

D.2.2.2 Title Page

Grant Proposal to the U.S. Department of Interior
Bureau of Reclamation

Proposed project:

The City of Trinidad's Municipal Metering Project:

Making Technological Improvements to Protect Water and Energy Resources



Submitted by the City of Trinidad

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July 2018

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D.2.2.4. Technical Proposal and Evaluation Criteria

(1) Executive Summary

Date: July 26, 2018

Applicant: City of Trinidad, Las Animas County, Colorado

The City of Trinidad’s Municipal Metering Project:

Total Project Cost:	\$150,000
Cost-Share:	\$75,000
Federal Share:	\$75,000
Project Duration:	12 months
Located on a Federal Facility:	No

Located on the southern Front Range/I-25 corridor of Las Animas County, Colorado, the City of Trinidad (Trinidad) proposes to implement a city-wide Advanced Metering Infrastructure (AMI) water conservation system. The new system will replace existing and antiquated 50+ year old and manually read residential meters. Outdated meters provide inaccurate data, which prevents leak detection and produces erroneous water bills. Faulty meters result in poor water management/water misuse and causes the city to lose revenue. This is evidenced by a 2018 American Water Works Association (AWWA) audit of Trinidad’s water use. The report shows an annual 21.1% non-revenue water in part due to inaccurate meters. Directly aligned with the Bureau of Reclamation’s (Reclamation) goals cited in this funding opportunity, the proposed AMI project will conserve water through the provision of accurate and real-time data on water usage and loss. This knowledge will help residents, business owners, and city workers to more appropriately use water as a natural resource while helping the city to recover lost revenue from defective meters. The AWWA audit estimates that Trinidad loses more than \$620K per year on non-water revenue. Accurate data provided by the meters will restore trust with the city’s tax payers when analyzing their water bills, strike a regulatory balance through better water restriction compliance, and will ultimately help modernize the area’s at-risk infrastructure.

The project will take 12 months to complete from the time Trinidad receives notice of grant funding.

(2) Background Data

Describe the source of water supply.

Trinidad's water supply consists of direct stream flow diversions from the North Fork of the Purgatoire River and a number of upper basin creeks of the Purgatoire River Basin that are stored in North Lake and Monument Lake Reservoirs. Water is delivered via an underground pipeline to the Water Treatment Plant located a few miles downstream of North Lake. The raw water is high quality and requires only minimal treatment to make it potable.

Total quantity of water supply managed and supplied.

Trinidad's existing mountain supply water rights provide a firm yield of approximately 5,746 acre feet (ac-ft) per year in an average year.

Describe water rights involved.

Trinidad's water rights consist of a variety of surface water supplies.

1. Diversions from the North Fork of the Purgatoire River, which are stored in North Lake and Monument Lake Reservoirs.
2. Diversions from Whiskey Creek, Cherry Creek, and Brown's Creek, which are stored in North Lake and Monument Reservoirs.
3. Diversions from the Purgatoire River via the Johns Flood and Model Irrigation Ditches, which are stored in Trinidad Reservoir.

Monument and North Lakes are located in western Las Animas County near the decreed surface water rights points of diversion, and Trinidad Reservoir is located a few miles west of Trinidad.

Describe current water uses (i.e., agricultural, municipal, domestic, or industrial).

The city provides water and wastewater services to more than 3,250 urban households within the city limits and to many rural areas from the upper Purgatoire River Basin and easterly to central Las Animas County. In addition, these services are provided to a broad range of commercial users, some of the larger users include a 500-inmate prison, a junior college with a 2,000-student enrollment, and a large U.S. Army base training facility with several thousand troops deployed on-site at differing times.

The number of water users served, and the current and projected water demand.

Trinidad serves a population of approximately 15,000, which includes 8,073 in the city and 6,000 in the surrounding rural service area (U.S. Census Bureau Quick Facts, 2017). The city provides 4,350 water service connections. The water supply provides a firm yield of approximately 7,700 acre-feet (ac-ft).

If water is primarily used for irrigation, describe major crops and total acres served. Also, identify potential shortfalls in water supply.

Trinidad's water supply is not primarily used for irrigation.

Trinidad is always at risk of potential shortfalls in water supply because it is located in a drought-susceptible region. Drought-induced water stress requires careful monitoring of water supply and restrictions made by state, city and local jurisdictions. To mitigate risk of water shortages and drought risk, Trinidad instituted a water demand management program in 2015. The program consists of three levels of watering restrictions designed to limit water usage. Level III calls for the highest amount of water savings and is only required in times of emergencies; whereas Levels I and II encourage conservation and enforce water savings during a drought. As recently as July of 2018, Trinidad has had to institute Level III water restrictions because of being designated as having an extreme drought.

In addition to the dry climate, Trinidad's water users have been non-compliant with their water use requirements causing state-imposed restrictions. Trinidad's Mayor, Phil Rico, shared that in June of 2018, the State Water Office reduced Trinidad's water from North Fork Creek from 6.2

cubic feet per second (cfs) to 3.6 cfs. At 6.2 cfs, Trinidad drew 4,017,600 gallons per day. At 6.2 cfs, the city used about 300,000 gallons more per day than they were allowed to draw from the creek, which means the difference was coming from North Lake. With the reduction to 3.6 cfs, the city can only draw 2,332,800 gallons per day. This change will increase Trinidad's draw from North Lake to 2,067,200 gallons or 6.33 acre feet per day unless water users actively conserve their use. AMI meters could help keep water users informed through real-time data to increase conservation and compliance.

Describe the applicant's water delivery or distribution system as appropriate. For municipal systems, please include the total approximate length of distribution lines, number and sizes of storage tanks, number of pump stations and capacities, and the number of connections and/or number of water users served and any other relevant information describing the system.

Trinidad is responsible for the maintenance and repair of all pipelines within the distribution system that are not on private property. Their water system consists of 75 miles of water mains and an average of 59 feet of service line per customer. Potable water is piped through an underground transmission line from the water treatment facility to four potable water storage tanks, having a combined storage capacity of 8.4 million gallons, and from the tanks through a distribution system to customers.

Identify any past working relationships with Reclamation. This should include the date(s), description of the relationship(s) with Reclamation, and a description of the project(s).

Trinidad has a working relationships with Reclamation through the following project:

Purgatoire River Watershed Plan

- Project location: Purgatoire River Watershed.
- Reclamation relationships: Tom Acre, City of Trinidad (former) City Manager and Gil Ramirez, City of Trinidad Watershed Manager.
- Dates of relationship: 2012-2014.
- Project description: The Purgatoire River Watershed Plan is a compilation of material from many sources with contributions from numerous community members, watershed stakeholders, government agencies, non-profit organizations and natural resource consultants. The plan was funded through a Bureau of Reclamation WaterSMART Cooperative Watershed Management Program grant awarded in September 2012 to the Purgatoire Watershed Partnership of Trinidad, Colorado.

Trinidad hopes to further establish a relationship and will leverage their positive experience gained from successfully managing and implementing previously funded water conservation grants that were sponsored by the Colorado Department of Local Affairs.

(3) Project Location

Provide specific information on the proposed project location or project area. Suggested description follows:

The City of Trinidad is the county seat and the most populous city of Las Animas County, Colorado, United States. Trinidad lies 21 miles north of Raton, New Mexico, and is 195 miles south of Denver. Trinidad is situated on the historic Santa Fe Trail. According to Google Maps,

Trinidad is located at 37°10'15"N 104°30'23"W / 37.17083°N 104.50639°W / 37.17083; -104.50639 (37.170944, -104.506447). According to the United States Census Bureau, the city has a total area of 6.3 square miles (16.3 km²), all of its land. Following is a map provided by Google Earth.



Figure 1 Google Earth map of the City of Trinidad

(4) Technical Project Description

Describe the work in detail, including specific activities that will be accomplished.

By the end of the 12-month project period, Trinidad will have implemented its city-wide AMI water conservation system. Key activities will be managed by Trinidad's Utilities Department led by Mike Valentine, Utilities Director.

- 1) Replace 1,000 residential meters.
- 2) Training of city workers on how to use the new system.
- 3) Education and outreach to residential water users on how to read and interpret data shared through the new technology. Outreach will be incorporated into Trinidad's existing water public education program.
- 4) AMI provides inherent tracking of data to identify customer side leaks and water loss areas.
- 5) Program and financial reporting to Reclamation.

Progress made: Trinidad has completed several steps in the planning process to help make the project ready for implementation. The city has a comprehensive water conservation plan that was completed by an independent engineering firm, RJH Consultants, Inc. The report ranks water meter replacement as critical priority. In 2018, the city conducted an AWWA Audit to gather key information needed to install the system. Finally, Trinidad solicited competitive bids and selected

a water conservation contractor, Johnson Controls, as their design builder to help implement the project from start to finish. The city has a project scope, schedule, and budget that has been authorized by its board.

Problems and needs.

Trinidad plans on replacing meters that are more than 50 years old. Because the meters are so antiquated, the city has at least 21.1% in water loss, which has been validated by a 2018 AWWA Water Audit. Estimated water loss costs the city at more than \$620K per year and decreases trust of tax paying water users who are paying bills with inaccurate data. Since Trinidad is located in drought-prone area with state and self-imposed water restrictions, conservation and accurate reporting is critical.

Addressing problems and needs.

AMI water meters will improve water conservation efforts by reducing wasted water that currently is 21.1%. AMI technology will improve metering reliability and ensure that customers are accurately billed for the volume of water consumed. Technology provided by AMI will provide Trinidad with the ability to evaluate system water losses and tighten the water budget.

Expected outcomes.

Accurate and real-time data provided by the new AMI system will allow Trinidad to reach its overall goal of improving [water conservation](#) and will result in the following outcomes:

- **Reduced water loss:** The new system will help identify water loss and leaks in the distribution system. The city will confirm decreased water waste by using a water budget approach. This consists of a calculation of the difference between water treatment production at the water treatment plant and metered usage by the end user.
- **Improved compliance with state and city mandated water restrictions:** Accurate and real-time data is expected to provide water users with more timely information to help them become more compliant with water restrictions.
- **Enhanced water user engagement and behaviors tied to water conservation:** The program will include community education and public outreach. Reliable data accompanied with continued education will motivate users to make positive behavioral changes.
- **Increased opportunities to invest in additional water infrastructure:** Trinidad anticipates recovering non-revenue water that is currently lost by inaccurate meters. Recovered revenue will be used to update additional antiquated water infrastructure.
- **Maximized city resources:** AMI meters will permit Trinidad workers to reallocate their time traditionally spent manually reading and checking meters.

(5) Evaluation Criteria

E.1.1 Benefits to the water supply delivery system

Increased water conservation: Installing an AMI system will promote water conservation for the City of Trinidad. Information provided by the system will help Trinidad to identify leaks causing an annual water loss of 21.1%.

Improvements to the overall water supply: Since Trinidad is located in a water-stressed geography that is prone to drought, knowledge of water use is vital to fulfilling federal, city and state water restriction mandates, which will protect their supply.

Improved public engagement focused on water conservation: Trinidad anticipates improved water conservation behaviors from the public through their access to real-time knowledge on their usage. Having more accurate and transparent information will help the public to be more personally invested water conservation and will promote compliance with water regulations.

Increasing collaboration with local sectors and economies: Reliable and accurate data provided by the new AMI system will lead to more consistent water bills and use. This will increase trust and collaboration with surrounding jurisdictions that rely upon Trinidad's shared supply. Ultimately, the system will help strike a better regulatory balance.

Maximizing water use by modernizing public infrastructure: As previously mentioned, the city loses more than \$620K per year on lost revenue from faulty meters. Trinidad anticipates being able to recover a good portion of this lost revenue through the AMI system. Recovered income will help the city to modernize its remaining 50+ year old water distribution infrastructure and backlog of deferred maintenance projects.

Increased opportunities for economic development: More reliable infrastructure has been proven to attract and retain businesses and residents to cities.

Increased trust in the public sector: Water users/payers will be more open to conserving water and paying an increased water bill caused by revenue recovery, if they know their bills are accurate and that the city is providing reliable services and infrastructure.

E.1.2.Planning efforts supporting the project

Trinidad has made efforts to support this project since 2012 when they commissioned an independent geotechnical and water resources engineering company, RJH Consultants, Inc. to provide a water conservation plan. The plan includes input from the city, water suppliers, water users, and Colorado's Water Conservation Board. Water meter replacement was been identified as a critical priority. Since Trinidad's infrastructure is mostly 50+ years old, emergency pipes replacement has taken a priority. Improperly metered water causes undetected leaks and increased pressurization and stress on pumps — which eventually leads to broken infrastructure. New meters that can help with leak identification will reduce the need for emergency repairs.

E.1.3. Project implementation

As stated in the attached Official Resolution and funding commitment letter, the City fully commits to the project. The City will be ready to proceed within one month of receiving a grant award. The City also has a signed agreement with Johnson Controls, who will be responsible for guaranteeing water benefits and project timelines. The project's schedule, including major timelines, tasks, and milestones follows.

Project Schedule

Task Name	Duration
Project Installation	8 months from the date of award notification.
<ul style="list-style-type: none"> • Preparation of submittals and review/approval. • Secure long lead materials. • Firm up subcontract with installer. • Final field engineering by AMI system engineer. • Mobilize and installation of meters and AMI system. • Operations and maintenance manuals. • Training and outreach on the new system and billing. • Final completion and punch list. 	
Commissioning	45 days from the date of award notification.
<ul style="list-style-type: none"> • Handling of meter replacement data. • Update billing system with new and old meter data. • AMI end to end point verification and testing. 	

Johnson Controls will be responsible for using their standard engineering process for the identification and testing of meters to accurately determine the project’s potential savings. An AWWA Water Audit will be completed during the grant period and each subsequent year of the project’s useful life (15- 20 years) to evaluate the project’s performance measures tied to water conservation. Performance will also be impacted by water users, which will include the City, residents and business owners. When accurate meters are installed, everyone pays their fair share of water use.

E.1.4. Nexus to Reclamation

The project will provide positive impact to Trinidad’s water supplies through anticipated water conservation caused by the AMI system—reducing the city’s current 21.1% water loss. Through court decrees and water rights, the city can request to move water up river from Trinidad Lake, which is owned by Reclamation, to North Lake and Monument Lake reservoirs. The need to request water being moved from Trinidad Lake will be less likely through the more accurate meters.

E.1.5. Alignment with Department of Interior Priorities

The AMI water conservation system project directly aligns with the Department of Interior priorities. The overall goal of the new system is to increase water conservation and recover non-revenue water from aging infrastructure. Modernizing the city’s water meters through an AMI system will help the city to more readily identify leaks and help water users gain a better understanding of their actual consumption. These factors build a water conservation mindset and

city-wide culture. Having timely and accurate data also helps water users more compliantly manage and fulfill mandated water restrictions. Meeting water restrictions helps water users to become more empowered. Increased knowledge of water use will also lead to better management of Trinidad’s water supply and increased trust of jurisdictions that share the city’s water supply. These activities contribute to striking a regulatory balance.

D.2.2.5. Project Budget

(1) Funding Plan and Letters of Commitment

Describe how the non-Reclamation share of project costs will be obtained. Reclamation will use this information in making a determination of financial capability.

The City of Trinidad requests \$75,000 in grant funding to implement its AMI water conservation system. The total project cost is \$150,000. Matching funds will be provided by Trinidad through board approved capital funds (shown in the attached resolution).

No donations or in-kind costs have been incurred and are not anticipated before the project’s start date. Trinidad has no existing federal support or pending requests that would contribute to this project. In addition, no state, local or private foundation requests have been made for the project.

Table 1. –Summary of Non-Federal and Federal Funding Sources

Funding Source	Amount
Non-Federal entities:	
Capital funds	\$75,000
<i>Non-Federal subtotal:</i>	\$75,000
Other Federal entities:	
<i>Other Federal Subtotal:</i>	\$0
Requested Reclamation Funding:	\$75,000
<i>Total Project Funding:</i>	\$150,000

(2) Budget Proposal

Table 2. – Budget Proposal

Budget Item Description	Computation		Quantity Type	Total Cost
	\$/Unit	Quantity		
Contractual	\$150	1,000	Sensus SR2 meter	\$150,000
Subtotal:	\$150	1,000	--	\$150,000

Budget Item Description	Computation		Quantity Type	Total Cost
	\$/Unit	Quantity		
Total Project Costs				\$150,000

(3) Budget Narrative

Contractual:

Trinidad requests 1,000, 5/8 –inch, brass body water meters for residential use. The cost per meter is \$150/ per Sensus SR2 meter and will total \$150,000.

Trinidad conducted a competitive bid request for proposal process during the spring of 2018 and selected Johnson Controls as a water conservation and performance infrastructure contractor. Providing a turn-key approach, Johnson Controls provided the city with a quote for the proposed AMI system that includes estimates of time, rates, supplies, and materials.

Environmental and Regulatory Compliance Costs:

Environmental and regulatory compliance costs are not included as part of the funding request for the smart meter and leak detection water conservation project. Construction will occur where existing and manually read meters exist (AMI meters) and where pipes exist (leak detection). Installation where equipment and infrastructure exists will not negatively impact the environment. Although costs are not anticipated, any unforeseen costs will be the responsibility of Johnson Controls as part of the signed development agreement.

Other Expenses:

There are no other expenses anticipated for the project. These expenses are accounted for under contractual as part of risk and proficiency.

Total Costs:

The total AMI water conservation system project will cost \$150,000. The funding request is for \$75,000. The City of Trinidad will provide \$75,000 in non-federal funding. This funding will be secured by debt service for the project or the city’s capital budget and is fully backed by the City as evidenced by the attached Official Resolution.

D.2.2.6. Environmental and Cultural Resources Compliance

Will the project impact the surrounding environment (e.g., soil (dust), air, water (quality and quantity), animal habitat)? 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.

Other than the positive benefits gained from water conservation, the project will not impact the surrounding environment. AMI meters will be installed where existing manual meters exist inside basements or in already pre-established meter boxes, on pre-disturbed soil.

Are you aware of any species listed or proposed to be listed as 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?

Located in Colorado, the city hosts 17 endangered animal species and 17 plant species (<https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=CO&status=listed>). Since the new AMI water system will be installed where water meters exist, endangered species will not be disrupted. The project will benefit endangered species because it focuses on water conservation. Improved water management and conservation is critical to protecting the livelihood of all plants and animals.

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

This is not applicable.

When was the water delivery system constructed?

The water delivery system was constructed between 1890 and 1950.

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.

This is not applicable because the project involves installing meters where manual ones already exist.

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

This is not applicable. No work will be done in buildings, including ones listed on the National Register of Historic Places.

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

There are no known archaeological sites in the proposed project area.

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

The project will not have an adverse effect on low-income or minority populations. Instead, it will provide Trinidad, including its residents, with economic opportunity. Revenue recovery provided by accurate meter data will help the city to reinvest in other much needed deferred maintenance. Over time, capital improvements will help the city to attract businesses and retain residents.

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

There are no tribal lands or Indian sacred sites involved with this project.

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

There are no non-native invasive species known to occur in this area.

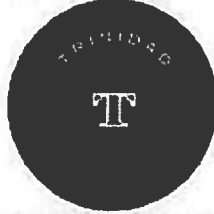
D.2.2.7. Required Permits of Approvals

No permits are required for this project.

D.2.2.8. Official Resolution

The City's signed and Official Resolution is included in the application's attachments.

Attachment: Official Resolution



RESOLUTION NO. 1520

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF TRINIDAD, COLORADO, TO APPROVE CITY MANAGER GREG SUND TO ENTER INTO AN AGREEMENT WITH THE U.S. DEPARTMENT OF INTERIOR, BUREAU OF RECLAMATION POLICY AND ADMINISTRATION (RECLAMATION), ON BEHALF OF THE CITY'S GOVERNING BODY; APPROVING THE CITY MANAGER TO COMMIT THE CITY TO THE FINANCIAL AND LEGAL OBLIGATIONS ASSOCIATED WITH RECEIPT OF THE WATERSMART GRANT FINANCIAL ASSISTANCE VERIFYING CERTAIN ADDITIONAL DETAILS

WHEREAS, Greg Sund, City Manager, has the legal authority to enter into an agreement with the U.S. Department of Interior, Bureau of Reclamation Policy and Administration; and

WHEREAS, the City's governing body and appropriate officials have reviewed and support the application submitted; and

WHEREAS, the City will provide the cash match through its capital budget in the amount of \$75,000, which is specified in the grant application's funding plan; and

WHEREAS, the City will work with Reclamation to meet the established deadlines for entering into a cooperative agreement.

NOW THEREFORE, BE IT RESOLVED, that the City Council of the City of Trinidad does hereby:

- 1. Approve the City Manager, Greg Sund, to review, approve, and submit the City of Trinidad's WaterSMART Small-Scale Water Efficiency grant application to Reclamation that will include a \$75,000 grant request and a \$75,000 non-federal cash contribution. The project's total cost will be \$150,000.**
- 2. The application will propose to replace manual and antiquated water meters with an upgraded AMR/AMI system. The project will support the City's goal of saving the necessary amount of water to sustain future water supplies. By recovering non-revenue water through the proposed meter accuracy, AMR/AMI upgrades, the City will attain the necessary efficiency information to account for all its water supply in a responsible manner.**

Approved this 17th day of July, 2018.

CITY OF TRINIDAD, COLORADO

By Shelly T. Reed
Mayor

[SEAL]

ATTEST:

Candice Jarrett
City Clerk

Attachment: Funding Commitment Letter



CITY OF TRINIDAD

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July 17, 2018

Bureau of Reclamation

Attn: Ms. Robin Graber
Mall Code: 84-51000
Denver Federal Center Bldg. 67, Rm. 152
6th Avenue and Kipling Street
Denver, CO 80225

Dear Ms. Koza:

Subject: WaterSMART Grants: Small-Scale Water Efficiency Projects for Fiscal Year 2018, Announcement No. BOR-DO-18-F009 Funding Letter of Commitment

The City of Trinidad, Colorado seems funding through the WaterSMART Grants: Small-Scale Water Efficiency Projects. The following representation and certification is made with respect to the application's required funding commitment.

I, Phillip T. Rico, Mayor of the City of Trinidad, as an authorized representative, commit the City of Trinidad to meet the 50% match required for the proposed AMI municipal metering and leak detection project, as described fully in the City's application.

- Amount of funding committed: \$75,000
- Total project costs: \$150,000
- Funding requested: \$75,000

The City is considering debt service to fund a utility wide AMI municipal metering project. Should the City not pursue debt service, the City will commit their share of the project's costs as a capital budget expense. As indicated in the application's signed Resolution, the City fully commits to dedicating their funds to the project.

Sincerely,

Phillip T. Rico, Mayor
City of Trinidad