13.3. Gallons used per day by customer class and date range. Ideally with default reports for each customer class updated monthly.

11.2.14. Customer portal registration and usage statistics

11.2.15. Communication preference report with changes to preferences, including subscribes and unsubscribes

11.3. Staff should be able to work with vendor to create custom reports based on any data field in the system.

11.3.1. It should be possible to have these reports be scheduled to be created automatically on a reoccurring basis

11.3.2. Ideally one option is to distribute the option via a file transfer process and API process.

11.3.3. Ideally custom reports could be run on demand to staff in the staff portal.

11.4. Ideally staff can create reports on their own using on any data field in the functional requirements, including ability to filter by date range, customer class, consumption, and account when relevant. These reports should be downloadable as a spreadsheet.

12. Other Customer Service Portal Features

Objective: Beyond water consumption; it would be valuable for a solution to provide various other customer service features integrated with the customer portal so that the portal can act as a "one stop shop" for customers.

12.1. Start and Stop Water Service

12.1.1. Rate payers need the ability to establish water service. To establish water services, the rate payer needs to supply the following:

12.1.1.1. Customer information: last name, first name, ID (SS#, driver's license, government issued-ID), Company name, Tax ID number, Mailing address, phone number, and e-mail address, Spouse or co-customer, and phone number, Employer and phone number, Reference and phone number

12.1.1.2. Service Information: Address to start service, Previous address, Property Type: residential, commercial, Type of service (water, fire, irrigation),

12.1.1.3. Owner or Tenant information including. If customer is renter, provide landlord name and phone number. If landlord, provide additional fields for automating sending agreement.

12.1.1.4. System must be able to send confirmations, such as Start Stop Request Received.

12.1.2. System must be able to provide configurable terms and conditions. Example: Ensure deposit request warning is given.

12.1.3. System must be able to follow business rules and validations for Starting and Stopping Service, including: Address must be valid and conform with USPS mailing standards, Limit online Start Service Request to specific Customer Types, send and display confirmation numbers, create start/stop orders in District CIS, Update account status in CIS, create service orders, create logs to add to CIS.

12.2. View Statement/Invoice/Payment

12.2.1.1. Ability to View Past and Current Account Statements/Invoices. Statement and Invoice details to display include: Statement date, Statement mailing date, Due date, Statement balance, Past due amount, images of specific statements.

12.2.1.2. Trucking operators should be able to see the following when wanting to view information about past and current invoices: Invoice date, Invoice mailing date, Invoice due date, Invoice balance, Past due amount.

12.2.2. Ability to View Payment History: Rate payers, trucking operators, hikers, and customers who have paid for any service and the general public should see the following when wanting to view information about past payments: Payment date, Method of payment made (e.g. check, credit card, EBPP, etc.) ,Paid amount

12.2.2.1.1. Additionally, rate payers, and trucking operators should be able to view: Balance before the payment was processed, Remaining balance after the payment was processed,

12.2.2.1.2. After seeing information about past payments, payees (e.g. ratepayers or general public) should be able to view a summary of what the payment was for (e.g. devices, books, trail permits, etc.)

12.2.2.2. Offer Level Billing based on previous year's consumption

12.2.2.3. Offer Donation to fund Customer Assistance Program

12.2.2.4. Recurring Credit Card payments via Autopay

12.2.2.5. Ability to store Credit card information PCI compliant.

12.3. Online Payments

12.3.1. Ratepayers should be able to Request Payment Extensions.

12.3.1.1. System must be able to follow rules to determine when rate payers can request a payment extension. These rules include: Account STATUS = Active; Past due is not greater than or equal to defined X days in arrears. The extension date cannot be greater than defined period (e.g. 2 weeks) before the next read date; No In-Progress Disconnect Non-Payment service order; No In-Progress Return Check – 48-hr service

order; Customer type is allowed payment extensions; Not on Automatic Bill Payment; Past due is greater than defined balance threshold, e.g. $ 50.

12.3.2. When a payment extension is granted the system must be able to: Display Payment Extension Successful Page with updated payment information; Generate defined service orders; Update District Customer Information System (CIS) with new payment extension; customer account online should display active payment extension when customer signs in.

12.3.3. Customer should be able to enter Payment Confirmation to Prevent Turn-Off of Service. After paying their bill using the online payment solution or pay stations, the rate payers should be able to enter their payment confirmation number. If a turn-off order has been created, but not completed, the OFF order should be cancelled. If service has been turned off, an On Order should be created.

12.4. Request Field Work

12.4.1. Rate payers should be able to Submit Hydrant Meter Readings online. A field service rep can view and select the read from a list of submitted reads. Ideally, if the read was good, the rep would be able to submit the read automatically to the District's billing system so that the rep would not need to manually enter the read.

12.4.1.1.1. Once the read is entered, it should drop from the list of submitted reads.

12.5. Establish an Online Chat Session: Customers should be able to establish a chat session for the Same Types of Inquires as Are Handled Currently over the Phone.

12.5.1. System should be able to Automate Chat Responses with a Chatbot

12.6. Customers should be able to update the following online: Mailing addresses, Contact phone numbers (home, work, cell, etc.), Contact e-mail(s), Number of people residing in their residence, Owner or Tenancy

12.7. Setting Permission of the Types of Data the District Can Share

12.7.1. Customers/users should be able to select the criteria in which they manage the why (topic), how (method), and when (frequency) for whether or not the District may contact them (i.e. under "opt out/opt in" scenarios) via e-mail, text, phone, print mail, etc. (e.g. conservation newsletters, emergency updates, recreation/trail info, etc.)

12.7.2. Customers should be able to select whether or not the District may share their e-mail with other parties.

12.7.3. The system should be flexible enough to prompt users whether they prefer to share different types of data that might be required because of future legislation/District policy related to privacy of the data

12.8. Establish an agency relationship

12.8.1. A customer such as a landlord might have a property management company. The customer might want to let the property management company act on his behalf in the CSSP. In general, the CSSP should:

12.8.1.1. Allow customers to specify a set of his agents.

12.8.1.2. Allow customers to specify which modules/functionalities the agent can access.

12.8.1.3. Revoke previously granted permissions from an agent.

12.9. Customer portal should include an Online Store, including the ability to:

12.9.1. Configure products including: The name of the device/item; a title/display name of the device/item; a description of the device/item; A picture of the device/item; Maximum number of devices/items customers can request; Water saving devices have an amount of water which can be saved on average; Eligibility rules; A price; Manage tax rates; Charge and collect appropriate taxes.

12.9.2. Allow users to Order/Purchase Water Savings Devices and Other Promotional Items.

12.10. Electronic Bill Presentment and Payment: The EBPP services consist of electronic bill presentment, bill payment, EBPP enrollment, and EBPP deactivation. District customers must enroll directly with VENDOR but can deactivate EBPP enrollment with VENDOR or with the District. VENDOR must provide EBPP services that are secure, reliable, and user-friendly, available 24 hours a day, seven days a week, 365 days a year, except during maintenance.

12.10.1. A preferred system would be for customers to log in to their accounts at a secured web site to enroll and deactivate EBPP participations as well as view their statements and optionally, to make payments. The site can either be in www.ebmud.com and mirror the look and feel of www.ebmud.com for seamless appearance and integration. VENDOR must clearly describe how the proposed solution would seamlessly transmit between www.ebmud.com and VENDOR's site, as well as the method of secured transmission between the two sites. VENDOR must maintain the EBPP system in good operating condition and maintain quality control, including balanced deposits, and no payment or deposit delays. Customers incur no VENDOR charges for EBPP enrollment.

12.10.2. VENDOR provides a secure internet web site that allows District customers to register and enroll to receive EBPP services. VENDOR shall provide a secured site where authorized District staff may securely transfer files containing EBPP customer enrollment or deactivation information. The file must be of a format and type that can be processed by District.

12.11. Electronic bill presentment shall include:

12.11.1. VENDOR shall provide a secured site for District staff to transfer files containing electronic bill notification data.

12.11.2. VENDOR notifies customers electronically within one business day that the customer's bill is ready for viewing. A link is provided to District customers to securely view their bill online. The link to the VENDOR's web site may be through www.ebmud.com.

12.11.3. VENDOR shall provide District the ability to: modify bill messages; and send other electronic notifications such as late payment notification, emergency alerts, rate changes and etc.

12.11.4. VENDOR shall provide viewing of bill histories and describe the number of years available for District customer viewing. VENDOR shall notify the District of all accounts missing bills since the day the last bill was received.

12.12. Bill payment shall include:

12.12.1. District EBPP customers shall have the ability to process electronic payments at the www.ebmud.com. After customers log in to the secured web site described in the proposed solution to view the electronic bill, a link should be displayed prominently for customers to click and link directly to a secure payment screen on the same web site. The

bill payment page displays the customer's account number, service address, last payment amount, payment amount due, payment methods and due date. The customer can immediately authorize payment of the bill, or has the option to change the payment amount and schedule the payment date.

12.12.2. Consolidate EBMUD customer payments from portals outside www.ebmud.com such as, on line banking, financial services providers and mobile payment service providers.

12.12.3. District EBPP customers should have the option to process electronic payments at the VENDOR's web site.

12.12.4. VENDOR shall describe the ability for District customers to arrange recurring payments.

12.12.5. VENDOR must describe all payment methods available to District customers (both those enrolled in bill presentment and those not enrolled) such as credit and debit cards, e-checks, and fees involved in making the payment.

12.12.6. VENDOR must deposit/ACH funds (credit only) to District bank account within two business days after receipt of customer payment information. Describe the timing of movement from the date of the customer payment to the confirmation of funds to the District.

12.12.7. District shall have the option to have delivery of payment notification in real time and/or consolidate payments to produce periodic daily electronic payment information file for posting to EBMUD's Customer Information System. VENDOR must provide a method where District staff can securely retrieve the file. Each payment record in the file must contain the 11-digit EBMUD account number and corresponding amount paid for each item in the file.

12.12.8. VENDOR must provide a separate payment process for Truck Waste payments which includes multiple digit customer and invoice numbers. These payments shall have only a report and the funds deposited to the District bank account.

12.12.9. District shall have the ability to block payments from specified customers.

12.12.10. District administrative portal to research and view customer payment transactions.

12.13. EBPP deactivation: District customers must be able to deactivate EBPP services at the same web site where they login to view their electronic water bills. District customers may also discontinue their EBPP enrollments with the District. VENDOR must provide a secured site for authorized District staff to upload customer data for EBPP deactivation. The deactivation is effective immediately upon VENDOR receiving the file. Customer incurs no VENDOR charges for EBPP deactivation.

12.14. Other Desired EBBP Functionality:

12.14.1. IVR/Phone Payments: VENDOR must provide IVR payment capabilities.

12.14.2. Capability for District customers to set-up multiple accounts under one profile.

12.14.3. Mobile EBPP solutions.

12.14.4. Returned check/payment items. District does not allow for vendor-initiated debits to the District's fiscal account.

12.14.5. Multiple technologies supported for payments – cash, credit/debit cards, etc. Any future payment methods under consideration?

12.14.6. Daily reports to the District that contain District customer water bill payments made since last data transfer, showing amount paid per District account number, and type of payment.

12.14.7. Provide District's web site look and feel in web pages VENDOR provides to District customers.

12.14.8. VENDOR shall immediately notify the District of all electronic transmissions failed or delivered.

12.15. REPORTS: Please describe how reporting works on your system. Provide a list of standard reports. What mechanisms are available for EBMUD to generate custom reports? Expected bill presentment reports shall include analytics on customer enrollments, bill viewing activities, etc. Expected payment reports shall include analytics on customer use, payment volume by method, and customer feedback.

12.16. The District has some online applications that may not be replaced by this project. The vendor system should be able to provide links to these applications in their online customer portal. These links should work with the SSO solution so the customer only needs to login once to access all online functionality. Describe how your system can integrate links to district applications.

13. Other Services

Objective: The District is interested in other software services that your solution provides. Provide a description of any of the below services your solution provides.

13.1. Community Events, Workshops, Scheduling in General

13.1.1.1. District staff need to be able to events and publish to a calendar on EBMUD.com. Events include community events, presentations, workshops, speaking engagements, tours.

13.1.1.2. Allow users to manage their registration for an event and add the event to their calendar.

13.2. Customer Complaints/Notifications

There are different business units for field customer complaints/notifications. These would include Water Waste complaints, Sanitary Sewer Overflow notifications, Water Quality issues, Wastewater Odor complaints, etc. An example for one type of customer complaint, water wase complaint, is listed below as an example.

13.2.1. Customers should be able to submit complaints, reports, or notifications to EBMUD of potential issues. These complaints should include issues with potable, recycled, Wastewater as well as Water Waste violations (water use restrictions and prohibitions)

13.2.2. When submitting these reports, customers need the ability to upload the photos to the incident along with the location details, date/time. Customers should be able to use available mobile device GPS data to assist in reporting the incident location.

13.2.3. Customers should be able to use digital map to assist in reporting the incident location.

13.2.3.1. Staff need the ability to view reports based on a location, automatically create service orders based on reports, view all the corrections/actions taken for one or more premise address.

13.2.3.2. System needs to allow for the configuration of how staff should be notified of each notification. Examples:

13.2.3.3. Automatically send an e-mail to the Dispatch Team when the water waste complaints are the result of hydrant-leak, meter-leak or seepage.

13.2.3.4. Automatically call/text a number with the information. This could potentially be a call/text to a State or Federal incident notification number.

13.2.3.5. Provide access to the customer's information such as account number, meter number, meter reads, consumption history, service log, and customer log to the field staff.

13.2.3.6. Map the incident to the mapping function so the field staff can view the entire incident for a particular neighborhood, and record action taken.

13.2.4. Reports

13.2.4.1. Ability to view the summary of the incidents (such as number of open, in-progress incidents, incident that are open beyond <n> number of days etc.)

13.2.4.2. Reports should interface with other District information systems to include complaints and notifications reported outside of the customer portal – such as complaints called in by phone.

13.3. Rebate applications and rebate processing tools

13.3.1. Public facing rebate application tool for customers to submit applications for various, configurable utility incentive programs (E.g. lawn conversion rebates, irrigation rebates)

13.3.2. Staff facing rebate processing tools, for example a staff facing dashboard that tracks projects from intake to payout.

13.4. Support of multiple languages. Describe how customer facing functionality can be accessible to users who proficient in languages other than English. Describe what languages are supported. Include a description of how languages are supported for the following functional areas.

13.4.1. Public facing pages

13.4.2. Pages accessible after logging into the system

13.4.3. Automated Alerts

13.4.4. Multi-channel Communications and Public Engagement Functionality

14. General (Non-Functional) Requirements

14.1. System should have web analytics to measure customer engagement.

14.2. Design and User Experience. The design of the various customer and staff interfaces are critical to ensuring the features are accessible, easy to navigate and create a positive experience.

14.2.1. Incorporate well established user interface patterns to facilitate a good user experience. This could include: provide tips for form fields; provide drop down menus for fields that the customer may not know the correct terminology to type in; Minimize clicks to accomplish functionality listed in this requirements document.

14.2.2. Ability to brand the customer facing portal to match EBMUD.com's design

14.2.3. Customer and Staff portal should be responsive design to work well on a variety of display sizes including computer monitors, tablets, and mobile devices. This should include responsive design for websites.

14.2.4. The system should integrate seamlessly into EBMUD.com.

14.2.5. The system layout should be customizable to allow the District to turn on or off certain features, and rearrange "module" placement to tailor it to best fit our customers needs.

14.3. Interfaces

14.3.1. The system must integrate with the District billing system to provide end users 10-years of billing data

14.3.2. The system must integrate with the Sensus AMI system to access 5-years of hourly AMI data. Ideally the system can present all available billing data and AMI data. District billing data for the portal starts around 2012, and AMI data starts around 2018.

14.3.3. The system should have a mechanism for staff to batch update account profile characteristics. These updates should be possible as a reoccurring scheduled update or an ad-hoc basis.

14.3.4. Vendor should be able to acquire and use census, real estate, spatial CIMIS, weather and other data to develop defaults for accounts and present to users in the portal. Defaults shall be customizable per account type and will be developed in collaboration with EBMUD.

14.3.5. The system should be able to provide user and system data from the portal to the district so the district can use the data in its systems. Examples of data integration needs include:

14.3.5.1. Daily report of leak alerts sent per account.

14.3.5.2. Changes to communication preferences to update district communication preferences.

14.3.5.3. Consumption based summary report and engagement messages sent to accounts

14.3.5.4. Account profile settings such as persons per household, or landscape size information.

14.3.5.5. The District's internal conservation application should be able to link directly to the Vendor's customer/account page, account search result page, or similar so that we can link directly from the staff conservation system to the vendor system account page with minimal staff user clicks.