Water Meter Upgrade Project
For City of Fountain, Colorado

WaterSMART Grant: Water and Energy Efficiency Grants for Fiscal Year 2023

Bureau of Reclamation NOFO No. R23AS00008

July 28, 2022

Applicant: City of Fountain

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EXECUTIVE SUMMARY

Date: July 28, 2022

Applicant: City of Fountain (City)

City/County/State: Fountain, El Paso County, Colorado

Project Manager: Katie Helm

Conservation & Sustainability Manager

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Applicant Category: The City of Fountain is a Category A applicant (local government).

Funding Group: Funding Group I

Grant Funding Request: $401,554.28

Non-Federal Matching Funds: $490,788.56

Total Project Cost: $892,342.84

Project Duration: 23 months

Estimated Project Start Date: May 1, 2023

Estimated Project Completion Date: March 31, 2025

Located on Federal Facility: This project is not located on a federal facility.

Unique Entity Identifier: 0304417030000

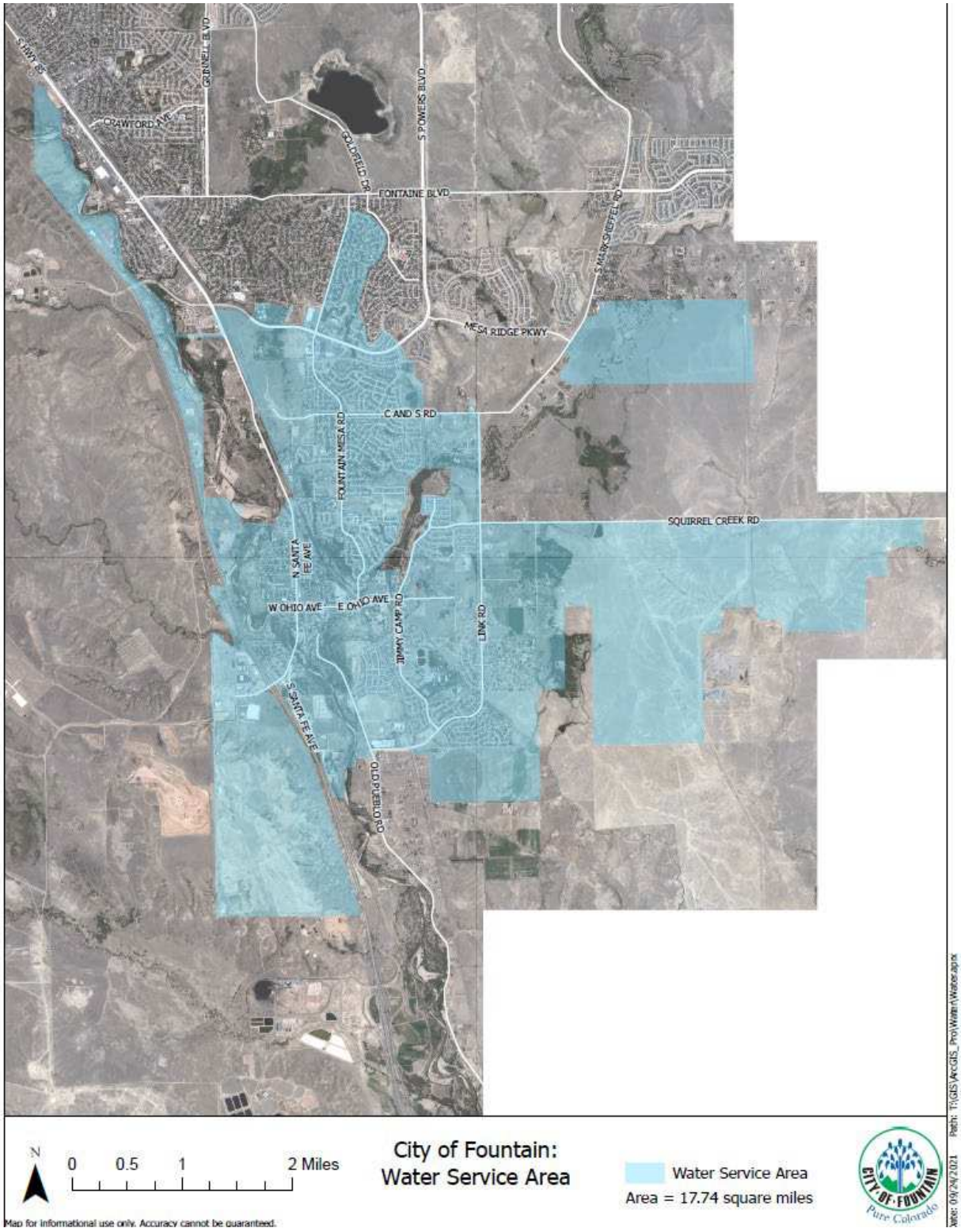
The City of Fountain is located 15 miles South of Colorado Springs in El Paso County, in the Colorado Front Range. This project will upgrade 1,406 Neptune R900, R900M and R900i water meters to Neptune T-10 and Neptune High Performance (HP) Turbine Water Meters in the City of Fountain Utilities water service area in Fountain, Colorado. This includes the installation of seven data collectors necessary to remotely gather real-time water meter consumption data and send to the City's server. The new water meters will allow City staff to monitor and run usage reports on customer water consumption in real-time. This will allow utility staff and water customers to easily identify and resolve leaks quickly to eliminate water losses. The upgraded meters will demonstrate other benefits such as improved accuracy of meter reads, remote detection of continuous usage, quick resolution of customer inquiries with real-time data, stabilized revenue and overall improved efficiency in utility operations. This project is

expected to result in 36 acre-feet of annual water savings and an associated 110,671 kWh annual energy savings. The water meter upgrades will defer the need to acquire additional water rights, storage, and additional treatment plants as the City focuses on proactive demand management, loss reduction and improved billing accuracy. It is the mission of City of Fountain Utilities to provide customers with high quality, reliable and cost-effective water as efficiently as possible. Upgrading the City's metering equipment is vital to achieving this goal.

PROJECT LOCATION

The City of Fountain is located 15 miles South of Colorado Springs in El Paso County, in the Colorado Front Range. The Water Meter Upgrade Project location as detailed in Figure 1 below, occurs within the entirety of the City's current water service area which is 17.74 square miles. The project latitude is 38°35'56"N and longitude is 104°39'37"W.

Figure 1: City of Fountain Water Service Area



TECHNICAL PROJECT DESCRIPTION

The City provides water utility services to approximately 27,350 people among 8,687 water utility accounts. Of 8,687 accounts, 319 are Commercial/Industrial/Institution (CII) and 8,368 are single family residential accounts. The City has already upgraded 73% of its meters, and will have upgraded 84% before beginning the project phase outlined in this project plan. This proposal seeks funding assistance to upgrade the remaining 1,333 ¾" residential meters and 73 CII meter including 1", 1.5", 2", 3" and 4" meters to Neptune T-10 and Neptune HP meters.

The City's Water Meter Upgrade Project will replace older, inefficient meters with Advanced Metering Infrastructure (AMI) and adds data collectors. The new meters increase read accuracy from 94% accuracy to 100%. Additionally, the data collectors allow all meters to communicate with the network in real-time. This allows the City and its customers to observe data instantaneously, opposed to waiting for monthly reads that are gathered via a drive-by method. The drive-by method requires utility staff to drive routes through the City, gathering meter read data sets at specified points. The new meters and paired technology will allow for remote, real-time data collection. The upgrade project will reduce staff time associated with collecting reads and allow for quick response and resolution to leaks indicated by a spike in usage.

Task 1 - Order Inventory: Upon project initiation, an order will be placed by the City's Water Meter Technician for water meter bodies.

Task 2 - Customer Outreach: The City's Utilities Billing Specialist will contact customers to schedule an appointment for their water meter to be upgraded. Approximately 89% of water meters in the City are located inside of the home meaning that customers must be present during their appointment. The Utilities Billing Specialist completes up to five touch points in order to schedule an appointment. They begin with a phone call and email to the customer. If the phone call and email are unreturned, the water field technicians will leave a door hanger at the property advising of the need for meter replacement scheduling. If this communication is unsuccessful, the Utilities Billing Specialist then mails a certified letter to the customer. If there is still no response, the Utilities Billing Specialist will submit a work order for the Water Field Technicians to shut off the water to the property requiring the customer to contact the City to schedule a meter replacement before the water is turned back on. When contact is made with the customer, the Utilities Billing Specialist will schedule an appointment with the appropriate staff required for the meter type. For ¾" and 1" meters, one Water Field Technician and one Water Meter Technician are required for each appointment. For meters sized at 1.5", 2", 3" and 4", one Water Meter Technician, one Lead Water Operator, and two Water Operators are required for the install.

Task 3 - Meter Installation: One to five days prior to the scheduled meter upgrade, a Water Operator will visit the property to mark the location of the curb stop. During this time, they ensure its accessibility by clearing out any debris or obstructions and confirm that it is in

operating condition. If it is not in operating condition, they will make the appropriate repairs on site.

During the meter upgrade appointment, the designated staff required for the meter install will meet with the customer at their property. They explain the reason for upgrading the meter, the replacement process, how to read the meter, and answer any questions that the customer may have. During this time, they also provide water saving resources such as showerhead and sink retrofits, dish scrapers and toilet leak detection dye tabs.

Occasionally there are variables that may be encountered during the changeout process that may add to the time and materials required on site. The following are examples:

- **Limited clearance:** The meter replacement may be challenging to access depending on its location. Meters may be in basements, crawlspaces, or closets. Smaller or unique spaces can add time to the process.
- **Vault Meter:** Larger, CII meters are commonly located within a vault. Vault meters require an antenna also be installed to communicate meter reads.
- **Polyethylene Pipes:** CII vault meters may have polyethylene pipes instead of copper. Therefore, additional staff are required for larger meters. Two staff must hold the flexible piping while other staff perform the meter removal, replacement, and adjust the couplings on the new meter.

Task 4 - Preprogram gateway data collector for deployment: The City's Utilities AMI Analyst will set up IP addresses that will be used for two-way communication between the server, data collectors and laptops used for drive-by water meter reads. The Utilities AMI Analyst will enable and troubleshoot connectivity between the Wi-Fi router and data collectors.

Task 5 - Schedule and carryout data collector install: The City's Utilities Analyst will work with the City's IT Department, Electric Department and vendor to schedule and facilitate the installation of the data collectors. Initially only one to three data collectors will be scheduled for installation and followed by a Systems Acceptance Test. The remaining data collectors will be installed once initial installment of data collectors has been troubleshot.

The City's Electric Crew Foreman and Electric Journeyman Lineman are the team responsible for mounting the hardware and data collectors to their pre-mapped, ideal location. The vendor identified ideal data collector locations based on customer meter locations and topography of the area. These locations are anticipated to achieve ≥99% coverage for meter reading.

Each data collector location requires an electrical power source with a 120-volt minimum capacity. Depending on the location, additional equipment may be required to bring 120v to that area. This would include overhead wire, transformer, or additional poles. The Crew Foreman and Journeyman Lineman will use a crew pick-up truck, a bucket truck and potentially a digger derrick if additional pole wires are required.

Task – 6 Standup servers, back up existing data and transfer to new servers: The selected vendor completes this stage. The contracted vendor will host the web-based server, install, and maintain the required software. The vendor will back up existing customer data from the onsite Neptune iN-site server and transfer it to the new vendor hosted server Neptune 360. Once the new server is in place and confirmed to adequately communicate with the City's Customer Information System (CIS), the Utilities AMI Analyst and Senior Systems Analyst will connect with the first data collector(s). These staff will establish, test and confirm its communication with the hosted Neptune 360 server. At this point, the new server will automatically monitor deployed data collectors and the City can bill water utility services off of that file. Additional data collector installments will continue during this stage.

Task 7 - Systems Acceptance Test (SAT): Following the first round install of data collectors the Senior Systems Analyst and Utilities AMI Analyst will work together to perform a SAT. Together they will initiate, configure, and then troubleshoot any connectivity issues between the data collectors and the customer billing system. The City anticipates that there will be observation and troubleshooting after each individual data collector install.

Task 8 - Quality Assurance: The Utilities Analyst and Utilities AMI Analyst will monitor the communication between the data collectors and Neptune 360 Platform to ensure that data is coming in utilizing the remote read technology. During this time, Water Meter Technicians will also continue to collect water meter reads by drive-by method and compare the data accordingly. By performing these two methods of data collection in parallel, staff can make sure that customer meter reads, and billing are not disrupted by the conversion. This quality assurance will allow the City of identify and resolve issues before completing the conversion.

This process will happen concurrently as data collectors are deployed. As more data collectors are staged and go live, the Water Meter Technicians will perform fewer drive-by meter reads. Once all data collectors are installed and operable, the Water Meter Technicians may still need to utilize drive-by meter read technology to gather data from any anomalies which are anticipated to be low in numbers.

The City's current process for gathering meter reads is to utilize the iN-site software on laptops which are connected to a 12v antenna that is mounted to the roof of the drive-by read vehicle. Once data collectors are set up, they will communicate directly with the Neptune 360 hosted server. This data will be transferred into the CIS from the Neptune 360 server. Meanwhile, meter reads collected via drive-by method performed by Water Meter Technicians will fill in any missing information.

Task 9 - Staff training on new software: The vendor will provide training on the Neptune 360 Software to City staff. This includes eight hours of on-site training and four hours of remote training. This training is necessary for staff to understand how to navigate the new system and maximize upon its enhanced capabilities.

Task 10 - Reporting: The Conservation & Sustainability Manager and Utilities Analyst will fulfill reporting requirements throughout the project, including financial and performance reports. They will maintain that the project stays true to its timeline as specified in this proposal through regular site visits and meetings to discuss project developments and milestones.

EVALUATION CRITERIA

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.*

EVALUATION CRITERIA A– QUANTIFIABLE WATER SAVINGS

This criterion prioritizes projects that will conserve water and improve water use efficiency, supporting the goals of E.O. 14008.

Describe the amount of estimated water savings.

This project is anticipated to conserve an estimated 36 acre-feet of water annually.

Describe current losses.

Explain where the water that will be conserved is currently going and how it is being used.

Explain where current losses are going. The water losses identified by this project are due to inaccurate metering from old, inefficient water meters and prolonged, unresolved leaks on the customer side. If indoors, these losses are distributed into the wastewater system. This is due to leaking fixtures or inaccurate metering. If outdoors, these losses are typically caused by irrigation breaks, malfunctioning irrigation systems or overwatering. These losses seep into the ground and eventually reach the alluvial aquifer. Excessive runoff may travel into storm drains and into Fountain Creek.

Are there any known benefits associated with where the current losses are going? The water lost due to metered, outdoor irrigation breaks may eventually travel to Fountain Creek through the City's storm drain system. It is uncertain whether this water loss has substantially impacted the habitat of the area.

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.*

Municipal Metering

Municipal metering projects can provide water savings 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. Estimated Annual Water Savings: 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.

1. Leak Detection, Notification & Resolution

The United States Environmental Protection Agency states that 10% of households have leaks averaging 90 gallons or more each day, or 2,700 gallons a month (WaterSense 2021). A study conducted in Sacramento, California observed 13% of residential accounts having a leak at 7.5 gallons per hour (GPH) or greater (Schultz, et al. 2018). This equates 180 gallons lost to leaks daily, or 5,400 gallons a month. For this reason, the City used a conservative 12% of its total upgraded meters to quantify the number of water customers that may have a leak each month. Since this project scope includes the incorporation of the Neptune 360 Software that enables real-time data collection and prompt high usage notifications, 12% of all 8,687 water meters were used to quantify water savings associated with leak detection and notification.

The same Sacramento study observed customer water consumption changes in the form of reduction, following introduction of an online customer portal that allowed for real-time monitoring of current and historical usage and ability to set leak alerts (Schultz, et al. 2018). Based on flow rates, this study determined the percentage of customers utilizing the portal, with a likelihood to have a leak. This decreased from 12% to 6% within three months of the customer initially logging in (Schultz, et al. 2018). This usage was compared to the household's consumption one month prior to signing up. From this data it is assumed that 50% of portal users will make efficiency changes and resolve leaks as a result of high-water usage notification (Schultz, et al. 2018). This 50% assumption was used to estimate the water savings for this project. The Utilities AMI Analyst will run weekly reports of high-water users, and users with unusual spikes in water consumption. These customers will be notified weekly, opposed to currently monthly notifications. By using this method, the City can make certain that high water users are notified directly regarding potential leaks rather than leaving it up to the customer to proactively observe their water consumption.

A study conducted by the Water Research Foundation identified household leaks as accounting for 12% of average household indoor water use (Mayer, 2016). This percentage was applied equally to the water meter accounts in the City. It is based on average water

consumption during November, December, and January during 2021-2022. These months were used to determine average indoor water use during non-irrigation months which is also known as the winter quarterly average. The winter quarterly average of a water customer account was 5,229.30 gallons. This number was multiplied by 12% to estimate 627.52 gallons lost to leakage, per month, per customer experiencing a leak. This is a conservative amount compared to the studies referenced that identify 2,700 gallons a month (WaterSense 2021) and 5,400 gallons a month (Schultz et al. 2018) lost to leaks per household. The 627.52 gallon estimate was then multiplied by 1,042.44. This number is 12% of the City's 8,687 water meters as previous studies identified the percentage of homes with leaks were between 10-13% (Schultz, et al. 2018; WaterSense, 2021).

This total equates 654,148.08 gallons lost due to indoor leaks each month, or 7,849,776.96 annually. It is important to note that this is a conservative estimate as it does not include outdoor water losses due to irrigation breaks or inefficiencies. The City assumes that 50% of these leaks will be resolved promptly and therefore estimates an annual savings of 3,924,888.48 gallons through improved leak detection and notification.

2. Metering Accuracy

It is natural for water meters to reduce in read accuracy as they age due to normal wear, water quality, and water velocity. The longer the active lifespan of a water meter, the more degraded and less accurate it will be (Richards 2010). It is not uncommon for debris to find its way into water infrastructure due to distribution system breaks and their corresponding repair processes. Debris or buildup of other deposits can have negative effects on the functionality and accuracy of water meters over time (Stoker, et al. 2012). Similarly, it is important to note that the accuracy of meter reads decreases at low flow rates (Tao, 1982) and about 16% of household water use occurs at a flow rate of 1 GPM or less (Hudson, 1978).

A study conducted by the Alameda County Water District in Fremont, California that weighed economic and operational considerations determined that water meters should be replaced every 15 years (Yee, 1999). The oldest water meters in the City of Fountain's distribution system are up to 25 years old. The same study in Alameda County Water District identified an accuracy degradation percent of 93.51% once a meter reaches 20 years of age (Yee, 1999). This was determined sampling meters throughout their distribution system.

Figure 2 below details the operating range and low flow accuracy of the new, Neptune T-10 and HP Turbine meters. This data assumes 95% accuracy at low flow rates and 100% accuracy +/-1.5% at normal operating range.

The operating range and low flow accuracy of the new, Neptune T-10 and HP Turbine meters are as follows. This data assumes 95% accuracy at low flow rates and 100% accuracy +/-1.5% at normal operating range.

Figure 2: Operating Range and Accuracy of New Neptune Meters

Meter Size	Operating Range	Low Flow Accuracy
¾”	.5 – 30 GPM	.25 GPM
1”	1 – 50 GPM	.38 GPM
1.5”	4 – 160 GPM	4 GPM
2”	4 – 200 GPM	5 GPM
3”	5 – 450 GPM	5 GPM
4”	10 – 1,200 GPM	5 GPM

The City assumes that the newly installed water meters will achieve 100% accuracy upon install and assumes that the older meters are operating at 94% accuracy. The City's annual revenue water for 2021 was multiplied by 6% to calculate the discrepancy of non-revenue water due to water meters that are under registering. The revenue water in 2021 totaled 805,635,480 gallons. This number was multiplied by 6% to determine a system wide estimated discrepancy of 48,338,128.80 gallons. The City provides water services to 8,687 accounts, equating a 5,564.42 gallon discrepancy per water account. The project scope within this grant application includes 1,406 meters. This equates 7,823,576.50 gallons saved annually due to improved meter read accuracy, as a result of this project.

Through improved, expedited leak detection notification and improved metering accuracy, this project is estimated to achieve 11,748,464.98 gallons or 36 acre-feet saved annually following completion.

The following is a list of studies referenced to support savings estimates.

Hudson, W.D. (1978), Increasing Water System Efficiency Through Control of Unaccounted-For Water. Journal - American Water Works Association, 70: 362-365. https://doi.org/10.1002/j.1551-8833.1978.tb04194.x

Mayer, P.W. (2016), Water Research Foundation Study Documents Water Conservation Potential and More Efficiency in Households. Journal - American Water Works Association, 108: 31-40. https://doi.org/10.5942/jawwa.2016.108.0160

Richards, G.L., Johnson, M.C. and Barfuss, S.L. (2010), Apparent losses caused by water meter inaccuracies at ultralow flows. Journal - American Water Works Association, 102: 123-132. https://doi.org/10.1002/j.1551-8833.2010.tb10115.x

Schultz, W., Javey, S. and Sorokina, A. (2018), Smart Water Meters and Data Analytics Decrease Wasted Water Due to Leaks. J Am Water Works Assoc, 110: E24-E30. https://doi.org/10.1002/awwa.1124

Stoker, D.M., Barfuss, S.L. and Johnson, M.C. (2012), Flow measurement accuracies of in-service residential water meters. Journal - American Water Works Association, 104: E637-E642. https://doi.org/10.5942/jawwa.2012.104.0145

Tao, P. (1982), Statistical sampling technique for controlling the accuracy of small water meters. Journal - American Water Works Association, 74: 296-304. https://doi.org/10.1002/j.1551-8833.1982.tb04925.x

WaterSense 2021. The Facts on Leaks. www.epa.gov/watersense/fix-leak-week (accessed October 28, 2021).

Yee, M.D. (1999), Economic analysis for replacing residential meters. Journal - American Water Works Association, 91: 72-77. https://doi.org/10.1002/j.1551-8833.1999.tb08666.x

B. Distribution System Losses

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

Current water distribution system losses have been determined by comparing water sales to water distributed. Current system losses are 602 AF annually.

C. Expected Water Use Reductions*: 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 potential for reductions in water use by individual users has been determined by referencing various peer reviewed case studies. Specifically, case studies exploring the following topics were referenced to determine average water savings:

- Average U.S. household water consumption attributed to leaks.
- Average degradation of water meter read accuracy as water meters age.
- Water savings associated with AMI, real-time water meter read data, and prompt leak notification.
- Water meter accuracy at low flow rates.

The percentages for savings identified in these case studies were paired with the City's water customer usage data to ensure that the water savings estimates were specific to the City's water customers.

D. Meter Specifications: What types (manufacturer and model) of devices will be installed and what quantity of each?

Outdated meters sized at ¾", 1", 1.5" and 2" will be replaced with the Neptune T-10 Meter. Outdated meters sized at 3" or 4" will be replaced with the Neptune High Performance (HP) Turbine Meter. Key features of these devices include magnetic-driven, low-torque registration to ensure accuracy, high resolution, low-flow leak detection and proprietary polymer materials to maximize long-term accuracy. Both meter models meet or exceed American Water Works Association (AWWA) C700 standards. This project will require 1,402 Neptune T-10 meters and 4 Neptune HP Turbine meters.

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

The Utilities Analyst and Utilities AMI Analyst will run the following reports regularly:

- **Report to identify high water users:** Water users that fall within a certain water consumption threshold will be contacted regarding high water use and resolution. Their usage will be monitored before and after notification to determine if a change was made as a result of the prompt
  alert.
- **Report to identify unusual spikes in consumption:** Similar to above, water users that demonstrate an unusual spike in water usage will be contacted regarding the abnormal water usage and resolution. Their usage will be monitored before and after notification to determine if a change was made as a result of the prompt alert.
- **Report of upgraded meters detailed within this project scope:** The water meters detailed within this project scope will have their usage monitored for a year prior to the upgrade, and a year following the upgrade. This data will be compared side by side to determine improved accuracies of water usage as a result of the meter upgrades.
- **Annual Reporting of distribution and sales:** The Conservation & Sustainability Manager will monitor annual water sales and water distribution to quantify losses. Annual losses will be compared to prior years to quantify water savings. Trends in gallons per capita per day will also be observed and reported.

EVALUATION CRITERIA B – RENEWABLE ENERGY

Implementing Renewable Energy Projects Related to Water Management and Delivery

N/A

Increasing Energy Efficiency in Water Management

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

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?

The City's water system is primarily gravity-fed from Finished Water Storage tanks situated at strategic locations, but there are two primary pumps utilized in the City's Water System to sustain normal operating service levels. These pumps serve two elevated booster tanks located at the interface of the City's low and high pressure zones.

The elevated tank service pump moves water from the at-grade 4,000,000 gallons finished storage water tank and lifts it up approximately 100' into a 750,000 gallon elevated booster tank. This tank gravity feeds outwards to serve an area that sits at too high of an elevation to be adequately served by the City's at-grade tanks. The approximate 50 HP booster pump runs every day of the year at intermittent intervals to maintain adequate storage levels within the booster tank.

During summer months the City operates the Highgate booster pump, which during peak demand periods moves water from the under-utilized low zone into the overstressed high zone. This is a 50 HP pump that is controlled manually and is operated when consumption in the high zone, which contains the majority of the City's customers, begins to exceed the City's capacity to supply treated water to that region.

This project is anticipated to save 36 acre-feet in water, resulting in less 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.

This project is estimated to save 110,671 kWh annually through reduced pumping and wastewater treatment processes.

The energy required to pump water from Lake Pueblo to Fountain is 9.42 kWh for every 1,000 gallons. This calculation was developed by considering the energy required to pump up in elevation changes among tanks, and individual pump motor efficiency. The annual 36 acre foot savings was converted to 11,748,465 gallons. This was divided by 1,000, equating 11,748. This number was multiplied by 9.42 kWh to determine 110,671 kWh saved as a result of reduced pumping.

City of Fountain Utilities wastewater is treated by three facilities, two of which are operated by Fountain Sanitation District, and one by Widefield Water & Sanitation.

These include the Richard J Christian II Treatment Facility (RJCII), the Harold D. Thompson Treatment Facility (HDT) and Widefield Water Treatment Facility. These wastewater treatment facilities receive electric service from Mountain View Electric and City of Fountain Utilities. Billing data for these facilities was analyzed to determine an average of 1,786 kWh to treat one acre-foot of water. This number was multiplied by 36 acre feet of water savings to equate 64,313 kWh saved by reduced waste water treatment resulting from this project.

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

Yes. The calculations above include the energy required to pump water, as well as the energy required to treat wastewater before it is released into Fountain Creek.

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 estimate originates from raw water supply storage in Lake Pueblo.

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

According to 2019 data from the Environmental Protection Agency, 25% of greenhouse gases are generated from electricity production. By lessening electricity use at the pumping and treatment stages of the water supply system, this project reduces the City's reliance on fossil fuels. As a result, this will reduce environmental damage from harvesting non-renewable resources and their corresponding greenhouse gas emissions during generation. Reduced emissions will also lower negative effects to human health through improved air quality. This project offsets climate change through reduced emissions, slowing warming effects to the earth.

Using the EPA's Greenhouse Gas Equivalencies Calculator, the 110,671 kWh savings achieved through reduced pumping and treatment processes of 36 acre feet of water will result in an avoided 78.4 metric tons of carbon dioxide emitted into the atmosphere annually.

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

Yes. Annually, the project will result in 4,092 less vehicle miles driven, and 3,843 lbs. of CO2 avoided.

- Annual mileage (25,047 miles) and engine hour (2352 hours) data were gathered among the Water Meter Technician and Water Field Technician team vehicles.
- High Bill Investigation (HBI) appointments over the last three years were gathered to create an annual average of 256.3 appointments.

  - Average drive time towards HBI appointments is 45 minutes.
  - Average drive time is multiplied by the average number of HBIs, equating 192 engine hours.

- Annual averages for hours spent towards drive-by data collection was gathered, also equating 192 engine hours. There are four water cycles, averaging four hours spent towards each cycle read.
- Average engine annual hours spent towards HBIs and drive-by reading totaled 384 hours, or, 16.34% of overall Water Meter Technician and Water Field Technician engine hours.
- 16.34% of total Water Meter Technician and Water Field Technician annual mileage equates 4,092 miles that will be avoided following project completion.
- The vehicles used for this data collection are 2019 Chevy Silverado. These average 20-23 miles per gallon in city and on highway. According to the EPA, this vehicle type emits 396-456 grams of CO2 for every mile driven. An average of 426 was used to determine 1,743,179 grams or 3,843 lbs. of CO2 avoided annually as a result of the completed project.

EVALUATION CRITERIA C – SUSTAINABILITY BENEFITS

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. 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?

Yes. This project will aid in ecological resiliency to climate change through reduced water consumption. This will ultimately improve upon the amount of water that is maintained in the natural environment by 36 acre-feet annually. More water maintained in the natural environment will improve ecological health through increased stream flows, higher water levels, improved water quality and overall habitat health resulting from the improved moisture retention. The maintained water will be used to improve water quality and quantity in the environment, which is key to combating climate change. Water scarcity is an ongoing challenge in Colorado. By improving water efficiency, the City is improving its resiliency to climate related variables.

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).

Yes, it is estimated that 36 acre-feet of water will remain in the system annually because of this project. This will keep water in the natural environment for longer, keeping water at healthy levels and ideal temperatures for aquatic life. Specifically, within the City's primary raw water storage in Pueblo Reservoir and in the Arkansas River Basin as a whole.

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).

Yes. Using the Information for Planning and Consultation tool (IPaC) on the U.S. Fish and Wildlife Service website, the following endangered or threatened species were identified as potentially residing within the City's watershed and/or river system or being influenced by this area. It identifies the project site as an area of influence (AOI) if a species may be indirectly impacted by activities within the defined space. In this case, species would be affected by an increase in the 36 acre-feet of water maintained within the natural environment for longer as a result of this project.

- **Prebles Meadow Jumping Mouse:** This creature's ideal habitat is riparian and near dense grasslands and shrubs. This threatened species has a recovery plan under the ESA.
- **Easter Black Rail:** This bird occupies shallow wetlands typically dense with cattails. The recovery plan for this threatened species is currently being developed.
- **Piping Plover:** This bird inhabits flooded pastures, lakes, ponds, meadows and grasslands. This threatened species has a recovery plan under the ESA.
- **Whooping Crane:** This bird frequents wetland areas during migration, breeding, nesting, and foraging. This endangered species has a recovery plan under the ESA.
- **Greenback Cutthroat Trout:** This fish occupies cold water streams and lakes. The recovery plan for this threatened species is currently under development.
- **Pallid Sturgeon:** This fish thrives in rivers and tributaries. This endangered species has a recovery plan under the ESA.
- **Ute Ladies-tresses:** This perennial thrives in seasonally flooded river terraces, sub irrigated or spring-fed stream channels, reservoirs, berms, and canals. This threatened species has a recovery plan under the ESA.
- **Western Prairie Fringed Orchid:** This perennial requires adequate soil moisture for

growth and is most found near unplowed calcareous prairies and sedge meadows. This threatened species has a recovery plan under the ESA.

As this project seeks to upgrade water meters at preexisting meter locations, the City only anticipates improved ecological benefits as a result of this endeavor through the increase of water maintained in the natural environment. The maintained water will be used to improve water quality and quantity, which are vital to the health and success of the aforementioned species.

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

Yes, as less mileage is driven to gather meter reads and follow up on high bill investigations, the project is anticipated to avoid 3,843 lbs. of CO2. This will result in improved air quality through the reduction of miles driven.

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. The improved accuracy of water metering will allow for better water management through improved data. This empowers utility leadership to continue to make informed decisions but with enhanced accuracy. As water usage trends improve in accuracy, the City will be in a better position to respond to water scarcity events or anticipate needs for additional water rights, supply, storage, and treatment.

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.

Colorado has a semi-arid climate that consistently experiences variable levels of drought throughout the state. The demand management efforts for the Colorado River are increasingly important as it continues to experience stress due to drought, high temperatures and increased water demand. The City imports a large amount of water from the Colorado River Basin to meet its supply needs. The Colorado river also flows into Lake Powell and Lake Mead which are currently experiencing historically low water levels. Both lakes use hydropower to generate electricity for customers in Arizona, California, Nevada, and Colorado. If water levels continue to drop, this threatens electrical generation capabilities and may cause an increase in electricity costs for customers serviced by that hydropower. The City has water storage in Lake Pueblo and purchases hydropower from the Pueblo Hydropower Plant. Although the electric generation capabilities are not currently threatened in this area, it remains a possibility in the future without proactive demand management.

These low levels also result in poor water quality for basin which puts it at risk to invasive species. Similarly, low water levels to these areas effect recreational opportunities on which some communities rely heavily for economic stability. Water scarcity to this area will also impact agricultural users and their crop production. This demonstrates ongoing and shared water related challenges that extend beyond the state. This project recognizes that the challenges and benefits of improved water efficiency through reduced losses and effect management are experienced well beyond the organization implementing efficiency strategies.

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 event that hydropower production capabilities lessen, the City will require more reliance on electricity produced by fossil fuels. In turn, this will generate more greenhouse gas emissions which contribute to climate change and result in poorer local air quality.

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?

As mentioned, the project will reduce water demand and avoid water losses, meaning ultimately less water will be drawn from supply storage. With less water drawn, there will be more water available to maintain healthy habitats, recreational opportunities, and hydropower generation.

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 water conserved because of this project will offset groundwater pumping, reduce diversions, and keep supply in storage, primarily in Pueblo Reservoir and within the Arkansas Water Basin as a whole.

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

N/A

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

36 acre-feet of water will be saved.

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.

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

Low precipitation, aridity, high temperatures and historically low water levels in Colorado's water basins are all demonstrative of climate change. All of these variables result in less water for human consumption, recreation, habitats, and hydropower. This project will reduce water losses and lowers water consumption City-wide. This will be accomplished through improved meter accuracy, instant leak detection, and proactive demand management using real-time data. Resulting water savings from this project will reduce strain on water resources, keeping more water in the environment longer. This maintained water will improve recreational opportunities and overall water quality. Concurrently, improved water levels and quality have a complementary effect on wildlife habitat and endangered or threatened species that exist in these areas. Climate change makes water supplies and deliveries difficult to predict. This project helps Colorado prepare for and adapt to changing conditions through improved water efficiency.

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

Yes, as established throughout this proposal; this project will reduce water losses through effective demand management by 36 acre-feet annually. Less water used by the City will mean than less water is drawn from our storage, surface and ground water supplies.

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

No.

D. Will the project result in lower greenhouse gas emissions?

Yes. The severity of the current mega drought is demonstrated by the historically low water levels currently observed in Lake Powell and Lake Mead. In the event that either of these lakes drop below the minimum level necessary to generate hydroelectricity, there will be an increased reliance on fossil fuels for electricity generation.

Also as mentioned previously, this project will result in fewer vehicle miles driven annually, avoiding 3,843 lbs. (1.74 metric tons) of CO2 that would have been previously released into the atmosphere.

The 110,671 kWh savings achieved through reduced pumping and treatment processes of 36 acre feet of water will result in an avoided 78.4 metric tons of carbon dioxide emitted into the atmosphere annually.

Collectively this project will result in 80.14 metric tons of carbon dioxide emissions avoided annually.

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?

Yes. The benefits of this project reach all City of Fountain water utility customers equally. As identified in Figure 3 below, the City of Fountain is home to minorities, low income, older adults and individuals with disabilities.

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.

Section 1015 of the Cooperative Watershed Act defines a disadvantaged community as "*a community (including a city, town, county, or reasonably isolated and divisible segment of a larger municipality) with an annual median household income that is less than 100 percent of the statewide annual median household income for the State in which the community is located, according to the most recent decennial census*".

According to the US Census Bureau, the City of Fountain's median household income from 2015-2019 was $64,582. During the same timeframe, Colorado's median household income was $72,331. This data demonstrates that the City's median household income is $7,749 less that the state median and therefore meets disadvantaged community qualifications.

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.

According to E.O. 13985, an underserved community is defined as a "*population 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*".

Underserved populations may include minorities, low-income, older adults, individuals with disabilities or individuals with limited English proficiency. The US Census Bureau identifies the following population estimates for the City of Fountain based on 2019 data. These populations have been systematically denied a full opportunity to participate in aspects of economic, social and civic life.

Figure 3: City of Fountain 2019 Population Estimates

City of Fountain 2019 Population Estimates	
Population	Percentage
Hispanic or Latino	25.6%
Persons in Poverty	7.8%
65 and older	6.1%
Persons with a disability under 65	7.7%

This following items of the project support economic and environmental justice through investment in underserved and disadvantaged communities.

Economic Opportunities: Following incorporation of the new technology, water customers will be notified of unusual spikes in water usage within a week, opposed to a monthly bill. This project pairs proactive outreach and education performed by the City, with live, accessible data. As a result, customers will be empowered with a better understanding of their consumption patterns and how they may incorporate small behavioral changes to lower their utility bills. Collectively this project will stimulate our local economy and improve two-way communication with our customers through additional engagement opportunities.

By maximizing efficient water use, this project will also defer the need to acquire additional water rights, storage, and additional treatment plants as the City focuses on proactive demand management, loss reduction and improved customer experience. As these processes are funded by water utility rates, the deferred costs will be experienced by our local economy. This project would allow the City to keep its utility rates lower, longer.

Public Health & Safety: Similarly, through improved water efficiency resulting from shifts in customer behavior and expedited response to leaks, the City will achieve improved water supply reliability. Less water consumed or lost will result in overall lowered demand. This means that the City will have improved water supply stability during events of water scarcity such as drought. Adequate water supply is vital to public health and safety.

Tribal Benefits: This project does not directly benefit any Indian Tribes.

Evaluation Criteria D – Complementing On-Farm Irrigation Improvements

This project does not complement on-farm irrigation improvements.

Evaluation Criteria E – Planning & Implementation

Alignment with existing local and regional planning efforts

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place?

Yes, see responses below.

1. Identify any district-wide, or system-wide planning that provides support for the proposed project.

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).

This project has been prioritized, and is supported, by the following local, regional, and statewide planning efforts:

Adopted Municipal Water Efficiency Plan: This project proposal supports the City's goal to reduce system-wide demand by 71 acre-feet (AF) annually through 2028 as outlined in the City's Water Efficiency Plan (Resolution 18-024). This plan recognizes inaccurate metering due to older, inefficient meters as being a contributing factor to losses (pg. 12). It identifies metering upgrades as a vital method to effective demand management for the City (pg. 27).

Link to the City of Fountain Water Efficiency Plan.

Adopted Water Master Plan: This project supports objectives in the City's Water Master Plan (Adopted by Resolution 21-059) including ongoing evaluation of water supply, analysis of potential improvements/modifications and pursuit of long-term capital improvements to make certain the City meets projected water demands and enhance operational flexibility. The plan identifies the development of a Water Scarcity Response Plan (WSRP) as a priority (pg. 12). This WSRP includes enacting mandatory outdoor watering restrictions dependent upon the severity of the water scarcity. The improved, real-time data capability of the upgraded meters will allow the City to easily identify and reach out to customers that are watering during the restricted days and times and guide them towards resolution.

Link to the City of Fountain Water Master Plan.

Arkansas Basin Implementation Plan: This project aligns with the Arkansas Basin Implementation Plan's support of projects that increase efficiency of current supplies (pg. 8). Specifically, the section "Water Delivery to Customers" recognizes that there is value in automating meter reading as its improved accuracy and real time data is vital to identifying water losses and reducing labor associated with the manual collection of meter reads (pg. 187-188).

Link to the Arkansas Basin Implementation Plan.

Southeastern Colorado Water Conservancy District (SECWCD): The SECWCD identifies five components within its Best Management Practices Toolkit that is recommended for use to their Fry-Ark Project participants as they are all required to maintain water conservation plans. This toolkit recognizes water delivery to customers, customer demand management and overall water system management as the major components of effective water system management.

Southeastern Colorado Water Conservancy District BMP Toolbox.

Colorado State Water Plan: This project aligns with the ideologies throughout the Colorado State Water Plan. The goals in this plan support and improve upon the wise use of water resources through proactive planning, strategy, and collaboration so that Colorado has sufficient water to meet its future needs. This plan identifies "*efficient and effective water infrastructure*" (10-3) as a value that guides the document. This value is further built upon by the corresponding goal to "*Increase Municipal Conservation and Efficiency: Implement long-term water efficiency strategies to meet local and statewide water needs that are cost-effective and promote a water efficiency ethic throughout Colorado*" (10-9). Additionally, this plan lists the goal "*Prepare for Climate Change: Respond to, monitor, and prepare for climate change*" (10-14). In the event that the City must respond to extreme water scarcity events, the real-time meter read capabilities will allow staff to more easily enforce mandatory outdoor watering restrictions.

Link to Colorado State Water Plan.

Does the project address an adaptation strategy identified in a completed WaterSMART Basin Study?

No.

Readiness to Proceed: The City's readiness to proceed with the Water Meter Upgrade Project as described in this proposal, is demonstrated by the following:

- The City has already upgraded approximately 6,333 meters using the same processes outlined in this plan. This grant would allow the City to expedite and complete it's water meter upgrades. The required staff are already trained, and the necessary equipment is on hand to fulfill this project.

- The City completed a propagation study in June 2021. This assessed ideal locations for data collector installation based on water utility customer boundary and topography. The City has confirmed Data Collector Counts and install locations to ensure ideal coverage of end point devices (water meters).
- The City has proposed a budget to fulfill its cost share during the 2023 and 2024 fiscal years as detailed in this proposal. The budget will be finalized in September 2022.
- City Council will issue a resolution in support of the project grant funding.

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

N/A

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

N/A

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

N/A

Summary Description

Identify and provide a summary description of the major tasks necessary to complete the project.

The City will purchase meters from its established vendor. It will schedule and perform meter upgrades as customers respond to outreach methods. Towards the completion of all meter upgrades, the data collectors will be prepared for deployment and installed in their pre-mapped locations based on vendor recommendations. After the data collectors have been installed, the new server will be set up. The City will back up preexisting data held by the old server and transfer it to the new server. System Acceptance Testing and troubleshooting will happen concurrently as the City monitors the implementation of the new technology and software. Staff training on utilization of the new software will happen concurrently during the final stages of this project.

Project Schedule, Tasks, & Milestones	Year 1			Year 2				Year3
	Q2 May-June 2023	Q3 July – Sept 2023	Q4 Oct – Dec 2023	Q1 Jan – Mar 2024	Q2 April – June 2024	Q3 July – Sept 2024	Q4 Oct – Dec 2024	Q1 Jan – Mar 2025
Grant Funding Financial Agreement								
Order Inventory								
Customer outreach, appointment scheduling								
Meter installation								
Prepare data collectors for deployment.								
Install data collectors.								
Standup servers. Back up data, transfer to new servers.								
Systems Acceptance Testing, troubleshooting								
Quality Assurance								
Staff training on new Neptune 360 software								
Project Reporting								

Figure 4: Project Schedule, Tasks &

EVALUATION CRITERIA F – COLLABORATION

Describe how the project promotes and encourages collaboration.

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?

Yes, the City of Fountain is a subcontractor to the Southeastern Colorado Water Conservancy District, member of the Arkansas Basin, benefactor/member of the Fountain Valley Authority (FVA), and Southern Delivery System (SDS). The City's Water Meter Upgrade Project demonstrates its commitment to being an effectual water steward to its partners, region, and state. As outlined in "Evaluation Criteria E – Planning & Implementation", this project supports and aligns with goals and values detailed in the plans of our partners. Collectively our partners value and support projects that promote the efficient use of water, effective demand management, and improved water supply reliability. The support for this project stems from shared infrastructure, water supply, and customer base. While the partners mentioned above are not involved in this project scope, they will by extension experience the benefits.

Letters of support from Fountain Sanitation District, Resource Central, Southeastern Water Conservancy District, and Widefield Water & Sanitation District were submitted electronically with this grant application.

What is the significance of the collaboration/support?

The improved metering technology utilized in this project fosters effective demand management. Effectual demand management is vital to the City and its partners as we collectively continue our work towards bridging the gap between supply and demand within our shared, limited water supply. Similarly, by mitigating water losses, the City may proactively maintain more water within raw water storage supplies. This improves water supply reliability and minimizes the impact of water shortages for water providers throughout the Arkansas River Basin.

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

Yes. The implementation of advanced metering that offers real time and improved accuracy data continues to grow in popularity. The City looks forward to contributing valuable data insights to its regional partners and beyond, that will encourage other communities to introduce similar technology.

EVALUATION CRITERIA G – ADDITIONAL NON-FEDERAL FUNDING

Non-Federal Funding: 55%

Non-Federal Funding/Total Project Cost

$490,788.56/$892,342.84

EVALUATION CRITERIA H – NEXUS TO RECLAMATION

Connection to a Reclamation Project or Activity

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

Yes, Fountain has two direct Reservoir Leases with Reclamation – the Southern Delivery System (SDS) Long-Term Excess Capacity Lease and the Excess Capacity Master Contract Lease. Fountain is a 9.95% Equity Owner of the Fountain Valley Authority that operates and maintains (O&M) the Fountain Valley Authority infrastructure owned by the Bureau of 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?

Yes, the City receives Reclamation water (Project Water) through the Fryingpan-Arkansas Project, administered by the Southeastern Colorado Water Conservancy District.

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

While the metering project does not have a direct benefit to Reclamation, a contract between the Bureau of Reclamation and the Southeastern Colorado Water Conservancy District (District) was established in 1979 for the operation of the Fountain Valley Conduit. This required the District and as a subcontractor the Fountain Valley Authority (including the City) to develop and implement an effective conservation program for all water conveyed under the contract. The City's last Water Conservation Plan was adopted by resolution in 2018 and includes the Water Meter Upgrade Project within its goals. The proposed work will support agreements required through the City's participation in the Fry-Ark Project.

Is the applicant a Tribe? No.

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).

Data Analysis of Consumptive Trends: Accurate and timely water measurement is a vital component of effective demand management. City staff will be able to contact water customers promptly when a potential leak has been identified. The ability to observe and resolve leaks quicker, will result in reduced water losses. One of the methods used to measure success will be observation and comparison of user water consumption data before and after high usage notification. The Utilities Analyst and Utilities AMI Analyst will run regular reports

that will identify high water users, or users with a sudden water increase. They will reach out to these customers accordingly, advising them of the usage and offering resources and recommendations for resolution. These staff members will continue to observe usage trends following the initial customer contact to see if the water usage has returned to normal.

Data Analysis of Metering Accuracies: The Utilities Analyst and Utilities AMI Analyst will run a report measuring water usage of the upgraded meters included in this project scope. This will measure the water usage for twelve months prior meter upgrade and twelve months post meter upgrade. A decrease in consumptive patterns can be a attributed to improved metering accuracy.

Customer Survey: Another means of performance measure will be feedback received from customer survey. A survey will be administered to customers that have been contacted regarding high water usage. The survey will gather feedback regarding the customer experience, if City outreach helped identify a leak, or if the customer has changed their water usage behavior as a result of City outreach. The City anticipates that the first set of consumption and survey analysis reports will be prepared by the first quarter of 2025

PROJECT BUDGET

FUNDING PLAN & LETTERS OF COMMITMENT

Funding Plan: The City of Fountain is contributing $490,788.56 to the non-federal share of project costs. This is fulfilled through materials purchase and labor costs. This funding is included in the City's proposed 2023 and 2024 budget and a resolution committing to this funding is scheduled for consent on the August 9, 2022 City of Fountain council agenda. These funds are sourced by water utility revenue and will be available January 1, 2023. No in-kind or third-party funds will be used towards this project. The City does not anticipate any project costs for environmental and cultural compliance or engineering/design work.

Funding Contingencies: The project funding for fiscal years 2023 and 2024 has been proposed to City Council. These budgets will be finalized by September 2022. Project funding for fiscal year 2025 will be taken to council for budget approval.

Letters of Commitment: Project funding is not supplied by any source other than the applicant.

Costs Incurred Prior to Award: There are no project costs to be incurred prior to award.

Figure 5: Total Project Cost Table

TOTAL PROJECT COST TABLE	
SOURCE	**AMOUNT**
Costs to be reimbursed with the requested Federal Funding	$401,554.28
Costs to be paid by the applicant	$490,788.56
Value of third-party contributions (if applicable)	$0.00
TOTAL PROJECT COST	**$892,342.84**

BUDGET PROPOSAL

Figure 6: Budget Proposal

BUDGET PROPOSAL				
BUDGET ITEM DESCRIPTION	**COMPUTATION**		**Quantity Type**	**TOTAL COST**
	$/Unit	**Quantity**		
Salaries and Wages				
Crew Foreman	$55.77	30	Hours	$1,673.10
Journeyman Lineman	$50.41	84	Hours	$4,234.44
Utilities Analyst	$32.78	100	Hours	$3,278.00
Utilities AMI Analyst	$33.90	80	Hours	$2,712.00
Lead Water Operator	$44.99	67	Hours	$2,541.94
Water Operator	$32.24	2,693	Hours	$89,594.96
Sr. Systems Analyst	$42.06	40	Hours	$1,682.40
Water Meter Technician	$24.10	1,484	Hours	$37,103.96
Field Services Technician	$22.95	1,417	Hours	$34,036.76
Utilities Billing Specialist	$30.16	563	Hours	$17,668.73
Conservation Manager	$40.14	100	Hours	$4,014.00
Fringe Benefits				
Crew Foreman	$18.62	30	Hours	$558.60
Journeyman Lineman	$13.41	84	Hours	$1,126.44
Utilities Analyst	$11.95	100	Hours	$1,195.00
Utilities AMI Analyst	$6.67	80	Hours	$533.60
Lead Operator	$12.11	67	Hours	$684.22
Water Operator	$15.20	2,693	Hours	$42,240.80
Sr. Systems Analyst	$12.46	40	Hours	$498.40
Water Meter Technician	$12.27	1,484	Hours	$18,890.69
Field Services Technician	$10.06	1,417	Hours	$14,919.82
Utilities Billing Specialist	$13.49	563	Hours	$7,902.89
Conservation Manager	$7.05	100	Hours	$705.00

Travel				
Not applicable	-	-	-	$0.00
Equipment				
Not applicable	-	-	-	$0.00
Supplies & Materials				
¾ meter	$261.50	1,333	Item	$348,579.50
1” meter	$408.30	36	Item	$14,698.80
1.5” meter	$742.30	14	Item	$10,392.20
2” meter	$919.20	19	Item	$17,464.80
3” meter	$2,950.00	2	Item	$5,900.00
4” compound meter	$3,732.70	2	Item	$7,465.40
Contractual – Professional Services Estimate from Core and Main				
Neptune 360 SAAS: Software, setup, training	$35,856.10	1	Package	$35,856.10
Standard Gateway Package & Power Supply	$8,176.30	7	Package	$71,817.20
Tropos Package & Power Supply	$60,000.00	5	Item	$60,000.00
Other				
Not applicable	-	-	-	$0.00
TOTAL DIRECT COSTS				**$892,342.84**
Indirect Costs				
Type of Rate	**Percentage**	**$base**		**$**
Hourly				
Total Estimated Project Costs				**$892,342.84**

Estimated Project Start Date: May 1, 2023

Estimated Project Completion Date: March 31, 2025

BUDGET NARRATIVE

Salaries and Wages: All staff assigned to this project are directly employed by the City of Fountain. A ‘Certification of Wages’ is included in the attachments submitted through Grants.gov.

Conservation & Sustainability Manager (Co-Project Manager): The Conservation & Sustainability Manager will serve as one of the two project managers. This staff member is responsible for compliance with reporting requirements including the financial and performance reports. They will maintain that the project adheres to its timeline as specified in this proposal through regular site visits and meetings to discuss project developments and milestones. This includes the final project evaluation

Crew Foreman: This staff member is a part of the team responsible for installation of data collectors.

Field Services Technician: This staff member is present for all ¾" meter upgrades.

Journeyman Lineman: This staff member is a part of the team responsible for installation of data collectors.

Lead Operator: This staff member is present for all meter upgrades sized at 1.5", 2", 3", 4".

Sr. Systems Analyst: This staff member will configure the networking. They will back up data, set up the new server, ensure that the data collectors are communicating with the new software.

Utilities AMI Analyst: This staff member is tasked with programming, assigning IP addresses, performing tech support, and troubleshooting the data collectors and corresponding software.

Utilities Analyst (Co-Project Manager): This staff member will serve as one of the two project managers and a liaison between the City Electric Department, IT Department, and contracted vendor to orchestrate data collector installation. They will also oversee this project in its entirety and share grant reporting responsibilities with the Project Manager.

Utilities Billing Specialist: This staff member performs outreach to customers due for meter upgrade. This process includes five touch points made in attempt to schedule the appointment. Depending on the responsiveness of the customer, not all five touch points are used in every case. These include phone call, email, certified letter, door tag, and eventual water utility services shut off if no response is received. The customer receives a call reminding them of their appointment one day prior. The Billing Specialist explains the purpose and process of the appointment, as well as what the benefits of the upgrade.

Water Meter Technician: This staff member is present for all meter upgrades.

Water Operator: This staff member is present for all meter upgrades sized at 1.5", 2", 3", 4". They also perform curb stop preparations before ¾" meter upgrade appointments.

Fringe Benefits: Fringe benefit options include health insurance, eye insurance, dental insurance, and retirement plans. An average was generated for fringe rates based on current coverage elections and number of positions filled by that title.

Travel: Does not apply.

Equipment: Does not apply.

Materials and Supplies: The costs of materials and supplies have been provided by quotes from the vendor. These are itemized by category, unit price and quantity in Figure 6.

Contractual and Construction: Professional services have been contracted through Core and Main (Vendor). This includes the Neptune 360 annual subscription for AMI services, set up fee, and staff training. It also includes a standard gateway package. This consists of Neptune gateways, antennas and materials needed for installation.

Third Party Contributions: Does not apply.

Environmental and Regulatory Compliance Costs: No budget is included for this category. This project is anticipated to fall within a Categorical Exclusion to NEPA. Costs associated with filing associated documentation are expected to be minimal and the City will not seek funding related to those efforts.

Other Expenses: Does not apply.

Indirect Costs: Does not apply.

Environmental and Regulatory Compliance: Not anticipated for this project.

Conflict of Interest: The City has no actual or potential conflicts of interest.

Uniform Audit Reporting Statement: The City was not required to submit a Single Audit Report for fiscal year 2021. It will be required to submit a Single Audit Report for fiscal year 2022.

Overlap or Duplication of Effort Statement: There is no overlap between the proposed project or any other active or anticipated proposals or projects in terms of activities, costs, or commitment of key personnel.

This project was submitted for funding consideration to NOFO No. R22AS00023 in November 2021 but was not selected. Other than that, this proposal 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.

ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

Will the proposed project impact the surrounding environment?

Yes, it is anticipated that by maintained water in the surrounding natural environment for longer, that this project will have a positive impact on the surrounding environment. Otherwise, the meter upgrades are occurring at pre-existing meter locations where earth-disturbing work is necessary to complete this project. Therefore, the City does not anticipate any negative impacts to the environment as a result of this project.

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?

Yes. As Mentioned under "Evaluation Criteria C – Sustainability Benefits" this project has eight threatened or endangered species that may be positively impacted by this project, but no negative impacts are anticipated.

The Information for Planning and Consultation tool (IPaC) on the U.S. Fish and Wildlife Service identified the following species as potentially residing within the City's watershed and/or river system or being influenced by this area. It identifies the project site as an area of influence (AOI) if a species may be indirectly impacted by activities within the defined space. In this case, species would be affected by an increase in the water maintained within the natural environment for longer. These species include the Prebles Meadow Jumping Mouse, Easter Black Rail, Piping Plover, Whooping Crane, Greenback Cutthroat Trout, Pallid Sturgeon, Ute Ladies-tresses, and Western Prairie Fringed Orchid.

As this project seeks to upgrade water meters at preexisting meter locations, the City only anticipates improved ecological benefits as a result of this endeavor through the increase of water maintained in the natural environment. Water quality and quantity are vital to the health and success of the aforementioned species.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States (WOTUS)?"

Yes. The City has regulatory wetlands (WOTUS) within Fountain in the Jimmy Camp Creek floodway and in the Fountain Creek Floodway. These are regulated by the FEMA Flood Insurance Program.

When was the water delivery system constructed?

The construction of our water delivery system in this area in 1911.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system?

No. The meter upgrades are occurring at pre-existing meter locations where new construction is not required.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

No. The National Register of Historic Places tool did not identify any eligible listings within the project area.

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

No. The meter upgrades are occurring at pre-existing meter locations where new construction is not required.

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

No. This project demonstrates equality as meter upgrades are occurring for all populations within the City's water service territory. This project will empower low and minority populations with information to improve their household water use efficiency, and lower utility bills.

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

No, this project is not on tribal lands.

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?

No. This project consists of upgrading water meters within preexisting constructions. This project does not have any influence on the introduction, continued existence, or spread of noxious weeds.

REQUIRED PERMITS OR APPROVALS

There are no permits or approvals required for this project. Meter upgrades are occurring at preexisting meter locations within the City's water service territory.

LETTERS OF SUPPORT & LETTERS OF PARTNERSHIP

Letters of support from Fountain Sanitation District, Resource Central, and Widefield Water & Sanitation were submitted electronically with this grant application.

OFFICIAL RESOLUTION

This grant application is on the August 9, 2022 council agenda for consent. Official resolution will be sent immediately to follow.

MANDATORY FEDERAL FORMS & ATTACHMENTS

The following forms and attachments have been submitted electronically with the grant application.

- SF-424 Application for Federal Assistance
- SF-424A Budget Information for Non-Construction Projects

- SF-424B Assurances for Non-Construction Projects
- Lobbying Form
- Certification of Wages
- Letter of Support – Fountain Sanitation District
- Letter of Support – Resource Central
- Letter of Support – Widefield Water & Sanitation