Advanced Metering Infrastructure (AMI) Project

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Submittal Date: July 28, 2022

U.S. Department of the Interior | Bureau of Reclamation (BOR)
Water Resources and Planning Office
WaterSMART Grants: WEEG Fiscal Year (FY) 2023
Funding Opportunity No. R23AS00008 | Funding Group III Application

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MANDATORY FEDERAL FORMS

The following forms were submitted electronically via grants.gov:

- SF-424 Application for Federal Assistance
- SF-424A Budget Information – Construction Programs
- SF-424D Assurances – Construction Programs
- OMB Form 4040-0019 Project Abstract Summary
- SF-LLL Disclosure of Lobbying Activities

TECHNICAL PROPOSAL AND EVALUATION CRITERIA

Executive Summary

July 28, 2022
Eddy E. Hernandez, Project Manager
Brownsville Public Utilities Board
Brownsville, Cameron County, Texas
Category A Applicant

A one-paragraph project summary that provides the location of the project, a brief description of the work that will be carried out, any partners involved, expected benefits, and how those benefits relate to the water management issues you plan to address.

Located in the heart of the Rio Grande Valley approximately 23 miles from the Gulf of Mexico, the City of Brownsville (City) is the 18th largest city in the state of Texas. The City is uniquely positioned geographically, located adjacent to the Matamoros, Mexico, border crossing. With a population of nearly 190,000 residents as of 2020, the City is home to a diverse and growing community, and Brownsville is itself over 90% Hispanic. Economically, the City has undergone substantial transformation in recent years and is an economic engine of the region, acting as host to SpaceX, the University of Texas Rio Grande Valley, and other major companies in the manufacturing, transportation, and aerospace industries. The City is also home to a significant trading port, the Port of Brownsville, which is the terminus of the Gulf Intercoastal Waterway that stretches from Florida to Texas, and is heavily involved in international trade. Because of its growth, the City is continually challenged with balancing the water needs of its residents with adequate management and stewardship of the surrounding natural resources upon which it is reliant. Water service is provided by Brownsville Public Utilities Board (BPUB) to approximately 58,000 accounts. BPUB plans to install new software systems and

upgrade/deploy water meters/modules to all customers during its Advanced Metering Infrastructure (AMI) Implementation Project. This project will provide BPUB visibility into its metering infrastructure, improve metering accuracy, and provide tools to curb real water loss within the distribution system and improve conservation by customers, thereby enhancing the security of water sources. Project components include an AMI system and a Meter Data Management System (MDMS), alongside integrations of these systems to BPUB's geographic information, work order management, and customer information and portal systems. Once implemented, these platforms will provide BPUB and its customers with near-real-time customer water usage data, leak alerts, and other service notifications. These capabilities will allow staff to proactively address service issues; and customers will be empowered to make more informed decisions about their water usage. By addressing these items, BPUB can curb a large amount of real water loss and waste, thereby preserving the precious resources of the Rio Grande Valley. BPUB currently experiences roughly 9% water loss annually. That amount equates to nearly 620 million gallons of water, or about 2-¼-times the volume of the Empire State Building, lost each year. It is anticipated that the project will result in over 2,103.42 acre-ft. of water savings per year—both through averted loss and additional conservation. BPUB will also experience energy savings by reducing the amount of water pumped from its water sources, as well as reduced greenhouse gas emissions through the elimination of truck rolls to read and service customer meters directly. These savings will result in a tangible environmental benefit to the Rio Grande Valley and the precious resources of this unique region. More detailed benefits are defined in the Evaluation Criteria portion of this application.

State the length of time and estimated completion date for the proposed project.

This project is anticipated to occur over a 36-month period, starting in January 2023 and completing by December 2025.

Whether or not the proposed project is located on a Federal facility.

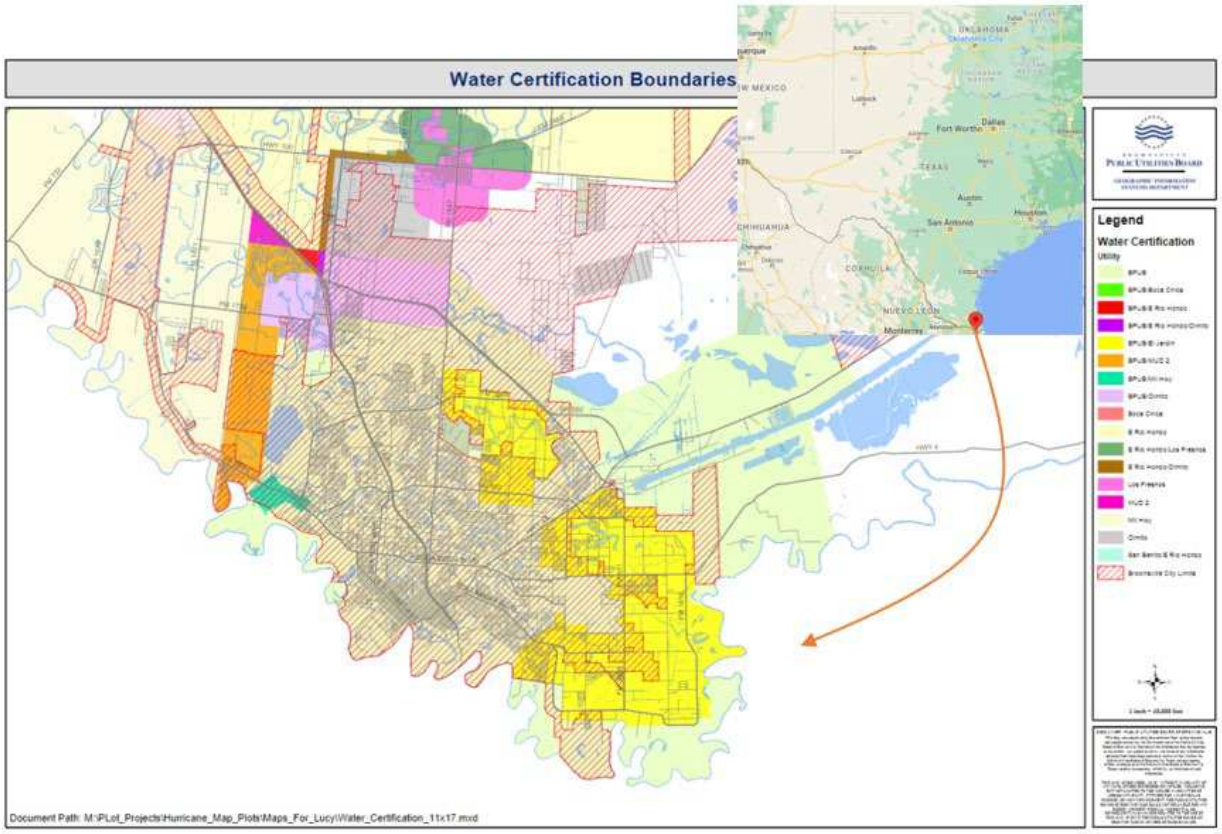
This project is not located on a Federal facility.

Project Location

Provide detailed information on the proposed project location or project area including a map showing the specific geographic location.

The City of Brownsville, Texas, is the county seat of Cameron County on the western Gulf Coast of Texas, directly North and across the border from Matamoros, Tamaulipas, Mexico. It is situated on the northern bank of the Rio Grande and is the largest city in the Rio Grande Valley. The project latitude is approximately 25°54'N and longitude is 97°29'W. See Figure 1 for a map of BPUB's service territory.

Figure 1: Project Location—BPUB Service Area



Technical Project Description

Provide a more comprehensive description of the technical aspects of your project, including the work to be accomplished and the approach to complete the work. This description should provide detailed information about the project including materials and equipment and the work to be conducted to complete the project. This section provides an opportunity for the applicant to provide a clear description of the technical nature of the project and to address any aspect of the project that reviewers may need additional information to understand.

The proposed project will include implementation of an AMI network, meters and their installation, and MDMS software. These activities come as a natural step in BPUB's metering and operational planning, as a substantial portion of existing meters will require changing to align with its standard residential change-out program.

All meter reading is handled in-house by BPUB's Billing staff, overseen by the Billing Manager. The team includes 36 full time employees, including 14 meter readers. Virtually all 58,000 meters are currently read manually. This process consists of meter readers driving to the service address, safely parking, exiting their vehicle, entering the premise, and physically reading the meter register. Meter readers use an Itron Field Collection System and handheld devices to collect the reads. Meter Services staff have noted that handheld equipment can sustain damage or fail. The advanced meters will wirelessly deliver near-real time meter readings to BPUB, which reduces the need for daily field visits to collect meter reads and increases reading accuracy, thereby improving billing accuracy.

BPUB began project pre-deployment planning activities by hiring technical consultants from E Source to conduct a business case that concluded in 2020. The results of this business case were positive environmentally, socially, and financially. Based on these findings, it was determined that an AMI Project is feasible for BPUB, and the utility continued with developing a Request for Proposals that was published in 2022.

This application covers the subsequent project phases:

1. Initial Deployment Area (IDA)
    - The intent of the IDA phase is to provide, install, and fully implement all hardware, firmware, software components (e.g., AMI, MDMS, customer portal) and system integrations for a limited group of meters. This phase will allow BPUB to verify proper communication and data transfer across the system. Staff training on the new systems will also take place during IDA.
    - The advanced water meter upgrade will consist of detaching the meter from the service line, exchanging the meter, attaching the AMI module, and

threading the antenna through a new water meter pit lid that has a hole cut out for the antenna. For existing meters being retrofit, the current mechanical register will be replaced with an electronic encoder that is capable of passing advanced alarms; additionally, the AMI module will be attached and the antenna threaded through the pit lid just as with those meters being replaced. To facilitate this work, BPUB will make water box improvements where there are issues with the placement of the new meter.

- The meters will begin to register and communicate using the fixed base network of communication devices. Any registration or communication issues that may arise will be addressed either by the selected AMI vendor or BPUB staff, as appropriate.

2. Mass Deployment

    - With all the planning, preparation, testing, and training complete, full deployment will be managed more like a construction project, in contrast to the BPUB.
    - With integrations and workflow proven out, mass meter exchange will see the bulk of meters (estimated at 90%) replaced. BPUB expects full system functionality to be available at this point, with route acceptance to switch meters from manual to AMI reads for billing.

BPUB plans to provide oversight to assure that cost, schedule, and scope are properly managed for the AMI Project. BPUB project management will also be responsible for reporting per the grant agreement.

Evaluation Criteria

Applications should thoroughly address each criterion and any sub- criterion in the order presented below. It is suggested that applicants copy and paste evaluation criteria and subcriteria into their applications to ensure that all necessary information is adequately addressed.

Applications will be evaluated against the evaluation criteria listed below. *If the work described in your application is a phase of a larger project, only discuss the benefits that will result directly from the work discussed in the technical project description and that is reflected in the budget, not the larger project.*

Note: Since the NOFO is open to a variety of project types, Evaluation Criteria A-D may not apply to every project. For example, a water savings project (Criterion A) may not include implementation of a renewable energy component (Criterion B). Please provide as much detail and support as you can for those criteria in A-D that are applicable to your project. All applicants should respond to Evaluation Criteria E-H.

Please note: All factors used to complete calculations in the following responses originate from BPUB data reports, water loss audits performed in accordance with the Texas Water Development Board (TWDB) and industry standard assumptions provided by E Source, BPUB's AMI Technology Planning and Implementation consultant. See supporting documentation in the attachments.

Evaluation Criterion A: Quantifiable Water Savings (28 points)

*Up to **28 points** may be awarded for this criterion. This criterion prioritizes projects that will conserve water and improve water use efficiency, supporting the goals of E.O. 14008. Points will be allocated based on the quantifiable water savings expected as a result of the project. Points will be allocated to give greater consideration to projects that are expected to result in more significant water savings.*

1) Describe the amount of estimated water savings.

For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

Please include a specific quantifiable water savings estimate; do not include a range of potential water savings.

BPUB expects water savings to result from the following activities: distribution system real loss reduction, improved apparent loss capture at the customer meter, demand-side conservation savings, theft identification, and leak detection management and resolution.

It is estimated that 5% savings in real losses in distribution will result in savings of 68.22 acre-feet annually. Losses are also the result of systemic inaccuracies in the overall metering system, which has a measurable impact of 3.2% that can be recovered against authorized consumption, or about 186.68 acre-feet annually. BPUB expects to attain additional demand-side customer conservation savings of 2.5% on authorized consumption, or about 473.98 acre-feet annually, as a result of improved visibility into usage through presentment of interval data through a customer portal.

This project will also improve theft detection and mitigation, which is estimated to have an impact of 0.25% across authorized consumption, for 47.40 acre-feet recaptured annually. In addition to these areas, alarms and reporting from the AMI system will allow for lowered latency in leak detection and resolution. Though BPUB has some data on leak adjustments performed annually, it also recognizes that many smaller leaks go unreported or are otherwise unknown as a result of limited interval consumption information. Due to unknowns related to the time it takes to resolve leaks after initial identification, water loss aversion estimates are difficult to prescribe, but BPUB expects it be appreciable, to the effect of 7% on authorized consumption, or about 1,327.14 acre-feet.

In summary, estimated water savings are expected to total 2,103.42 acre-feet per year or 1,877,818 gallons daily. Note that these figures are based on the BPUB's TWDB Water Audit Report for FY 2021. See ATTACHMENT E for further details.

2) Describe current losses.

Please explain where the water that will be conserved is currently going and how it is being used (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground).

BPUB pumps raw water from the Rio Grande to BPUB water treatment plants. Line losses in the delivery system are unknown. Losses within the boundaries of the treatment plant are thought to be minimal. Losses are usually attributed to the evaporation of filter backwash process water as it is held for extended periods in the residual ponds.

BPUB made a commitment to reduce treated water losses in the early 1990's. Since then, BPUB has taken major steps to improve the efficiency of the treated water distribution system and made significant progress in reducing treated water losses. The average annual treated water loss between 1990 and 1994 was 23.8%, and it was reduced to 14.21% between 1995 and 1999. During the period between 2000 and 2004, the average treated water loss decreased to 14.51%. During the period from 2004 to 2008, the average treated water loss was 13.8%. In 2018, the average retail water loss had decreased to 12.8%. This reflects many system improvements since the early 1990s. BPUB continues to implement and fund projects and programs directed at reducing treated water losses to less than 13%.

As mentioned earlier, system losses in 2021 averaged 9.10%. To minimize this value, Line Maintenance personnel are available 24/7 to address system failures as they occur. Upon being notified of a failure, crews respond with quick corrective action.

The primary source of water loss within the distribution system is unreported losses, accounting for approximately 1,361.89 acre-feet or 73.9% of losses in 2021. Leaks in the distribution system only get repaired when they become noticeable and reported. An AMI system will allow BPUB to analyze sections of the system to help identify leaks in the distribution system.

Inaccurate meters account for approximately 20.9% of system losses in 2021. Other less prevalent sources of documented non-metered water loss include unauthorized consumption and systematic data handling errors.

Additionally, BPUB conducted an audit of the water system utilizing the TWDB methodology. See Table 1 for inputs used to calculate the total water total losses below. BPUB is prepared to utilize the AMI system functionality to reduce these losses.

Table 1: Inputs to Calculate Current Water Loss

System Details	
Water Produced (Acre Feet)	20,856.37
Water Consumed (Acre-Feet)	18,959.17
Net Loss (Acre-Feet)	**1,897.21**
Apparent Loss (Acre-Feet)	479.02
Real Loss (Acre-Feet)	1,364.44
Net System Loss (%)	**9.1%**
Source	2021 TWDB Water Audit Report

20,856.37 – 18,959.17 = 1,897.21 Net Acre-Feet Loss

1,897.21 / 20,856.37 = 9.10% Net System Loss

If known, please explain how current losses are being used. For example, are current losses returning to the system for use by others? Are current losses entering an impaired groundwater table becoming unsuitable for future use?

Current water losses typically end up in the distribution system. Otherwise, BPUB cannot definitely state the specific use for those losses at this time.

Are there any known benefits associated with where the current losses are going? For example, is seepage water providing additional habitat for fish or animal species?

It is unlikely that current losses are contributing to the ecosystem, as these losses occur within the BPUB distribution system, rather than at some other ecological point.

4) Describe the support/documentation of estimated water savings:

Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations. Note: projects that do not provide sufficient supporting detail/calculations may not receive credit under this section. Please be sure to consider the questions associated with your project type (listed below) when determining the estimated water savings, along with the necessary support needed for a full review of your proposal.

In addition, please note that the use of visual observations alone to calculate water savings, without additional documentation/data, are not sufficient to receive credit under this section. Further, the water savings must be the result of reducing or eliminating a current, ongoing loss, not the result of an expected future loss.

Details to support the estimates provided are included in response to item (2) Municipal Metering, question a, below.

5) Please address the following questions according to the type of project you propose for funding.

(2) Municipal Metering: *Municipal metering projects can provide water savings when individual user meters are installed where none exist to allow for unit or tiered pricing and when existing individual user meters are replaced with advanced metering infrastructure (AMI) meters. To receive credit for water savings for a municipal metering project, an applicant must provide a detailed description of the method used to estimate savings, including references to documented savings from similar previously implemented projects. Applicants proposing municipal metering projects should address the following:*

a. How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

Several sources of water savings are outlined below in this application. They are as follows:

- The AMI system will improve distribution system monitoring to identify and target specific areas of loss.
- The AMI system will have the ability to detect leaks earlier and provide alerts and other service information to the utility to take early action.
- The inclusion of a customer portal within the overall AMI Project will provide customers with near real-time information water usage data. The information made available will allow customers to make more informed decisions about their water usage, including the management and conservation thereof.
- The replacement of old water meters will cause increased metering accuracy as meter precision can decline in traditional meters with age, leading to improved apparent losses and demand-side conservation.
- Theft of water can be averted through alarms enabled by AMI hardware.

Table 2 includes the annual savings totals for the AMI Project.

Table 2: Anticipated Annual AMI Project Water Savings

Distribution-Side Leak Detection and Management	68.22
Customer-Side Leak Detection and Management	1.327.14
Improved Customer Water Conservation and Management Savings	473.98
Improved Metering Accuracy	186.68
Theft Detection and Aversion	47.40
Total	**2,103.42 Acre-Feet/Year**
Savings on Production	**15.90%**

Specific details related to each savings category are detailed below.

Utility-Side Losses

Through data analytics routines that will be implemented as part of this project, improved system balancing will allow BPUB to identify what areas are most responsible for loss by assessing inflow and outflows in specific parts of the distribution system, uncovering utility-side leaks and inefficiencies. Table 3 includes the total calculated savings per year from distribution-side leak detection and management.

Table 3: Distribution-Side Leak Detection Savings

Distribution Side Leak Detection and Management			
Water Lost in Distribution (Acre-Feet/Year)	Effective Savings	Savings (Acre-Feet/Year)	Comments
1,364.44	**5%**	**68.22**	Based on E Source Industry Estimates

1,364.44 x 5% = **68.22 Acre-Feet/Year Savings**

Customer-Side Water Reduction Through Use of a Customer Portal

A customer portal will be implemented in conjunction with the AMI Project at BPUB. Customers will have the ability to view their hourly consumption data and monitor their daily usage with this new tool. BPUB plans to develop a strategic outreach effort to educate and empower customers to use the portal to take control of their monthly bill as well as work toward conservation goals. Table 4 details customer water conservation and management savings.

Table 4: Improved Customer Water Conservation and Management Savings

Improved Customer Water Conservation and Management			
Water Consumption (Acre-Feet/Year)	Demand-Side Reduction	Savings (Acre-Feet/Year)	Comments
18,959.17	**2.5%**	**473.98**	Based on E Source Industry Estimates

18,959.17 x 2.5% = **473.98 Acre-Feet/Year Savings**

Eastern Municipal Water District (EMWD), a wholesaler of water in Southern California, completed a demonstration project that included a customer portal similar to the solution that BPUB plans to implement. For the demonstration project, EMWD installed AMI units for a subset of its customer base, included daily water use information on customer water bills, and made flow data available to customers via the customer portal on EMWD's website. EMWD determined that implementation of the demonstration project realized an average annual reduction of 0.027 acre-feet of water per year per meter across all meters.

BPUB will aggressively market the customer portal to its customers, but only assumes a 25% uptake of the portal by the customer base, leading to an effective system-wide conservation rate of 2.5% using the 0.027 acre-feet metric. With the addition of an AMI customer portal, customers will also be able to set thresholds for potential high-bills and opt in to receive notifications including advanced leaks alerts.

BPUB also plans to procure meters and retrofit existing meters so that the meters can detect very low flow down to portions of a gallon as part of the project. This will allow for all recorded water flow data to be sent to the utility to assist in the identification of possible leaks based on the meter notating consistent water flow for an extended period of time. The AMI system will cause alarms or flags to be sent to both BPUB and the customer notifying them of the potential leak. This will be a major improvement from BPUB's current leak detection process. Today, the responsibility falls on the customer to notify the utility if they suspect they might have a leak. This typically happens after substantial water loss has already occurred, likely due to a high bill. With the use of a customer portal, BPUB can notify customers about high usage due to water leaks or other service issues, allowing them to take action sooner. Earlier detection will also reduce the impact of most issues that on-call line maintenance personnel have to address. Table 5 covers customer-side leak detection savings.

Table 5: Customer-Side Leak Detection and Management Savings

Customer Side Leak Detection and Management			
Water Consumption (Acre-Feet/Year)	Customer Leak Savings	Savings (Acre-Feet/Year)	Comments
18,959.17	**7%**	**1,327.14**	EPA study (http://www3.epa.gov/watersense/pubs/fixleak.html) references 10% leaks on customer side. 7% aversion is used as a conservative basis.

18,959.17 x 7% **= 1,327.14 Acre-Feet/Year Savings**

Improved Accuracy of Meters

As noted above, BPUB performs annual water audits following TWDB guidelines. In the 2021 fiscal year audit, the reported water loss was 1,843.45 acre-feet, of which 47.28 acre-feet were estimated systemic losses. By assessing improvement in the overall water consumption, BPUB expects to reduce systemic losses and improve water conservation. Table 6 lays out the details to support the anticipated savings from improved metering accuracy.

Table 6: Improved Metering Accuracy Savings

Improved Metering Accuracy				
Water Consumption (Acre-Feet/Year)	Improvement in Meter Accuracy	Replaced Meters (%)	Savings (Acre-Feet/Year)	Comments
18,959.17	**3.2%**	**30.8%**	**186.68**	E Source Analysis of BPUP Meter Test Results

18,959.17 x 3.2% x 30.8% **= 186.68 Acre-Feet/Year Savings**

BPUB has a program to test every meter removed from service. For the test period for this analysis, BPUB provided test results on over 4,300 or approximately 7.6% of its total meter population. A summary of these test results is provided below in Table 7, with 100% being an indication of perfect accuracy. Values greater than 100% indicate over registration, whereas values less than 100% indicate loss of accuracy resulting in unreported water flow. Comprehensive results can be found in ATTACHMENT F.

Table 7: 2018 Meter Audit Results

Flow Range	Test Average
Low	**96.77%**
Mid	**96.74%**
High	**97.25%**
Weighted	**96.81%**

The results indicate, that in addition to age impacting the meter accuracy by slowing the metrology of the sampled meters overall, flow also is a factor. Based on the expert evaluation conducted by E Source, flows were weighted 15%, 70% and 15% for low, mid, and high flows to determine a weighted accuracy based on expected pattern of use. For new meters being installed as part of this project, AWWA specifies new meter accuracies of 100% +/- 1.5%.

Water Theft

Using new hardware, the AMI system will be capable of sending alarms and alerts to the utility when tampering occurs at a meter. Advanced meters can detect reverse flow, cut wires, and other adverse conditions that signify theft. Based on AWWA estimates, theft can be averted to the order of about 0.25% of normal authorized consumption. Theft detection savings are estimated below in Table 8.

Table 8: Theft Detection and Aversion

Theft Detection and Aversion			
Water Consumption (Acre-Feet/Year)	Theft Aversion Rate	Savings (Acre-Feet/Year)	Comments
18,959.17	**0.25%**	**47.40**	Based on AWWA Water Loss Audit Software Estimates

18,959.17x 0.25% **= 47.40 Acre-Feet/Year Savings**

b. How have current system losses and/or the potential for reductions in water use by individual users been determined?

Determination of water losses described are conducted in the aggregate. Individual user losses are not included in the savings discussed in this application.

c. For installing end-user water service meters, e.g., for a residential or commercial building unit., refer to studies in the region or in the applicant's service area that are relevant to water use patterns and the potential for reducing such use. In the absence of such studies, please explain in detail how expected water use reductions have been estimated and the basis for the estimations.

The basis for expected water use reductions is included in the response to question a, of this section. For the determination of meter accuracy related savings, E Source analyzed meter test results on a significant number of meters. Otherwise, no specific study was available for the State of Texas, Cameron County area. As such, industry studies and figures from E Source were used that relied on data from other AMI projects across the country. Due to potential differences in these studies as compared to specific water use patterns in the Brownsville area, additional conservatism in calculations was used to avoid overestimating potential water savings.

d. What types (manufacturer and model) of devices will be installed and what quantity of each?

The AMI Project will replace an estimated 17,678 existing meters with new meters and electronic encoder registers, as well as an AMI endpoint. The remainder of meters (estimated at 39,773) that are assessed to still be accurate in their metrology will receive an electronic encoder register and an AMI endpoint. These new registers will be capable of delivering advanced alarms to the utility that traditional mechanical dials cannot, such as continuous leak detection and tampering. While the AMI endpoint has yet to be selected, it is anticipated that the registers will be Badger Meter's HR-E LCDs and that the new meters will be from Badger Meter's Recordall line. The Recordall line is an optimal solution for BPUB for a number of reasons. The organization has long identified specific attributes that are desirable and specific to its operational staff and customer base, which is why the Badger Recordall is prolific in BPUB's existing meter population. These requirements were again assessed as part of the procurement of the AMI system, and BPUB has confirmed that the nutating disc technology that has been implemented by Badger continues to provide the best performance (at low flows, over long spans of time, and across large throughputs) relative to all other competing metering technologies (including jet, piston, fluidic oscillator, electromagnetic, and ultrasonic meters), with research supported by Utah State University[1][2]. Notwithstanding, BPUB may also opt to include value-added technologies, such as remote disconnect valves, pressure monitoring sensors, and leak detection sensors as an optional technology in the final contract.

[1] https://cdn2.webdamdb.com/md_nyj34cDPPhue.jpg.pdf?v=1
[2] https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=4489&context=cee_facpub

In addition to metering, BPUB will implement an AMI communication system to transmit reads, interval data, and advanced alarms from meters to a cloud platform, as well as a Meter Data Management System for the long-term retention and actioning of this data through reporting, business intelligence, analytics, automated service order generation and business process, and delivery of interval data to a customer portal. BPUB is still conducting due diligence on competing AMI networks, MDMSs, and installers for these components.

e. How will actual water savings be verified upon completion of the project?

As previously described, water savings will be identified by using the BPUB audit and report for annual water loss based on TWDB guidelines. This audit compares the amount of water produced to metered water sales and authorized non-metered usage to calculate unaccounted for or lost water. Post completion, BPUB will perform a new water audit and analyze the results of the report along with comparisons. This will enable BPUB to identify specific reductions in the amount of metered water sales, unaccounted for or lost water, and demand that is the result of the AMI Project.

Evaluation Criterion B: Renewable Energy (20 points)

*Up to **20 points** may be awarded based on the extent to which the project increases the use of renewable energy or otherwise results in increased energy efficiency and reduced greenhouse gas emissions.*

For projects that include constructing or installing renewable energy components, please respond to Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery. If the project does not implement a renewable energy project but will increase energy efficiency, please respond to Subcriterion No. B.2. Increasing Energy Efficiency in Water Management. If the project has separate components that will result in both implementing a renewable energy project and increasing energy efficiency, an applicant may respond to both.

Subcriterion No. B.2 – Increasing Energy Efficiency in Water Management

*Up to **10 points** may be awarded for projects that address energy demands and reduce greenhouse gas emissions by retrofitting equipment to increase energy efficiency and/or through water conservation improvements that result in reduced pumping or diversions.*

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water efficiency project (e.g., reduced pumping).

If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

BPUB expects to realize carbon energy savings as a result of the AMI Project. BPUB currently pays a monthly bill for electricity usage at its facilities. With the addition of AMI, BPUB is prepared to see a reduction in the amount of water being processed and delivered at any given time, which will result in reduced electricity usage. This decrease can be further compounded by the improved and optimized pumping routines that will be designed during the project to leverage consumption demand data.

See Table 9 for more details on the anticipated savings from reduced pumping.

Table 9: Water Treatment and Delivery Energy Savings

Treatment and Delivery Energy Savings			
Annual kWh	Savings	kWh Reduction	Comments
3,129,568	**5%**	**156,478.40**	Based on E Source Industry Estimates

3,129,568 x 5% = **156,478.40 kWh Reduction**

How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.

BPUB will realize a reduction in carbon emissions due to the reduction of truck rolls needed to visit customer premises to collect meter reads and respond to other service disruptions. Table 10 includes CO2 savings information.

Table 10: Vehicle Greenhouse Gas Reduction Savings

Vehicle Greenhouse Gas Reduction				
Annual Miles	Truck MPG	CO2 Emissions per Gallon (Grams)	Total CO2 Averted (Grams)	Total CO2 Averted (Metric Tons)
68,941.20	**18**	**8,887.00**	**34,037,802.47**	**34.04**

68,941.20 / (18 x 8,887) = **34,037,802.47 Grams of CO2 Averted or**

34.04 Metric Tons of CO2 Averted

The metric tons of CO2 saved per year can be determined by finding the product of the following values:

- Average miles per read truck roll is estimated at 0.1 mile for each of the 57,451 customer accounts
- Effective miles per gallon of gasoline is 18 MPG
- 12 monthly readings per meter per year
- 8,887 grams of CO2 per gallon of gasoline

If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?

BPUB draws water from the Rio Grande with a water system that consists of a river rock weir, river pump station, two reservoirs, three water treatment plants and a raw water transport system. Water is pumped from the Rio Grande into the reservoirs and then water treatment plants before entering the distribution system.

As stated, BPUB expects a 5% reduction in energy usage as a result of this project. As of July 2021, BPUB can show production levels as high as 38.4 million gallons of water across its treatment plants. Though projections on water savings are substantially more than 5%, BPUB is aware that some overhead electricity will be required to maintain normal operations, even at decreased throughput.

BPUB anticipates the opportunity to manage pumping routines based on granular knowledge of customer usage post-AMI. Current pump information can be found in Attachment F.

Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.

Energy savings are based on pumping energy originating at the point of diversion on the Rio Grande.

Does the calculation include any energy required to treat the water, if applicable?

The calculations only include energy used for pumping. Additional energy savings should be realized through a reduction in volume of water treated.

Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.

As referenced above, BPUB expects to see a reduction in vehicle miles driven due to the reduced need for truck rolls with the implementation of AMI. Based on the assumptions and calculations made above, BPUB anticipates 34.04 metric tons of CO2 averted.

Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).

At this time, BPUB is still making the determination on AMI communications technology. If the selected AMI solution includes fixed-base RF network components, these collectors, repeaters, and routers could be solar powered.

Evaluation Criterion C: Sustainability Benefits (20 points)

*Up to **20 points** may be awarded under this criterion. This criterion prioritizes projects that address a specific water and/or energy sustainability concern(s), including enhancing drought resilience, addressing the current and future impacts of climate change, and resolving water related conflicts in the region. In addition, this criterion is focused on the benefits associated with the project, including benefits to tribes, ecosystem benefits, and other benefits to water and/or energy supply sustainability.*

Enhancing drought resiliency. In addition to the separate WaterSMART Environmental Water Resources Projects NOFO, this NOFO places a priority on projects that enhance drought resiliency, through this section and other sections above, consistent with the SECURE Water Act. Please provide information regarding how the project will enhance drought resilience by benefitting the water supply and ecosystem, including the following:

Does the project seek to improve ecological resiliency to climate change?

Through a focus placed on customer consumption and operational conservation efforts, the proposed project will have an indirect positive impact on ecological resiliency to climate change.

Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels).

The conserved water resulting from the 19.08% annual water production savings mentioned above will improve the resiliency of BPUB's current water sources. Consequently, the additional water will help maintain sufficient levels in the Rio Grande River system and surrounding resacas.

Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).

The state of Texas designated the Rio Grande Shiner (RGS) as a threatened species in 2020[3], and its federal status is currently under review.[4] The RGS is a small, freshwater fish native to the sandy, main-channel areas of the Pecos and Rio Grande rivers. A once-thriving species, the RGS now faces dwindling population numbers due in large part to dewatering of the river and interruptions to the river's natural flows and cycles.[5]

According to the petition to the U.S. Fish & Wildlife Service to list the RGS under the Endangered Species Act, "habitat loss and degradation are the main reasons the Rio Grande Shiner's populations have been and will continue to decline if not protected. Unsustainable water diversions reduce stream flow, dams and diversions alter the historic flow patterns, and dam and levee infrastructure fragment populations. Climate change also exacerbates these threats and further taxes the already-strained rivers."[6]

While the RGS is not yet subject to a recovery or conservation plan under the ESA, the reduction of ground water pumping and overall water savings due to the AMI Project will help to conserve the RGS' habitat.

Please describe any other ecosystem benefits as a direct result of the project.

As a result of the AMI project contributing to water conservation, the need for BPUB to draw raw water from the surrounding resacas will also be lessened. Resacas are former channels or distributaries of the Rio Grande that were once formed by natural flooding cycles as many as 10,000 years ago, and they are unique in Texas to only Cameron County.[7] The resacas provide habitat to numerous rare plant and wildlife species. According to the U.S. Army Corps of Engineers' Interim Ecosystem Restoration Feasibility Study and Environmental Assessment of the resacas near Brownsville, there

[3] https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/nongame/listed-species/media/fedState-ListedSpeciesComplete-3302020.pdf
[4] https://ecos.fws.gov/ecp/species/6212
[5] https://wildearthguardians.org/wildlife-conservation/endangered-species-list/fish/rio-grande-shiner/
[6] https://ecos.fws.gov/docs/tess/petition/874.pdf
[7] https://texashighways.com/things-to-do/on-the-water/resacas-are-the-natural-wonders-of-texas-rio-grande-valley/

are some plant and animal species native to the habitat provided by the resacas that have been considered threatened, endangered, or species of concern by the state of Texas. These species' habitats are under threat due to degradation of the resacas from increased water demand and urbanization. The AMI project will benefit the more than 66 individual resacas by indirectly helping to stabilize water levels through conservation efforts.

Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?

Yes, AMI will provide:

- The opportunity to manage pumping routines more efficiently based on the ability to identify trends through granular consumption data.
- The ability to receive near real-time alerts, enabling BPUB to address potential leaks expeditiously and prevent water losses.

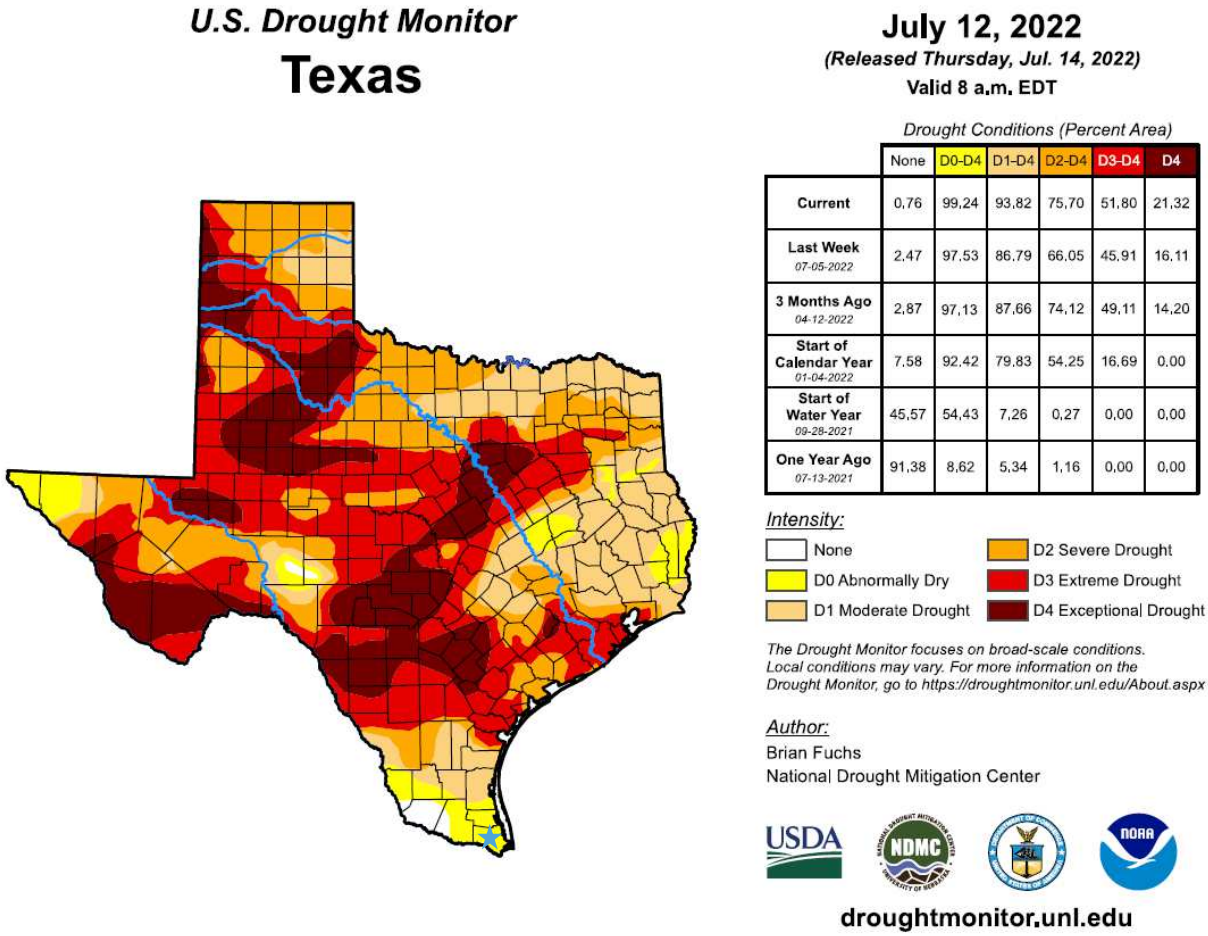
Addressing a specific water and/or energy sustainability concern(s). Will the project address a specific sustainability concern? Please address the following:

Explain and provide detail of the specific issue(s) in the area that is impacting water sustainability, such as shortages due to drought and/or climate change, increased demand, or reduced deliveries.

According to the U.S. Drought Monitor, Cameron County falls within the D0 – Abnormally Dry category.[8] In the state of Texas, historically observed characteristics of D0 impacts include increased grass fires and declines in surface water levels.[9] The blue star in Figure 3 identifies Cameron County in the drought condition map below.

[8] https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?fips_48061
[9] https://droughtmonitor.unl.edu/DmData/StateImpacts.aspx

Figure 2: Texas U.S. Drought Status



Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.

In the Watershed Characterization Report: Lower Rio Grande, prepared for the Texas General Land Office and U.S. Fish and Wildlife Service, the Texas Commission on Environmental Quality highlighted the critical nature of the pollution faced by the lower Rio Grande, specifically the segments below the Falcon Reservoir to the Gulf of Mexico, from various point and nonpoint sources. These specific segments of the Rio Grande face concerns of dissolved oxygen, ammonia, and nutrients, as well as impairment due to levels of fecal indicator bacteria.[10]

[10] https://www.ibwc.gov/Files/LRGWQI_WCR_20170216.pdf

Please describe how the project will directly address the concern(s) stated above. For example, if experiencing shortages due to drought or climate change, how will the project directly address and confront the shortages?

Drought Conditions

Various counties and cities upstream of Brownsville are actively facing exceptional drought conditions, in addition to portions of Cameron County experiencing moderate drought conditions as little as three months ago, making the Water Conservation and Drought Contingency Plan put in place by BPUB in May 2019 so imperative. AMI data and water conservation education through the customer portal will enable and encourage customers to proactively manage their water consumption, which will contribute to reduction in the impacts of drought conditions.

The Texas Commission on Environmental Quality released an alert to all water right holders in the Rio Grande regarding drought conditions on May 27, 2022. It states that in recent years, the Rio Grande Watermaster Program has not been able to fulfill its complete allocations due to inadequate inflows in the Amistad and Falcon reservoir system, which leads to shortages.[11]

Additionally, Cameron County was included in the list of impacted counties in Governor of the State of Texas, Greg Abbott's July 8, 2022, state of emergency declaration due to drought conditions. It proclaims that the state of emergency has been declared, "based on the existence of serious drought conditions that pose an imminent threat of widespread severe damage, injury, or loss of life or property."[12]

The water saved through the AMI Project will lead to a reduction in demand and require less water to be drawn from the Rio Grande River, BPUB's primary source of water, also aiding other counties as they struggle with drought conditions. Additionally, AMI data (e.g., detailed usage trends, system failure reports etc.) will allow BPUB to enhance its approach to drought preparedness and enable more proactive asset management. The project will directly support BPUB's conservation plan and increase its resiliency against possible future severe drought conditions.

Pollution

While the Rio Grande River faces challenges reducing pollutants from various regions, there are opportunities to engage the community regarding maintaining a clean water supply. The AMI customer portal would provide a platform for BPUB to communicate and educate customers on actionable steps to reduce water pollution.

[11] https://www.tceq.texas.gov/downloads/response/drought/rio-grande/drought-wr-holders-rg-05272022.pdf
[12] https://gov.texas.gov/uploads/files/press/Droughtdisasterproc07-08-2022.pdf

Please address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.

The conserved water will simply be left in the Rio Grande River system and resacas for environmental benefit, use by surrounding communities, or future utilization by BPUB.

Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

The AMI system will facilitate water conservation; however, no specific mechanisms will be necessary to put the conserved water to the intended use. Instead, the conserved water will be used to meet future demand more efficiently.

Indicate the quantity of conserved water that will be used for the intended purpose(s).

The AMI Project will conserve an estimated 2,103.42 AFY and 42,068.40 AFY over the 20-year useful lifespan of the AMI system. This conserved water will play a crucial role in helping BPUB meet is water supply needs, especially into the future as a study of the Lower Rio Grande Basin[13] revealed that all users dependent upon the Rio Grande will face an estimated 592,084 AFY shortage by the year 2060 due to climate change, as predicted by the regional planning process. This project will address over 20% of this shortfall over that timeframe.

Other project benefits. Please provide a detailed explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

Combating the Climate Crisis: E.O. 14008: "Tackling the Climate Crisis at home and Abroad", focuses on increasing resilience to climate change and supporting climate-resilient development.

Please provide specific details and examples on how the project will address the impacts of climate change and help combat the climate crisis.

With over 120 Texas counties currently facing a state of emergency due to drought conditions, and uncertain futures due to decreased precipitation and low inflows, the water conserved from AMI will play a crucial role in helping to combat the impacts of the climate crisis. The conserved water will also be useful for extending the life of the Rio Grande Shiner, as well as decreasing demand on the resacas, which will help provide

[13] https://www.usbr.gov/watersmart/bsp/docs/finalreport/LowerRioGrande/LowerRioGrandeBasinStudy.pdf

greater raw water storage and contribute to protecting the many at risk species that inhabit them.

Does this proposed project strengthen water supply sustainability to increase resilience to climate change?

The AMI Project will strengthen BPUB's water supply sustainability by providing several benefits that result in the aforementioned water savings noted in response to Evaluation Criterion A. Conserving water will make more resources available for the many communities reliant upon the Rio Grande River, especially if climate change continues to cause drought conditions to arise.

Will the proposed project establish and utilize a renewable energy source?

Not applicable.

Will the project result in lower greenhouse gas emissions?

Yes, AMI will directly result in an annual reduction in 34,037,802 grams of CO2 averted or 34.04 metric tons of CO2 averted carbon emissions due to the reduction of truck rolls. Additionally, the estimated energy reduction for pumping will indirectly result in reduced greenhouse gas emissions from the power generating facilities that supply power to the pumping facilities.

(2) Disadvantaged or Underserved Communities: *E.O. 14008 and E.O. 13985 support environmental and economic justice by investing in underserved and disadvantaged communities and addressing the climate-related impacts to these communities, including impacts to public health, safety, and economic opportunities. Please describe how the project supports these Executive Orders, including:*

Does the proposed project directly serve and/or benefit a disadvantaged or historically underserved community? Benefits can include, but are not limited to, public health and safety through water quality improvements, new water supplies, new renewable energy sources, or economic growth opportunities.

According to the most recent US Census Bureau data, 27.5% of the population of Brownsville lives in poverty.[14] This is more than double the national poverty average of 11.4%.[15] As part of the AMI project, BPUB plans to implement a customer engagement portal (CEP) that will enable customers to receive high bill alerts, monitor their water consumption, access tips for reducing water usage, and make payment arrangements

[14] https://www.census.gov/quickfacts/fact/dashboard/brownsvillecitytexas/IPE120220#IPE120220
[15] https://www.census.gov/newsroom/stories/poverty-awarenessmonth.html#:~:text=Highlights%2C%20Poverty%3A,and%20Table%20B%2D4).

through an online portal. This enhanced functionality/service offering will make essential utility services more financially feasible. The AMI Project will provide opportunities for all residents, including disadvantaged and historically underserved customers, to efficiently monitor and manage their water use, reduce waste, and save money to spend on other essential items.

Additionally, in collaboration with Community Action Corporation of South Texas and Catholic Charities of the Rio Grande Valley, BPUB currently offers bill payment assistance to customers through the SHARE Program. Residential customers who are 62 years of age or older, low income, or facing hardship due to COVID-19 or medical/funeral expenses are eligible through the program to receive up to $200 per month per customer to assist with past due utility bills.

If the proposed project is providing benefits to a disadvantaged community, provide sufficient information to demonstrate that the community meets the disadvantaged community definition in Section 1015 of the Cooperative Watershed Act, which is defined as a community with an annual median household income that is less than 100 percent of the statewide annual median household income for the State, or the applicable state criteria for determining disadvantaged status.

The median household income (2016-2020) in Brownsville City was $40,924[13], which falls $22,902 or 35.9% below the state of Texas's median household income (2016-2020) of $63,826.[16] Therefore, Brownsville City does meet the disadvantaged community definition in Section 1015 of the Cooperative Watershed Act.

If the proposed project is providing benefits to an underserved community, provide sufficient information to demonstrate that the community meets the underserved definition in E.O. 13985, which includes populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.

As mentioned above, the city of Brownsville has a median income below state levels. 27.5% of Brownsville's population is living below the poverty line, which is nearly double the rate of 14.2% in the state of Texas.[17] Additionally, 94.1% of the population of Brownsville is Hispanic or Latino.[16]

[16] https://www.census.gov/quickfacts/fact/table/TX/BZA210220
[17] https://censusreporter.org/profiles/16000US4810768-brownsville-tx/

(3) Tribal Benefits: *The Department of the Interior is committed to strengthening tribal sovereignty and the fulfillment of Federal Tribal Trust responsibilities. The President's memorandum "Tribal Consultation and Strengthening Nation-to-Nation Relationships" asserts the importance of honoring the Federal government's commitments to Tribal Nations. Please address the following, if applicable:*

Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?

This project will not directly serve and/or benefit a Tribe. BPUB's service area does not include tribal lands, and American Indian and Alaska Natives account for only 0.1% of Brownsville City's population.[13]

Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other tribal benefits such as improved public health and safety through water quality improvements, new water supplies, or economic growth opportunities?

Not applicable. Please see above response to (3) Tribal Benefits a. for further details.

(4) Other Benefits: *Will the project address water and/or energy sustainability in other ways not described above? For example:*

Will the project assist States and water users in complying with interstate compacts?

While BPUB is not part of any interstate compacts, the AMI Project will assist water users in Colorado, New Mexico, and Texas in complying with the Rio Grande Compact. The compact between the three states was signed in 1938 and went into effect in 1939 to apportion water from the Rio Grande River above Fort Quitman, Texas. It establishes maximum reservoir storage quantities and water quality standards and ensures that each state receives its equitable share of water.[18]

Increased water conservation through BPUB's AMI project will contribute to the health and sustainability of the Rio Grande River, assisting Colorado and New Mexico in their efforts to comply with the compact. BPUB is eager to not only use AMI to better serve its customers, but also to mitigate the anticipated impacts of climate change in the region that pose considerable risk for water users in the coming years.

Please note: the state of Texas is included in multiple compacts including the Canadian River compact, the Pecos River compact, the Red River compact, and the Sabine River

[18] https://www.tceq.texas.gov/downloads/permitting/water-rights/interstate-compacts/rio-grande/rio-grande-compact.pdf

compact. The Rio Grande Compact was highlighted in this response be due to its direct relation to BPUB's water supply.

Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?

Yes, the AMI Project will benefit the following sectors:

- **Recreational** – Benefits in the city generally translate to parks and recreation (e.g., watering of public flower beds, swimming pools etc.). Water use in public areas can be better monitored and managed through AMI equating to reductions in water usage and expenses for this department. There are a number of parks and trails along the resacas in Brownsville that attract tens of thousands of visitors per year, who come to view and observe the many species of wildlife. The water conserved as a result of the AMI project will help to preserve the resacas and continue to allow visitors to enjoy the biodiversity they provide.
- **Environmental** – Reductions in carbon emissions and gas consumption from fewer utility vehicle miles driven contributes to environmental benefits.
- **Municipal and Industrial** – The ability to access granular, around the clock water usage and history to identify trends and pinpoint water waste within facilities / buildings benefits the city and its businesses.
- **Agricultural** – With irrigation accounts in the Lower Rio Grande basin being subject to limited water usage balances by the Rio Grande Watermaster and a monthly determination by the watermaster that there is adequate surplus supply in the Falcon-Amistad system to allocate to the irrigation accounts, the agricultural sector will benefit from the conserved water from the AMI project. The conserved water will help to ensure that river and reservoir levels are high enough to be allocated for irrigation purposes and the watering of crops and fields.

Will the project benefit a larger initiative to address sustainability?

In 2009, the City of Brownsville adopted the Imagine Brownsville Comprehensive Plan to address the City's various strategic, economic, infrastructure, social, civic, and environmental goals. The vision of the Environmental Plan is to "create a green, sustainable community that protects and maintains its environmental resources, promotes environmental awareness and responsible resource use/recycling and promotes increased quality of life throughout the community." [19]

[19] https://www.brownsvilletx.gov/DocumentCenter/View/1052/Goals-and-Objectives-PDF

This Environmental Plan sparked BPUB to implement the Resaca Restoration Project in 2013, which encompasses many of the same tenets. The Resaca Restoration Project aims to restore the resaca systems to their previous depths to help waterflows, in addition to restoring the diversity of their ecosystems.[20] The AMI project will further these initiatives by reducing greenhouse gas emissions, lowering energy usage for pumping, contributing to the conservation of wildlife habitats, conserving water for future use, and contributing to improved quality of life for the community.

Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?

There has been frequent tension and litigation centered around the waters of the Rio Grande River. In the 1950's, severe drought and shortages led to lawsuits being filed and ultimately resulted in judicial power being invoked to address the issues of control of the American water in the lower Rio Grande River basin.[21]

The Rio Grande Watermaster Program was created after the finalization of these multiple lawsuits in 1971. The Program, which includes Cameron County in its jurisdiction, determined that the water located below Lake Amistad is to be allocated on an account basis with priority placed on all municipal accounts.

However, according to the Texas Commission on Environmental Quality, "Irrigation accounts, on the other hand, must rely on balances that are carried forward, as irrigation accounts are not reset at the beginning of the year. Each month the watermaster determines how much unallocated water assigned to the United States is contained in the Falcon-Amistad system. If the surplus water is identified in a given month, it is allocated to the irrigation accounts… This system of accounting for water usage was put in place after an international treaty with Mexico was established, and in accordance with a 1969 District Court ruling."[22]

BPUB aims to use the lessons learned from past conflicts to implement AMI and play a proactive role in preventing another water-related crisis or conflict from occurring in the future. The conserved water will also play a large role in helping the United States to comply with its Convention with Mexico[23] regarding the distribution of the waters of the Rio Grande and minimize any future tensions.

[20] https://www.brownsville-pub.com/projects/resaca-restoration/#:~:text=The%20Brownsville%20Public%20Utilities%20Board%27s,built%20up%20over%20the%20years.
[21] https://casetext.com/case/state-v-hidalgo-co-wtr
[22] https://www.tceq.texas.gov/permitting/water_rights/wmaster/rgwr#about-the-rio-grande-watermaster-program
[23] https://www.tceq.texas.gov/downloads/permitting/water-rights/interstate-compacts/rio-grande/1906-rg-convention.pdf

Evaluation Criterion D: Complementing On-Farm Irrigation Improvements (10 points)

*Up to **10 points** may be awarded for projects that describe in detail how they will **complement on-farm irrigation improvements** eligible for NRCS financial or technical assistance.*

Note: Scoring under this criterion is based on an overall assessment of the extent to which the WaterSMART Grant project will complement ongoing or future on-farm improvements.

*Applicants should describe any proposal made to NRCS, or any plans to seek assistance from NRCS in the future, and how an NRCS-assisted activity would complement the WaterSMART Grant project. Financial assistance through EQIP is the most commonly used program by which NRCS helps producers implement improvements to irrigation systems, but NRCS does have additional technical or financial assistance programs that may be available. Applicants may receive maximum points under this criterion by providing the information described in the bullet points below. **Applicants are not required to have assurances of NRCS assistance by the application deadline to be awarded the maximum number of points under this sub- criterion.** Reclamation may contact applicants during the review process to gather additional information about pending applications for NRCS assistance if necessary.*

Note: Scoring under this criterion is based on an overall assessment of the extent to

BPUB's AMI project will not directly impact on-farm irrigation improvements. However, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) in Texas is offering financial assistance to farmers and ranchers along the southern border currently impacted by damage to fields and farming infrastructure, including fencing and water structures.

Funding is available for producers in Cameron county through the Environmental Quality Incentives Program (EQIP), which provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits.

NRCS accepts applications for conservation programs year-round, however, producers and landowners were encouraged to apply by July 5, 2022, to be considered for this year's funding. Applications for this enrollment opportunity will be selected for funding by August 5, 2022. The BPUB team is planning to engage eligible producers to ensure that they understand how their new AMI irrigation meter can complement their on-farm irrigation improvements once selections have been made.

Evaluation Criterion E: Planning and Implementation (8 points)

*Up to **8 points** may be awarded for these subcriteria.*

Subcriterion E.1 – Project Planning

Points may be awarded for proposals with planning efforts that provide support for the proposed project.

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Does the project address an adaptation strategy identified in a completed WaterSMART Basin Study? *Please self-certify or provide copies of these plans where appropriate to verify that such a plan is in place. Including a specific excerpt or a link to the planning document may also be considered where appropriate.*

Provide the following information regarding project planning:

Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

BPUB's Capital Improvements Plan (CIP) identifies the major improvement projects and aligns them with its fiscal capabilities for five years into the future. The CIP summary in BPUB's FYE 2022 Annual Budget Report features the AMI Project.

Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan(s).

Based on an examination of BPUB's water use profile, supply, and system evaluation, BPUB adopted three water conservation goals in its latest Water Conservation and Drought Contingency Plan. Of these, two goals will be directly supported by the AMI Project:

1. Maintain A Lower Residential Per Capita Usage

   During 2014 to 2018, the residential consumption in Brownsville ranged from 56 to 62 gallons per capita per day (gpcd), with an average of 58 gpcd. BPUB can further reduce its residential water gpcd by adopting and maintaining the water conservation measures set forth in the Water Conservation Plan. BPUB projects that residential water consumption can remain at or below 60 gpcd within 5 years.

   Long-term, BPUB's 10-year goal is to maintain residential water demand at or below 55 gpcd by implementing additional water conservation measures. BPUB

plans to achieve this goal by aggressively continuing and/or concentrating additional efforts related to several established water conservation strategies. The AMI Project will facilitate the following:

a. Public awareness and education on the need for water conservation

   BPUB has been proactive regarding water conservation awareness and education. Brownsville residents and businesses receive extensive information on conservation efforts annually as part of the Water Conservation Public Information Campaign. Through advertising, editorials, marketing, media contacts, public relations, speaking engagements, presentations, and tours, BPUB has reached individuals from all age groups and social classes with respect to the importance of conserving one of our most precious resources –water.

   AMI technology will enhance the relationship between BPUB and customers. Both parties will now have access to near real-time usage data and the ability to set notifications for service issues. BPUB plans to develop a stakeholder engagement campaign to support the AMI project. This effort will leverage current communication channels to educate customers on the project benefits, especially those resulting from the CEP. The online portal will empower customers to manage their water usage and cut costs. The campaign will instruct customers on steps to take to enroll and inform them on the supplemental conservation related data available on the portal. The CEP will continue to support the latest conservation efforts post-AMI, thus BPUB intends to include it in the annual public information campaign as well.

b. Universal metering, meter repair and replacement

   BPUB has a policy that all water users, including BPUB uses and water supply sources, be metered. This policy promotes water conservation in two ways. First, metering results in lower water use, since the customer becomes aware of the amount of water used through the effect it has on the water bill. Second, metering is an aid to detecting leaks on both sides of the meter.

   BPUB will be upgrading over 57,000 meters throughout the duration of the MI Project. All subsequent new constructions will also have advanced meters moving forward. Additionally, BPUB will review its current meter replacement program to ensure that it adequately supports timely advanced meter repairs and replacements.

c. Leak detection and repair

BPUB currently has a program in place to detect leaks in the distribution system. Advanced meters will aid this program in reducing water losses by identifying customer-side leaks in addition to those found in the distribution system. The AMI software will notify BPUB when a certain threshold of usage occurs consistently over a 24-hour period. Additionally, customers will receive notifications and have access to materials that instruct them on the appropriate actions to take to address a leak through the customer portal.

Through these activities, BPUB's water system has and will maintain a high standard of operational integrity. Over the next 15 years, BPUB's goal is to maintain distribution system losses at an annual average of less than 14%, and this figure can even be driven down substantially through the AMI program. BPUB will continue to implement its leak prevention, detection, and repair program, which will include AMI in its processes/protocols in the future.

2. Accounting For Raw Water Use In the Resaca System

The use of raw water by landowners along the resacas to irrigate private lawns has resulted in a dual water system. The landowners use raw water to irrigate their lawns and use treated water for household use. This dual water system works to reduce treated water demands. However, presently there is no charge or metering for pumping raw water from the resacas.

BPUB will install raw water meters to measure the raw water going into the Resaca system. The raw water meters would facilitate the calculation of a more accurate "unaccounted for" raw water quantity. BPUB will explore available options for raw water AMI meters as part of the procurement process.

The drought contingency plan portion of the document outlines four stages and includes protocol to address drought conditions during each including: Stage 1 – Voluntary Water Conservation, Stage 2 – Water Shortage Alert, Stage 3 – Water Shortage Warning, and Stage 4 – Water Shortage Emergency.

AMI would allow BPUB to support customers in urgent water conservation efforts by providing near-real time data, producing regular reports, and setting system alerts. For example, BPUB currently has to rely on citizen reporting and staff field visits to document landscape irrigation limitations. The AMI system could provide this information to BPUB staff internally and customers externally via the CEP.

The AMI Project also supports the City of Brownsville's Imagine Brownsville Comprehensive Plan, which was designed to establish the community's vision objectives for a 10-year planning horizon and to develop an implementable strategy to help reach these targeted objectives using feedback from the general public and a third-party consultant.

The AMI Project supports the following strategic goals from the comprehensive plan:

- Infrastructure Goal: A community with quality delivery of infrastructure (utility, transportation, drainage, telecommunications) and levels of service in a cost efficient, reliable, equitable, affordable, and effective manner that provide a foundation for the community's sustainable quality of life and economic development through the 10-year planning horizon.
    - Objective: The City wants a reliable water system, hardened against service interruptions due to natural and man-made disasters, that delivers environmentally safe water at sufficient pressures with acceptable sector characteristics uniformly throughout the community.
      AMI functionality will allow BPUB to better support all customer groups through drought-conditions and natural disasters through outage/leak detection and restoration.

    - Objective: Want a financially sustainable operation with efficient and competitive life cycle costs that maximizes external funding source, and with competitive, affordable user fees/tax rates that distribute life cycle costs among private and public sectors in an equitable manner.
      The available AMI consumption data will empower customers to manage usage better which will save water and cut costs. BPUB can also use AMI data to determine when changes should be made to enhance conservation and better match costs of service internally.

    - Objective: Want a water system that encourages efficient consumer use, uses alternative sources of water, recovers and reuses natural resources, and complies with environmental regulations in a sustainable manner.
      Upgrading to AMI will allow BPUB and its customers to use the latest technology to conserve water, which will support BPUB's water supply Brownsville continues to develop.

- Civic Goal: An engaged, civically responsible and informed community that actively participates in civic affairs characterized by open and effective cooperation among public and private sector entities guided by effective appointed or elected leadership, all committed to the community's sustainable development through the 10-year planning horizon.

- Objective: Improve and sustain the number, quality and diversity of effectively engaged individuals working together to improve the quality of life and economic development of the community. Engage well-informed individuals (e.g., voters, volunteers) committed to participation and action who are empowered with a sense of ownership, accountability and responsibility in the community.
  It's impossible to complete a large-scale project like AMI without getting stakeholders from across the community on-board and engaged (e.g., Utilities Board, City Council, city agencies, Chamber of Commerce, residential and business customers).

- Objective: Enhance the value and benefits of public services and improve productivity and utility of public serving entities in Brownsville by causing high order inter-entity cooperation and collaboration among all public institutions.
  As previously mentioned, city-wide agencies such Parks and Recreation (e.g., managing water usage at parks/outdoor locations) and Planning and Redevelopment (e.g., installing the latest meters at new developments) would be engaged with BPUB's AMI technology.

- Environment Goal: An environmentally conscious community with quality management and protection of environmental resources in a cost efficient, reliable, equitable, affordable, and effective manner to support the community's infrastructure, quality of life, and economic development through the 10 year planning horizon in a sustainable manner.
  The AMI Project will provide opportunities for residents at different income levels to proactively manage their water use, reduce waste and cut costs, which allows them handle other important needs. The sustainability benefits mentioned in response to Evaluation Criterion C (e.g., water conservation, renewable energy, reduction of pollution etc.) will help the city to retain its natural resources and protect the unique habit within the Rio Grande River Valley.

If applicable, provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a completed WaterSMART Basin Study or Water Management Options Pilot (e.g., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes)

In 2011, "the Bureau of Reclamation (Reclamation) and the Rio Grande Regional Water Authority (RGRWA) with its 53 member entities—in collaboration with the Texas Region M Planning Group, TWDB, Texas Commission on Environmental Quality (TCEQ), and

International Boundary and Water Commission—conducted the Lower Rio Grande Basin Study (Basin Study) to evaluate the impacts of climate variability and change on water supply imbalances, and to develop adaptation and mitigation strategies to address those imbalances, within an eight-county region, along the U.S./Mexico border in south Texas (Cameron, Willacy, Hidalgo, Starr, Zapata, Jim Hogg, Webb, and Maverick Counties). [24]

The AMI project will address a few of the Regin M Plan water management strategies mentioned in the Basin Study including:

- Advanced water conservation: Public information/School education
    - The AMI project will provide customers with more than just a new meter. AMI change the relationship that customers have with BPUB because they will now have access to the same data and tools as staff. This will empower self-service and better water conservation practices. However, in order for this project to be successful long-term, BPUB must continue advanced water conservation education via public information. In the short term, individuals may realize the personal benefit of water conservation once they see increased water savings. Over time, the affected customer may encourage additional water conservation among peers and family based on their experience. This strategy is especially effective when combined with other measures such as tips and usage notifications on the customer portal, quantifiable savings due to early leak-detection and BPUB conservation programs.
- On-Farm Water Conservation
    - The AMI Project will indirectly impact on-farm water conservation by allowing farmers with irrigation meters to view their trends usage via the customer portal. AMI coupled with other measures including farm-level water measurement, replacement of field ditches canals with poly pipe, and adoption of improved water management practices and irrigation technologies will make a significant difference in on-farm water conservation.

Subcriterion E.2 – Readiness to Proceed

Points may be awarded based upon the extent to which the proposed project is capable of proceeding upon entering into a financial assistance agreement. Please note, if your project is selected, responses provided in this section will be used to develop the scope of work that will be included in the financial assistance agreement.

[24] https://www.usbr.gov/watersmart/bsp/docs/finalreport/LowerRioGrande/LowerRioGrandeBasinStudy.pdf

Applications that include a detailed project implementation plan (e.g., estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates) will receive the most points under this criterion.

Identify and provide a summary description of the major tasks necessary to complete the project. Note: please do not repeat the more detailed technical project description provided in Section D.2.2.4.; this section should focus on a summary of the major tasks to be accomplished as part of the project.

- January 2023: BPUB and the selected vendors begin AMI project planning
- May 2023: Award notification from Bureau of Reclamation
- June 2023: Begin initial deployment area (IDA) with a small group of meters for further verification/testing
- November 2023: Complete IDA testing and begin to acquire production quantities of meters/modules
- January 2024: Start mass deployment of meters
- December 2025: Complete mass deployment of meters

Describe any permits that will be required, along with the process for obtaining such permits.

No permits or approvals will be required for the AMI Project at this time. BPUB will proactively plan ahead for each phase of the project, so any unforeseen required permits or approvals can be easily obtained in a timely fashion.

Identify and describe any engineering or design work performed specifically in support of the proposed project.

Engineering and design work has been completed. No additional design work is necessary for the AMI Project.

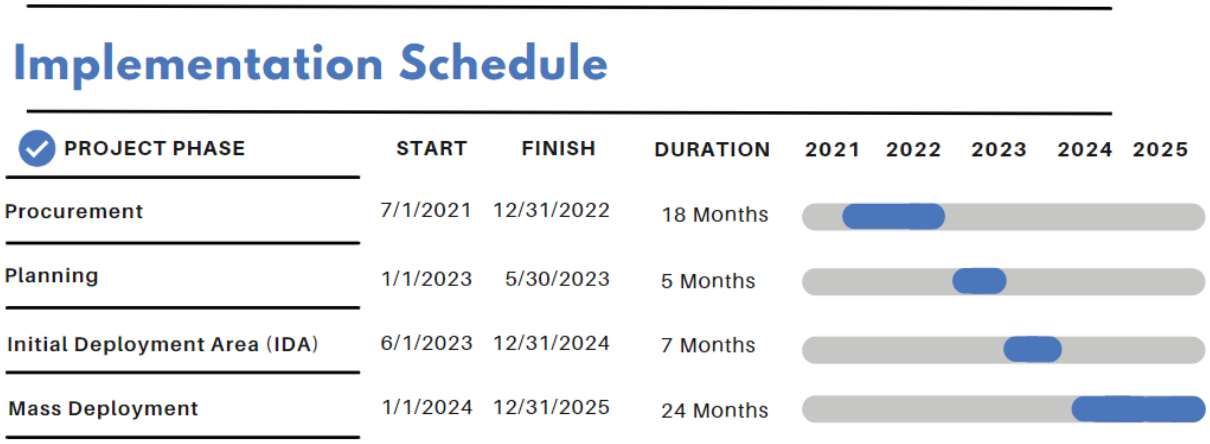
Describe any new policies or administrative actions required to implement the project.

There are no new policies or administrative actions required to implement the project.

Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural compliance; mobilization; begin construction/installation; construction/installation (50% complete); and construction/installation (100% complete). Was the expected timeline for environmental and cultural compliance discussed with the local Reclamation Regional or Area Office?

An estimated project schedule is provided as Figure 3 below:

Figure 3: Project Schedule



Evaluation Criterion F: Collaboration (6 points)

*Up to **6 points** may be awarded for projects that promote and encourage collaboration among parties in a way that helps increase the sustainability of the water supply.*

Please describe how the project promotes and encourages collaboration. Consider the following:

Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?

BPUB has support for the project throughout the community. Advocates include Judge Eddie Treviño Jr., City Manager Noel Bernal, and the BPUB board of directors.

Each of these advocates understands the economic and environmental benefits of the AMI Project to the City of Brownsville. Please see detailed letters from these supporters in ATTACHMENT A.

What is the significance of the collaboration/support?

Backing from the previously mentioned groups/individuals is vital for a large-scale implementation like AMI. Replacing aging infrastructure with state-of-the-art technology is the next step in BPUB's effort to enhance customer service by conserving water and cutting cost. Community support at all levels is a needed to ensure project success and realize the benefits in the long-term.

Will this project increase the possibility/likelihood of future water conservation improvements by other water users?

BPUB receives water from the Southmost Regional Water Authority (SRWA), a consortium of five water conservation and reclamation entities in Brownsville, Texas. SRWA partners in the desalination facility include Brownsville Public Utilities Board (92.91% ownership), Valley Municipal Utility District #2 (2.51% ownership), City of Los Fresnos (2.28% ownership), Brownsville Navigation District (2.10% ownership), and the Town of Indian Lake (0.20% ownership). The successful completion of the AMI project will strengthen the resiliency of the water supply and serve as an example to other water users. This will also contribute to further water conservation both in the region and across the state of Texas, which is currently facing exceptional drought conditions in various areas.

Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding)

Evaluation Criterion G: Additional Non-Federal Funding (4 points)

*Up to **4 points** may be awarded to proposals that provide non-Federal funding in excess of 50 percent of the project costs. State the percentage of non-Federal funding provided using the following calculation:*

$$\frac{\textbf{\$13,059, 207 (Non-Federal Funding)}}{\textbf{\$18,059,207 (Total Project Cost)}}$$

The non-federal cost-share is 72.3% of the total cost and will be paid by BPUB funding sources. This percentage is greater than the required 50% match.

Evaluation Criterion H: Nexus to Reclamation (4 points)

*Up to **4 points** may be awarded if the proposed project is connected to a Reclamation project or Reclamation activity. No points will be awarded for proposals without connection to a Reclamation project or Reclamation activity.*

Describe the nexus between the proposed project and a Reclamation project or Reclamation activity. Please consider:

Does the applicant have a water service, repayment, or operations & maintenance (O&M) contract with Reclamation?

BPUB does not have water service, repayment, or an O&M contract with Reclamation.

If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?

SRWA was awarded $300,000 in Reclamation funding for a Well Field Monitoring project under the WaterSMART Drought Response program in 2015[25]. The funding was used to develop a monitoring and management program for brackish groundwater wells that are part of a desalination treatment facility which provides a reliable supply of water for approximately 50,000 people, decreasing dependence on the Rio Grande River.

Will the proposed work benefit a Reclamation project area or activity?

Like the Well Field Monitoring initiative, this project supports the Lower Rio Grande Basin Study which highlighted the development of appropriate adaptation and mitigation strategies to meet future water demands.

Is the applicant a Tribe?

No, BPUB is a division of the City of Brownville township government.

PERFORMANCE MEASURES

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved). For more information calculating performance measure, see Appendix A: Benefit Quantification and Performance Measure Guidance.

All Water and Energy Efficiency Grants applicants are required *to propose a "performance measure" (a method of quantifying the actual benefits of their project once it is completed). A provision will be included in all assistance agreements with Water and Energy Efficiency Grants recipients describing the performance measure and requiring the recipient to quantify the actual project benefits in their final report to Reclamation upon completion of the project. If information regarding project benefits is not available immediately upon completion of the project, the financial assistance agreement may be modified to remain open until such information is available and until a Final Report is submitted. Quantifying project benefits is an important means to determine the relative effectiveness of various water management efforts, as well as the overall effectiveness of Water and Energy Efficiency Grants.*

Note: program funding may be used to install necessary equipment to monitor progress. However, program funding may not be used to measure performance after project construction is complete (these costs are considered normal operation and maintenance costs and are the responsibility of the applicant).

[25] https://www.usbr.gov/drought/docs/apps/2015/4600014_508.pdf

Performance Measure A.2: Projects with Quantifiable Water Savings

Good water management requires accurate and timely water measurement at appropriate locations throughout a conveyance system. This includes irrigation delivery systems and municipal distribution systems.

Performance Measure A.2.a. Measuring Devices: Municipal Metering

For projects that install or replace existing municipal end-user water service meters, the applicant should consider the following:

Whether the project includes new meters where none existed previously or replaces existing meters

BPUB anticipates that 17,678 meters will be replaced, while the remaining 39,773 meters will be retrofit with a new register as part of the AMI project. All 57,451 meters will receive AMI endpoints and be able to register usage to a finer resolution.

Whether the project includes individual water user meters, main line meters, or both

The AMI Project includes the deployment of individual water end-user meters only.

If the project replaces existing individual water user meters with new meters, whether new technologies (e.g., automatic meter reading [AMI] meters automatic meter) will be employed

The new meters will replace, and upgrade existing manual read meters.

Include a description of both pre- and post-project rate structuring.

A water customer service charge, water consumption charges, and resaca fee are the primary components of the water rate structure for BPUB customers. The customer service charge varies by meter size, while the consumption charges are tiered based on the amount of water used (in gallons). See Figure 4 for the BPUB water rate structure as noted on the utility website.[26]

[26] https://www.brownsville-pub.com/utility-services/water-wastewater/water-wastewater-rates/

Figure 4: BPUB Water Rate Structure

Water Customer Service Charge				
	Residential		Non-Residential	Wholesale
Meter Size	Inside City	Outside City		
¾" or less	$13.02	$19.57	$19.57	$13.02
1"	$24.44	$36.65	$24.38	$24.44
1.5"	$40.54	$60.79	$40.45	$40.54
2"	$64.24	$96.34	$64.09	$64.24
3"	$148.66	$223.13	$148.45	$148.66
4"	$226.45	$339.79	$226.06	$226.45
6"	$435.49	$653.54	$434.80	$435.49
8"	$683.05	$1,025.02	$681.95	$683.05
10"	$1,005.95	$1,509.53	$1,004.29	$1,005.95

Water Consumption Charges				
	Residential		Non-Residential	
Volume Charges	Inside City	Outside City	Inside City	Outside City
Block 1: 0—3,000 gallons	$2.14	$3.21	$2.82	$4.23
Block 2: 3,001—9,000 gallons	$2.37	$3.55		
Block 3: 9,001—16,000 gallons	$2.92	$4.37		
Block 4: Over 16,000 gallons	$4.41	$6.61		

Resaca Fee
$4.50

The type of account is determined based on the zoning and use. Residentially accounts are charged the residential rates. Commercial or industrial accounts are charged the non-residential rate.

It is important to find balance and spread the costs over the various tiers to reliably generate the required revenue necessary to meet ongoing operations & maintenance (O&M) and capital costs while spreading the impact to all classes when setting rates.

BPUB does not plan to change water rates post-project. The Board determined that the specific rate charged will change/increase annually over the next five years on March 14, 2022, but the structure will remain unchanged. The available AMI consumption data will empower customers to manage usage better which will save water and cut costs. BPUB can also use AMI data to determine when changes should be made to enhance conservation and better match costs of service internally.

Overall Performance Measures

Based primarily on actual cost of business or industry best estimates relative to BPUB size and demographics, estimated circumvented costs and recovered revenues are back calculated. Table 11 summarizes all quantitative benefits areas, their value driver with key calculation assumptions (which can be used for benefits verification) and annual value after the first full year of system deployment (for the moderate AMI scenario).

Table 11: AMI Project Performance Measures

Benefit	Assumptions(s)	Annual Benefit
Theft Identification	0.25% Revenue Impacts	$44,373
Meter Replacement Offset	95% Reduction for 10 years	$403,750
Improved Water Meter Accuracy	7.03% Total Improvement from Replaced Water Meters	$294,990
System Loss Reduction	33% Reduction on Current Water Losses	$250,442
Revenue Capture from Stuck Meter Reduction	95.0% Reduction in Stuck Meters	$14,051
Main Leaks Prevention/Reduction	5.0% Reduction in Main Repairs	$22,185
Leak Adjustments Reduction	90% Reduction	$20,662
Pump Schedule Optimization	5.0% Reduction in Electricity Costs for Pumping	$29,349

PROJECT BUDGET

The project budget includes:

(1) *Budget proposal*
(2) *Budget narrative*
(3) *Funding plan and letters of commitment*

If the proposed project is selected, the awarding Reclamation Grants Officer will review the proposed pre-award costs to determine if these costs are consistent with program objectives and are allowable in accordance with the authorizing legislation. Proposed pre-award costs must also be compliant with all applicable administrative and cost principles criteria established in 2 Code of Federal Regulations (CFR) Part 200 and all other requirements of this NOFO. ***In no case will costs incurred prior to April 1, 2022, be considered for inclusion in the final approved project budget.***

Please note that the costs for preparing and submitting an application in response to this NOFO, including developing data necessary to support the proposal, are not eligible project costs under this NOFO and must not be included in the project budget. In addition, budget proposals must not include costs for the purchase of water or land, or to secure an easement other than a construction easement. These costs are not eligible project costs under this NOFO.

Pre-Award Costs

In addition, please identify whether the budget proposal includes any project costs that have been or may be incurred prior to award. For each cost, describe:

The project expenditure and amount.

BPUB has been actively engaged in the procurement for supplies and contracts to be executed as part of this project. BPUB has worked with a consultant to assist in RFP development and vendor evaluation for the cost of $78,500.

The date of cost incurrence.

The incurrence of this cost will take place from August 2021 through September 2022.

How the expenditure benefits the project.

After the conclusion of the initial business case, BPUB set out to develop requirements and engage in a formal RFP process to solicit proposals from vendors. These activities will ensure that the features, functions, and capabilities of the hardware and software procured will meet the operational and conservation needs of the utility. Additionally, BPUB and the consultant are currently performing due diligence on final candidates to ensure the viability of solutions. These preparations will ultimately help BPUB to select and implement the best solution and to move the schedule along in a timely fashion for a successful project.

Budget Proposal and Funding Plan

The total project cost is the sum of all allowable items of costs, including all required cost sharing and voluntary committed cost sharing, including third-party contributions, that are necessary to complete the project. Please include the following chart (Table 1) to summarize all funding sources. Denote in-kind contributions with an asterisk (*).

Table 12: Summary of Non-Federal and Federal Funding Sources

FUNDING SOURCES	AMOUNT
Non-Federal Entities	
1. Brownsville Public Utilities Board (Capital Improvement Projects Fund)	$13,059,207
2.	
3.	
Non-Federal Subtotal	$13,059,207
REQUESTED RECLAMATION FUNDING	$5,000,000

*The budget proposal should include detailed information on the categories listed below and must clearly identify all items of cost, **including those that will be contributed as non-Federal cost share by the applicant (required and voluntary), third-party in-kind contributions, and those that will be covered using the funding requested from Reclamation**, and any requested pre- award costs.*

Table 13: Total Project Cost Table

SOURCE	AMOUNT
Costs to be reimbursed with the requested Federal funding	$ 5,000,000
Costs to be paid by the applicant	$ 13,059,207
Value of third-party contributions	$ -0-
TOTAL PROJECT COST	**$ 18,059,207**

Budget Narrative

The Budget Narrative for each budget object category is found within ATTACHMENT B. Note that costs represented here are estimates based on pricing received from BPUB's RFP process. Actual contract costs will differ pending negotiations with vendors.

Funding plan and letters of commitment

BPUB will provide 100% of non-Federal share of the project. Funds will be provided through BPUB's Capital Improvement Plan. See a letter of funding commitment attached to this document**.**

ENVIRONMENTAL AND CULTURAL RESOURCE COMPLIANCE

To allow Reclamation to assess the probable environmental and cultural resources impacts and costs associated with each application, all applicants should consider the following list of questions focusing on the NEPA, ESA, and NHPA requirements. Please answer the following questions to the best of your knowledge. If any question is not applicable to the project, please explain why. The application should include the answers to:

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

AMI hardware (e.g., network communication equipment and advanced meters) will be installed throughout the already developed areas of the water system within BPUB's service territory. Therefore, the AMI Project will not have an impact on the surrounding environment (soil, air, water, or animal habitat).

The only earth-disturbing activity would include replacement or modification of the existing water boxes at customer premises. BPUB is prepared to complete this process as necessary.

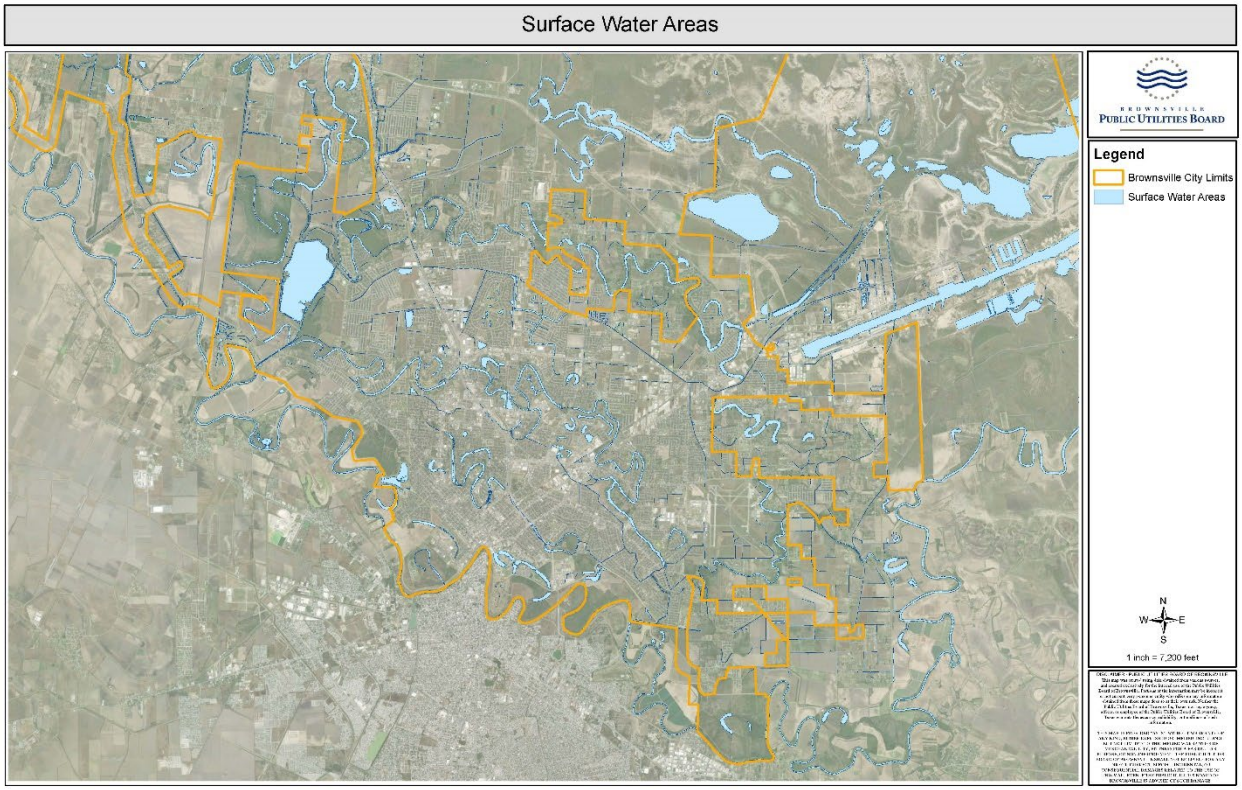
Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

The RGS is a state threatened species (pending federal status) located in the Pecos and Rio Grande rivers, in BPUB's service territory. However, the RGS would not be directly affected by any activities associated with the AMI project, because project work will not be conducted in the areas where it resides.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.

There are several coastal wetlands and surface waters, as illustrated in Figure 5, that can be considered Waters of the United States. However, no direct impacts are anticipated to these waters as a result of the proposed project since the work will be performed at customer premises.

Figure 5:BPUB Surface Waters



When was the water delivery system constructed?

BPUB's water delivery system was established in 1931 after the first water plant.

Will the proposed project result in any **modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.**

The AMI Project will not result in any modification of or effects to individual features of an irrigation system.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

There are a number of buildings listed on the National Register of Historic Places (e.g., Fort Brown, Historic Brownsville Museum, Brownsville Freight Depot and Warehouse District etc.), but the activities of this project will have no impact on those places. BPUB will replace water meters servicing those buildings as part of the AMI Project.

Are there any known archeological sites in the proposed project area?

There are no known archeological sites located in the proposed project area (i.e., customer meter boxes and other city-owned structures). The AMI Project will not include ground-disturbing activity that would pose a significant threat to archaeological sites.

Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

The AMI Project will not have a disproportionately high and adverse effect on low income or minority populations in the BPUB service area. As previously mentioned, the CEP will allow residents to better manage their water use, reduce waste and save money to spend on other important needs. The new data that will be available via the customer portal should enhance customer service interactions between BPUB and customers as users view their water consumption, understand how it compares to their neighbors, set alerts, and receive additional conservation tips for their household or business.

Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

The AMI Project will not limit access to and ceremonial use of Indian sacred sites or result in other impacts to tribal lands. BPUB service area does not currently include tribal land.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

The AMI Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the Brownsville area.

REQUIRED PERMITS OR APPROVALS

You must state in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

Note that improvements to Federal facilities that are implemented through any project awarded funding through this NOFO must comply with additional requirements. The Federal government will continue to hold title to the Federal facility and any improvement that is integral to the existing operations of that facility. Please see P.L. 111-11 §9504(a)(3)(B). Reclamation may also require additional reviews and approvals prior to award to ensure that any necessary easements, land use authorizations, or special permits can be approved consistent with the requirements of 43 CFR §429 and that the development will not impact or impair project operations or efficiency.

There are no required permits anticipated for the AMI Project. All the project work will be conducted at current customer meter locations within the BPUB service territory.

OVERLAP OR DUPLICATION OF EFFORT STATEMENT

Applicants must provide a statement that addresses if there is any overlap between the proposed project and any other active or anticipated proposals or projects in terms of activities, costs, or commitment of key personnel. If any overlap exists, applicants must provide a description of the overlap in their application for review.

Applicants must also state if the proposal submitted for consideration under this program does or does not in any way duplicate any proposal or project that has been or will be submitted for funding consideration to any other potential funding source—whether it be Federal or non- Federal. If such a circumstance exists, applicants must detail when the other duplicative proposal(s) were submitted, to whom (Agency name and Financial Assistance program), and when funding decisions are expected to be announced. If at any time a proposal is awarded funds that would be duplicative of the funding requested from Reclamation, applicants must notify the NOFO point of contact or the Program Coordinator immediately.

There will not be a duplication of effort. The proposal submitted for consideration under this program does not in any way duplicate any proposal or project that has been or will be submitted for funding consideration to any other potential funding source. As previously mentioned, BPUB plans to contribute all non-federal funding toward the project.

LETTERS OF SUPPORT

Please include letters from interested stakeholders supporting the proposed project. To ensure your proposal is accurately reviewed, please attach all letters of support/partnership letters as an appendix. Letters of support received after the application deadline for this NOFO will not be considered in evaluating your proposed project.

See Attachment A for three AMI Project support letters from Judge Eddie Treviño Jr., City Manager Noel Bernal and Brownsville Independent School District.

OFFICIAL RESOLUTION

Include an official resolution adopted by your organization's board of directors or governing body, or, for state government entities, an official authorized to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award under this NOFO, verifying:

- *The identity of the official with legal authority to enter into an agreement*
- *The board of directors, governing body, or appropriate official who has reviewed and supports the application submitted*
- *That your organization will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement*

An official resolution meeting the requirements set forth above is mandatory. If you are unable to submit the official resolution by the application deadline because of the timing of board meetings or other justifiable reasons, the official resolution may be submitted to sha-dro-fafoa@usbr.gov up to 30 days after the application deadline.

An official resolution from the BPUB Board of Directors will be approved and submitted via email in August 2022.

CONFLICT OF INTEREST DISCLOSURE STATEMENT

Conflict of Interest Disclosure Per the Financial Assistance Interior Regulation (FAIR), 2 CFR§1402.112, you must state in your application if any actual or potential conflict of interest exists at the time of submission.

Recipients must notify the program immediately in writing of any conflict of interest that arise during the life of their Federal award, including those reported to them by any subrecipient under the award. Recipients must notify the program in writing if any employees, including subrecipient and contractor personnel, are related to, married to, or have a close personal relationship with any Federal employee in the Federal funding program or who otherwise may have been involved in the review and selection of the award. The term "employee" means any individual engaged in the performance of work pursuant to the Federal award. Recipients may not have a former Federal employee as a key project official, or in any other substantial role related to their award, whose participation put them out of compliance with the legal authorities addressing post-Government employment restrictions. See U.S. Office of Government Ethics website for more information on these restrictions. Reclamation will examine each conflict of interest

disclosure based on its particular facts and the nature of the project and will determine if a significant potential conflict exists. If it does, Reclamation will work with the recipient to determine an appropriate resolution. Failure to disclose and resolve conflicts of interest in a manner that satisfies Reclamation may result in any of the remedies.

BPUB does not currently have or anticipate a conflict of interest with the Bureau of Reclamation or any other federal agencies.

UNIFORM AUDIT REPORTING STATEMENT

All U.S. states, local governments, federally recognized Indian Tribal governments, and non- profit organizations expending $750,000 in U.S. dollars or more in Federal award funds in your organization's fiscal year must submit a Single Audit report for that year through the Federal Audit Clearinghouse's Internet Data Entry System in accordance with 2 CFR §200 subpart F.
U.S. state, local government, federally recognized Indian Tribal governments, and non-profit applicants must state if your organization was or was not required to submit a Single Audit report for the most recently closed fiscal year. If your organization was required to submit a Single Audit report for the most recently closed fiscal year, provide the Employer Identification Number (EIN) associated with that report and state if it is available through the Federal Audit Clearinghouse website.

BPUB was not required to submit a Single Audit report for the recently closed 2021-22 fiscal year.

CERTIFICATION REGARDING LOBBYING

Non-Federal entities are strictly prohibited from using funds under a grant or cooperative agreement for lobbying activities and must provide the required certifications and disclosures pursuant to 43 CFR §18 and 31 USC §1352.

As previously mentioned, the non-federal portion of the AMI Project is being funded through BPUB's Capital Improvement Plan. BPUB currently does not anticipate future lobbying activities in relation to this project. Further details can be found on the required SF-LLL form.

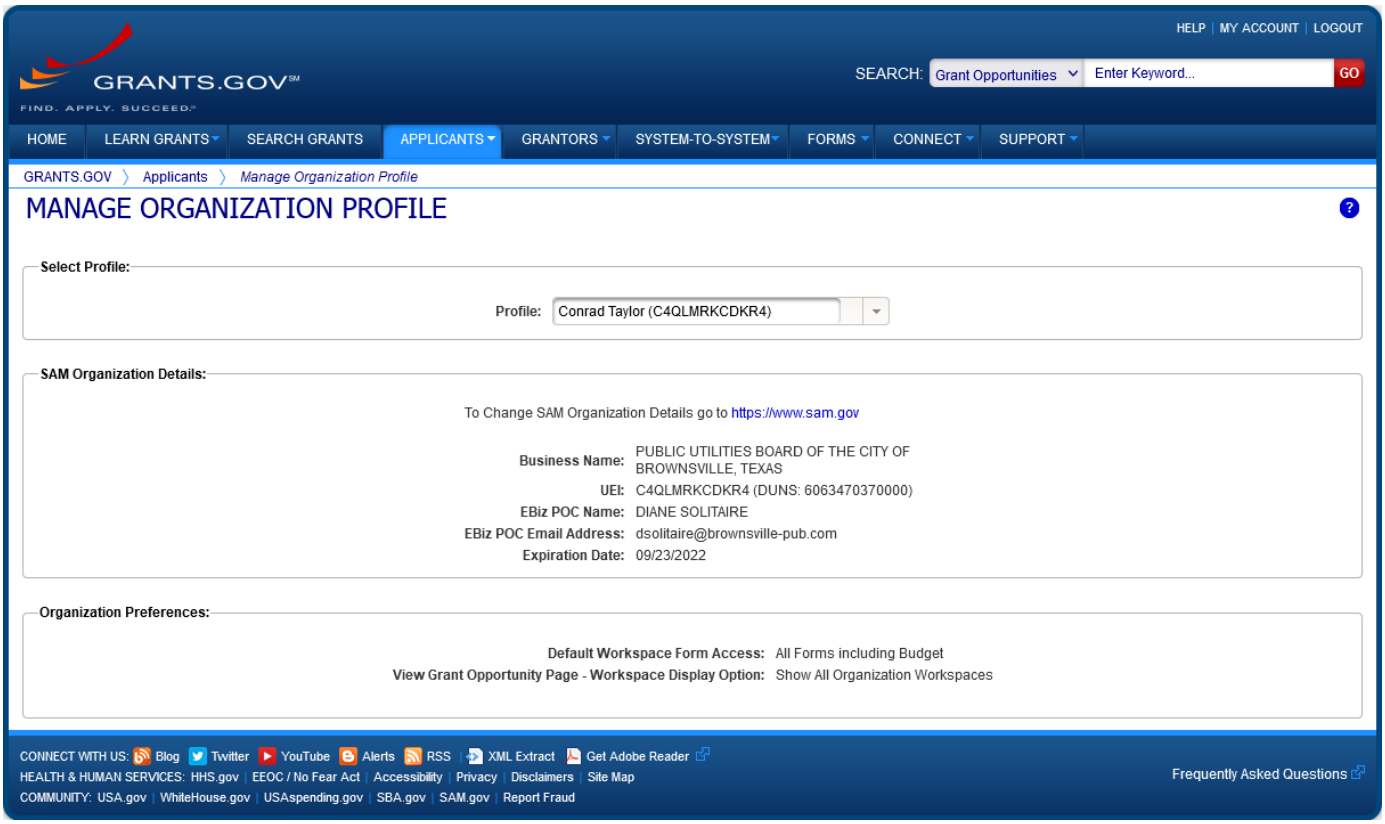
UNIQUE IDENTITY IDENTIFIER AND SYSTEM FOR AWARD MANAGEMENT

All applicants (unless the applicant has an exception approved by Reclamation under 2 CFR §25.110[d]) are required to:

(i) Be registered in the System for Award Management (SAM) before submitting its application

BPUB currently maintains an active SAM registration. The screenshot below in Figure 6 shows the active registration status.

Figure 6: BPUB SAM Registration



(ii) Provide a valid unique entity identifier in its application

BPUB uses C4QLMRKCDKR4 (DUNS:6063470370000) as its unique entity identifier.

(iii) Continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency.

BPUB is committed to maintaining its currently active SAM registration.

ATTACHMENTS

Attachment A – Letters of Support

Attachment B – Budget Narrative

Attachment C – AMI Assessment Business Case

Attachment D – BPUB's TWDB FY 2021 Water Audit

Attachment E – BPUB Meter Audit Results

Attachment F – BPUB Pump Information

ATTACHMENT A – Letters of Support

This attachment contains the letters of support from the following:

- Judge Eddie Treviño Jr.
- Brownsville City Manager Noel Bernal, ICMA-CM
- Brownsville Independent School District

Eddie Treviño, Jr.
County Judge

July 8, 2022

Bureau of Reclamation
Financial Assistance Support Services
Attn: NOFO Team
PO Box 25007, MS 84-27133
Denver, CO 80225

RE: Bureau of Reclamation WaterSMART Grants: Water and Energy Efficiency Grants for FY 2023 (Notice of Funding Opportunity No. R23AS00008)

To Whom It May Concern:

I am writing to express my support for the Brownsville Public Utilities Board's application for the Advanced Metering Infrastructure Project. The Brownsville Public Utilities Board operates and maintains the water and wastewater systems for the City of Brownsville and will be replacing and retrofitting approximately 58,000 meters with new meters and network improvements for automatic meter reading. This project will improve the Brownsville Public Utilities Board's water efficiency and conservation efforts thereby extending the life of water resources to serve the city and to allow future growth. Additionally, the increased accuracy that the new meters will provide will instill confidence in customers that the water billing to their location is correct and based on accurate and timely water readings.

I am privileged to extend my support of the Brownsville Public Utilities Board's application to the Bureau of Reclamation for their Advanced Metering Infrastructure project.

Should you need additional information, feel free to contact me at 956-544-0830 or email at etrevino@co.cameron.tx.us.

Sincerely,

Eddie Treviño, Jr.
County Judge

Cameron County Courthouse
Oscar C. Dancy Building
Phone (956) 544-0830

1100 E. Monroe Street, Suite 218
etrevino@co.cameron.tx.us

Brownsville, Texas 78520
Fax (956) 544-0801

Noel Bernal
City Manager

Brownsville
All-America City
2001 / 2014

July 11, 2022

Bureau of Reclamation
Financial Assistance Support Services
Attn: NOFO Team
PO Box 25007, MS 84-27133
Denver, CO 80225

RE: Bureau of Reclamation WaterSMART Grants: Water and Energy Efficiency Grants for FY 2023 (Notice of Funding Opportunity No. R23AS00008)

To Whom it May Concern:

On behalf of the City of Brownsville, I would like to express our support of the Brownsville Public Utilities Board's application for the Advanced Metering Infrastructure project. The Brownsville Public Utilities Board operates and maintains the water and wastewater systems for the City of Brownsville and will be replacing and retrofitting approximately 58,000 meters with new meters and network improvements for automatic meter reading. This project will improve the Brownsville Public Utilities Board's water efficiency and conservation efforts thereby extending the life of water resources to serve the city and to allow future growth. Additionally, the increased accuracy that the new meters will provide will instill confidence in customers that the water billing to their location is correct and based on accurate and timely water readings.

It is the City of Brownsville's privilege to extend its support of the Brownsville Public Utilities Board's application to the Bureau of Reclamation for their Advanced Metering Infrastructure project. The City believes that BPUB will use these funds to combat climate change effects, improve water use, and supply efficiency, sustainability, and reliability in our community.

If you have any questions or comments, please feel free to contact me at (956) 548-6005 or by email at noel.bernal@brownsvilletx.gov.

Sincerely,

Noel Bernal, ICMA-CM
City Manager

AN EARLY COLLEGE DISTRICT

BROWNSVILLE INDEPENDENT SCHOOL DISTRICT

July 19, 2022

Bureau of Reclamation
Financial Assistance Support Services
Attn: NOFO Team
PO Box 25007, MS 84-27133
Denver, CO 80225

RE: Bureau of Reclamation WaterSMART Grants: Water and Energy Efficiency Grants for FY 2023 (Notice of Funding Opportunity No. R23AS00008)

To Whom it May Concern:

On behalf of Brownsville I.S.D., I would like to express our support of the Brownsville Public Utilities Board's application for the Advanced Metering Infrastructure project. The Brownsville Public Utilities Board operates and maintains the water and wastewater systems for the City of Brownsville and will be replacing and retrofitting approximately 58,000 meters with new meters and network improvements for automatic meter reading. This project will improve the Brownsville Public Utilities Board's water efficiency and conservation efforts thereby extending the life of water resources to serve the city and to allow future growth. Additionally, the increased accuracy that the new meters will provide will instill confidence in customers that the water billing to their location is correct and based on accurate and timely water readings.

It is the Brownsville I.S.D.'s privilege to extend its support of the Brownsville Public Utilities Board's application to the Bureau of Reclamation for their Advanced Metering Infrastructure project. If you have any questions or comments, please feel free to contact me at (956) 548-8011 or by email at rene.gutierrez@bisd.us.

Sincerely,

Dr. René Gutiérrez
Superintendent

1900 Price Road • Brownsville, Texas 78521-2417 • (956) 548-8000 • Fax: (956) 548-8019

ATTACHMENT B – Budget Detail and Narrative

The Budget Detail and Narrative includes a breakdown of estimated costs, by category, needed to accomplish project activities. The budget narrative provides a discussion of, or explanation for, items included in the budget proposal.

6f. Contractual

Include all contracts and subawards, (other than those for construction activities) under this Budget Object Class Category. Per § 200.1, a *contract* means, for the purpose of Federal financial assistance, a legal instrument by which a recipient or subrecipient purchases property or services needed to carry out the project or program under a Federal award. The term as used in this part does not include a legal instrument, even if the non-Federal entity considers it a contract, when the substance of the transaction meets the definition of a subaward.

For additional information on subrecipient and contractor determinations, see § 200.331 Subrecipient and contractor determinations. Do not include construction contract costs in this subsection. Construction costs should be included in Budget Object Class Category 6g, Construction.

Links: § 200.1 Definitions
§ 200.331 Subrecipient and contractor determinations.

Contracts

For each contract, regardless of dollar value, describe the services to be obtained and the applicability or necessity of each to the project. Identify the total estimated cost and the basis(es) used to develop the estimate. For each contract with an estimated amount meeting or exceeding $250,000 or represents 35% or more of the total project cost, provide a separate detailed description of the estimated costs. A detailed estimate can be included with the application in lieu of a description. For contracts with an estimated cost equal to or greater than the micro-purchase threshold (currently $10,000) identify the anticipated procurement method to be used and the basis of selection.

NOTE: Only contracts for architectural/engineering services can be awarded using a qualifications-based procurement method. If a qualifications-based procurement method is used, profit must be negotiated as a separate element of the contract price. See **§200.318** ***General Procurement Standards*** for additional information regarding procurements, including required contract content. The procurement method used must be compliant with **§ 200.319** ***Competition*** , and **§ 200.320** ***Methods of procurement to be followed*** . Recommend reviewing **§200.459** ***Professional service costs*** .

Links: § 200.318 General procurement standards
§ 200.319 Competition
§ 200.320 Methods of procurement to be followed.
§ 200.459 Professional service costs

Contractor Name	Purpose and Contracting Method			Total Cost	Description of costs	Basis of cost
EXAMPLE!! Facilitator, TBD	facilitate stakeholder meetings, technical assessments and preplanning activities.			**$11,250**	personnel costs	average fees of consultants in the area is $150 x estimated 75 hours of work. Estimate prepared by Project Director
EXAMPLE!!! Water Quality Consulting	water quality support for pre-planning activities			**$2,000**	personnel costs	quote from local provider of services
AMI Vendor, TBD	Finalizing AMI propagation study, headend SaaS set-up, design meetings, integrations, testing, metering and endpoints, and project management				hardware, personnel, and software set-up costs	representative costs from from formal RFP responses; pricing from proposal response to be negotiated
Professional Services				**$73,617**		
DISC METER, 1", ORION LTE-M	489	$ 375.45	Each	**$183,596**		
DISC METER, 1-1/2", ORION LTE-M	86	$ 572.51	Each	**$49,236**		
DISC METER, 5/8", ORION LTE-M	16830	$ 244.86	Each	**$4,120,994**		
DISC METER, 2", ORION LTE-M	234	$ 768.39	Each	**$179,804**		

TSM METER, 3", ORION LTE-M	32	$ 1,442.34	Each	**$46,155**		
TSM METER, 4", ORION LTE-M	7	$ 2,056.82	Each	**$14,398**		
REGISTER M70 HR-E, ORION LTE-M	37356	$ 180.73	Each	**$6,751,350**		
REGISTER M120 HR-E, ORION LTE-M	1013	$ 180.73	Each	**$183,079**		
REGISTER M170 HR-E, ORION LTE-M	388	$ 180.73	Each	**$70,123**		
REGISTER 3"TSM HR-E, ORION LTE-M	899	$ 180.73	Each	**$162,476**		
REGISTER 4"TSM HR-E, ORION LTE-M	62	$ 180.73	Each	**$11,205**		
REGISTER 6"TSM HR-E, ORION LTE-M	24	$ 180.73	Each	**$4,338**		
REGISTER 8"TSM HR-E, ORION LTE-M	21	$ 180.73	Each	**$3,795**		
REGISTER 10"TSM HR-E, ORION LTE-M	2	$ 180.73	Each	**$361**		
IR Communication Device Kits	5	$ 115.54	Each	**$578**		
MDMS Vendor, TBD	MDMS SaaS set-up, design meeting, integrations, testing, and project management			**$93,105**	personnel and software set-up costs	representative costs from from formal RFP responses; pricing from proposal response to be negotiated
E Source	business process redesign, system architecture work, customer awareness and education campaign design, and overall project management				personnel costs	budgetary estimate from current provider; sole source
Vendor Contracting and Negotiations				**$25,547**		
Project Management				**$178,832**		

System Architecture					**$153,285**		
Change Management					**$153,285**		
Meter Installation Vendor, TBD	field management, meter replacements/retrofits, pit lid drilling, pit cleaning, and disposal of debris					personnel costs	representative costs from from formal RFP responses; pricing from proposal response to be negotiated
Project Management					**$45,001**		
Storage and Warehousing					**$41,448**		
3/4" Water Meter Replacements	$	51.51	16830	Each	**$866,836**		
1" Water Meter Replacements	$	51.51	489	Each	**$25,186**		
1-1/2" Water Meter Replacements	$	209.88	86	Each	**$18,050**		
2" Water Meter Replacements	$	209.88	234	Each	**$49,112**		
3" Water Meter Replacements	$	209.88	32	Each	**$6,716**		
4" Water Meter Replacements	$	508.80	7	Each	**$3,562**		
3/4" Water Meter Retrofits	$	41.92	37356	Each	**$1,566,076**		
1" Water Meter Retrofits	$	41.92	1013	Each	**$42,468**		
1.5" Water Meter Retrofits	$	78.46	388	Each	**$30,443**		
2" Water Meter Retrofits	$	100.44	899	Each	**$90,291**		
3" Water Meter Retrofits	$	100.44	62	Each	**$6,227**		
4" Water Meter Retrofits	$	100.44	24	Each	**$2,410**		
6" Water Meter Retrofits	$	100.44	21	Each	**$2,109**		
8" Water Meter Retrofits	$	100.44	8	Each	**$803**		
10" Water Meter Retrofits	$	100.44	2	Each	**$201**		
Pit Lid Drilling (Steel)	$	17.97	47686	Each	**$856,774**		
Pit Lid Drilling (Polymer)	$	5.99	9767	Each	**$58,495**		
Pit Cleaning	$	31.80	57451	Each	**$1,826,942**		
Disposal	$	1.06	57451	Each	**$60,898**		
					$0		

Subtotal	**$18,059,207**	

Additional Narrative/Comments: The contractual costs for this project are itemized in Attachment A, worksheet 6f. Contractual. Note that only the costs directly attributable to the water portion of the project are represented herein.

BPUB plans to enter into a master agreement or multiple, separate agreements with different specialized entities to provide various parts of the project. Both contracting separately or having a single vendor subcontract with other entities to provide other services are common within the industry, and BPUB plans to negotiate the most advantangeous (both from a fiscal and resource aspect) terms possible.

A services agreement with the AMI system provider will be used to provide the professional services related to the configuration of headend software, as well as to provide integration and professional services neccessary to accomplish the requirements outlined in BPUB's initial RFP; this agreement will also encompass the metering hardware and endpoints. Additionally, BPUB will enter into a meter/module installation agreement with a meter installation vendor to replace water meters/registers, install endpoints, program endpoint for communication on the AMI network, and perform other anscillary work to ensure that field conditions are suitable to support change-out (e.g., box cleaning, lid drilling, etc.). The installation vendor will provide training for their personnel and provide a web scheduler and robo-call services to assure that customers are aware of the meter replacement and request that it be scheduled for a specific time, if necessary. A meter data management system vendor will be needed to provision the backend database and long-term data retention mechanisms, as well as develop reports and analytics to support those water savings goals identified. Finally, BPUB will continue to retain its consltant to implement the neccessary organizational changes and to provide adequate project management structure to keep the project on pace.

Subawards

If known, identify the recipient of each subaward. Describe the activities to be performed under each subaward and indicate the applicability or necessity of each to the project. Provide a separate detailed budget for each subaward, regardless of dollar value. A detailed estimate may be included with the application in lieu of a description of budgeted costs. Identify who prepared the estimate (subrecipient, applicant personnel, etc.) and indicate the basis used to estimate each cost. Include any indirect/overhead costs anticipated to be paid and the rate used. If the subrecipient has a Federal negotiated indirect cost rate agreement (NICRA), include a copy of the NICRA with the application.

Subrecipient Name	Description of Activites	Total Cost	Description of budgeted costs	Basis of Cost
EXAMPLE!!! ABC Nonprofit	Conduct outreach, facilitate stakeholder meetings and perform preplanning activities	**$8,400**	See attached estimate.	actual compensation and fringe rates(21%), GSA mileage rate, indirect cost rate agreement.
		$0		
		$0		
		$0		
		$0		
		$0		
	Subtotal	**$0**		

Additional Narrative/Comments: There are no anticipated Subawards.

TOTAL CONTRACTUAL	**$18,059,207**

BROWNSVILLE
PUBLIC UTILITIES BOARD

July 21, 2022

Bureau of Reclamation
Financial Assistance Support Services
Attn: NOFO Team
PO Box 25007, MS 84-27133
Denver, CO 80225

Funding Plan – Advanced Metering Infrastructure Project

Dear Sir or Madam:

As required by the Bureau of Reclamation, the Brownsville Public Utilities Board (BPUB) is providing a funding plan for the completion of the Advanced Metering Infrastructure (AMI) Project. The BPUB is committed to the completion of the AMI Project and will use available resources. Funding is managed through the Capital Improvement fund.

The $5,000,000 estimated grant funding from the Bureau of Reclamation will support the upgrade of approximately fifty-eight thousand (58,000) meters and the implementation of associated software. This technology will help to improve water efficiency and enhance conservation efforts. The BPUB hereby commits to the remaining non-Federal share in the amount of $13,059,207. Costs incurred before the anticipated project start date will not be included in the reimbursement requests expected for this project.

Sincerely,

Miguel A. Perez
Chief Financial Officer
Brownsville Public Utilities Board

C: George Rangel, Fiscal Manager

P.O. Box 3270 Brownsville, TX 78523-3270
(956) 983-6100 Fax (956) 983-6289

ATTACHMENT C – AMI Business Case

This attachment contains the AMI business case report performed by E Source.

H. Conclusions

Based on the underlying assumptions reflected in the business case, the deployment of an AMI system at BPUB indicates a positive ROI, regardless of the deployment scenario. Additionally, each scenario presents a payback period less than the standard 15-year period for the full warranty of an AMI endpoint, which is a favorable result. The ability to realize savings within the warranty period means that, in the event that another technology supplants AMI, BPUB will be able to pivot before the useful life of an endpoint has been reached, precluding the need to absorb sunk costs or invest additional capital in the AMI system prior to achieving breakeven investment.

From the comparison of key financial metrics outlined in Table 15, UtiliWorks recommends BPUB proceed with the design, procurement, and implementation of an electric AMI system also capable of accommodating water meters in its service territory. By proceeding in this manner, BPUB will be able to lessen upfront capital investment, while leaving open the opportunity to migrate all water metering operations to AMI after proving out the technology.

Table 15 – Business Case Key Financial Metrics Overview

Total Project Lifespan Category	Combined Deployment	Electric Only Deployment	Staggered Deployment
NPV ($000)	$5,632	$15,054	$6,706
IRR (%)	5.7%	15.5%	7.3%
ROI (%)	26.5%	103.1%	28.5%
Payback Period (Years)	13	8	13
Total CapEx ($000)	$25,547	$11,690	$22,826
Total CapEx per Meter ($)	$236	$225	$210

With the combination of benefits identified, BPUB will be positioned to greatly enhance levels of service both to internal and external customers relative to the current operations and services that are offered today. In particular, the intangible benefits identified and described in Table 14 will allow BPUB to provide significantly greater customer service.

Though no civil infrastructure project should be undertaken solely on the basis of financial gain, the benefits from adopting AMI are significant. It is UtiliWorks' conclusion that BPUB is well-positioned to implement AMI with minimal financial risk to the organization.

ATTACHMENT D – BPUB's TWDB FY 2021 Water Audit

All retail public water systems with more than 3,300 connections or a financial obligation to TWDB are required to complete and submit a Water Loss Audit annually. This audit helps a utility understand where and how much water is being lost from the distribution system and provides a baseline to track and improve water loss control.

TEXAS WATER DEVELOPMENT BOARD

P.O. BOX 13231, CAPITOL STATION

AUSTIN, TX 78711-3231

2021 WATER AUDIT REPORT

A. Water Utility General Information

1. Water Utility Name: BROWNSVILLE PUBLIC UTILITIES BOARD

1a. Regional Water Planning Area: M

1b. Address: PO BOX 3270
BROWNSVILLE, TX 78523-3270

2. Contact Information

2a. Name: Jose Garza

2b. Telephone Number: (956) 459-9888

2c. Email Address: jgarza@brownsville-pub.com

Have you completed Water Loss Auditor Training?

(•) Yes

( ) No

3. Reporting Period

3a. Start Date: 01/01/2021

3b. End Date: 12/31/2021

4. Source Water Utilization

4a. Surface Water	70.30	%	
4b. Ground Water	29.70	%	
5. Population Served			
5a. Retail Population Served	194,907		Assessment Scale
5b. Wholesale Population Served	14,998		
6. Utility's Length of Main Lines	701.20	miles	5
7. Total Retail Metered Connections - Active and Inactive	64,962		
7b. Service Connections	64,962		4
8. Number of Wholesale Connections Served	3		
9. Service Connection Density	92.64	connections per mile	
10. Average Yearly System Operating Pressure	63.00	psi	4
11. Volume Units of Measure	Gallons		

B. System Input Volume

12. Volume of Water Intake	5,294,274,000	gallons	
13. Produced Water	5,124,199,000	gallons	4
13a. Production Meter Accuracy	100.00	%	4
13b. Corrected Input Volume	5,124,199,000	gallons	
14. Total Treated Purchased Water	2,238,159,000	gallons	4
14a. Treated Purchased Water Meter Accuracy	100.00	%	4

14b. Corrected Treated Purchased Water Volume	2,238,159,000	gallons	
15. Total Treated Wholesale Water Sales	566,316,000	gallons	4
15a. Treated Wholesale Water Meter Accuracy	97.00	%	4
15b. Corrected Treated Wholesale Water Sales Volume	583,830,928	gallons	
16. Total System Input Volume Line 13b + Line 14b - Line 15b	6,778,527,072	gallons	
C. Authorized Consumption			Assessment Scale
17. Billed Metered	6,138,476,000	gallons	3.5
18. Billed Unmetered	23,956,000	gallons	3.5
19. Unbilled Metered	0	gallons	2
20. Unbilled Unmetered	15,406,080	gallons	3
21. Total Authorized Consumption	6,177,838,080	gallons	
D. Water Losses			
22. Water Losses Line 16 - Line 21	600,688,992	gallons	
E. Apparent Losses			
23. Average Customer Meter Accuracy	98.00	%	3.5
24. Customer Meter Accuracy Loss	125,275,020	gallons	
25. Systematic Data Handling Discrepancy	15,406,080	gallons	0.5
26. Unauthorized Consumption	15,406,080	gallons	2
27. Total Apparent Losses	156,087,180	gallons	
F. Real Losses			
28. Reported Breaks and Leaks	831,835	gallons	3
29. Unreported Loss	443,769,977	gallons	3
30. Total Real Losses Line 28 + Line 29	444,601,812	gallons	
31. Total Water Losses Line 27 + Line 30	600,688,992	gallons	
32. Non-Revenue Water Line 31 + Line 19 + Line 20	616,095,072	gallons	
G. Technical Performance Indicator for Apparent Loss			
33. Apparent Losses Normalized Line 27 / Line 7b / 365	6.58	gallons lost per connection per day	

H. Technical Performance Indicators for Real Loss

34. Real Loss Volume Line 30	444,601,812	gallons	
35. Unavoidable Annual Real Losses Volume (5.41 * Line 6 + (Line 7b * 0.15)) * 365 * Line 10	311,301,527	gallons	
36. Infrastructure Leakage Index Line 34 / Line 35	1.43	I.L.I	
37. Real Losses Normalized - Service Connections Line 34 / Line 7b / 365	18.75	gallons lost per connection per day	
38. Real Losses Normalized - Main Lines Line 34 / Line 6 / 365	0.00	gallons lost per mile per day	

I. Financial Performance Indicators

			Assessment Scale
39. Total Apparent Losses Line 27	156,087,180	gallons	
40. Retail Price of Water	0.00198	$/gallons	4
41. Cost of Apparent Losses Line 39 x Line 40	$309,053		
42. Total Real Losses Line 30	444,601,812	gallons	
43. Variable Production Cost of Water	0.001430	$/gallons	4
44. Cost of Real Losses Line 42 x Line 43	$635,781		
45. Total Cost Impact of Apparent and Real Losses Line 41 + Line 44	$944,834		
46. Total Assessment Score	69		

J. System Losses and Gallons Per Capita per Day (GPCD)

47. Total Water Loss per Connection per Day	25.33	gallons
Line 22 / Line 7b / 365	95	
48. GPCD Input Line 16 / Line 5a / 365	8	
49. GPCD Loss Line 31 / Line 5a / 365		

K. Wholesale Factor Adjustments

50. Percent of Treated Wholesale Water Traveling through General Distribution System	100.00	%

51. Volume of Treated Wholesale Water Traveling through General Distribution System (Line 50/100) * Line 15b	583,830,928	gallons
52. Wholesale Factor Line 15b / (Line 13b + Line 14b)	0.08	
53. Adjusted Real Loss Volume ((1 - Line 52) x (Line 30 * Line 50 / 100)) + (Line 30 - (Line 30 * Line 50/100))	409,033,667	gallons
54. Adjusted Cost of Real Losses ((1 - Line 52) x (Line 44 * Line 50 / 100)) + (Line 44 - (Line 44 * Line 50/100))	$584,919	
55. Adjusted Total Water Loss Volume ((1 - Line 52) x (Line 31 * Line 50 / 100)) + (Line 31 - (Line 31 * Line 50/100))	552,633,873	gallons
56. Adjusted Total Cost Impact of Apparent and Real Losses ((1 - Line 52) x (Line 45 * Line 50 / 100)) + (Line 45 - (Line 45 * Line 50/100))	$869,247	
57. Adjusted Real Loss Per Connection ((1 - Line 52) x (Line 37 * Line 50 / 100)) + (Line 37 - (Line 37 * Line 50/100))	17.25	gallons lost per connection per day
58. Adjusted Real Loss Per Mile ((1 - Line 52) x (Line 38 * Line 50 / 100)) + (Line 38 - (Line 38 * Line 50/100))	0.00	gallons lost per mile per day
59. Adjusted Infrastructure Leakage Index ((1 - Line 52) x (Line 36 * Line 50 / 100)) + (Line 36 - (Line 36 * Line 50/100))	1.32	I.L.I
60. Adjusted Total Water Loss Per Connection Per Day (((1 - Line 52) x (Line 37 * Line 50 / 100)) + (Line 37 - (Line 37 * Line 50/100))) + Line 33	23.83	gallons
61. Adjusted GPCD Loss ((1 - Line 52) x (Line 49 * Line 50 / 100)) + (Line 49 - (Line 49 * Line 50/100))	7	

Comments

ATTACHMENT E – Meter Audit Results

BPUB has a program to test every meter removed from service. BPUB provided test results on over 4,300 or approximately 7.6% of its total meter population from 2018. Attachment E includes an excerpt from the comprehensive results report.

Size	Meters	# tested	% Size Tested	Weight	Low	Mid	High	Flow Wtg Average
0.75	51999	3973	7.64%	0.943	97.00	96.83	97.32	91.45
1	1512	138	9.13%	0.027	91.13	93.23	94.01	2.55
1.5	458	82	17.90%	0.008	96.16	99.15	100.00	0.82
2	1144	159	13.90%	0.021	93.14	95.55	97.26	1.98
Totals	**55113**	**4,352**	**7.90%**	1.000	**96.76**	**96.72**	**97.25**	**96.81**

Percent of Meter Population Tested

7.58%

ATTACHMENT F – BPUB Pump Information

The attached table details pump information for all active well locations including the well number, capacity, and motor size.

Note:

WTP – Water Treatment Plant

Location	Type	Pump No.	Motor Size (hP)
WTP1	High Service	1	300
WTP1	High Service	2	300
WTP1	High Service	3	250
WTP1	High Service	5	250
WTP2	High Service	1	300
WTP2	High Service	2	300
WTP2	High Service	3	300
WTP2	High Service	4	300
WTP2	High Service	5	300
WTP1	Raw Water	1	7.5
WTP1	Raw Water	2	20
WTP1	Raw Water	3	25
WTP1	Raw Water	4	15
WTP1	Raw Water	5	20
WTP1	Raw Water	6	40
WTP2	Resaca Raw Water	1	40
WTP2	Resaca Raw Water	2	50
WTP2	Resaca Raw Water	3	100
WTP2	Resaca Raw Water	4	200
WTP2	Reservoir Raw Water	1	150
WTP2	Reservoir Raw Water	2	200
WTP2	Reservoir Raw Water	3	150