WaterSMART Grants: Water and Energy Efficiency Grants for Fiscal Year 2021

FOA No. BOR-DO-21-F001



HEART OF THE WASATCH BACK

Heber City Secondary Water Metering Project - Phase 1

APPLICANT:

Heber City Corporation 75 N Main Street Heber City, UT 84032

PROJECT MANAGER:

Russell Funk, P.E. 75 N Main Street Heber City, UT 84032 (435) 657-7929 rfunk@heberut.gov

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September 17, 2021

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Technical Proposal and Evaluation Criteria

1. Executive Summary

Applicant Info

Date: September 17, 2020

Applicant Name: Heber City Corporation

City, County, State: Heber City, Wasatch County, Utah

Project Manager:

Russell Funk, Assistant City Engineer
75 N Main Street, Heber City, UT 84032-1827
435-657-7929

rfunk@heberut.gov

Project Funding Request: Funding Group I: \$450,000; Total Project Cost: \$900,000

Project Summary

The Heber City Secondary Water Metering Project – Phase 1 will install approximately 596 secondary water meters at existing unmetered residential connections to the City's pressurized irrigation system. While meters have been installed on some newly constructed homes, this is the first phase of the City's secondary water meter installation program for existing connections. The City is undertaking a multi-year program to install meters at all of its approximately 2,513 existing residential, commercial, institutional, and industrial customers. Cellular endpoints will transmit the data to an advanced metering analytics software suite. The project, which will include conservation outreach, will promote water conservation, help identify leaks, identify peak usage, and will have quantifiable annual water savings of 228.9 acre-feet, which will remain in the Central Utah Project System. The project contributes to the Bureau of Reclamation's mission of managing and protecting water resources and the FOA's objective of using technology to increase water reliability. The City's water is supplied by the Central Utah Water Conservancy District through Bureau of Reclamation funded Wasatch County Water Efficiency Project facilities.

Schedule

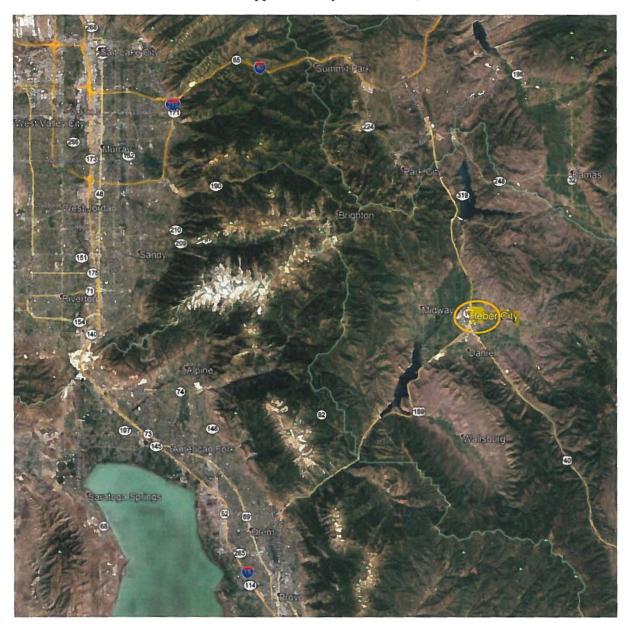
The City intends to begin installation as soon as practical based notification of grant award, receipt of a Categorical Exclusion, and completion of a competitive bidding process. The project schedule anticipates award notification in March 2021, contractor mobilization in May 2021, project completion in November 2021, and final reporting and project close-out in December 2021. Delays in award notification, environmental compliance review, and grant agreement could extend installation work until spring 2022 with contract completion by June 30, 2022 and final reports in August 2022.

Federal Facility

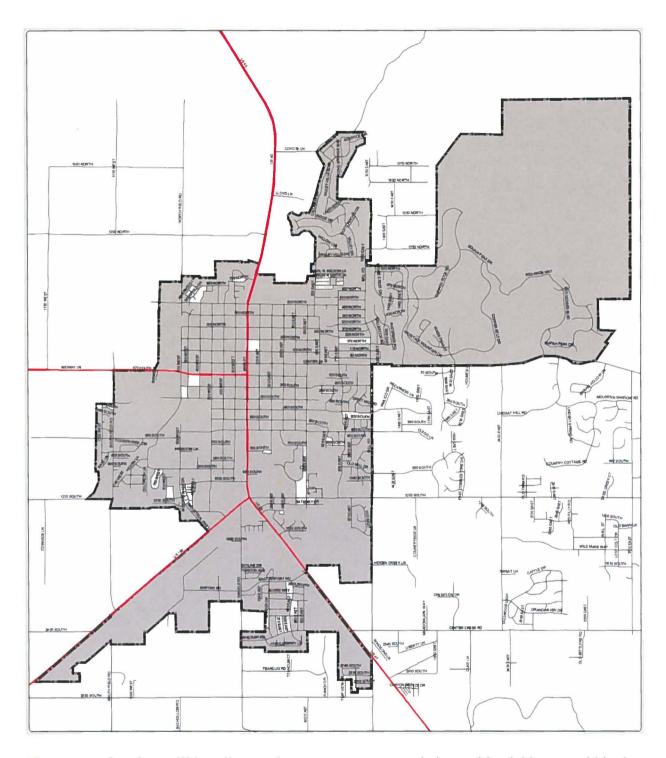
This project will install secondary meters for private residential lots; however, the City's distribution system is supplied by water from U.S. Bureau of Reclamation funded facilities.

2. Project Location

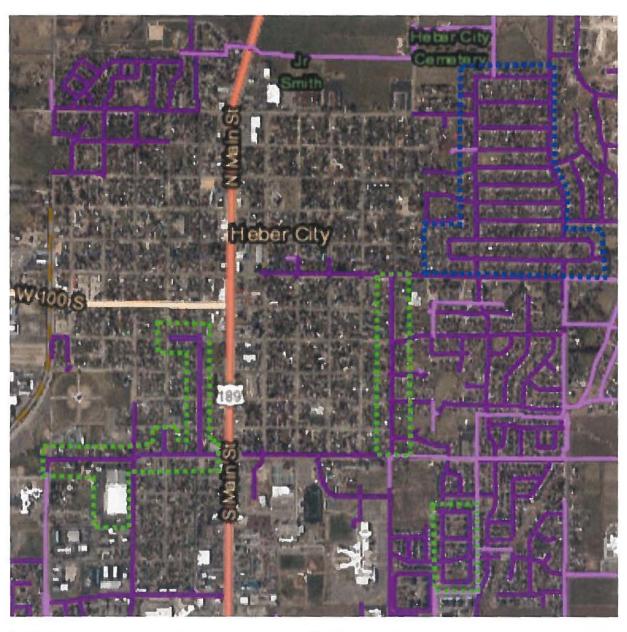
The proposed project will take place within Heber City located in Wasatch County, Utah on the east side of the Wasatch Front at approximately 40.5070° N, 111.4133° W.



The gray area on the following map indicates the Heber City limits and generally indicates the City's secondary water service area. The exception is a private development, Red Ledges, in the northeast corner that is not serviced by the City.



The proposed project will install secondary water meters at existing residential homes within the areas indicated on the following map. Priority has been given to the 196 connections that have existing meter boxes (outlined in green) and to areas with suspected high water usage (outlined in blue) and therefore greater potential for water conservation. See Appendix A for maps of the Pressurized Irrigation system and the installation areas. Also included is a street view and aerial view of a typical street within the installation area outlined in blue.







3. Technical Project Description

Describe the technical aspects of the project including the materials, equipment, and work to be accomplished as well as the approach used to complete the project.

Overview

The City proposes to install 596 Badger Ultrasonic water meters connected to the Beacon Advanced Meter Analytics System through cellular communication endpoints. The installations will be at existing residential connections which are currently unmetered within the locations identified in the previous section. The meters will be installed along the existing underground service lines and near existing curb stop valves.

Problem being Addressed

Utah's population is expected to double by 2060, but its water supply will not. Conservation is a vital first step towards meeting future water needs. More than 60% of Utah's drinking water is used on outdoor landscapes. In 2000, Utah established a statewide goal to reduce water use by 25% per person between 2020 and 2025. So far Utahns have reduced their use an average of 18%. In 2019, a regional goal was established which calls for a 19% reduction in water usage between 2015 and 2030¹. Heber City is the third fastest growing county in the United States and its population is expected to double by 2040. As a result, water conservation and efficient irrigation system management is an imperative.

¹ https://water.utah.gov/goals/

In 2019 the Utah legislature passed State Bill 52² which requires all pressurized secondary water providers to meter all non-farm water usage for new services designed after April 1, 2020. Additionally, SB 52 requires providers to develop and submit a plan for metering existing pressurized irrigation connections and to report progress annually. The City began requiring new service installations to install secondary water meters in 2020 and through this project, the City intends to comply both with its Water Conservation Plan and with the intent of SB52 by beginning to install secondary water meters at its existing customer connections.

Technical Description

The City proposes to install Badger Ultrasonic Type E water meters with Beacon registers and transmitters. This meter uses solid state technology in a compact, totally encapsulated, fully submersible housing with no moving parts. The meter has an LCD display and records consumption, rate of flow, reverse-flow indication, and alarms. Long-term sustained accuracy is within +/-1.5%.

Pictured below are Badger Ultrasonic Type E meters in diameters ranging from ¾" to 2". Also depicted is a black cellular endpoint used to automatically transmit meter data through existing cellular networks.



The meters will be connected via ORION Cellular LTE-M endpoints to the BEACON Advanced Metering Analytics (AMA) software suite. This approach leverages existing cellular networks to provide Advanced Metering Infrastructure (AMI) benefits without the need for fixed infrastructure investment and maintenance³. Homeowners will be able to login to the system and track their daily water usage.

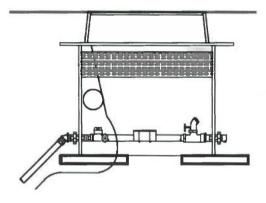
² https://le.utah.gov/~2019/bills/static/SB0052.html

³ https://www.badgermeter.com/resources/f1722ce1-8a32-4488-a7b8-c0fa0ce4fe0f/water%20utility%20solutions%20brochure%20inc-br-00625-en.pdf/





The meters will be installed in Mueller⁴/Hunt inline single meter or double meter boxes as illustrated and further described in the Standards Drawings in Attachment B. The meter boxes are to be installed at grade and set on concrete blocks. The configuration whether for a single meter or two meters requires a 1" inline ball valve before the meter and a brass tee with a ³/₄" brass hose bib after the meter. An insulation insert is also specified along with a cast iron frame with a composite lid with a side locking mechanism.



Due to the wide variety of conditions encountered in retrofitting meters into existing residential and commercial connections, the City reserves the right to allow certain variations to the specifications when necessary and prudent. The selected contractor will be required to take all reasonable efforts to minimize the disturbance to existing landscaping and to restore the site as best as possible to pre-installation conditions. It is anticipated that the meters will be installed at the existing curb stop valve typically located in the front planter strip of each residence.

Implementation Strategy

The City's intention is to begin secondary water meter installation as soon as possible given the timing of the prospective grant award and environmental compliance requirement. The City will fund bid preparation expense along with any required technical services. The bid process will be consistent with the City's standard practices and compliant with 2 CFR §200.320. The City will provide or contract for third-part inspection and project management services. Information about

⁴ https://www.muellercompany.com/water-works/service-brass/meter-boxes/pvc/

the upcoming project and water conservation will be mailed to homeowners and the contractor will pass out door hangers 1-2 days prior to installation. The City's Public Works staff will ensure proper cellular connection and registration on the AMI network. The contractor will be required to provide a two-year installation warranty.

4. Evaluation Criteria

Evaluation Criterion A- Quantifiable Water Savings

Describe the amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

This project is expected to conserve 228.9 acre-feet of water per year.

Describe current losses: Please explain where the water that will be conserved is currently going.

Meters are being installed at residences that currently pay a small flat fee for irrigation water and as a result they are not conscience of their water usage. Far too often, water is being overused on lawns, shrubs, trees, gardens, pastures and even sidewalks, driveways, and roads. Excess water often runs off and ends up in drainage systems or is lost to evapotranspiration or evaporation. Without a measurement system, there is reduced incentive to conserve water and to install water conservation equipment such as smart, internet connected sprinkler controllers. There is also no basis for the City to bill for over usage or to develop a pricing structure that encourages water conservation.

Additionally, there are undoubtable water leaks within the delivery system and within residential irrigation systems that are currently being lost underground that could be identified and repaired with the information provided by the proposed meters with low-flow accuracy and Advanced Metering Infrastructure (AMI) and data analytics.

Water conserved through this program will remain in the Provo River Project system managed by the Central Utah Water Conservancy District and a part of the Central Utah Project. As the City's culinary and secondary water needs increase, the water savings resulting from this project will help mitigate future shortfalls in water rights and availability.

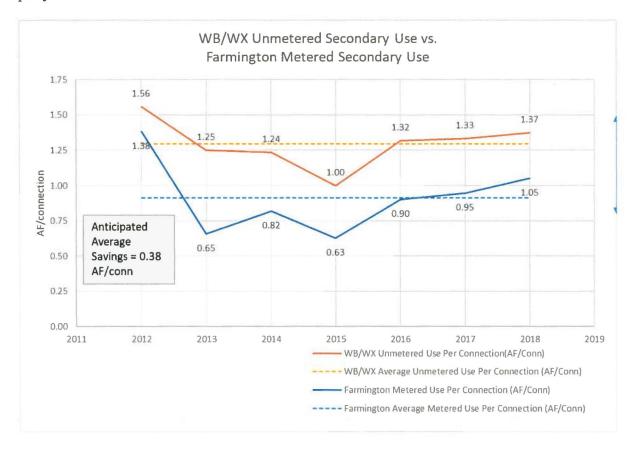
Describe the support/documentation of estimated water savings: Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations.

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.

The proposed project is estimated to conserve 228.9 ac-ft/yr. of water. This is based on the best know regional data source that directly compares metered and unmetered secondary water usage. Specifically, secondary water users in Farmington, Utah over the period of 2012 – 2018 who were metered used significantly less water than those who were not metered. Usage for unmetered users was based on trunkline flow meter data. The seven-year data set, as illustrated

in the following chart and table, indicates a water savings per secondary connection of 0.38 ac-ft per year.



The following calculations illustrate the anticipated water savings for the proposed meter project.

Calculation 1. Documented Percentage Water Savings for Average Metered Secondary Connections in Farmington.

Farmington Secondary Water Usage per Connection									
Water Usage (ac-ft)	2012	2013	2014	2015	2016	2017	2018	Average	
Unmetered	1.56	1.25	1.24	1	1.32	1.33	1.37	1.296	
Metered	1.38	0.65	0.82	0.63	0.9	0.95	1.05	0.911	
Reduction	0.18	0.6	0.42	0.37	0.42	0.38	0.32	0.384	

1.296 ac-ft/conn./yr. – 0.911 ac-ft/conn./yr. = 0.384 ac-ft/conn./yr. Water Savings

Calculation 2. Anticipated Water Savings for proposed project

596 new meters x 0.384 ac-ft/connection/yr. = 228.9 ac-ft

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

Without installation of the proposed residential meters, it is impossible for the City to effectively determine system losses and assess the potential for loss reduction. One of the principal objectives of this project is to use the meter data and advanced data analytics capability to help identify and repair both system leaks and leaks in residential irrigations systems. While the City is confident that reducing system losses will provide further water savings, no additional specific estimate was included.

The water savings estimate detailed in the previous section was based on water saving data from a seven-year data set from a community that is similar in nature and climate. Water users that pay a flat fee and have no data on their water usage tend to view water as an unlimited resource and have less motivation to conserve. When actual water usage is tracked and combined with conservation tips and proper information on landscape water needs, the data indicates that significant water usage reductions follow.

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

Since the proposed project is the City's first secondary water metering program, the City has to rely on publicly available information. Weber Basin Water Conservation District published the following data set that studied hourly data, parcel size, irrigated area from a group of 1,057 meters in Farmington, UT.

Water Savings Comparisons								
	2012	2013	2014	2015	2016	2017	2018	
Used Gallons	284,912,371	220,146,962	205,346,968	168,066,551	217,748,680	236,101,249	252,738,705	
Used AF	874	675.3	629.9	515.5	667.9	724.2	775.6	
Used AF/Gross Acreage	2.69	2.08	1.94	1.6	2.06	2.23	2.39	
Landscaped Area	225.3	225.3	225.3	225.3	225.3	225.3	225.3	
Used AF/Landscaped Area (acres)	3.9	3	2.8	2.3	3	3.2	3.4	
Estimated Need (inches)	30.46	29.72	28.41	22.33	28.6	29	33.7	
Average % Used of Estimated Need	153.64%	121.13%	135.43%	123.60%	124.52%	132.37%	122%	
Average % Allocation Used	82.44%	63.70%	59.41%	48.62%	63.00%	68.31%	73%	
Average Allocation per Parcel/yr.	1.003	1.003	1.003	1.003	1.003	1.003	1.003	
Total Allocation	1060.171	1060.171	1060.171	1060.171	1060.171	1060.171	1060.171	
*This data includes 1,057 meters that have data for 2012-2017 with accurate landscape area.								

In the above table, the "Average % Used of Estimated Need" adjusts for variations in water usage due to seasonal weather patterns. When meters were first installed in 2012, average usage was 54% higher than estimated need. The average over watering over the last four years in the data set has been cut in half to 26% and was 22% in 2018. Similarly, the 2012 water usage per landscaped area has dropped from 3.9 ac-ft/acre to an average of 3.0 ac-ft/acre over the last four years of data. The City's initial objective is to obtain a similar reduction in landscape water usage and position itself for a future tiered rate structure to further encourage water conservation.

d. Not applicable.

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

The project will install 596 Badger Ultrasonic Type E water meters as depicted below. Almost all installations will be 1-inch meters; however, if a service requires a higher flow rate then the same type of meter will be installed in 1.5" or 2" size. The meters will be connected via ORION Cellular LTE-M endpoints to the BEACON Advanced Metering Analytics (AMA) software suite.





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

Upon completion of the project, the City will have hourly and monthly consumption data available from all of the installed meters within the analytics software program. This data will be analyzed year to year to identify water conservation trends. Adjustments can be made for year to year weather variations by using evapotranspiration rate to normalize the data. Because meters are being installed in various locations, it will be difficult to isolate and accurately utilize historic main line meter data; however, as the meter installation program expands this data will become more useful.

Evaluation Criterion B- Water Supply Reliability

Describe how your project addresses water reliability concerns, including making water available for multiple beneficial uses and resolving water related conflicts in the region.

1. Will the project address a specific water reliability concern?

"Wasatch County, the home of Heber City, was the third in growth among all counties in the U.S., growing about 45% from 23,525 to 34,091 people" per 2010 to 2019 census data. Heber City's 2018 Master Plan anticipates 5,170 additional equivalent residential units pressurized irrigation connections will be added between 2018 and 2040. The City's estimated annual 2020

⁵ https://www.usnews.com/news/best-states/utah/articles/2020-03-26/report-3-utah-areas-top-nation-in-population-growth

pressurized irrigation usage is 3,293 ac-ft while usage in 2040 is predicted at 4,850 ac-ft, an increase of 47% or 1,557 ac-ft. Peak Instantaneous demand is also estimated to increase by 47%. Reductions in overwatering will reduce system stress resulting from the City's fast growth and increase water reliability.

The 2018 Master Plan found that "Heber City will need to convert additional irrigation shares to municipal water rights to keep from over utilizing the current water rights during certain times of use as growth continues." There are no unallocated water rights in Heber Valley. As both municipal and outdoor irrigation demands increase, water conservation in general and the water savings from the proposed project in particular will be critical to meeting the City's competing demands to maintain adequate levels of service for both beneficial uses (culinary water and landscape irrigation water). This is particularly important given the region's susceptibility to drought. The Master Plan has also identified over \$13 million in pressurized irrigation improvements in order to maintain system reliability over the next 20 years. The proposed metering will assist in reduce peak demands and therefore reduce or postpone some of the planned pressurized irrigation improvements.

In the near term, the project's water savings will be left in the Provo River Project system managed by the Central Utah Water Conservancy District to benefit multiple water users and help mitigate environmental issues associated with the depletion of the Great Salt Lake. Longer term, ongoing water savings from secondary water metering may be converted to municipal use and used to maintain system reliability as the City's population increases.

2. Will the project make water available to achieve multiple benefits or to benefit multiple water users?

While Wasatch County was the third fastest growing county in the U.S., the Provo-Orem area, which is downstream from Heber City, was listed as ninth among all U.S. metro areas for population growth since 2010. The cities to the north in Salt Lake County are also experiencing rapid growth. Water not used by Heber City and other water users within Wasatch County flows through the Provo River to the Provo-Orem area and surrounding cities before emptying into Utah Lake and then traveling north via the Jordon River to Salt Lake County cities before emptying into the Great Salt Lake.

Increasing water demands due to rapid population growth will strain water system reliability and increase regional conflict. In addition to the multitude of cities and water districts struggling to maintain their level of service and system reliability for their customers, shortfalls in the residual water reaching the Great Salt Lake has potentially for significant environmental harm. The Great Salt Lake Advisory Council reports that the Great Salt Lake's water depth has dropped about 11 feet over the past ten years and it will continue to decrease at about the same amount over the next couple of decades if more is not done to bring water to the lake.⁸

⁶ https://www.ci.heber.ut.us/DocumentCenter/View/270/Heber-City-Master-Plan-PDF?bidId=, p8-11

⁷ https://www.ci.heber.ut.us/DocumentCenter/View/270/Heber-City-Master-Plan-PDF?bidId=, p4-20

⁸ https://www.usnews.com/news/best-states/utah/articles/2020-09-07/report-great-salt-lake-shrinking-more-than-a-foot-annually

While the proposed project's water savings will assist Heber City in meeting its increased water demand within its existing water rights, any net reduction in water usage will help mitigate the shortfalls and conflicts among downstream municipal, industrial, and agricultural water users. Additionally, the water saved could reduce the environmental and recreational impact of the deficit in water reaching the Great Salt Lake. Over 757 square miles of dry lakebed has already been exposed with significant potential for PM10 dust with troubling concentrations of nine heavy metals. "If the lake's level declines, salinity increases, and wetlands are altered. Salinity is a driver of microbial diversity and, as this foundation of the ecosystem is altered, so will be the rest of the food web, affecting large numbers of avian migrators along the Pacific and Central fly-ways." ¹⁰

3. Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?

The State of Utah Division of Water Resources' Regional M&I Water Conservation Goals report lists "installing secondary water meters and smart controllers for outdoor irrigation systems" as a key conservation goal and a method of meeting the State of Utah's water conservation goals. Water Conservation is also a key objective of the Central Utah Water Conservancy District which is the water supplier to the City and strongly supports the City's water conservation and reliability efforts. See their letter of support in Attachment D.

As the primary city in Wasatch County, Heber City's lead on installing secondary water meters will set a precedent for the other cities and irrigation districts in the Heber Valley that do not have secondary water metering. The lessons learned can be shared as the City collaborates and works with other entities on water conservation education and outreach.

Heber City's Water Conservation Plan passed unanimously and there is valley wide awareness and support for increased water conservation. There has been tension in the outskirts of Heber Valley as unmetered usage at new residential subdivisions is viewed as causing irrigation service to farmers to be cut off earlier in the year as the irrigation water supply runs out. It is anticipated that installing meters and continuing with conservation efforts will help address this concern.

Evaluation Criterion C- Implementing Hydropower (NOT APPLICABLE)

Evaluation Criterion D- Complementing On-Farm Irrigation Improvements (NOT APPLICABLE)

Evaluation Criterion E- Department of Interior and Reclamation Priorities

⁹ https://www.sltrib.com/news/environment/2019/09/16/u-scientist-goes-extra/#gallery-carousel-1341497

¹⁰ Great Salt Lake Biology, Baxter, Bonnie K, Butler, Jaimi K. 2020, p23.

The following Department of Interior priorities are addressed by this project:

- 1. Creating a conservation stewardship legacy second only to Teddy Roosevelt. The proposed project will utilize the latest Automatic Metering Infrastructure technology to collect detailed meter data allowing for increased conservation, better water management, and the avoidance of waste of a precious natural resource. This project will allow the City to better stewards over its natural resources and expand the capacity of existing Department of Interior infrastructure to serve the generation that comes after us.
- 2. Utilizing our Natural Resources. The proposed project will conserve water and enable it to be delivered more efficiently as it will reduce peak demands on infrastructure. This is particularly critical given that Utah is the second driest state in the nation and subject to periods of drought.
- 3. Restoring Trust with Local Communities. The proposed project will provide detailed usage information to the City's residents. Better water usage data availability will reduce the potential for conflict and increase trust between residents, the City, other water users withing the watershed, environmental interests, and regulatory agencies.
- 4. Striking a regulatory balance. Currently City administrators are unable to invoice secondary water users in a way that fairly reflects their usage patterns. The proposed project and meter reading system will help the City move towards a tiered rate structure that will hold high water users accountable and offer lower rates to customers who conserve.
- 5. Modernizing our infrastructure. The proposed project will modernize the City's existing infrastructure with the latest metering technology. By quantifying real-time water flows, the City will better be able to identify constraints that require the construction of new infrastructure, when to best do cyclical maintenance, and better identify and understand the potential impacts of deferred maintenance.

The following Bureau of Reclamation priorities are addressed by this project:

- Increase Water Supplies, Storage, and Reliability under WIIN and other Authorities. Water conservation and detailed usage information gathered from the proposed project will increase reliability by reducing stress on the system, improving maintenance and operations, and more effectively planning systems upgrades.
- 2. Leverage Science and Technology to Improve Water Supply Reliability to Communities. The proposed project will utilize the latest Automatic Metering Infrastructure technology to collect detailed water usage data allowing for increased conservation and better water management which will improve the community's water supply reliability.
- 3. Address Ongoing Drought. The proposed project will enable leaks to be identified and fixed and encourage water conservation. Furthermore, the advanced meters will allow the City to monitor and enforce watering restrictions if required during drought conditions.

Evaluation Criterion F- Implementation and Results

1. Project Planning

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

Heber City developed and approved a Water Conservation Plan in December 2016. A copy of the City Council resolution is attached in Appendix C. The report noted that consumption over the past five years had decreased a substantial 37% which is largely believed to be due to expansion of the pressurized irrigation system, repair of leaking water lines, increasing water rates, and public outreach and education. Problems identified were the need for more efficient landscaping and water practices, rate increases below inflation, water intensive landscape, water usage straining the delivery system, high losses at remaining surface irrigation locations, and "Existing pressurized irrigation connections are not individually metered and may overwater because there is a simple flat fee per month."

The key tools for achieving the City's water conservation goals were identified as completing and metering the pressurized irrigation system. The proposed meter installation project would enable usage based billing to encourage more efficient landscaping and watering practices and provide data for identifying and reducing system leakage; both of which would help further reduce per capita usage by the City's goal of an additional five percent by 2021. The Water Conservation Plan will be updated in 2021 with more further water conservation goals in line with Utah's new regional water conservation goal of 19% reduction between 2015 and 2030.

Detailed planning efforts for the City's secondary water system are primarily contain in the Heber City Master Plan 2018 to 2040¹¹. The Master plan is periodically updated and reviewed annually. Heber City's population doubled between 2000 and 2015 and is expected to grow by an additional 69% by 2040. Because all water in Heber Valley has been allocated, no additional water rights are available except by purchase or annexation. As a result, conservation is critical to meet the water needs of the City's increasing population.

Furthermore, the City has committed to meeting the requirements of Utah's SB 52 which requires metering all new secondary water connections and a plan to install secondary water meters at all of the City's existing customers and to convert from flat fee monthly billing to usage based billing to encourage conservation. This commitment was demonstrated by the City Council approval of a FY20/21 budget allocation of \$470,000 for secondary water meter installation¹². Additionally, the City has budgeted 639,000 in FY20/21 for its other top priority, of installing pressurized irrigation to residences in the central city area that currently use either culinary water or open ditch service for irrigation water.

2. Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project.

The performance measure of the project's actual benefits to be verified will be the quantity of water conserved. Hourly and monthly data from all installed meters will be aggregated and

¹¹ https://www.ci.heber.ut.us/DocumentCenter/View/270/Heber-City-Master-Plan-PDF?bidId=

¹² https://heberut.gov/DocumentCenter/View/961/Heber-City-2020-2021-Final-Tentative-Budget, p213-214

stored in Badger's advanced analytics software program. The City intends to use statistically valid sampling of metered lots and use GIS data to determine actual water usage per irrigated acre. The City will then be able to both track that usage metric year to year as well as to compare it to aggregate estimated water usage per irrigated acre from available main line meter data in some areas.

3. Readiness to Proceed

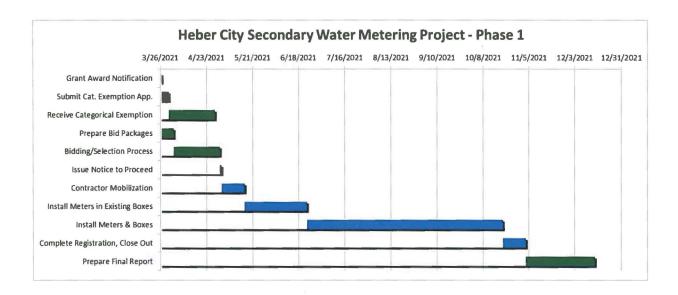
The following project schedule outlines the timing of the major tasks and milestones for the proposed project. Before installation can begin, an Environmental Document will be prepared in collaboration with Reclamation's Provo Area Office. Installation can begin after a Categorical Exclusion is received. A competitive bid will be conducted, and a qualified contractor selected and mobilized to perform the work. The City will provide affected homeowners with information about the project, the function of the meters, the installation process, and the importance of water conservation. The contractor will also be required to keep homeowners informed during the installation process and of the timing of secondary water outages as required during construction.

The City's intention is to begin the installation process as soon possible given the timing of the grant award and the duration of the environmental review to receive a Categorical Exclusion. As indicated in the following schedule, installation is anticipated to begin in May 2021 with final reporting to Reclamation and project close-out by December 2021.

Estimated Project Schedule

The following task list and schedule is based completing meter installation as soon as possible after an estimated grant award notification on March 26, 2021 and an environmental compliance review lasting four weeks. In order to expedite the schedule, the City will with their own funds do some bid and environmental compliance preparation work prior to receiving notification of award. Additionally, the City will run the bidding and contractor selection process parallel with the environmental compliance work necessary to receive a Categorical Exclusion.

Task Name	Start	End	Duration (days)
Grant Award Notification	3/26/2021	3/27/2021	1
Submit Cat. Exemption App.	3/27/2021	3/31/2021	4
Receive Categorical Exemption	3/31/2021	4/28/2021	28
Prepare Bid Packages	3/27/2021	4/3/2021	7
Bidding/Selection Process	4/3/2021	5/1/2021	28
Issue Notice to Proceed	5/1/2021	5/2/2021	1
Contractor Mobilization	5/2/2021	5/16/2021	14
Install Meters in Existing Boxes	5/16/2021	6/23/2021	38
Install Meters & Boxes	6/23/2021	10/20/2021	119
Complete Registration, Close Out	10/20/2021	11/3/2021	14
Prepare Final Report	11/3/2021	12/15/2021	42



Describe any permits that will be required, along with the process for obtaining such permits. The proposed work will be located within existing right of way and along existing residential service lines. No permits will be required for implementation of this project.

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

As the City already has standard drawings (See Attachment B) minimal engineering or design work will be required. Any outside technical services and work by City staff towards preparing thorough bid documents will be contributed by the City and are not included in the grant budget.

Describe any new policies or administrative actions required to implement the project. No new policies or administrative actions are required for this project.

Describe how the environmental compliance estimate was developed. Have the compliance costs been discussed with the local Reclamation office?

The City does not anticipate significant environmental and regulatory costs relating to this project. Installation work will only occur on previously disturbed soil in developed residential properties. No impacts to historic water conveyance structures, soils, air quality, animal habitat, or endangered species are expected. Peter Crookston at the Provo, UT Reclamation office was contacted by telephone on 9/11/2020 and confirmed that residential meter installation projects typically receive a Categorical Exclusion and that a budget of \$5,000 should be more than adequate.

Evaluation Criterion G- Nexus to Reclamation Project Activities

Is the proposed project connected to a Reclamation project or activity? The proposed project will be performed within a distribution system that is supplied by Bureau of Reclamation funded facilities and managed by the Central Utah Water Conservancy District ("CUWCD"). The Central Utah Project authorized in 1956 is Utah's largest and most comprehensive federal water resource development project. It moves water from the Colorado River basin in eastern Utah to the western slopes of the Wasatch Mountain range. The Central Utah Project was originally the responsibility of the Bureau of Reclamation; however, the Central Utah Project Completion Act in 1992 transferred

responsibility to the CUWCD under direct oversight of the Department of Interior.

The proposed project will therefore benefit the City and Reclamation through better management of water resources and reduce overall demand which is increasing with a growing population throughout the entire Central Utah Project system.

Does the applicant receive Reclamation project water? Yes, water delivered to the City by the CUWCD through Reclamation funded facilities.

Is the project on Reclamation project lands or involving Reclamation facilities? The distribution system and residential service lines where the meters will be located are owned and operated by the City; however, they are interconnected with the Wasatch County Water Efficiency Project water delivery and storage system which is a Reclamation facility now managed by CUWCD.

Is the project in the same basin as a Reclamation project or activity? Yes, the proposed project is within one of the basins of the Central Utah Project and connected to the Wasatch County Water Efficiency Project water delivery and storage system as well as the Provo River Project.

Will the proposed work contribute water to a basin where a Reclamation project is located? Yes, the proposed project will better manage water resources within the Central Utah Water Conservancy District system by providing better water use data and increase water conservation which will therefor increase the water available to other users within the basin.

Will the project benefit any tribe(s)? N/A

Evaluation Criterion H- Additional Non-Federal Funding

The percentage of non-Federal funding is 50%. Non-Federal (\$450,000) / Total Project Costs (\$900,000) = 50%

5. Project Budget

Funding Plan and Letters of Commitment

Please identify the sources of the non-Federal cost share contribution for the project. The City has budgeted and will fund all non-Federal contributions entirely from Heber City's operating revenues and reserves. The City Council has approved a FY20/21 budget for pressurized irrigation water meters of \$470,000¹³. There are no other sources of funding supporting this project.

Please identify whether the budget proposal includes any project costs that have been or may be incurred prior to award.

The budget does not include any pre-application costs or costs to be incurred prior to award. Bid preparation including any third-party technical services and City staff hours may occur prior to award; however, these costs will be contributed by the City and are not part of the grant budget.

¹³ https://heberut.gov/DocumentCenter/View/961/Heber-City-2020-2021-Final-Tentative-Budget, p213-214

Budget Proposal

Table 1. - Total Project Cost Table

SOURCE	AMOUNT	% of Costs
Costs to be reimbursed with the requested Federal funding	\$450,000.00	50.0%
Costs to be paid by the applicant	\$450,000.00	50.0%
Value of third-party contributions	\$0.00	0.0%
TOTAL PROJECT COST	\$900,000.00	100.0%

Table 2. - Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTA	ATION	Quantity	TOTAL COST			
	\$/Unit	Quantity	Туре	TOTAL COST			
Salaries and Wages	\$0.00	-	•	\$0.00			
Fringe Benefits	\$0.00		-	\$0.00			
Travel	\$0.00	-	-	\$0.00			
Equipment	\$0.00	-	-	\$0.00			
Supplies and Materials	\$0.00	-	-	\$0.00			
Contractual/Construction							
Meter Installation Contract	\$1,426.17	596	Lump Sum	\$850,000.00			
Const. Mgmt & Inspection	\$45,000.00	1.00	Lump Sum	\$45,000.00			
Other							
Environmental Compliance	\$5,000.00	1	-	\$5,000.00			
TOTA	\$900,000.00						
Indirect Costs							
N/A				\$0.00			
TOTAL ESTIM	\$900,000.00						

Budget Narrative

Salaries & Wages

No City Salaries or Wages will be included. Full time City staff will manage the proposed project as part of their job requirements. These costs and any associated overhead will be covered as part of the City's operating expenses and not charged to the project.

Fringe Benefits

No fringe benefits will be required.

Travel

No travel will be required.

Equipment

Installation equipment will be supplied by the selected contractor and is included as a cost in the Contractual /Construction portion of the project.

Materials and Supplies

Materials and Supplies are included as a cost in the Contractual /Construction portion of the project and will be procured by competitive bidding.

Contractual

The City's engineering department has reviewed the project scope and bid results for similar projects as well as the City's cost to install meters into meter boxes installed by developers and estimates that the average per unit bid by qualified, licensed, and insured contractors to furnish all necessary labor, parts and equipment to meet project specifications and provide a two-year will be approximately \$520 per meter/endpoint only installations and approximately \$1,870 per full meter service installation. 196 installations at \$520 and 400 installations at \$1,875 for a total construction contract of \$850,000. The City engineering department also estimates a 5% allowance for construction management and inspection services which totals \$45,000. The final numbers will be adjusted based on bid results.

Third-Party In-Kind Contributions

N/A.

Environmental and Regulatory Compliance Costs

As the meters will be installed primarily in residential lawns adjacent to existing City supply lines and valves, environmental and regulatory impact and compliance costs will be minimal. The compliance budget is estimated at \$5,000 which is 0.56% of project costs.

Reporting

The City's staff time to prepare the reports will be over and above the cost of the project and will not be counted toward the project cost.

Other Expenses

No other expenses will be part of the project.

Indirect Costs

No indirect costs will be part of the project.

6. Environmental and Cultural Resources Compliance

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

The project will not impact the surrounding environment. Excavation work is typically less than 24" deep and limited to less than nine square feet per installation. The work will be performed in a manner that minimizes impact to the existing landscaping and the surrounding environment. As almost all excavations are within watered landscaping, dust

impact will be minimal. No animal habitats will be negatively impacted.

- 2. 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? No endangered species are impacted by this project.
- 3. 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. No wetlands are impacted by this project.
- 4. When was the water delivery system constructed? The beginning of Heber City's original irrigation system dates back to pioneer days. The process of upgrading the system to lined canals and to a pressurized irrigation system has been ongoing over the past few decades and is still ongoing with a program to complete the conversion of central Heber City's irrigation water delivery system to pressurized irrigation.
- 5. Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., head gates, 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 modify or effect the irrigation system components. The proposed work will only add meters where individual residences connect to the distribution
- 6. Are any buildings, structures, or features in the irrigation City 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.
- No. The proposed project will not install secondary water meters at any buildings, structures or features that are listed or eligible for listing on the National Register of Historic Places.
- 7. Are there any known archeological sites in the proposed project area?
- 8. Will the project have a disproportionately high and adverse effect on low income or minority populations?

 No.
- 9. Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?
 No.
- 10. 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?

 No.

7. Required Permits or Approvals

system.

The proposed work will be located within existing right of way and along existing residential service lines. No permits or approvals will be required for the project.

8. Letters of Project Support

Included in the Attachments section are letters of project support from:

- Mayor Kelleen Potter, Heber City
- Senator Ronald Winterton, Utah State Senate
- Gene Shawcroft, P.E., CEO/General Manager, Central Utah Water Conservancy District

9. Official Resolution

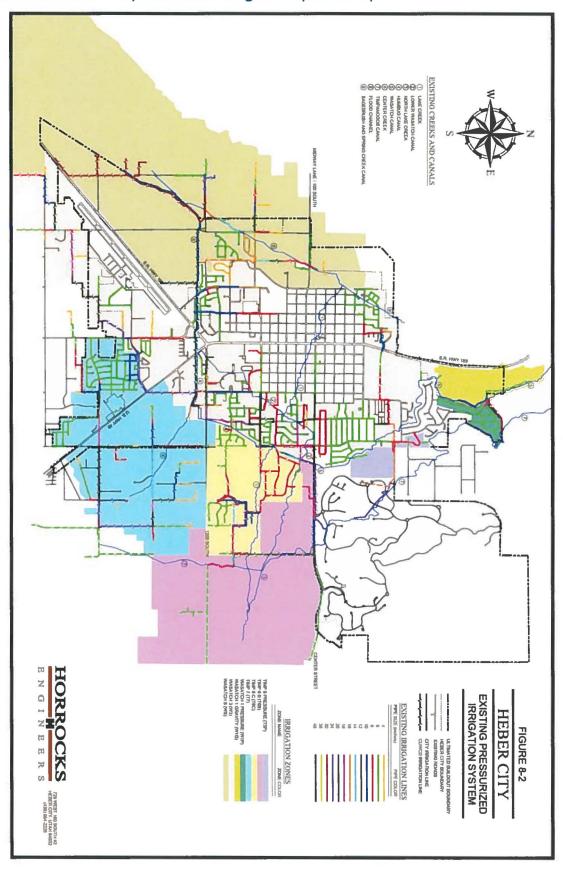
Resolution No. 2020-14 meeting the FOA requirements was adopted during the City's September 15, 2020 City Council meeting and is attached in Appendix E.

10. Unique Entity Identifier and System for Award Management

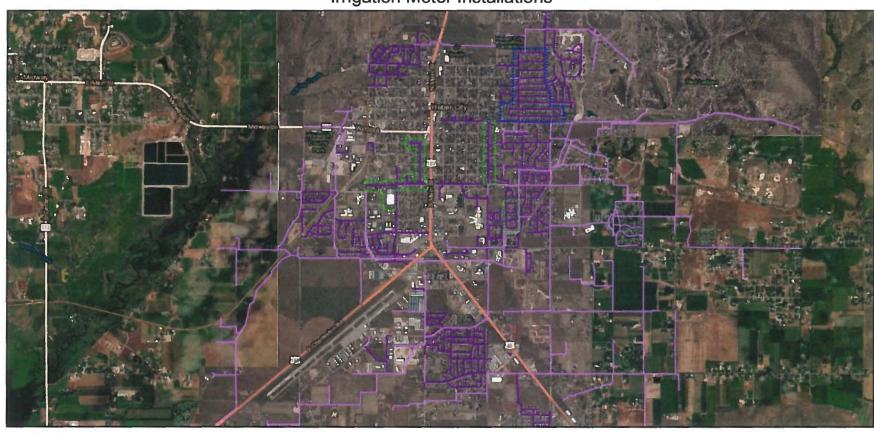
The City's Unique Entity Identifier (i.e. DUNS) is 089493811. The City of Heber has an active SAM registration with an expiration date of 03/11/2021 and a CAGE Code of 5QHY4. The City will maintain an active SAM registration throughout the duration of the Project.

11. Attachments

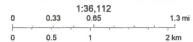
Attachment A. Heber City Pressurized Irrigation System Map



Irrigation Meter Installations

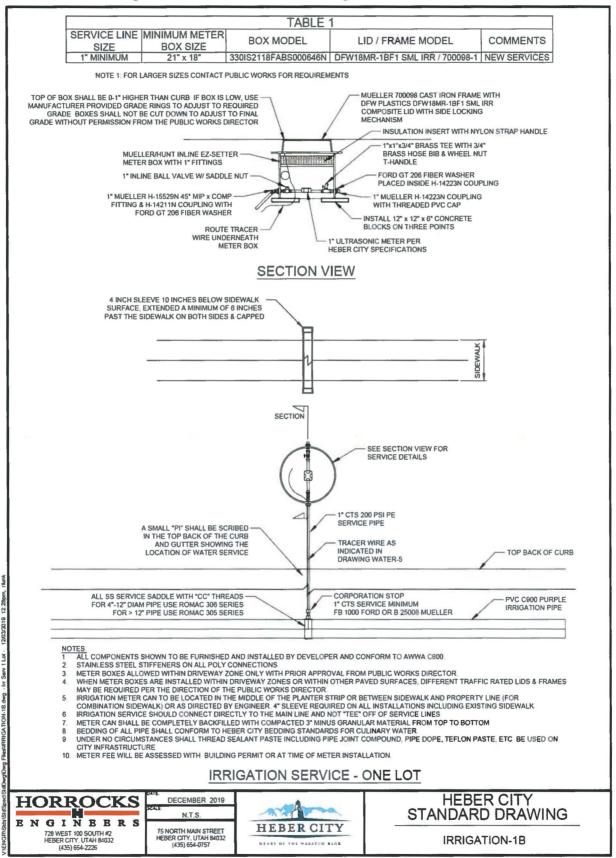


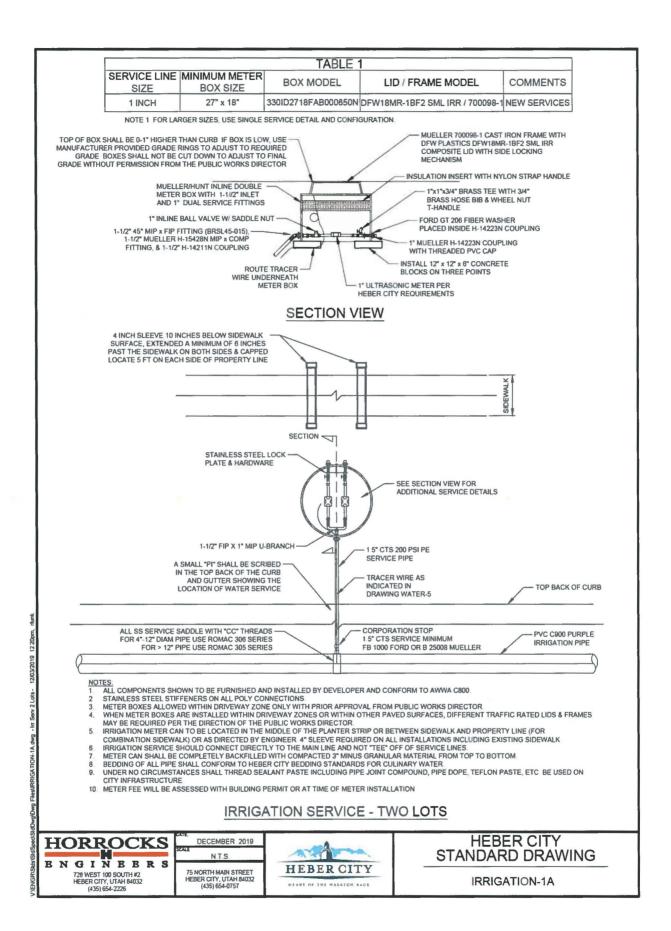




Source Earl, Maxar, GeoEye, Earthstar Geographics, CNES/Alrbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Earl, HERE, Garmin, (c) OpenStreetMap contributors, Earl, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user

Attachment B. Irrigation Meter Standard Drawings





Attachment C. Water Conservation Plan

Resolution 2016-18

A RESOLUTION TO ADOPT THE HEBER CITY WATER CONSERVATION PLAN

WHEREAS, Heber City, Wasatch County, Utah (Heber City) desires to assist and promote the conservation of water in Heber City and the Valley; and

WHEREAS, the City has developed a Water Conservation Plan to instigate and realize conservation; and

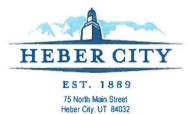
WHEREAS, the City is confident that the referenced Conservation Plan, if followed, will greatly improve the implementation of practical processes for conserving the City's water.

NOW THEREFORE, it is hereby resolved by the City Council of Heber City, Wasatch

County, Utah, that Heber City intends to adopt the afore hereby approves the same, as attached as Exhibit "A".	mentioned W	ater Conservation	i Plan, and
ADOPTED and PASSED by the City Council of 2016, by the following vote:	Heber City,	Utah, thisd	ay of
	AYE	NAY	
Council Member Jeffery M. Bradshaw	X		
Council Member Heidi Franco	χ		
Council Member Kelleen L. Potter	X		
Council Member Jeffrey Smith	<u> X</u>		
Council Member Ronald Crittenden	X_		
APPROVED:	Pl	Mc & Jou	ale
	M	ayor Alan W. Mc	Donald
ATTEST: MICHILL X. OLDNIGE City Recorder	WEBER C	THE STATE OF THE S	
	Bea		

Attachment D. Letters of Project Support

September 9, 2020



SUBJECT: Heber City WaterSMART Grant Application

Dear Application Review Committee,

Thank you for your consideration of the Heber City WaterSMART Grant Application. Although Heber City was historically a small agricultural community, for the past several years it has been one of the fastest growing micropolitan areas in the United States. This growth has brought numerous challenges, one of which is considerable strain on the City's water supply.

The City understands the value of water and is dedicated to taking the steps necessary to conserve this valuable resource and educate our residents to do the same. The City has adopted a Water Conservation Plan and has established goals for water savings. The City also understands the importance of metering systems, tiered rate structures, and individual accountability as they relate to water conservation.

As water conservation is one of our major priorities, we have budgeted a significant amount of money to pursue installation of individual irrigation meters in our City, but will be able to accomplish much more if awarded the WaterSMART grant.

As the Mayor of Heber City, I fully support pursuit of this grant opportunity and respectfully ask for your consideration of our request.

Sincerely,

Kelleen L. Potter Heber City Mayor SENATOR
RONALD WINTERTON
TWENTY-SIXTH DISTRICT



PO. BOX 523 ROOSEVELT, UT 84066 (C) 435-299-8531 801-923-7618 rwinterton@le.utah.gov

350 NORTH STATE STREET • SUITE 320 • SALT LAKE CITY, UTAH 84114 801-538-1035 • senate.utah gov

September 15, 2020

Bureau of Reclamation

RE: Application for WaterSMART and Energy Efficiency Grant

Dear WaterSMART Grant Review Committee,

It has been brought to my attention that Heber City, within my senate district, will be submitting an application for a Water and Energy Efficiency Grant. The grant would be used to implement an irrigation water metering project intended to improve water conservation and efficiency within the City. For this reason, I would like to offer my support of this request.

As a member of the Natural Resources, Agriculture, and Environmental Quality Appropriation Subcommittee I applaud Heber City's efforts to conserve this important natural resource and their efforts to assist the State of Utah in meeting its overall conservation goals.

Thank you for your time and consideration.

Sincerely,

Senator Ronald Winterton

Utah Senate District 26



Al Mansell Chair of the Board Shelley Brennan Vice Chair of the Board Gene Shawcroft General Manager / CEO G. Wayne Andersen IR Bird E James (Jim) Bradley Shelley Brennan Max Burdick Kirk L Christensen Board of Trustees Steve Farrell Steve Hanberg Max Haslem Nathan Ivle Hill I ee Al Mansell

Greg (AcPhic Jim Riding Jennifer Scott Edwin Boyd Sunderland Byron Woodland Boyd Workman

September 14, 2020

Bart Mumford, Heber City Engineer Heber City Engineering Dept. 75 North Main Street Heber City, UT 84032

Dear Bart,

Central Utah Water Conservancy District is pleased to support your effort to develop a Secondary Water Metering Project under the Bureau of Reclamation's WaterSMART Water and Energy Efficiency Program. We appreciate the importance of improving the efficiency of your system and becoming more resilient to overuse in our water-short basin. We are also looking forward to being a stakeholder in the process of metering secondary water use. This type of system upgrade is important as it will permit all users to better understand their usage and limit unnecessary overwatering.

We have appreciated our partnership through the years and look forward to many more years of cooperation to meet Utah's growing demands for safe, reliable, and cost-effective water. As a shareholder in several Irrigation Companies that are contract holders of a portion of 12,100 acre-feet of Bonneville Unit, Central Utah Project, irrigation water, we look forward to working with you on issues that arise as their systems transition from primarily agricultural uses to municipal and industrial uses.

We strongly support your grant application and appreciate the advancements it will make in water conservancy and efficiencies for the Heber Valley and the Provo River Basin.

Sincerely,

Gene Shawcroft, P.E. CEO/General Manager

Central Utah Water Conservancy District.

Attachment E. Official Resolution

RESOLUTION NO. 2020-14

A RESOLUTION SUPPORTING PARTCIPATION IN THE BUREAU OF RECLAMATION WATERSMART: WATER AND ENERGY EFFICIENCY GRANTS FOR FY 2021 - FOA: BOR-DO-21-F001.

WHEREAS, Senate Bill 52 passed in the 2019 Legislative Session initiated and established the following requirements:

- Installation of individual irrigation meters mandated on all new connections designed after April 1, 2020.
- Submission of a Metering Plan to the Division of Water Resources by December 31, 2019 outlining a plan to implement a process to meter existing connections; and

WHEREAS, pursuant to said Bill, Heber City created and submitted the required plan; and

WHEREAS, the plan states that the City will budget operating money and seek loans and grants to fund the improvements; and

WHEREAS, the City budgeted money for this purpose in FY 20/21, and is pursuing grants to assist in the effort; and

WHEREAS, the Heber City Council deems it to be in the best interest of Heber City to participate in the WaterSMART Grant Program,

NOW, THEREFORE, BE IT RESOLVED THAT:

- 1. The City Council supports a proposal for the WaterSMART Water and energy Efficiency Grant for Heber City Corporation; SECONDARY WATER METERING PROJECT PHASE 1 (Project).
- 2. Heber City has budgeted \$470,000 for secondary water metering and is capable of providing the amount of funding and/or in-kind contributions specified in the attached Funding Plan for the Project.
- 3. If selected for a WaterSMART Grant, Heber City will work with the Bureau of Reclamation to meet established deadlines for entering into a cooperative agreement.
- 4. The City Manager is authorized to execute all necessary forms on behalf of Heber City Corporation.

This Resolution shall take effect and be in force from and after its adoption and publication.

ADOPTED and PASSE September			er City, Utah this	15 th day of
	AYE	NAY	ABSENT	ABSTAIN
Heidi Franco	_X_			
Wayne Hardman	X			
Michael Johnston	X			
Rachel Kahler	_&_			
Ryan Stack	X			
APPROVED: Nollow Mayor Kelleen L. Potter	Potter	*	BER CITY	AH *
ATTEST: Juna	, n look	e g	CH COUNT	State