City of Arlington, TX – Smart Metering and Customer Conservation Education Project

WaterSMART Water and Energy Efficiency Grants Project
Funding Opportunity Announcement No. R23AS00008
Due: July 28, 2022, 4:00 PM (MST)

Proposal Submitted to:	Bureau of Reclamation Financial Assistance Management Branch Attn: NOFO Team P.O. Box 25007, MS-84-27133 Denver, CO 80225
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Executive Summary

Date: July 28, 2022,
Applicant: City of Arlington, Texas
City: Arlington
County: Tarrant
State: Texas

The City of Arlington, Texas (Arlington or the City) is submitting this application on July 28, 2022, to be considered for the Bureau of Reclamation's WaterSMART Grants: Water and Energy Efficiency Grants for fiscal Projects. The City is applying for **$2,000,000.00**. The project is expected to take 17 months at a cost a total of $5,8380, 454.94 of which Arlington will contribute $3,840,454.94. The estimated procurement date is set for **May 31, 2023,** and the project end date is **November 30, 2024**. The project is not located at a federal facility.

Project Summary

The City of Arlington Smart Metering and Customer Conservation Education Project (the WaterSMART project) will include a **public awareness campaign** and **customer portal system upgrades** in addition to the deployment of **17,678 smart meters.** The city anticipates using the $2,000,000 in Bureau of Reclamation WaterSMART funding to complete the installation of remote read meters, contribute to the public awareness campaign, and roll out enhanced offerings in our customer service portal. The City of Arlington anticipates that it will allow customers to monitor their usage and conserve their water supply, The WaterSMART meter upgrade project is part of a larger water conservation initiative by the City of Arlington, which includes additional leak detection devices.

Background Data

The City of Arlington Water Utilities Department serves a population of approximately 394,000 by maintaining 113,093 water meters for active accounts, and more than 1,582 miles of water distribution pipes. As part of its water conservation initiative, the City of Arlington began its efforts in 2011 to transition its meters population to Advanced Metering Infrastructure (AMI). As of July 2022, over 86,000 installations have been performed by the City of Arlington Water Utilities staff. Full implementation of the AMI system is projected to take place with approximately 9,000 customer meters per year being installed and/or retrofitted for AMI. The first phase of implementation for the Advanced Metering Infrastructure (AMI) system was completed in August 2012 with the installation of the database, communication, and customer interface infrastructure with approximately 17,000 manually read meters retrofitted for radio read. Our efforts have resulted in an additional 69,000 meters being upgraded since the end of the first phase.

Project Location

The City of Arlington is situated in Northeast Texas, twelve miles east of downtown Fort Worth.

The city lies within Tarrant County and has an area of approximately 100 square miles.

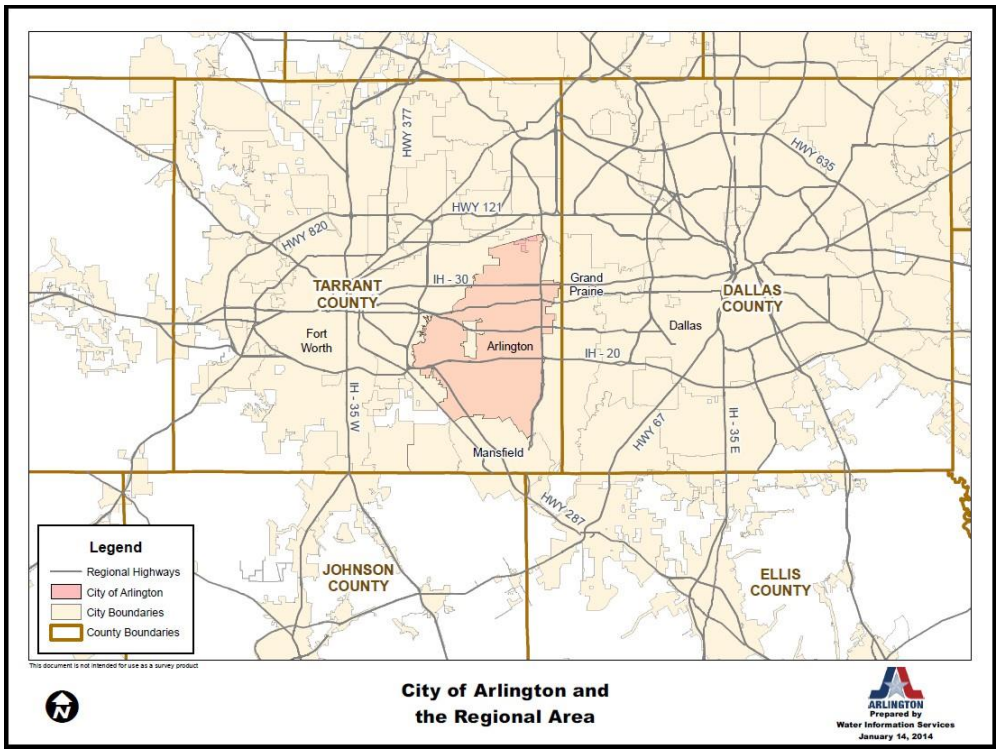


FIGURE 1 - LOCATION MAP

Water Supply and Water Rights

The City of Arlington purchases raw water from the Tarrant Regional Water District (TRWD). TRWD owns and operates four major reservoirs including Lake Bridgeport, Eagle Mountain Lake and the Cedar Creek and Richland-Chambers Reservoirs. TRWD has a service area that encompasses all or part of 11 North Texas counties with a population of over 1.8 million. Current reservoir levels[1] are shown in Figure 2.

Reservoir	Normal Elevation (MSL)	Current Water Level below Normal (ft.)
Bridgeport	836	-5.72
Eagle Mountain	649.1	-3.86
Richland-Chambers	315	-3.37
Cedar Creek	322	-3.50
Arlington	550	-3.82
Benbrook	694	-5.37
Lake Worth	594	-2.09

FIGURE 2 - TRWD RESERVOIR LEVELS, J U L Y 2022

Water purchased from TRWD is pumped about 75 miles from the Cedar Creek and Richland Chambers Reservoirs. Raw water is transported through 72-inch and 90-inch pipelines from the two TRWD reservoirs and delivered to the John F. Kubala Water Treatment Plant and/or

discharged into Village Creek to be stored in Lake Arlington. In addition, the TRWD has the ability to deliver water stored in Benbrook Reservoir in southwest Tarrant County to the John Kubala Water Treatment Plant and into Lake Arlington. Diversions are made from Lake Arlington to supply the Pierce- Burch Water Treatment Plant.

The supply from the East Texas reservoir system consists of a combination of pumpage from Richland Chambers Reservoir and Cedar Creek Reservoir. The two reservoirs are operated in parallel with consideration taken to use a larger amount of water from Richland Chambers Reservoir to minimize energy required to pump the water and produce a raw water blend that is more efficiently treated. In addition, the pumping capacity of the Richland Chambers pipeline is greater; therefore, the majority of the pumpage will normally be taken from Richland Chambers Reservoir. The raw water supply system operated by the TRWD is shown in Figure 3.

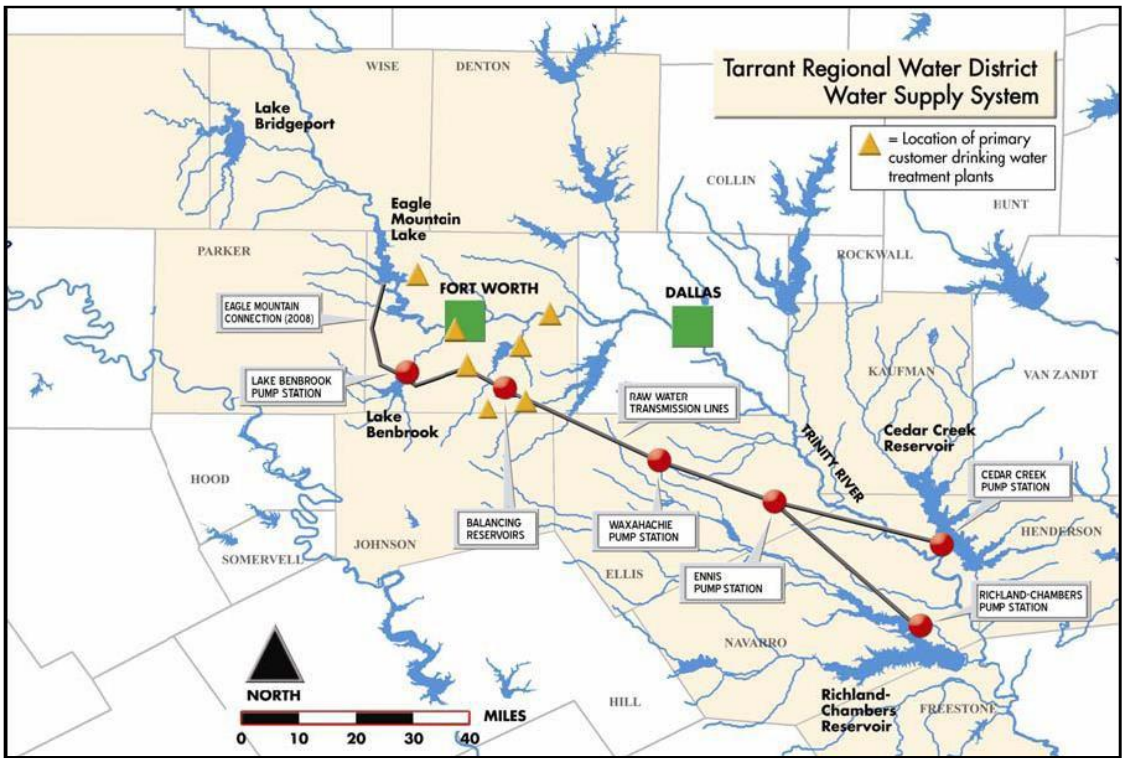


FIGURE 3- TRWD WATER SUPPLY SYSTEM

Water Distribution

The City of Arlington operates over 1,582 miles of distribution pipe. The table below shows a summary of the current pipe materials and length in the City of Arlington's distribution network. Over 36% of the pipe length is made up of Asbestos-Cement (transite) material, which is susceptible to leaching and softening. An additional 45% is made up of PVC, which is susceptible to brittle breaks and deformation if exposed to high temperatures. On average, the City of Arlington's pipes are 25 years old.

TABLE 1 - PIPE MATERIAL AND LENGTHS

PIPE MATERIAL	PIPE COUNT	LENGTH (LF)
UNKNOWN	599	565,864
AC	20,596	3,304,570
C301	491	128,454
C303	1,359	341,771
CAST	2,875	511,456
CONCR	1,586	288,315
DUCT	2,020	239,602
STEEL	1	516
OTHER	7	1,289.76
PVC	34,800	3,575,620
PVCO	43	2,256.76
	64,868	**7,525,743.57**

Current Uses and Projected Demand

With a population of 394,266, Arlington is the seventh most populous city in the state of Texas and fiftieth in the country. A breakdown of customer classes currently served in the City of Arlington (Table 2) demonstrates that roughly 94% of customers are residential. The Other customer class includes irrigation and construction/temporary use meters.

TABLE 2 - CUSTOMER CLASS DISTRIBUTION

Customer Class	Percentage of Customer Meters
Residential	93.98
Commercial	3.48
Industrial	0.07
Other	2.29
Public	0.19

While currently experiencing drought conditions, the Dallas–Fort Worth area is rapidly growing in population and water demand. Over the next 50 years, the North Texas population is expected to more than double to 4.3 million and 430,000 acre-feet of new water supply will be needed prior to 2060. The annual population growth of the City of Arlington, itself according to the U.S. Census for 2020[2] was 4.9% but has been even higher in recent years. By multiplying 4.9% to the 19,910,430,301 gallons produced as reported in the TWDB 2014 Water Audit, Arlington would expect an additional demand of 975,611.084.75 gallons per year, or 61,103.02 AFY. The City expects to meet future demands through an active water conservation program, of which leak detection, AMI implementation and customer outreach is an integral part.

Shortfalls in Water Supply

The state of Texas has been susceptible to dramatic climate shifts in recent years[3]. A comparison of drought area as a percent of the state over time (Figure 4) illustrates how quickly, and extensively parts of the state can shift to extreme or exceptional drought conditions. Stage 1 of the Drought Contingency and Emergency Water Management Plan was enacted in June 2013 when water supplies dropped to 75% capacity. The TRWD service area was placed under Stage 1 watering restrictions in 2014-2015. Recently, the lack of precipitation in the state has increased drought conditions across the region[4].

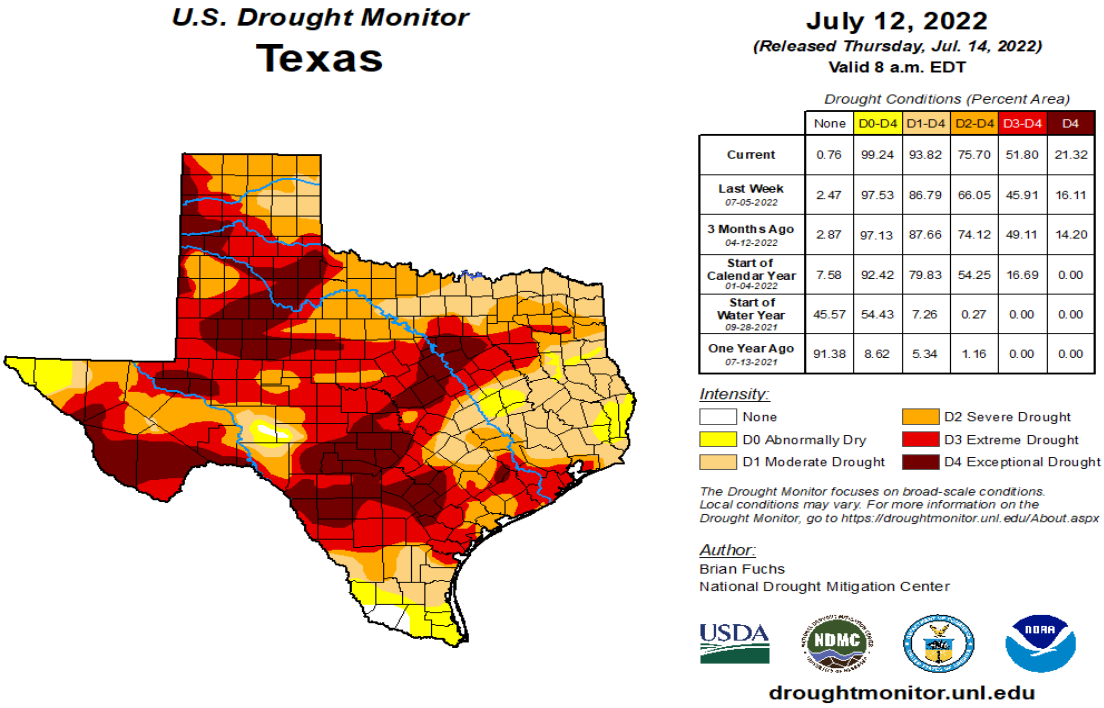


FIGURE 4 – TEXAS DROUGHT AREA JULY 2022

Arlington is located in North Central Texas, between the cities of Dallas and Fort Worth. The city lies in the Eastern Cross Timbers eco-region of Texas. The soils are mainly red and yellow sands that have been leached of nutrients. The climate in North Central Texas is humid and subtropical during the hot summer months and is prone to spring and fall thunderstorms. Summer temperatures can exceed 100° F for relatively short periods with the heat-humidity indexes as high as 117° F.

Past Working Relationships with Reclamation

Arlington was awarded a $300,000 grant in 2016.

Technical Project Description

The City of Arlington's WaterSMART project includes a water conservation education campaign for the City of Arlington's customers and deployment of 17,693 smart meters over a 17-month period.

Smart Metering:

As part of the WaterSMART project, Arlington will upgrade 17, 693 of its manually read meters to smart meters. The City will employ a combination of factors to determine which meters are replaced, which makes the change outs as efficient as possible:

1. Any that is determined to have exceeded the manufacturers recommendation of 750,000 gallons of usage and is determined to be greater than 10 years old and non-AMI, will be replaced.
2. Finally, as a way to ensure meter reading services are still operating efficiently, route cycle is used to determine which routes are near completion in order to close out the cycle.

The City is currently using their staff and hiring additional part-time staff for all meter domestic replacements. We will continue to replace all manually read over the next twenty-seven (27) months. Each installation is captured with GPS coordinates and incorporated into the city's geographic information system (GIS). This information makes it easier to locate meters during future field investigations and helps support the city's distribution system modeling efforts. New meters will improve the accuracy of reporting consumption data. The utility will use the meter data to assist with identifying customer-side irrigation leaks that often go undetected in order to conserve water.

Sensus 520M MIUs and Master Meter Multi Jet meters were selected through a competitive process from a wide field of products. The Multi Jet SR II magnetic jet meter was selected because of its ability to provide greater sensitivity in measuring a wide range of flows for a variety of residential applications. The meter design includes a high-quality cast bronze case, dual inlet ports and streamlined flow pattern. With few exceptions, all meters are either multi-jet, positive displacement (2" and smaller) or compound (3" and larger) and are located in outside pits and vaults within existing rights-of-way.

TABLE 3 - WATER METER COUNT BY METER SIZE

Meter Size	Number Of Meters	
5/8 X 3/4"	103,829	91.81%
1"	3,916	3.46%
1 1/2"	1,604	1.42%
2"	3,094	2.73%
3"	322	0.28%
4"	143	0.13%
6"	157	0.14%
8"	19	0.017%
10"	9	0.008%
Totals	**113,093**	**100%**

The 520M is a radio transceiver with two-way communication ability and specifically designed for submersible, pit environments. Phase 1 of the AMI program included standing up 5 collectors, which are all positioned on water towers in the City. This setup provides full coverage for the remaining MIUs to be installed. All communications will be transmitted via radio frequency with primary use radio spectrum on the Sensus FlexNet communication network.

Public awareness campaign (Customer Conservation Education):

The WaterSMART program includes an upgrade to Arlington's meter data management system (MDMS) and customer portal. Customers will have access to an online web portal that will include drill down functionality from the water usage graph, e.g., it will show monthly for the entire year. A customer will be able to click on the month bar to show daily usage and then click on the daily usage bar to show hourly usage. Arlington's current web portal does not include any drill down feature. It will also include cost projections for the monthly billing based on the current usage pattern for the month and current rates. Engaging customers in this way with tangible results helps them understand and change their consumption habits, which in turn assists the City with Customer-side Leak Identification and Improved Customer Water Management.

The City of Arlington will build a robust public outreach and education campaign as part of the WaterSMART grant project. The plan will drive messaging in several forms (For example: brochures, website announcements, bill notices, advertising, press releases, social media, etc.), and will occur at strategic points during the smart meter deployment timeline. Arlington will seek to use multiple communications channels to maximize the audience's reception of the information. New tool kits, including the web portal and notifications mentioned previously will be used to empower customers to become more efficient water users.

Evaluation Criteria

The proposed project will improve performance of water distribution infrastructure, increase meter accuracy, engage customers in water conservation efforts and improve leak detection for the City of Arlington. The WaterSMART project will also reduce the energy requirements for water treatment and fuel required for meter reading.

Evaluation Criterion A: Water Conservation

The City of Arlington's WaterSMART Project will result in large quantities of water conservation and energy and cost efficiencies for the utility through enhanced leak detection, improved water management and accuracy, reductions in energy use through reduced water pumping and treatment, and overall decrease in greenhouse gas emissions from reduced vehicle miles for metering activities See the sections below for more detail.

Sub criterion No A.1: Quantifiable Water Savings

Describe the amount of water saved. 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 provide sufficient detail supporting how the estimate was determined, including all supporting calculations.

The City has calculated water savings through the proposed WaterSMART project to total 6,160.56 AFY. Arlington expects it could increase these savings to 15,793.95 AFY by incorporating savings from current water conservation initiatives, including installation of smart meters and leak location technology which is currently underway. Please see the individual sections for calculations to support the cumulative program savings of 15,793.95 AFY.

WaterSMART Project	Water Saved (AFY)
Customer-side Leak Identification	723.38
Improved Customer Water Management	1,756.78
Replace Aging Meters	1,136.74
Distribution-side Leak Identification	2,336.98
Customer Theft Identification	206.68
Total	**6,160.56**

The WaterSMART Project will save water across the following 5 areas. The methodologies follow in the sections below.

1. Customer-side Leak Identification
2. Improved Customer Water Management
3. Improved Accuracy of Meters
4. Distribution-side Leak Identification
5. Theft Identification

Customer-Side Leak Identification

AMI meters will provide hourly usage data on a daily basis to the City of Arlington and its customers. Regular hourly usage data can assist in identifying potential leaks to the customer and the utility. If a particular account experiences high levels of usage continuously it is very likely the customer is experiencing a leak. The data provided by the AMI meters will illustrate the continuous usage to the utility and the system's supporting software. Customers will have the ability to configure alerts within the customer portal to improve notify them if a potential leak is present within the system. Additionally, the utility will receive notifications of potential leaks and will work with its customer base to inform them of potential unintended water losses.

Customer-side leaks are the cause of a large quantity of water loss within the City of Arlington. The EPA states that the average household's leaks account for more than 10,000 gallons of water wasted a day. Based on EPA study[5], the City anticipates that it will reduce 7% of total usage due to corrective measures that will come from proactive customers.

For the WaterSMART project, the City has targeted 17,678 meters to be transitioned to smart meters, which is 15.64[6]% of the entire meter population. The City's TWBD 2014 Water Audit includes a total water consumption of 53,313.20. By applying 15.64% to the total water

consumption, Arlington estimates that the water consumption for the WaterSMART project population is equal to 8,342.75. It is believed that the meter accounts upgraded would be representative of the entire population as a percentage of water consumed.

Water Consumption	% Savings	Water Conserved (AFY)
8,342.75.02	7%	723.38

Inclusive of cumulative smart meter deployments over the past several years, the City of Arlington expects it could realize a cumulative savings of 2,287.26 AFY via customer side leak reduction by the end of the WaterSMART project period. That calculation is based off of 100% of Arlington's meter population being transitioned to AMI by the end of the project.

Improved Customer Water Management

The data provided by AMI meters will equip water customers with the ability to better manage their usage via a customer portal and proactive notifications via text or email. The City of Arlington provides AMI customers with a web-portal that illustrates interval usage information to customers, allowing them to better understand their water consumption and take corrective steps to reduce consumption. Additionally, the web-portal provides customers with daily updates and alerts that can notify them via email if their water consumption has reached a particular threshold[7]. System generated notifications will assist customers in better managing their water usage and improve water conservation at the City of Arlington.

[5] http://www3.epa.gov/watersense/pubs/fixleak.html
[6] Infinite decimals used in calculations.
[7] http://twri.tamu.edu/publications/conservation-matters/2014/june/automated-meter-infrastructure-project-how-technology-can-reduce-water-usage/

As part of a recent study with Texas A&M University, citizens of Arlington were given the option of enrolling in a web portal to view their metered usage. Web portal users' water data was collected and analyzed compared to a control group of similar customers who did not use the web portal. The before and after usage of both the control and treatment groups were tested to determine whether access to the portal had a significant impact on consumer habits. Results showed that there were statistically significant differences between the groups, and that portal users used on average 8% less water in the winter and 17% less water in the summer than non- users. [8] Based on this study, the City of Arlington believes it can achieve 17% savings by providing a web portal and active customer education and engagement options.

Water Consumption	% Savings	Water Conserved (AFY)
8,342.75	17%	1,756.78

By accounting for the estimated 61.23% of customers who would have access to the web portal and granular smart meter data, as well as participation in customer education initiatives, Arlington expects to increase these savings to 1,756.78 AFY.

Improved Meter Accuracy

The new AMI meters will replace aging, less accurate meters. As meters age they deteriorate and

slow down, making meter readings less accurate. Water users with older meters will use more water because they are charged less for consumption. As meter accuracy improves it will deter increased consumption. The current City average age of non-AMI meters is 20 years. The City's replacement efforts will target older meters first, so the average age of the 17,678 to be replaced is greater than 20 years. A conservative figure of 11% was used to estimate the reduced consumption due to increased accuracy and associated consumption reductions.[9] This assumes approximately half of the meters replaced will be in the 20–25-year range and an accuracy of 96%, while the remaining are 25-30 years old and in the 82% accuracy range. An estimated summary of the type and quantity of meters and sensors that will be installed is provided in table 8- Sensus Smart Meter Replacements/Upgrades for Project by Size.

Water Consumption	% Savings	Water Conserved (AFY)
10,344.02	11%	1,136.74

An estimated summary of the type and quantity of meters and sensors that will be installed is provided in table 8- Sensus Smart Meter Replacements/Upgrades for Project by Size.

[8] Understanding the Influence of Sociodemographic, Psychosocial and Behavioral Factors on Water Conservation in Texas II: Post-Intervention Analysis. Authors: Anna Faloon; Allen Berthold; Kelly Brumbelow; Kevin Wagner. For Submission to: ASCE WRPM. Not yet published as of 12/22/15.

[9] http://www.wwdmag.com/meters/determining-economical-optimum-life-residential-water-meters

By applying this calculation to the total of all smart meters deployed by the end of the WaterSMART grant period, Arlington could realize 3,594.27 AFY of unaccounted for water recovered due to metering inaccuracies.

Distribution-side Leak Identification

Over 36% of the City's existing pipelines are made of transite material and are 25 years old or older. Another 46% are made of PVC, which are expected to have many years of service available. However, the City of Arlington anticipates seeing a significant number of leaks and pipeline failures as these pipelines approach the end of their useful life. Currently, the City of Arlington calculates that its water distribution system has experienced 13% of unaccounted for water from its total system production. That 13% does include estimates of unmetered usage for system flushing, hydrant use and other activities. Arlington believes much of the losses are due to leaks within the distribution system. Leaks not only result in continuous water loss but can produce main line breaks that typically lead to extraordinary water losses.

2021 Water Produced (Gallons)	2021Water Consumed (Gallons)	Net (Gallons)	% System Loss
19,910,430,301	17,372,088,000	2,538,342,301	13%

The installation of leak detection devices within the water system will assist the utility in identifying pipelines experiencing leaks and assist in realigning the City's asset management

program of pipeline replacement based on areas experiencing leaks. The improved prioritization of those replacements will significantly reduce water losses. Based on research from the Institute of Research Construction, typical leaks in water distribution systems are between 20-30%.[10] The City of Arlington anticipates that it will reduce utility-side losses by 4% of total system usage, or 30% of their current 13% system loss for the WaterSMART Project.

Water Produced (AFY)	% Savings	Water Conserved (AFY)
61,103	4%	2,336.98

The City of Arlington expects that by coupling leak detection technologies from this project with current leak location initiatives, it could increase distribution side savings by an additional 4%, which would equate to 2,336.98 AFY.

Theft Identification

The AMI meters will assist in identifying instances of theft quickly to avoid unnecessary water losses. If water is used at locations which are considered "OFF" accounts, the software system will receive a notification, thus triggering an investigation in the field and eliminating theft.

[10] https://www.nrc-cnrc.gc.ca/ctu-sc/files/doc/ctu-sc/ctu-n40_eng.pdf

Due to uncertainty of the level of theft currently at the City of Arlington, the city assumes that AMI meters will lead to water conservation of approximately 2% of total consumption due to Theft Identification. It is difficult to quantify the true level of theft since this is only discovered during re-read or other meter servicing activities. With an improved level of data available to the City from use of AMI, they will be better equipped to identify and deter water theft.**er Consumption**	**% Savings**	**Water Conserved (AFY)**
10,344.02	2%	206.68

By applying the 2% reduction from unauthorized use to the entire smart meter population at the end of the grant period, Arlington could realize a water use reduction of 653.50 AFY.

As part of project completion, the City intends to revisit these methodologies and calculations to determine if the overall expected water savings have been met.

What is the applicant's average annual acre-feet of water supply?

As described in the Performance Measures, Arlington's average annual water supply as reported to TWDB is 17,372.09 MG or 61,103.12 acre-feet.

Where is the water that will be conserved currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground, etc.)?

Water that will be conserved is currently seeping into the ground due to leaks in the distribution system, going to use as unaccounted for in cases of theft or inaccurate meters, or to consumers that are not closely monitoring their use. Through this project the hope is there will be less demand on the reservoirs that supply the City of Arlington's water and/or more water will become available to other water suppliers in the region through water marketing.

Where will the conserved water go?

Through this project the hope is there will be less demand on the reservoirs that supply the City of Arlington's water and/or more water will become available to other water suppliers in the region through water marketing.

For Municipal Metering:

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.**

Arlington expects to save 6,160.56 AFY. Please see the section under Sub criterion No. A. 1: Quantifiable Water Savings for all calculations and references.

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

Reductions have been determined from testing, case studies and other assumptions as outlined previously. Please refer to the section under Subcriterion No. A. 1: Quantifiable Water Savings for all calculations and references.

c. **For installing individual water user meters, 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.**

Reductions have been determined from testing, case studies and other assumptions as outlined previously. Please refer to the section under Subcriterion No. A. 1: Quantifiable Water Savings for all calculations and references.

d. If installing distribution main meters will result in conserved water, please provide support for this determination (including, but not limited to leakage studies, previous leakage reduction projects, etc.). Please provide details underlying any assumptions being made in support of water savings estimates (e.g., how leakage will be reduced once identified with improved meter data).

Please refer to the section under Subcriterion No. A. 1: Quantifiable Water Savings for all calculations and references.

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

Please see below for the expected quantity of meters to be upgraded to smart meters by size. Arlington has selected Sensus as the AMI vendor, who provides the Sensus SRII meters and the meter interface units (MIU) to be installed. Arlington may adjust the individual quantities represented at its discretion to maximize the value and the scheduling of the WaterSMART grant period. However, 17, 693 meters is the anticipated total meter count for the Water SMART grant.

Smart Meter by Size	Quantity
5/8 x 3/4-inch Smart Meter	16,216
1-inch Smart Meter	519
1 1/2-inch Smart Meter	206
2-inch Smart Meter	658
3-inch Smart Meter	1
4-inch Smart Meter	0
6-inch Smart Meter	68
8-inch Smart Meter	7
10-inch Smart Meter	3
Total	**17, 678**

Table 8: Sensus Smart Meter Replacements/Upgrades for Project by Size

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

As part of project completion, the City intends to revisit these methodologies to determine if the overall expected water savings have been met. Please refer to the section under Sub criterion No. A. 1: Quantifiable Water Savings for all calculations and references.

Subcriterion No A.2: Percentage of Total Supply

Provide the percentage of total water supply conserved. State the applicant's total average annual water supply in acre-feet. $\%\ Total\ Water\ Conserved = 6{,}160.56 = 10.08\%$

Evaluation Criterion B: Energy-Water Nexus

The proposed project will reduce the electrical energy required to pump 6,160.56 ACFT of water supplied to the system. It will also significantly reduce the city's fuel consumption associated with meter reading:

- The city's approximately 108,000 meters are read monthly by a staff of eight full-time meter readers that incur a total of about 110,000 miles annually to obtain meter readings for billing purposes. However, that is the full population. For purposes of obtaining an estimate for the WaterSMART project, Arlington assumed a reduction of 19.38% vehicle miles driven. Please see the calculation table below.
- A conservative figure from the Environmental Protection Agency (EPA) assumes a reduction of 8.8 kilograms of carbon emission per gallon. Arlington estimates its vehicles average 15 miles/ gallon. Therefore, the City of Arlington will be reducing its carbon footprint impact by 12.63 metric tons for the WaterSMART project.

  By applying the % of the smart meter population at 61.23%, the metric tons of CO2 savings would increase to 39.94. This represents the total reduction in vehicle miles and greenhouse gas reduction to be realized from the City of Arlington, combining the WaterSMART project with current smart meter upgrades.

  Additionally, fuel needs for the Arlington field staff will be reduced as Arlington's field crew will now be able to pinpoint leakages in the distribution system more efficiently with the installed leak detection technology. This will eliminate the number of miles driven and the amount of time City staff will need for leak inspections.

Subcriterion No B1: Implementing Renewable Energy Projects Related to Water Management and Delivery

The City of Arlington will not pursue a renewable energy project within the WaterSMART Project.

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

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

The proposed project will reduce the electrical energy required to pump 6,160.56 ACFT of water supplied to the system. The City additionally will capture the following energy efficiencies:

- A reduction meter reading which in turn, will reduce the City's carbon imprint from vehicle miles driven by 12.63 metric tons for the WaterSMART project and 39.94 metrics tons overall. Please see above for the calculation.
- The primary energy efficiencies realized with AMI will be in a reduced volume of water being pumped and treated (inclusive of water and wastewater). Pumping requirements are expected to be reduced by 10.08%, which equates to 2,539,294.11 kWh for the

WaterSMART project. By correlating 25.79% water conservation for the City of Arlington's program, the City could save 6,494,395.59 kWh.

Water and Wastewater Energy Treatment and Pumping		
Annual kWh for Pumping and Treatment	% Reduction	Total Energy Savings (kWh)
25,185,816.00	10.08%	2,539,294.11

Please provide sufficient detail supporting the calculation of any energy savings expected to result from water conservation improvements. If quantifiable energy savings are expected to result from water conservation improvements, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

Please see the section above for calculations and additional information.

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?

The City of Arlington owns and operates two water treatment facilities, the Pierce-Burch (PB) Water Treatment Plant (WTP) and the John F. Kubala (JK) WTP. The PB facility includes two treatment plants: the North and the South. The North WTP is rated at 34.1 million gallons per day (MGD) and the South at 75 MGD. The PB North WTP has not been in active production for several years and since the conversion of the South WTP to ozone treatment. The PB WTP is supplied with raw water from Lake Arlington through the Raw Water Pump Station. The JK WTP was built in the late 1980s with a rated capacity of 25 MGD in response to the rapid growth in the southern part of the city. The JK WTP was granted state regulatory approval for up rating to 32.5 MGD in 1989. In 1999 the city completed the WTP Modification project where ozone treatment and Biologically Active Carbon (BAC) filtration were implemented as the modified treatment processes for both PB South WTP and JK WTP. The JK WTP had two subsequent expansions bringing the total capacity to its current rating of 97.5 MGD. The JK WTP is supplied with raw water from Tarrant Regional Water District (TRWD). The JK WTP serves primarily the upper pressure plane (UPP), and the west pressure plane (WPP); it is capable of supplying the entire city. The PB WTP is dedicated to serving the lower pressure plane; it can supply the UPP through the utilization of the Charles F. Anderson, Jr. (CFA) pump station and Arkansas pump station.

Type of Pump	Number of Pumps
Raw Water Pumps	5
Pierce-Birch WTP HSPS Pumps	8
Kubala WTP HSPS Pumps	7
Kubala WTP Recycle Pumps	4
Booster Pump Station	15

The City of Arlington treats the raw water received from TRWD and delivers throughout the city through the city's pressurized distribution system. The city has established a power cost for its pumping through delivery of $123.09/million gallons (MG).

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.

The energy savings estimates originate from the point of diversion from TRWD reservoirs.

Does the calculation include the energy required to treat the water?
Yes, the calculation involved all energy required for treatment and distribution of water. They do not include wastewater energy requirements.

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

In 2012, the US Environmental Protection Agency (EPA) designated ten counties in North Texas, including Tarrant, as nonattainment for the pollutant ozone in accordance with the 1997 8-hour ozone National Ambient Air Quality Standards (NAAQS). These standards are designed to protect human and environmental health, and ground-level ozone is monitored and targeted for reductions due to its potentially harmful effects. On-road mobile sources, like cars and trucks, are one of the main sources of ozone-causing emissions. Development of an air quality plan, known as the State Implementation Plan (SIP), is required for all nonattainment areas in order to demonstrate how ozone will be reduced to levels compliant with the NAAQS. The SIP for the Dallas-Fort Worth nonattainment area includes programs to reduce vehicle miles driven, including city-owned vehicles.

The proposed project will also significantly reduce the city's fuel consumption associated with meter readings and equate to 12.63 metric tons of greenhouse gas reduction for the WaterSMART project and 39.94 metrics tons overall.

Evaluation Criterion C: Sustainability Benefits

Annual Miles	CO2 Emissions per Mile	Total CO2 Savings (Grams)	Total Savings (Metric Tons)	Reduce by % of Smart Meter Population for WaterSMART Grant
110,000.00	592.47	65171333.33	65.17133333	12.6322037

Benefi*t*s to Endangered Species

The City of Arlington receives treated water from Tarrant Regional Water District (TRWD). TRWD develops and maintains reservoirs throughout the Trinity River basin. As the population and demand for water in the Dallas-Fort Worth area increase, greater demands are placed on these reservoirs.

The Texas Water Development Board's 2016 Region C Water Plan included the following table which presents the federally listed threatened and endangered species identified by UWFWS in Region C counties. Indigenous and migratory species may rely on waters in Region C. In Tarrant County, the list includes the Bald Eagle, Least Tern, Piping Plover, and Whooping Crane. Additionally, the USFWS website lists Ren Knot as a threatened species in Tarrant County[11].

TABLE 3. FEDERAL ENDANGERED OR THREATENED SPECIES IDENTIFIED BY USFWS IN REGION C COUNTIES

[11] http://ecos.fws.gov/tess_public/reports/species-by-current-range-county?fips=48439

Species	Federal Status [b]	County														
		Collin	Cooke	Dallas	Denton	Ellis	Fannin	Freestone	Grayson	Henderson	Jack	Kaufman	Navarro	Parker	Rockwall	Tarrant	Wise
Bald Eagle	DM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Louisiana Black Bear	T						X										
Black Capped Vireo	E		X	X							X			X			X
Golden Cheeked Warbler	E			X							X						
Least Tern	E		X	X	X		X	X	X			X				X	
Large Fruited Sand Verbena	E							X									
Navasota Ladies' Tresses	E							X									
Piping Plover	T	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Smalleye Shiner[c]	E													X			
Sharpnose Shiner[c]	E													X			
Whooping Crane	E	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X

Source: ***2016 Region C Water Plan, Table 1.13.***

What is the relationship of the species to water supply?

The above species are native inhabitants of the region's reservoirs. As such, they rely on the water supply and environmental conditions in the area. Allowing water to remain in the region's rivers and lakes will benefit those species that rely on those bodies as habitat. The largest direct impact for the City of Arlington's water savings will be to Lake Bridgeport, Eagle Mountain Lake and the Cedar Creek and Richland-Chambers Reservoirs, as these are the source of most raw water purchases from TRWD.

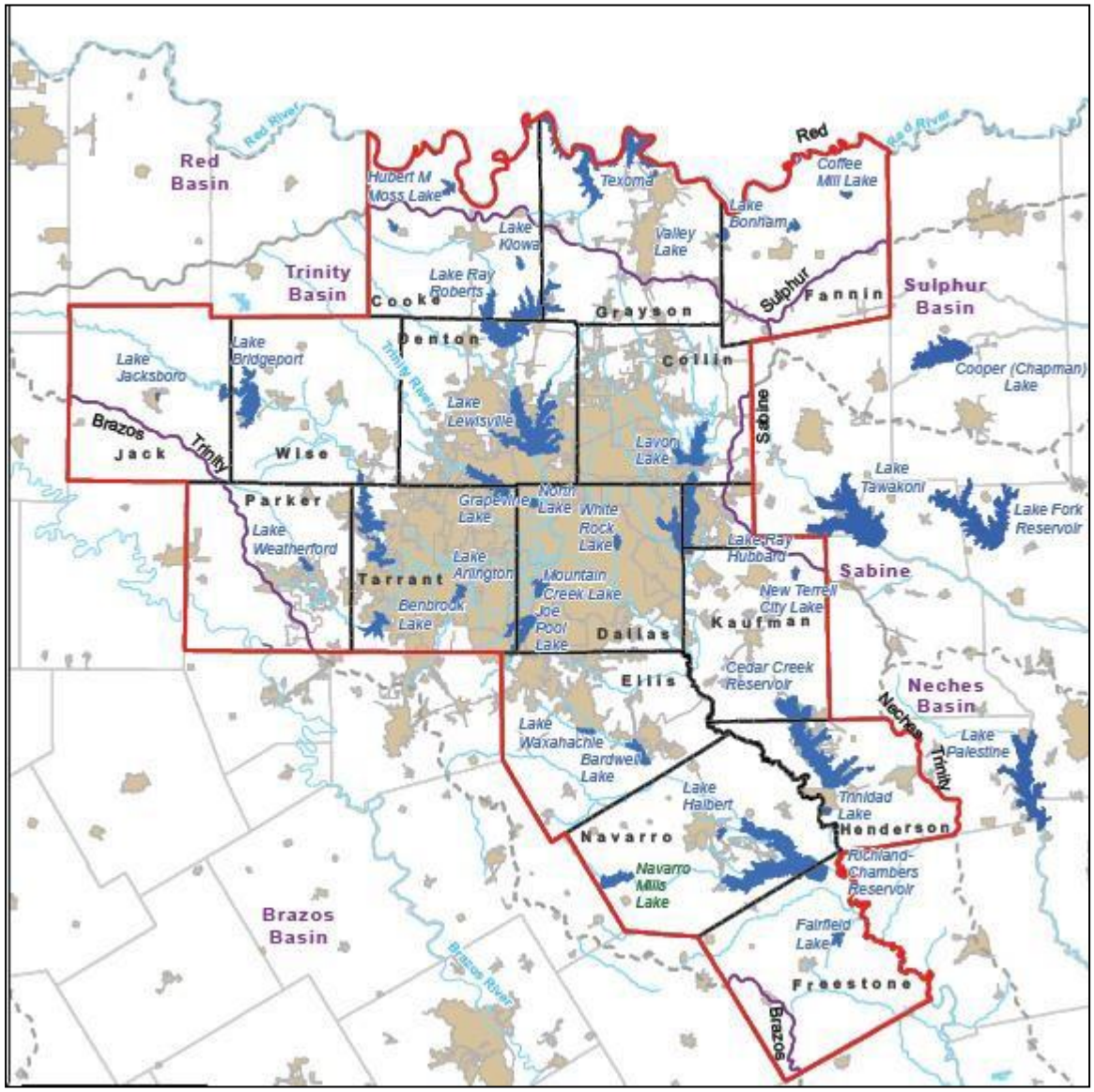


FIGURE 6 - REGION C RESERVOIRS

What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?

The water conservation from the implementation of the proposed project will reduce the amount water required by Arlington to serve its customers. Consequently, the 6,160.56 AFY reduction will apply less pressure on the City's water supplier (TRWD) and increase the likelihood that

they can improve water levels needed for a healthy ecosystem in the region.

For projects that will directly accelerate the recovery of threatened or endangered species or address designated critical habitats, please include the following elements:

How is the species adversely affected by a Reclamation project?

This Reclamation project will not adversely impact the species.

Is the species subject to a recovery plan or conservation plan under the ESA?

Yes – all of these endangered species in the "Endangered or Threatened Species identified by USFWS in Region C Counties" table represented previously are subject to a recovery or conservation plan under the ESA.

What is the extent to which the proposed project would reduce the likelihood of listing or would otherwise improve the status of the species?

The proposed project will result in over 6,160.56 AFY of water conservation which will reduce the amount of water the City of Arlington will demand from its water supplier, TRWD. Such a large quantity of water on an annual basis will likely supplement stream flows to the degree it will improve their habitat and the status of the species.

Evaluation Criterion D: Water Marketing

The City of Arlington currently has a wholesale contract with the nearby city of Dalworthington Gardens, TX and Kennedale, TX and Bethesda Water Supply Corporation. It is also exploring contracts with the city of Pantego, TX.

Briefly describe any water marketing elements included in the proposed project.

The water conserved in the project will result in more water available to the City of Dalworthington Gardens, Kennedale, and Bethesda Water Supply Corporation, all of which are in Northeast Texas. Additionally, there will be lessened demand on the City's water supplier, TRWD, who may market water that goes unused by the City of Arlington and these other suppliers.

Evaluation Criterion E: Other Contributions to Water Supply Sustainability

Subcriterion E.1: Addressing Adaptation Strategies in a WaterSMART Basin Study

Identify the specific WaterSMART Basin Study where this adaptation strategy was developed. Describe in detail the adaptation strategy that will be implemented through this WaterSMART Grant project, and how the proposed WaterSMART Grant project would help implement the adaptation strategy.

This Subcriterion does not apply to the proposed project.

Subcriterion E.2: Expediting Future On-Farm Irrigation Improvements

This Subcriterion does not apply to the proposed project.

Subcriterion E.3: Other Water Supply Sustainability Benefits

Will the project make water available to alleviate water supply shortages from drought?

The City of Arlington's water conservation program and water savings that will result from AMI implementation will have a direct effect on the reservoirs where raw water is purchased from TRWD. These sources include Lake Bridgeport, Eagle Mountain Lake and the Cedar Creek and Richland-Chambers Reservoirs. By reducing demand on those water resources, the City will alleviate the strain on critical supplies, especially during any future drought conditions.

Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?

The reduced demand on those sources will help to keep the reservoirs, lakes, rivers, and creeks at sustainable levels. The WaterSMART Project will position the City to address the future needs of a growing population more directly, since data from AMI infrastructure and smart meters are the foundation for proactive water management programs. This technology is becoming the standard for water suppliers to achieve better Customer-side Leak Identification, Improved Customer Water Management, Improved Accuracy of Meters, Theft Identification, and Utility- side Leak Identification. With an improved dataset showing near real-time status of the water distribution system and customer demand, superior water conservation and incentive programs can be put in place, which will achieve even greater returns of water savings in the future.

Describe how the water source that is the focus of this project (river, aquifer, or other sources of supply) is impacted by climate variation.

As described in the Background Data, the state of Texas, while not currently experiencing drought conditions, has been susceptible to dramatic climate shifts in recent years. A comparison of drought area as a percent of the state over time illustrates how quickly, and extensively parts of the state can shift to extreme or exceptional drought conditions. Stage 1 of the Drought Contingency and Emergency Water Management Plan was enacted in June 2013 when water supplies dropped to 75% capacity. The TRWD service area was placed under Stage 1 watering restrictions in 2014-2015. Recently, more normal precipitation has helped ease drought conditions across the region.

Will the project help to address an issue that could potentially result in an interruption to the water supply if unresolved?

As evidenced by past water restrictions and mandates, there is legitimate fear over an interruption in water supply in Texas. The water conservation gained from the project's AMI meters and enhanced system monitoring will reduce water demand at the TRWD.

Will the project make additional water available for Indian tribes?

Although there currently are not Indian reservations within the City, Arlington has been of significance to many Indian tribes. In fact, the Republic of Texas signed its first ever Indian peace treaty here in 1843 at Bird's Fort with nine tribes including Cherokee, Delaware, Biloxi, Caddo, Keechie and Waco representatives.[12]

Will the project make water available for rural or poor communities?

Yes, the reduced water demand, improved information sharing, and water conservation programs will help make more water available for all customers, including those in rural and poor communities. Through this project, the City will be equipping customers with interval usage data and exhibiting that data in a web-based format. The project will have a positive impact on rural and disadvantaged populations as they will have access to interval water usage data and alerts to better manage their water bill.

Does the project promote and encourage collaboration among parties?

Yes, in fact, The City of Arlington was part of a joint research project with the Texas A&M that examined approaches for realizing household water-use efficiency using AMI. This partnership was dependent upon engagement with 1,000+ residential customers, who were the early adopters for viewing web-based interval usage data and receive daily alerts and usage updates. As part of the study, web portal users' water data was collected and analyzed compared to a control group of similar customers who did not use the web portal. The before and after usage of both the control and treatment groups were tested to determine whether access to the portal had a significant impact on consumer habits. Preliminary results showed that there were statistically significant differences between the groups, and that portal users used on average 8% less water in the winter and 17% less water in the summer than non-users. [13]

In the future, the City will collaborate with all of its 366,000 customers and it moves through the full implementation of AMI. The technology will enable them to identify leaks and provide a greater understanding of personal water usage and how to reduce it. Research from this project will improve the understanding of the nexus between AMI technology and water efficiency from the perspectives of conservation, rate structures, leak detection, and infrastructure optimization. The results of the study will be used to determine the best communication methods to increase water use efficiency by using real world data. The findings will be published and act as a guide for numerous other water utilities across the region to use when implementing similar technologies.

[12] http://www.arlington-tx.gov/history/arlington-history/

[13] Understanding the Influence of Sociodemographics, Psychosocial and Behavioral Factors on Water Conservation in Texas II: Post-Intervention Analysis. Authors: Anna Faloon; Allen Berthold; Kelly Brumbelow; Kevin Wagner. For Submission to: ASCE WRPM. Not yet published as of 12/22/15.

Is there widespread support for the project?

Yes, the City has partnered with Texas A&M and the Texas Water Research Institute as mentioned above. The project is rooted in Texas Legislature, which charged A&M agencies to address growing water needs after the release of a 2012 state water plan. Researchers at Texas A&M identified the data available through AMI as a pivotal technology in increasing awareness of water consumption. The City of Arlington is the first City to be involved in the research project, but there are plans to expand to Round Rock and other cities in the state.

The City has obtained signed letters demonstrating the widespread collaboration with and support from surrounding utilities and government entities. Supporting entities include the TRWD, the neighboring city of Fort Worth, and other utility service providers, such as Oncor Energy, and the Trinity River Water Authority. Many of these individuals are closely monitoring the progress of the AMI Project as it heads into completion. All letters of support can be found in the attachments.

What is the significance of the collaboration/support?

The City of Arlington was a proud partner in a joint research project with the Texas A&M University, the state's research-intensive flagship university founding in 1876, and Texas Water Resources Institute, which was designated as the water resources institute for the state in 1964. Both institutions are highly regarded in water and natural resources science and management. The success of this project in the City of Arlington will lead to other cities in Texas following suit. All lessons learned from the project and conservation program interviews will be published in several extension guidebooks that are available to water suppliers.

Will the project help to prevent a water-related crisis or conflict?

This project will conserve water to reduce demand on current supplies and will help to prevent crisis or conflict over water.

Is there frequently tension or litigation over water in the basin?

There is not frequent tension over water in the basin.

Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?

The City's customers will have increased awareness of their own water usage as a direct result of the WaterSMART Project. Additionally, the successful completion of this project would likely influence other utilities in the area to pursue this type of AMI technology. The findings from the collaboration between the City of Arlington, Texas A&M and the Texas Water Resources Institute will contain customer engagement strategies that will promote water conservation throughout the state and beyond.

Will the project increase awareness of water and/or energy conservation and efficiency efforts?

Yes, see response above.

Will the project serve as an example of water and/or energy conservation and efficiency within a community?

Yes, see response above.

Will the project increase the capability of future water conservation or energy efficiency efforts for use by others?

Yes, see response above.

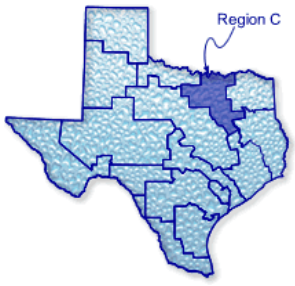
Does the project integrate water and energy components?

Yes, significant water and energy savings will be realized as a direct result of this project.

Evaluation Criterion F: Implementation and Results

Subcriterion No E.1: Project Planning

1) **Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Basin Study, drought contingency plan, or other planning efforts done to determine the priority of this project in relation to other potential projects.**



Like the rest of the Dallas-Fort Worth region, the City of Arlington is part of the Region C Regional Water Planning Group (Region C). The Region C Water Planning Group (RCWPG) is one of 16 regional water planning groups established by the Texas Water Development Board to help develop and revise a comprehensive water plan for Texas through 2060. The Region C Water Plan includes conservation and reuse strategies to reduce the average per capita municipal water demand in the region by nearly 30% over the next 20 years. The proposed project is one element of the City of Arlington's efforts to achieve that regional goal.

There are ongoing basin studies for major reservoirs including Lake Bridgeport, Eagle Mountain Lake and the Cedar Creek and Richland-Chambers Reservoirs. Please see below for several studies:

- Trinity River Basin (Lake Bridgeport and Richland-Chambers association):
    - https://tx.usgs.gov/projects/trin/pubs/pdf/awra.pdf

- http://tx.usgs.gov/projects/trin/
- http://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R370_ReservoirSite.pdf

- Eagle Mountain Lake:
  - http://nctx-water.tamu.edu/media/5314/eagle%20mountain%20background.pdf
  - http://www.twdb.texas.gov/publications/reports/numbered_reports/doc/R370_ReservoirSite.pdf

2) 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).

The Region C Water Plan includes conservation and reuse strategies to reduce the average per capita municipal water demand in the region by nearly 30% over the next 20 years. The proposed project is one element of the City of Arlington's efforts to achieve that regional goal.

Subcriterion No F.2: Readiness to Proceed

Describe the implementation plan of the proposed project. Please include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

The City's WaterSMART project is expected to take 17 months from May 2023 – November 2024, not including procurement timelines. We are already installing smart meters in the system and will continue the procurement and fielding of this technology as matching funding is obtained. In addition, The City will issue bid documents to solicit support for:

1. Leak detection technology
2. Public awareness and outreach (water conservation education) support

The public awareness outreach will conduct in parallel with the smart meter installations. The city currently has its selected AMI vendor, Sensus, under contract for procurement of smart metes, therefore no additional solicitations are required.

TABLE 4-1. PROJECT SCHEDULE

Project Task	Duration	Start	End
In-house installation of 17,676 meters and MIUs using in house labor	17 months	5/31/23	11/30/2024
Advertise for public awareness and education support services	2 months	06/01/23	08/01/23
Implement public awareness and education campaign	15 months	08/01/23	09/30/24
Advertise and Bid for leak detection technologies	2 months	06/01/23	08/01/23
Install leak detection devices	8 months	10/01/23	07/01/24

Subcriterion No F.3: 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, marketed, or better managed, or energy saved).

Prior to the deployment phase, The City of Arlington will refine and institute a number of Key Performance Indicators (KPI's) designed to measure the success of the program. It is anticipated that these KPI's will include but are not limited to:

- Water Loss in gallons, monthly
- Number of Line Breaks/month
- Average Gallons lost/line break
- Number of Leaks detected/month
- Number of Leaks repaired/month
- Reduced vehicle miles for meter reading

The City of Arlington currently tracks the amount of water pumped and distributed as well as the amount billed on an annual basis. Prior to the project, the City will create a baseline of historical water distribution and billed data to compare against conservation gains from the project. The City will monitor the same metrics on a regular basis as well as meter population changes, main line breaks, gallons pumped and other indicators to measure the performance of the project.

Subcriterion No F.4: Reasonableness of Costs

Please include information related to the total project cost, annual acre-feet conserved, energy capacity, or other project benefits and the expected life of the improvement(s).

In using $2,000,000 in Bureau of Reclamation WaterSMART funding with $3,838,160 in City funds, the City of Arlington anticipates that it will conserve **10.08%** of its water supply, or **6,160.56-acre feet a year**

The City will also **reduce greenhouse gas emissions by 12.63 metric tons annually** due to decreased vehicle miles required for metering activities.

For all projects involving physical improvements, specify the expected life of the improvement in the number of years and provide support for the expectation (e.g., manufacturer's guarantee, industry-accepted life-expectancy, description of corrosion mitigation for ferrous pipe and fittings, etc.).

The total life expectancy of the AMI meters and leak detection equipment is 20 years based on industry-accepted data. Collectors have a life expectancy of 20 years. All AMI and MDM systems are expected to be hosted by the vendor and supported for 5 years, with an option to renew.

Evaluation Criterion G: Additional Non-Federal Funding

The cost of the WaterSMART Project will be $5,838,159.33. The City of Arlington will spend $3,838,159.33 in non-federal funding for the project. The City of Arlington is requesting $2,000,000 of federal funding support towards the project cost. The percentage of non-federal funding will be:

$$\frac{\$2{,}000{,}000}{\$5{,}838{,}159} = 34{,}25\%$$

Evaluation Criterion H: Connection to Reclamation Project Activities

1) How is the proposed project connected to Reclamation project activities?

The proposed project is not connected to an existing Reclamation project.

Performance Measures

While the City of Arlington anticipates many benefits as a result of the WaterSMART Project, it is important to identify measures that will quantify the true results. Determining this at the start will create historical context to assess the City's efforts as a trend over time. The first metric that the City will closely monitor to assess the project is the annual system loss %, which is submitted to TWDB each year. The three-year average from 2012-2014 for System Loss % is 11%, while the 2014 figure was slightly higher at 12.75%. Any improvements in customer- or distribution-side leak detection, meter accuracy and theft identification will result in a decreased loss percentage.

$$System\ Loss\ \% = \frac{(water\ produced) - (water\ consumed)}{(water\ produced)}$$

$$\mathbf{0}22\ \boldsymbol{System\ Loss}\ \% = \frac{(19.910\ MG) - (17.372\ MG)}{(19.910\ MG)} \cdot 100 = \mathbf{12.75}\%$$

Gallons per capita day (GPCD), represented in the formula below and provided in the Region C 2016 Plan, is the basis for the City in tracking efficiency of water use. This metric provides an estimate of municipal per capita water use that includes commercial, residential, some light industrial, and institutional water users and in some cases, municipal golf course irrigation. The City intends to utilize this figure in assessing water conservation trends with improved Customer-side management.

$$\frac{(water\ diverted\ and/or\ purchased) - (wholesale\ sales\ +\ industrial\ sales\ +\ power\ sales)}{(Population\ of\ service\ area) \cdot (365\ days)} = \text{GPCD}$$

Additional detailed performance measures can be found in section Subcriterion No. F.3: Performance Measures.

Environmental and Cultural Resources Compliance

Will the 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.

The proposed project will not impact the surrounding environment as the work will exclusively focus on current utility property. The utility property will consist of meters and other utility assets in the field which are not part of the surrounding open spaces or animal habitats.

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?

There are four federally listed species that may be found in the project area. These are the piping plover, interior least tern, golden-cheeked Warbler, and Black-capped Vireo. Since work will be limited to existing utility facilities and public rights-of-way, none of these species will be affected by the project.

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 project may have.

This project will not have any impact on wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "waters of the United States". The project is confined to work within existing meter boxes and utility facilities and will not involve new construction in areas of jurisdictional waters or wetlands.

When was the water delivery system constructed?

The Arlington water system began operations in 1894.

Will the 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 project will not result in any modifications to 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 six buildings, structures, or features in the City of Arlington that area listed in the National Register of Historic Places. The work involved in replacing the existing manually read water meter will not affect any historic structures.

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

There is one archeological site in the City of Arlington that area listed in the National Register of Historic Places. Work on the project will be confined to existing utility infrastructure will involve replacing the existing manually read water meters. The proposed project will not affect any archeological sites.

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

No, the project will not have adverse effects on low income or minority populations. It is expected that the availability of AMI data will have a positive effect on low income and minority populations by reducing costs associated with water losses. They will also have access to interval water usage data and alerts to better manage their water bill.

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

This project will not limit access to and ceremonial use of Indian sacred sites or impact tribal lands.

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

This project will not contribute to the introduction, continued existence, or spread of noxious weeks or non-native invasive species known to occur in the area.

Required Permits or Approvals

There are no requirements for permits or approvals by any federal, state, regional, or local government body associated with the project. To the extent that any activities involved in the Arlington project require some perfunctory local approvals, the city is confident that those can be obtained expeditiously.

Official Resolution

Please see attachments for the City of Arlington's Official Resolution.

Project Budget

Funding Plan and Letters of Commitment

The City of Arlington's 2022 Capital Improvement Plan was approved in February 2022. The figures in the project budget reflect the allocated costs per this Plan. A total of $4,112,500.00 has been secured solely by the City to support the public awareness campaign, system upgrades, meter replacements, and leak detection equipment over the length of the 2-year project.

TABLE 4 - SUMMARY OF NON-FEDERAL AND FEDERAL FUNDING SOURCES

Funding Sources	Funding Amount
Non-Federal entities	$ 3,838,159.00
Non-Federal subtotal:	*$ 3,838,159.00*
Other Federal entities	$ 0
Other Federal subtotal:	$ 0
Requested Reclamation funding:	$ 2,000,000
Total project funding:	$ 5,838,159.00

Budget Proposal

TABLE 5 - FUNDING SOURCES

Funding Sources	% of total project cost	Total cost by source
Recipient funding	65.75%	$ 3,838, 159.00
Reclamation funding	34.25%	$ 2,000,000.00
Other Federal funding	0%	$ 0
Totals	**100%**	$ 5,838,159.00

Budget Narrative

The budget narrative provides a discussion of, or explanation for, items included in the budget proposal.

Please see the table below for a break out of individual budget components:

Category	Budget
Leak Detection Equipment	$ 100,000.00
AMI Public Awareness Campaign	$ 20,000.00
Smart Meter Replacement	$ 2,255,344.00
Meter Interface Units & Support Items	$ 3,462,815.00
Total	$ 5,838,159.00

Salaries and Wages

The city is not requesting grant funding for salaries and wages for city staff. The City of Arlington will appoint a Manager to oversee the Project and report progress to its constituents.

Fringe Benefits
Arlington is not including fringe costs for the purpose of the grant budget.

Travel
Travel is not included in the budget proposal.

Equipment
Equipment comprises the largest budget line items. Arlington has included leak detection equipment, meter boxes, meter vaults for larger meters, meter replacements and meter interface units under the equipment category.

Supplies/Materials
No materials or supplies have been budgeted.

Contractual/Construction
Arlington has included contractual labor to assist with the additional 17,693 meters and MIU installations as well as assistance for customer outreach and education in this category.
Environmental and Regulatory Compliance Costs

The proposed Project is technology services driven and not for construction. Therefore, no costs for environmental compliance are included.

Other
Arlington does not anticipate any other expenses that were not included in previous categories.

Indirect
There are no indirect costs to be included.

Total Costs
The total cost of the WaterSMART project is estimated at $5,838,159 over two years. The WaterSMART Grant Funding Group II request is for $2,000,000. The City of Arlington will contribute the remaining $3,838,159.00.

Budget Form
See Attachments for- SF-424A Budget Information for Non-Construction Programs.

Funding Restrictions
No project pre-award costs shall be submitted for consideration as an allowable reimbursable expense unless the award date is delayed.

Attachments

Attachment I - SF-424A Budget Information for Non-Construction Programs

Attachment II - Letters of Support