

Boulder City Water Meter Upgrades  
Boulder City, Nevada

WaterSMART Grants: Small-Scale Water Efficiency Projects  
Fiscal Year 2021  
R21AS00300

BOULDER CITY  
UTILITIES DEPARTMENT  
401 CALIFORNIA AVE  
BOULDER CITY, NV 89005

MARCH 18, 2021

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## EXECUTIVE SUMMARY

**Date:** March 18, 2021

**Category A Applicant:** City of Boulder City,  
Utilities Department, Boulder City, NV 89005

The City of Boulder City currently has an aging metering system which prevents the effective monitoring of residential and commercial water usage. In the proposed project, Boulder City Water Meter Upgrades, the City of Boulder City Utilities Department plans to implement a meter replacement program that will upgrade 306 meters across the city in the short term. The upgrade will reduce seepage losses and enable the City to proactively monitor water usage and better manage the water supply. These upgraded meters will be able to capture data via radio transmission, allowing City staff to spend less time manually reading older meters. Most importantly, the City will be able to better conserve water that is currently being lost through undetected leaks and meters that are miscalculating water usage. The proposed project aligns with the Bureau of Reclamation's goals for this funding opportunity by seeking to conserve, better manage, or otherwise make more efficient use of Boulder City's water supplies. The project will take approximately seven months to complete. This timeframe includes approval processes, requests for proposals, contractor bid reviews, contractor selection process, and actual project implementation. An estimated completion date for the project is February 2023. This project is not located on a federal facility.

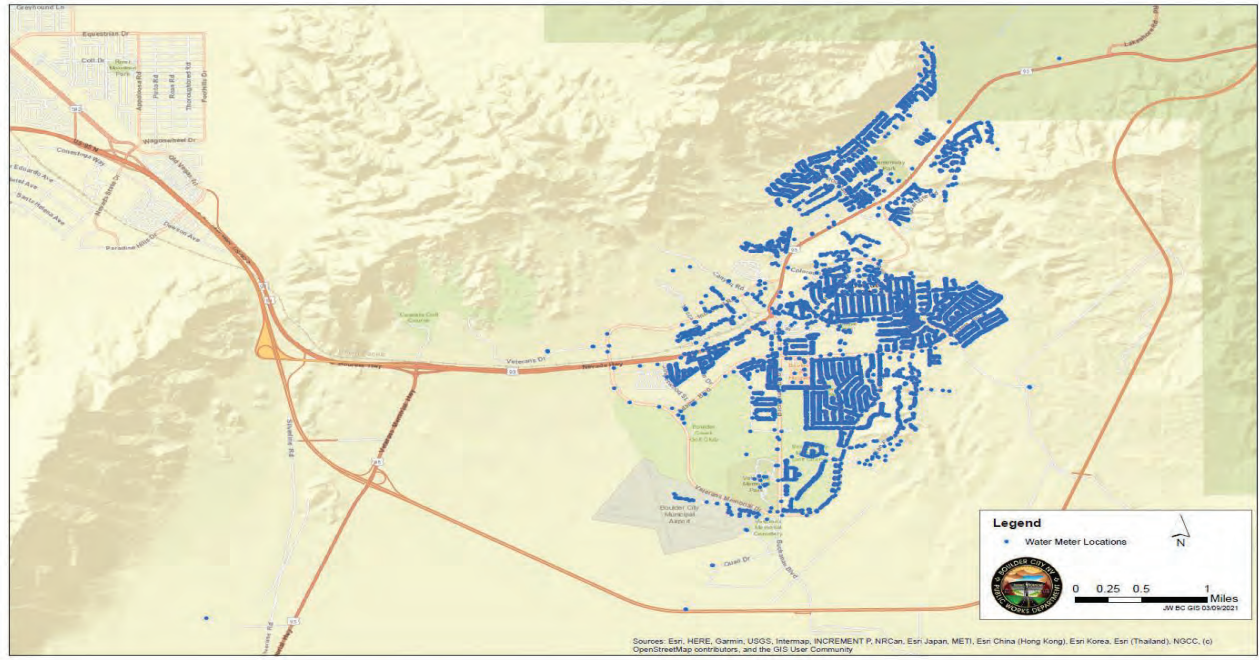
The City of Boulder City is a member agency of the Southern Nevada Water Authority (SNWA), which serves over 2.2 million people. SNWA has established a desired 2035 target of 105 gallons per person per day for the communities it serves. Boulder City is striving to meet the gallons per day target set by SNWA and this project will aid Boulder City in the acceleration of this goal.

Currently, Boulder City customers use a significant amount of water per person, much of which is used for outdoor watering. Although Boulder City represents a small proportion of the water distributed by SNWA, prior to 2035 Boulder City may need to put in place polices to achieve further reductions in per capita water consumption. The City currently maintains 126 miles of underground pipeline, three lift stations and one treatment plant. In 2019, the City's water distribution was 2,021 MG. This increased in 2020 to 2,265 MG. Raw water distribution also increased from 1,099 MG in 2019 to 1,179 MG in 2020. The projected distributions for 2021 are estimating another increase in water distributed for Boulder City. It is imperative that the City takes every avenue to ensure the conservation and best use of its resources.

Boulder City Utilities staff has slowly been replacing older water meters within the system. Due to budget constraints, the meters where staff can determine a severe misreading are prioritized for replacement. These older meters let more water through the meter than is recorded, leading to water waste, inaccurate meter readings, and incorrect customer water fees. The newer water meters are cogent upgrades in comparison, as they are capable of being equipped with radio transmitters and are a more modern solution overall. In effort to help Boulder City meet the SNWA 2035 per person target, the City would like to accelerate the water meter upgrades to reduce unmetered water use and prepare the city for possible future remote meter reading capabilities.

## PROJECT LOCATION

This project will take place within the City of Boulder City which is in Clark County, Nevada, in areas between 9 and 11 miles from the city of Henderson. The project latitude is 36.9782°N and longitude is 114.8345°W, which is the location of the city and the overall project area. A map of the City's meter GSA locations within Boulder City is shown below.



## PROJECT DESCRIPTION

The objective of the proposed project is to improve water consumption monitoring across the City's residential and commercial customers. This project would also contribute to the continuous effort to reduce Boulder City's annual water consumption and aide in our duty to prolongate water availability as the city continues to grow. The City's older meters consist of mostly brass water meters with a smaller portion being polymer body meters. An approximate estimate of age for meters that need to be replaced is 30 years old. The City plans to replace these aged meters with NSF certified low-lead brass body water meters with an Itron ERT module for each meter. Boulder City currently has 6,300 meters, of which 4,735 need to be replaced. Assistance from Reclamation would allow Boulder City to replace 306 meters over one fiscal year. Once the project has been completed, accurate meter readings will be used to refine and expand the strategy to reduce water consumption across Boulder City and help to maximize water use efficiency.

As previously mentioned, Boulder City Utilities staff has made efforts in the area of water meter replacement, but the City does not have a budget to efficiently replace a significant amount of water meters that need replacement within a fiscal year. The City is requesting that Reclamation support this project as these efforts will help accelerate the water meter replacement progress.

## EVALUATION CRITERIA

### Evaluation Criterion A — Project Benefits (35 points)

**Describe the expected benefits and outcomes of implementing the proposed project. What are the benefits to the applicant's water supply delivery system?**

The benefits of accelerating the City's meter replacement initiative would be converting our meter reading from a primarily manually read system to an Automatic Meter Reading (AMR) system. AMR systems are communication technologies used by water utilities to automatically collect water consumption and status data from water meters. These systems can be either walk-by or drive by. An endpoint is connected to the meter's encoder register which captures water flow and alarm data. This data is transferred to a database where utilities personnel can monitor and analyze usage, troubleshoot issues, and bill customers based on actual consumption rather than the prediction-based methods currently used due to manually read meters. These AMR meters will give our Utilities Department access to better data, which will in turn increase and streamline operating efficiencies, as well as provide the ability to effectively implement water conservation and drought management measures. This will be accomplished by utilizing real time meter reading data that will help us work with our customers to better manage water usage, lead determinations, overwatering, and watering on the wrong days. By replacing aged meters, we will reduce unaccounted water losses and be able to properly bill for water consumption, which improves the City's billing system. Although the City has 4,735 meters that ultimately need to be replaced, with funding from our own Utilities budget and assistance from Reclamation, Boulder City will be able to upgrade approximately 306 meters through the proposed project. This will be an upgrade to 6.5% of the City's meters, which is a significant increase in the amount of replaced meters that the City can replace on its own in a fiscal year.

**If other benefits are expected explain those as well. Consider the following: Extent to which the proposed project improves overall water supply reliability.**

SNWA's 2019 Water Resource Plan prioritizes aggressive conservation to reduce water demands and maximize the use of available resources. By modernizing 306 of Boulder City's water meters, the City will more effectively manage water conservation measures. Increasing water conservation will help SNWA and all its member agencies, which serve over 2.2 million people, manage its water resource portfolio which is mostly dependent on the Colorado River/Lake Mead.

The City's current meter replacement progress is limited by budgetary constraints. Accelerating the replacement of meters will improve water supply reliability. Within our current metering system, customers can use more water than is reflected on their bill. This issue can be resolved by upgrading our meters and possibly lead to additional revenue for the City. Newly implemented meters would allow our Utility Billing department to accurately account for how much water is being delivered to Boulder City customers. This would presumably lead to an encouragement amongst our customers to more willingly participate in conservation efforts. According to Sonderlund, et al., (2016), smart meter implementation showed decreases in water use between

2.5 and 28.6%, with an average of 12.15% (standard deviation of 8.75).

**The expected geographic scope benefits from the proposed project (e.g., local, sub-basin, basin).**

As a City that provides water to residential and commercial customers, improving our distribution system efficiency is a substantial benefit. Although it may be a small contribution to the overall conservation effort, lowering the City's per capita consumption, will serve a direct benefit to all the users on the Lower Colorado River System.

**Extent to which the proposed project will increase collaboration and information sharing among water managers in the region.**

Implementing this system will provide data to SNWA which will help them manage all the water resources in Southern Nevada through information sharing and increased collaboration among the SNWA members. SNWA serves over 2.2 Million people and its members include Big Bend Water District, Boulder City, Clark County Water Reclamation, Henderson, Las Vegas, Las Vegas Valley Water District, and North Las Vegas.

**Any anticipated positive impacts/benefits to local sectors and economies (e.g., agriculture, environment, recreation, tourism)**

The proposed project will benefit Boulder City's residential and business economy by having access to better data. This will impact residential consumers by giving them a better understanding of their actual water consumption. The project will impact existing businesses in a similar way. It will impact businesses considering moving to Boulder City because when businesses are choosing to move into any community, it is useful for them to know that we have a water conservation program in place that they can rely on for economic development purposes both now and well into the future.

**Extent to which the project will complement work done in coordination with NRCS in the area (e.g., with a direct connection to the district's water supply). Describe any on-farm efficiency work that is currently being completed or is anticipated to be completed in the future using NRCS assistance through EQIP or other programs.**

Boulder City is not within an agricultural area and therefore has no opportunity to work directly with NRCS related to farm irrigation efficiency programs.

**Evaluation Criterion B—Planning Efforts Supporting the Project (35 points)**

**Describe how your project is supported by an existing planning effort. Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?**

This project will help address the established SNWA Water Conservation goal of a desired 2035 target of 105 gallons per person per day for the communities it serves. Furthermore, the project will address Boulder City's own conservation goals, which are derived from the 2003 SNWA Drought Plan. This plan helped to establish measures to enhance the efficient use of water and to

prevent and discourage the wasting of water in Boulder City. These measures include waste of water guidelines, responsibility of waste, landscape watering restrictions, a watering schedule, outdoor water use restrictions, a water budget for golf courses, man-made lake provisions, operation of ornamental fountain guidelines, and enforcement policies. Of the established guidelines from the Drought Plan, this project will help improve the City’s responsibility of waste, water guidelines, and enforcement by providing the city with better consumption data.

**Explain how the proposed project has been determined as a priority in the existing planning effort as opposed to other potential projects/measures.**

This proposed project was determined to be a priority because it is directly tied to SNWA’s water conservation efforts of reducing per person consumption to 105 gallons per person per day for all customers. Boulder City also deems this project important because it will allow us to properly manage water usage, accurately track consumption data, and bill our customers properly. Also, it must be noted that water conservation has been and will continue to be a high priority for SNWA and all its member agencies. A recent Reclamation study discovered that Lake Mead’s water level is currently 1,085 feet. If Lake Mead levels were to fall below 1,075, which models suggest is possible, it would trigger a federally declared water shortage. Reclamation has operation plans to help re-water levels at Lake Mead, which include expanded participation in conservation and Basin-wide programs. This project can help contribute to such conservation efforts.

**Evaluation Criterion C—Project Implementation (10 points)**

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

Boulder City’s anticipated work efforts will parallel Reclamation’s required elements for water meter projects as detailed in the grant NOFO. All work is anticipated to be undertaken by a project team comprised of Boulder City Utility staff and a selected contractor. The City will follow state guidelines for posting municipal projects for bid via the Request for Proposal. Once the submittal window has closed, the City will evaluate the received bids and select the most qualified contractor based on the proposals submitted. Once the City and the selected contractor come to an agreement, the City will begin to purchase the necessary materials and the contractors will be scheduled to begin executing the water meter replacements.

A schedule demonstrating the anticipated timing and iterative nature of the tasks within each element is provided below. The dates assume possible award notification in May 2021, completion of financial assistance agreements with Reclamation by December 2021 or January 2022, and an official project start date in July 2022, with activities continuing until February 2023. This completes the project in the required two-year project window.

<u>Activity</u>	<u>Approximate Implementation Date</u>	<u>Description</u>
Post project requirements/Request for proposals (RFP)	July 2022	Public posting for proposals from qualified

		contractors.
Receive and evaluate bids	August — September 2022	Rank and evaluate each proposal received
Hire qualified contractor	October 2022	City will enter into a contractual agreement with the contractor who submitted the best proposal for the requested work
Water Meter Upgrade Begins	November 2022 — February 2023	Installation of water meters

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

No permits are anticipated for this project.

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

There will be minimal engineering work required for this project. This work will mostly be tied to the installation of the AMR systems. Engineering will be required to ensure the correct materials are purchased and that the upgrades are compatible with current systems.

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

No new policies or administrative actions are required to implement this project.

**Describe the timeline for completion of environmental and cultural resource compliance. Was the timeline for completion of environmental and cultural resource compliance discussed with the local Reclamation office?**

No environmental compliance estimates were developed or needed for this project however, further discussion of environmental compliance can be found in the Environmental and Cultural Resource Compliance section.

**Evaluation Criterion D— Nexus to Reclamation (10 points)**

**Is the proposed project connected to a Reclamation project or activity? If so, how? Please consider the following: Does the applicant receive Reclamation project water?**

Boulder City is a member agency of SNWA, which has oversight for water delivery to Boulder City. SNWA submits a water conservation plan in accordance with the Reclamation Resource Act of 1982. Boulder City has a long-standing relationship with Reclamation and has previously had a water contract with Reclamation, which allowed the City the ability to draw directly from Lake Mead via the Boulder Canyon Project Act.

**Is the project on Reclamation project lands or involving Reclamation facilities?**



The Bureau of Reclamation is a water, sewer, power, and landfill customer of Boulder City and we provide these services to the Bureau’s offices and facilities that are in Boulder City.

**Is the project in the same basin as a Reclamation project or activity?**

Yes, Boulder City lies within Reclamation’s Lower Colorado River Region Project Water Supply Basin.

**Will the proposed work contribute water to a basin where a Reclamation project is located?**

The proposed project will indirectly benefit the Lower Colorado River Basin. The project will increase water use efficiency and help the City lower its per capita consumption, which will leave more water in the system for other users within the system.

**Will the project benefit any tribe(s)?**

This project will not directly benefit any tribes.

**PROJECT BUDGET**

**Funding Plan and Letters of Commitment**

Boulder City has been replacing meters with funds from the City’s Water Maintenance budget. The City will wholly finance the non-federal share of the project’s expenses through its annual budgetary process as outlined below. The Boulder City FY 2021 budget will be approved prior to July 1, 2021. There are no partners, not including Reclamation and Boulder City. There are no other pending funding requests for the proposed work. Federal share (50 percent) \$75,000.00. Non-federal Share (50 percent) \$75,000.00

**Budget Proposal**

**Table 1.-Total Project Cost Table**

<b>SOURCE</b>	<b>AMOUNT</b>
Costs to be reimburse with the requested Federal funding	<b>\$75,000.00</b>
Costs to be paid by the applicant	<b>\$75,000.00</b>
Value of third-party contributions	<b>\$0.00</b>
<b>TOTAL PROJECT COST</b>	<b>\$150,000.00</b>

**Table 2.-Budget Proposal**

<b>BUDGET ITEM DESCRIPTION</b>	<b>COMPUTATION</b>		<b>APPLICANT FUNDING</b>	<b>RECLAMATION FUNDING</b>	<b>TOTAL COST</b>
	<b>Unit</b>	<b>Quantity</b>			
<b>MATERIALS &amp; SUPPLIES</b>					
Water Meter Upgrade	\$245	306 meters	\$0.00	\$75,000	\$75,000
<b>OTHER</b>					
Contractor to install meters.			\$75,000		\$75,000

TOTAL DIRECT COSTS					\$150,000
TOTAL ACTIVITY/PROJECT COSTS			\$75,000	\$ 75,000	\$150,000

**Budget Narrative**

The materials needed for this project will be water meters and the Itron ERT module for the meters. This set costs approximately \$245 per meter/module. This quote is based on costs from previously upgraded meters in the City. The ERT communication module offers advanced two-way meter data collection designed specifically for collection systems using handheld, mobile, fixed network, and combination hybrid solutions. These modules help increase a water utilities ability to log data, improve water loss management, monitor accurate consumption levels, and it allows meters to be read in a more efficient manner. These will be an upgrade to our current meters, which are decades old and manually read.

The City plans to hire a licensed contractor with expertise in water meter replacement and water delivery systems. Ideally, they will be familiar with the Boulder City area as well as potential partners, affected parties, regulations, and other items used for replacing outdated water meters within the system. The cost of the contractors is estimated based on our water department’s previous experience with hiring contractors for similar jobs. This contractor will be selected in accordance with public contractor solicitation, purchasing, and hiring requirements, as well as standard public contract code requirements. The total direct costs of the project will be \$150,000 with the non-federal funding contribution at 50 percent and the federal funding at 50 percent. There are no indirect costs included in the proposed project budget.

**ENVIRONMENTAL AND CULTURAL RESOURCE COMPLIANCE**

**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 take place within the water service area of Boulder City, Clark County, Nevada. The work necessary to complete this project will not impact the surrounding environment as the project will not require any construction. Replacing water meters will have no adverse impacts to air, water, or any animal habitat.

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

There are no species listed that would be impacted by this project. Most of the work will be conducted in urbanized areas, which are often not designated as critical habitats for endangered species or wildlife.

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

There are no wetlands within the boundaries that this project will take place.

**When was the water delivery system constructed?**

The water delivery systems within Boulder City were constructed in the 1930s and the 1960s.

**Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed.**

Irrigation systems are mainly for watering in this area. This project will not result in the need for any modifications or effects to any irrigation systems in the area.

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

There are no known structures listed on the National Register of Historic Places that will be directly affected by the proposed project.

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

This project will not directly affect any archaeological sites. There are no known archeological sites within the project boundaries.

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

The project will not have any adverse effect on low income or minority groups, but the project may benefit these groups of people by providing accurate meter readings which can aide in leak detections and a better understating of their overall household water consumption.

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

The proposed project will not limit access to ceremonial use of sacred sites or tribal lands. Any such lands in the project area will not experience any impacts from the proposed project.

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

The proposed project will not result in the introduction, continued existence, or spread of noxious

weeds or non-native invasive species.

### **REQUIRED PERMITS OR APPROVALS**

At this time, there are no known permits that would be applicable to this project. As the project progresses, there will be reviews with Utilities Department and Public Works Department staff to make sure all procedures and protocols are being followed for any applicable permits.

### **LETTERS OF SUPPORT**

Boulder City is the sole funding entity and owner of this project; therefore, letters of support were not required.

### **OFFICIAL RESOLUTION**

Boulder City's City Council will meet April 13<sup>th</sup>, 2021 to consider and adopt a resolution certifying that the City will have sufficient funds to operate and maintain the project and to authorize this application. The Utilities Department will forward a copy of the resolution to Reclamation immediately after the meeting, which will still be within the 30-day window.