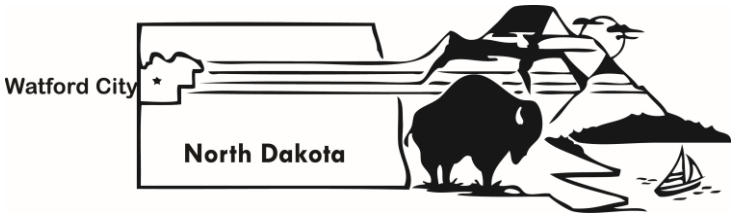

ADVANCED METERING INFRASTRUCTURE (AMI) PROJECT – PHASE II

City of Watford City, North Dakota

Project Proposal for Bureau of Reclamation Funding Announcement

Funding Opportunity Title

WaterSMART Small-Scale Water Efficiency Projects

Funding Opportunity Number

No. R24AS00059

Applicant:

City of Watford City
Justin Smith, Public Works Director

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Watford City, ND 58854
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Unique Entity Identifier

Organizational DUNS: 072553936
UEI: U1KDQNR11FR8

Supported By:

Advanced Engineering and Environmental Services (AE2S), LLC
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1.0 TECHNICAL PROPOSAL AND EVALUATION CRITERIA

The Technical Proposal is comprised of the following sections:

1.1 Executive Summary
1.2 Project Location
1.3 Project Description and Milestones
1.4 Evaluation Criteria

The mandatory federal forms (SF424 family) were included prior to the title page of this proposal.

1.1 Executive Summary

Date: June 1, 2024
Applicant Name: City of Watford City
City: Watford City
County: McKenzie County
State: North Dakota
Applicant Category: Category A

Following a comprehensive analysis and planning initiative, encompassing the Watford City Water Rate Appropriateness Study (2020), Watford City 2040 Infrastructure Master Plan (2021), and the Watford City Advanced Metering Infrastructure (AMI) Project – Phase I, the City of Watford City, herein referred to as "City," is set to implement the Watford City Advanced Metering Infrastructure (AMI) Project – Phase II. Phase I was submitted as part of the FY22 funding opportunity No. R22AS00195 WaterSMART Small-Scale Efficiency Project. Phase II will consist of the installation of 1,090 SmartPoint heads to existing municipal water meters. The City's current infrastructure are nearing the end of their estimated useful life, so this project is critically important to the City to ensure water meter readings remain accurate and reliable. The new SmartPoint heads will provide more accurate data to the City through AMI technology compared to the manual readings currently collected. This will help control water loss and theft, identify and respond to water leaks and usage spikes, and provide customers access to real-time water usage data via an online portal. Ultimately, this project will help the City of Watford City conserve and better manage their water supplies and provide transparent water service to their customers. The City is requesting assistance to purchase the 1,090 SmartPoints.

The anticipated start and completion dates for this project are May 2025 and September 2025, respectively, assuming that the materials and supplies can be procured and delivered in a timely manner.

This project is not located on a Federal facility.

1.2 Project Location

The project is in the City of Watford City (City), located in McKenzie County, North Dakota. The City is located approximately 50 miles east of the North Dakota – Montana border, 145 miles north of the North Dakota - South Dakota border, and 90 miles south of the North Dakota – Canada border. The coordinates of the project are 47°48'9" N (latitude) and 103°16'50" W (longitude). A location map of the City of Watford City showing the City's water distribution system is provided as **Figure 1**.

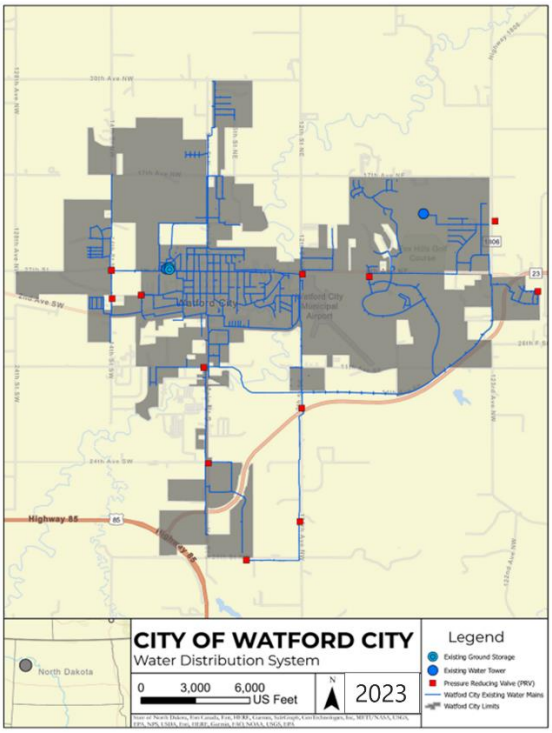


Figure 1. City of Watford City Location Map

1.3 Technical Project Description

Over the last decade, communities across western North Dakota have experienced rapid population growth, primarily due to increased oil and gas activity in the Bakken Formation (a figure of the Bakken Formation is provided in). Watford City was one of the fastest growing communities in the State, growing from 1,800 people in 2010 to an estimated 6,207 people today (2020 Census). Over the last decade, a majority of the City's time and resources have gone towards serving these developing and growing areas, leaving little to invest in the City's existing water system infrastructure, specifically their water metering system. Today, the City has reached or is rapidly approaching the estimated useful life on the majority of the City's water meter endpoints.

This project, the Watford City AMI Project – Phase II, includes replacement and installation of new SmartPoint heads to approximately 1,090 end users. The installation of SmartPoint heads will support the City on their journey towards a full AMI system and will replace much of the system's infrastructure that is failing or near the end of its useful life. The City's current distribution system is composed of Sensus PMM Water Meters and Sensus RadioRead AMR 510R MXU Non-Pit Set Units. Specification and data sheets are attached to this application in **Appendix A**. The City's plan is to install the upgraded SmartPoint heads themselves.

Upon completion of this project, the City will be able to see water meter readings in real-time (for the meters equipped with new SmartPoints), which will help control water loss and water theft, identify and respond to water leaks and usage spikes more efficiently, and provide customers access to real-time water usage data. The City expects to experience environmental, economic, and social benefits through enhanced and efficient water monitoring efforts resulting from the project.

1.3.1 Background Data

As the oil industry began to boom in 2008 and 2009, it was quickly realized that there was a significant need for a water supply solution in northwestern North Dakota to provide adequate services to the growing Bakken Region.

Around this same time, Watford City was in the process of exploring additional water supply options due to quality concerns around their groundwater supply, which contained high levels of iron, manganese, calcium, phosphates, dissolved solids, sodium, and bicarbonate. The City of Watford City's local water treatment plant was also in need of improvement or replacement, which emphasized the City's need for a reliable, long-term water supply solution.

The Missouri River was identified as the clear solution. Recognizing that there was a sizeable amount of existing water infrastructure already in service throughout the region, the preferred solution effectively utilized the existing infrastructure to the extent possible. In 2011, the Western Area Water Supply Authority (WAWSA) initiated the Western Area Water Supply Project (WAWSP), a $500M water supply project that utilized Missouri River water treated at the Williston Regional Water Treatment Plant (WRWTP) and groundwater through the R&T Water District Water Treatment Plant to supply water to the region. Today, WAWSA provides water service to four Members including the (1) City of Williston, (2) Northwest Rural Water District (NRWD), (3) McKenzie County Water Resource District (MCWRD) and (4) R&T Water District, each of which supply water to their own submembers (except the City of Williston).

Now that the WAWSA is fully operational, Watford City is a wholesale water customer of MCWRD. Treated water is pumped, stored, and conveyed via transmission lines from the Williston Water Treatment Plant to MCWRD's distribution system, where the water is then conveyed, metered, and sold to Watford City.

Because Watford City is a wholesale water customer and they are located a considerable distance from the water treatment plant, the City's water rates are among the highest when compared to other communities in the state and region. This affordability challenge, coupled with their aging water meter endpoints, has brought to light the importance of reliable metering infrastructure. As a result, the City has deemed this project a priority.

1.3.1.1 Watford City AMI Project - Phase II

In 2025, the City intends to conduct the second phase of the City's AMI Project, which includes installing 1,090 SmartPoints. This phase will be the second step in transitioning the City's water metering system to an automated and transparent system. This phase will improve metering accuracies, provide customers access to real-time water usage data, and strive to further reduce the City's non-revenue water (NRW) amount by tracking water losses, theft, and usage spikes.

Table 1. Phased Project Plan

Phase No.	Year	Description of Improvements
Phase II	2025	- Apply for a CATEX File Through the USEPA - Procure 1,090 SmartPoint Heads - Install 1,090 SmartPoint Heads

1.3.1.2 Water System Composition

The City of Watford City's water distribution system is comprised of approximately 64 miles of water system piping ranging in pipe diameter, pipe material, and install date. The system also has 12 pressure reducing valves, two water towers (each 1 million gallons), and two ground storage reservoirs (each 1 million gallons) used to maintain storage levels and distribution system pressures. The City has approximately 1,802 customer water meters located throughout the City, which, in addition to their meter endpoints, are reaching their estimated useful life.

1.3.1.3 Water Use

Watford City's purchased water annual totals, billed water annual totals, and non-revenue water annual totals from years 2016 to 2022 are provided in **Table 1**. Also included in the table are Watford City's annual non-revenue water percentages for each of the seven years assessed. Additionally, the seven-year averages for each respective column are included at the bottom of **Table 1**.

Table 2. Water Purchased, Water Billed, and Non-Revenue Water[1]

Year	Total Water Purchased (AC-FT)	Total Water Billed (AC-FT)	Non-Revenue Water (AC-FT)	Non-Revenue Water Percentage
2016	814	747	67	8.2%
2017	888	845	43	4.8%
2018	920	883	37	4.0%
2019	899	879	20	2.2%
2020	850	837	13	1.5%
2021	871	859	12	1.4%
2022	900	873	27	3.0%
Average	**877**	**846**	**31**	**4.0%**

The City's average non-revenue water amount from 2016 to 2022 was 31 AC-FT/YR (this value is used in calculations going forward).

According to the City's customer billing records, approximately 37% of water is billed to residential customer accounts. The remaining 63% of water is billed to commercial and other accounts. Using the seven-year average total water billed amount of 846 AC-FT/YR, the following were calculated:

- Typical Residential Use
  - 313 AC-FT/YR (37% of billed usage)
- Typical Commercial and Other
  - 533 AC-FT/YR (63% of billed usage)

Of the City's total 1,802 meters, 1,449 are residential customer accounts. As a result, it is estimated that each residential customer account utilizes 0.22 AC-FT (typical annual residential usage of 313 AC-FT/YR divided by 1,449 residential accounts) of water per year.

1.3.2 Problems and Project Need

This section outlines the need for the project, which includes the following four sections: distribution system losses, residential losses, aging meter endpoints, and affordability challenges.

1.3.2.1 Distribution System Losses

Over the past seven years, 4.0% or **31 AC-FT/YR** (as shown in **Table 2**) of purchased water is being lost. These losses are occurring in the Watford City distribution system (somewhere between the wholesale meters and the customer meters) through either: (1) apparent losses, such as unauthorized consumption and customer meter inaccuracies, or (2) real losses through infrastructure systems including water main, storage, and service connection leaks. The City consistently monitors non-revenue water and actively strives to keep this number low.

1.3.2.2 Residential Losses

A study conducted by the Environmental Protection Agency (EPA) states that average water loss through a residential home (i.e. leaky appliances, plumbing issues, etc.) is 13.7% of total water use. Based on this value, it is estimated that each City of Watford City's single-family residences lose 0.03 AC-FT/YR (13.7% x 0.22 AC-FT/YR) through residential plumbing leaks, recognizing that some of the older homes may lose more water and some of the newer homes may lose less water. Based on this calculation, the total estimated average residential losses experienced in Watford City is **43 AC-FT/YR** (0.03 AC-FT/YR x 1,449 single-family residential meters).

The total estimated water loss through distribution system losses and residential losses is **74 AC-FT/YR** (31 AC-FT/YR + 43 AC-FT/YR), or approximately 66,020 gallons per day. With improved meter reading accuracy through SmartPoint heads, a portion of these losses can be isolated and mitigated.

1.3.2.3 Aging Meter Endpoints

As mentioned previously, many of the City's water meter endpoints are near the end of their estimated useful life and are anticipated to start dying in the near-future. For this reason, the project is important to the City, ensuring that water services and water service billings are provided in an efficient, accurate, and uninterrupted manner.

1.3.2.4 Affordability Challenges

Based on a recent annual utility rate survey, Watford City has the highest water rates in the State of North Dakota, and they are also high amongst peer systems in neighboring states. This makes City investment in the water system challenging; the City sees the importance of proactively maintaining a reliable water system but doesn't want to continuously increase customer water rates to fund their water system improvements. For this reason, the City actively pursues grant and low interest loan funding for their needed water system projects.

1.4 Evaluation Criteria

The answers to the evaluation criteria are provided in blue.

E.1.4.1 Evaluation Criterion A---Project Benefits

- Describe the expected benefits and outcomes of implementing the proposed project
    - Explain the anticipated water management benefits of the water supply delivery system and water customers.
        - Will the project result in more efficient management of the water supply?

      This project will replace aging water meter endpoints throughout the City and will help the City transition their water metering system from manual read meters to Advanced Metering Infrastructure (AMI). It is anticipated that this project will lower and stabilize the amount of water the City loses in both distribution system losses and residential losses through utilization of AMI. The new AMI system will

help Watford City Public Works staff identify and respond to water usage spikes caused by leaks and watermain breaks out in the distribution system, improve the efficiency and accuracy of the City's water meter readings and billings, and help customers conserve water through access to real-time usage data.

On average from 2016 to 2022, the City had a non-revenue water percentage of 4.0%, which equates to 31 AC-FT/YR or 27,657 gallons per day in distribution system losses. The City buys water from the MCWRD at a rate of $4.40 per 1,000 gallons; therefore, the City loses approximately $121.70 per day in non-revenue water ($44,420 per year).

It is anticipated that Watford City will continue to reduce their amount of water loss through implementation of this project. The money saved from operating an AMI distribution system could be used towards other critical water infrastructure improvements as well as alleviating the burden of significant water rate increases to ensure the City continues to provide affordable and equitable water service.

- Where any of the conserved water as a results of the project will go and how it will be used?

The conserved water resulting from curbing water losses through this project will simply be additional water supply available to Watford City's water users. Therefore, this project's conservation of water will improve the water security and resiliency of the community.

- Explain the significance of the anticipated water management benefits of the water delivery system and water customers. Consider the following:
  - Are customers not currently getting their full water rights at certain times of year?
    Customers are currently getting their full water rights.
  - Does this project have the potential to prevent lawsuits or water calls?
    Because the project will further advance the City's transition to an AMI system, the City and its customers will have a greater capacity to see real-time water usage using the newly installed SmartPoints, resulting in fewer water billing disputes and water calls.
  - What are the consequences of not making the improvement?
    If this project is not completed, many of the existing meter endpoints are expected to start failing, which would hinder the City's ability to read meters and appropriately bill customers. This would directly cause the City's non-revenue water amount to increase.
  - Are customer water restrictions currently required?
    There are currently no water restrictions, and no water restrictions are forecasted; however, 2021 was a dry year where much of the state

experienced drought, leading some municipalities in the state to employ restrictions on outdoor lawn watering to minimize the negative impacts of drought.

- Other significant concerns that support the need for the project.
  This project will reduce the amount of miles driven to collect monthly meter readings, in turn, reducing carbon emissions, fuel costs, and wear on the City's pavement system. It will also free up time previously spent by City staff on collecting meter readings to focus on other needs of the water system.

- Describe the broader benefits that are expected to occur as a result of the project. Consider the following:
  - Will the project improve broader water supply reliability at sub-basin or basin scale?
    - Extent to which the proposed project will increase collaboration and information sharing among water managers in the region.

      This project will provide the City and its customers access to real-time water usage data. The City's wholesale water provider, MCWRD, recently undertook a water meter improvement project, and they now have an AMI system which provides them with real-time data. The City of Watford City often collaborates with MCWRD. With the combined real-time water usage data of both utilities, greater insight can be shared with other WAWSA members and water systems to better manage the whole region's water supply and delivery process. Additionally, this real-time water usage data could be shared across the state and region for incorporation in various state and regional studies and benchmarking efforts.

    - Is the project in an area that is experiencing, or recently experienced, drought or water scarcity? Will the project help address drought conditions at the sub-basin or basin scale?

      North Dakota experienced one of its worst droughts of the last century in 2021. By upgrading the City of Watford City's current metering system to an AMI system, the current non-revenue water losses will be curbed, conserving that lost water volume for essential uses. This conservation for essential use will more efficiently use available water resources within the MCWRD system and lessen the impacts of water shortages during drought. Additionally, the advanced utility metering could be used to inform water use restriction enforcement efforts, if needed, during future water shortages or droughts.

- Will the project benefit any federally threatened or endangered, federally recognized candidate species, a state listed species, or species of particular recreational or economic importance?

  Not applicable.

- Any anticipated positive impacts/benefits to local sectors and economies within the applicable geographic area (e.g., agriculture, environment, recreation, tourism)
  Utilizing AMI will reduce the amount of water that is lost throughout the City's water distribution system. Anticipated environmental benefits of curbing water losses include a reduction in the chemical usage to treat and produce water as well as a reduction in the energy consumption to treat and pump water.
  This project will also economically benefit Watford City and its water customers. Utilizing the AMI system's data to inform future rate modeling and water fund budgeting, Watford City will be able to delay the need for water rate increases though more accurate resource planning.
  Finally, as part of the EPA's Lead and Copper Rule Improvements (LCRI), public water systems are required to develop an inventory and make public the locations of lead service lines by October 16, 2024. After the installation of the SmartPoints, the City will have an updated database which can serve as a genesis for verifying service line material, allowing the City to better plan for replacement of lead and lead affected galvanized steel service lines.
- 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).
  Not applicable.

E.1.4.2. Evaluation Criterion B---Planning Efforts Supporting the Project

- Describe how your project is supported by an existing planning effort.
  - Is the project identified specifically in an existing planning effort? If so, describe when the existing plan was developed and what its purpose and/or objective was.
    This project has been in the City's plans for a few years, being discussed, reviewed, or budgeted directly as part of two specific previous studies and/or ongoing planning efforts:
    - North Dakota established a "Water Development Plan" in 2023, which outlines the state's water development goals and priorities through 2025. One of the highlighted goals is to improve the resiliency and reliability of water supplies to North Dakota citizens for their health and prosperity as

well as that of the state's economy. Additionally, it was highlighted throughout this plan that general water and water supply projects are considered a priority, and it specifies projects that improve upon or replace water distribution infrastructure under this priority category.

- Watford City and MCWRD Water Rate Appropriateness Study (2020)
  - This study compared the water rates for all users in the State of North Dakota to Watford City's water rates to determine if the rate that MCWRD was charging them was appropriate based on water usage and distribution.
- Watford City 2040 Infrastructure Master Plan (2021)
  - This plan was developed in 2021 to evaluate the City's existing infrastructure systems as well as the City's finances and financial processes to ensure the City is making appropriate infrastructure decisions over the next 20 years. This master plan specifically evaluated transportation systems, wet infrastructure systems, and facilities.
- Advanced Metering Infrastructure (AMI) Project – Phase I
  - Phase I was the first phase for replacing SmartPoints under the WaterSMART Small-Scale Water Efficiency Project.

- Does the proposed project implement a goal or address a need or problem identified in the existing planning effort?
  - The Watford City AMI Project – Phase II will enable improved water delivery through more transparent and reliable water accounting and billing as well as a more resilient distribution system through decreased nonrevenue volumes. This project aligns with the aforementioned goals of the State of North Dakota in their Water Development Plan (2023).
  - In the Watford City Water Rate Appropriateness Study, water rate affordability was discussed in depth. This is not an easily solved problem because Watford City's drinking water supply comes from two wholesale water providers (WAWSA and MCWRD); consequently, the City's rates progressively increase as their wholesale provider's rates increase. Nevertheless, the City feels that providing transparent, real-time usage to their customers through an AMI system will help them track their usage and anticipate their monthly bill amount.
  - Throughout the development of the Watford City 2040 Infrastructure Master Plan, the City and project team discussed the need for a water meter improvement project to prevent lost data attributed to the existing meter endpoints failing by providing a more secure data stream.

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

Through ongoing planning efforts, specifically those described above, improvements to the City's water meter network and reading processes have been determined as priorities to avoid data loss, provide transparent billing to customers, and reduce the amount of water lost by the distribution system. This project will build upon work previously planned and prioritized for implementation by the City.

E.1.4.3. Evaluation Criterion C---Project Implementation and Results

- 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.

  The Watford City AMI Project – Phase II will be started in May of 2025 (anticipated start will be 10 months after submission deadline and as soon as grant award becomes available) and be completed in September of 2025. The proposed project schedule is outlined below in **Table 3**, noting that the city will need to apply for a CATEX file prior to the kickoff of construction in July, 2025.

Table 3. Proposed Project Schedule

Approximate Date	Major Tasks
May (2025)	Apply for CATEX File Through the USEPA
May – July	Procure SmartPoint Heads
July	Install 363 SmartPoint Heads
August	Install 363 SmartPoint Heads
September	Install 364 SmartPoint Heads

The water meter infrastructure that will be installed under this Project is planned to be installed by City staff (install costs provided in the budget section). If the City of Watford City is successful in receiving grant funding, the City will work cooperatively with the Bureau of Reclamation to meet specific milestones and adhere to schedule requirements set forth by the Bureau of Reclamation.

- Describe any permits and agency approvals that will be required, along with the process and timeframe for obtaining such permits or approvals.

  Because the SmartPoint heads will be installed in homes and businesses, no permits will be required for this project. Customers will be notified prior to installation of the SmartPoint heads.

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

  No engineering or design work is anticipated for this project.

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

There will be public outreach efforts performed prior to project implementation to inform customers of the SmartPoint installation and the new real-time water usage viewing capabilities offered to customers.

- Describe the timeline for gaining access to the land or water source where the project is located. Have any required easements been obtained?
  Not applicable. Since the SmartPoint installations will take place on existing water meters in customer homes and businesses, no permits or easements will be needed. Communication with customers will be conducted throughout the installation process.
- Describe the timeline for completion of environmental and cultural resource compliance.
  No environmental and cultural resource compliance is anticipated for this project; however, an application will be submitted in February of 2025 to obtain a CATEX file through the EPA prior to the start of the project to prove all environmental and cultural resource compliance is being met.
- Was the timeline for completion of environmental and cultural resource compliance discussed with the local Reclamation office?
  Not applicable.

E.1.4.4. Evaluation Criterion D---Nexus to Reclamation

- Is the proposed project connected to a reclamation project or activity?
  Yes, this is Phase II of the Watford City AMI Project.
- If so, how? Please consider the following:
  - Does the applicant have a water service, repayment, or operations and maintenance contract with Reclamation?
    No.
  - Does the applicant receive Reclamation project water?
    No.
  - Is the project on Reclamation project lands or involving Reclamation facilities?
    No.
  - Is the project in the same basin as a Reclamation project or activity?
    There is an ongoing project connected to the Bureau of Reclamation going on in the State of North Dakota that would potentially provide water supply to serve central and eastern North Dakota (however Watford City is not engaged in this Project). According to the Bureau of Reclamation website, the Bureau of Reclamation signed a record decision on January 15, 2021, selecting the preferred alternative proposed for the Eastern North Dakota Alternate Water Supply (ENDAWS) Project. The selected alternative includes construction of infrastructure to provide up to 165 cubic-feet-per-second of water from the McClusky Canal. Water will be delivered through a buried pipeline along a northern route and connect with the main transmission pipeline of the state-led

Red River Valley Water Supply Project (RRVWSP). Both ENDAWS and the RRVWSP are located in North Dakota (Bureau of Reclamation Region 5).

- Will the proposed work benefit a Reclamation project area or activity?
  No.
- Will the proposed work contribute water to a basin where a Reclamation project is located?
  No.

E.1.4.5. Evaluation Criterion E---Presidential and Department of the Interior Priorities

Without repeating benefits already described in previous criteria, describe in detail how the proposed project supports a priority(ies) below.

E.1.5.1. Sub-criterion No. E1. Climate Change

- Please provide specific details and examples on how the project will address the impacts of climate change and help combat the climate crisis.
- Using the "Climate Mapping for Resilience and Adaptation" (v1.3.1) Tool, the specific climate hazards for the City of Watford City were investigated. Essentially, storms will become more intense and less frequent leading to more severe periods of drought and more sporadic and intense influxes of water. The annual number of days with maximum temperatures over 90, 95, 100, and 105 are all predicted to have relatively significant increases through the century, and both the highest temperature recorded annually and the 5-day average maximum temperature are expected to increase by 3.1°F to 3.3°F each by the end of the Early Century. Additionally, cooling-degree days are expected to significantly increase due to these predicted temperature increases. This will lead to an increased water demand for cooling and air-conditioning purposes.

  The pairing of increased temperatures with a decrease in annual "wet days" brings along expectations of more frequent and more severe drought periods and fire hazards. Water utility resiliency and reliability is quintessential looking to the future so that in times of drought or emergency water supplies can provide for these additional needs such as firefighting, landscape watering, etc. The City of Watford City is already needing to supplement their original groundwater sources. In 2011, the City began getting water from the Western Area Water Supply Authority which discharges water from the Missouri River to supply water to the City of Williston, NRWD, MCWRD, and R&T Water District. Considering this, Watford City's water supply may become limited and more expensive as extreme heat and the number of dry days increase in the future, making any and all conservation efforts of utmost importance for reliable and affordable water services to their customers to continue in the face of these climatic challenges.

This project will improve the water accounting ability of the City to track water use and more efficiently identify and fix leaks throughout their distribution system. Resulting from this, reductions in the volume of nonrevenue water is expected to be mitigated. Additionally, with the improved customer interface, water users will be able to more efficiently track their water budget and better practice water conservation efforts.

These outcomes of the project for the City and water utility will actively work towards adapting to the changing climate and their specific hazards. It will ultimately lead to a more resilient water utility that uses its water resources in a more economically and environmentally friendly manner that allows for reliable, adequate, and quality water delivery to its users, even in times of drought or emergency. Additionally, the better-informed water users that can budget and account their own water use through an improved customer-facing interface will be able to assist the water utility in water conservation efforts to minimize water waste and nonrevenue water volumes.

- Does this proposed project strengthen water supply sustainability to increase resilience to climate change? Does the proposed project contribute to climate change resiliency in other ways not described above?
  The curbing of distribution system and domestic water losses and nonrevenue water will directly impact the amount of water needing to be treated by the utility, decreasing their use of fossil fuels and ultimately their carbon emissions. All the climate hazards mentioned above are exacerbated by increased emissions, and, while the decrease of Watford City's water utility emissions will not halt or reverse global trends, it shows they are taking responsibility for and doing their part to address and adapt to climate change.

E.1.5.2. Sub-criterion No. E2. Disadvantaged or Underserved Communities

- Will the proposed project serve or benefit a disadvantaged or historically underserved community? Benefits can include, but are not limited to, public health and safety by addressing water quality, new water supplies, or economic growth opportunities.
  The project will provide real-time access to water usage information for the water meters where new SmartPoints are added. This will result in real-time information transfers that allow customers to curb and limit water usage, which would in turn lower water bills.
- Please use the White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool, available online at Explore the map – Climate & Economic Justice Screening Tool (https://screeningtool.geoplatform.gov) to identify any disadvantaged communities that will benefit from your project.
  - No disadvantaged or underserved communities are located in the project area.
- If the proposed project is providing benefits to an underserved community, provide sufficient information to demonstrate that the community meets the underserved definition in E.O. 13985, which includes populations sharing a particular characteristic, as

well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.
Not applicable.

E.1.5.3 Sub-criterion No. E.3. Tribal Benefits

- Does the proposed project directly serve and/or benefit a Tribe? Will the project improve water management for a Tribe?
  The project is not located within tribal jurisdiction. Not applicable.
- Does the proposed project support Tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety by addressing water quality, new water supplies, or economic growth opportunities?
  The project is not located within tribal jurisdiction. Not applicable.

1.5 Overlap of Duplication of Effort Statement

The only overlap that could potentially exist between this project and other projects is if the City elects to start improving water meter end points in the event they go dead, ultimately forcing the City to make an immediate improvement.

This grant application submitted for consideration under this program does not in any way duplicate a proposal or project that has been or will be submitted for funding consideration to any other potential funding source. The City would like to continue to apply for future WaterSMART grant opportunities, as applicable and available, to continuously improve their water system.

2.0 PROJECT BUDGET

The proposed project budget is described in the forthcoming sections.

2.1 Funding Plan and Letters of Commitment

The funding plan for this project is to utilize money from the City of Watford City water fund to fund the City's cost-share portion of the project. These funds are available and already programmed in the City's budget, so no time constraints exist on the available funds. The total estimated project costs (including federal and local cost shares) for this project are $223,450.00. The City is requesting $100,000 (45% of total project costs) in federal cost-share from the Bureau of Reclamation under this grant, with the remaining amount to be funded by the City of Watford City through their water fund.

Included in the notice of funding opportunity were the following parameters, which are answered in blue. Please identify the sources of the non-Federal cost-share contribution for the project, including:

- Any monetary contributions by the applicant towards the cost-share requirement and source of funds (e.g., reserve account, tax revenue, and/or assessments)
  The City of Watford City will use budgeted funds from the City's water fund to pay for the non-federal share of the Project costs.
- Any costs that will be contributed by the applicant
  The City of Watford City Public Works Director is planning to provide oversight over the project. The salary and wages associated with these activities are outlined in the budget proposal and budget narrative.
- Any third-party in-kind costs (i.e., goods and services provided by a third party)
  No.
- Any cash requested or received from other non-Federal entities
  No.
- Any pending funding requests (i.e. grants or loans) that have not yet been approved and explain how the project will be affected if such funding is denied
  No.

No project costs are anticipated prior to award. A summary of the total project costs is provided in **Table 4**. It should be noted that the City of Watford City is registered (and maintains an active registration) in the System for Award Management (SAM). The City is also registered with and willing to process payments through the Department of Treasury Automate Standard Application for Payments (ASAP) system with the Bureau of Reclamation.

Table 4. Total Project Costs

Source	Amount	Percentage
Costs to be reimbursed with the requested Federal funding	$ 100,000.00	45%
Costs to be paid by applicant	$ 123,450.00	55%
Value of third-party contributions	$ 0.00	0%
TOTAL PROJECT COST	**$ 223,450.00**	**100%**

2.2 Budget Proposal

The budget proposal for this project is provided below in **Table 5**.

Table 5. Budget Proposal

Budget Item Description	Computation		QTY Type	Total Cost
	$ / Unit	QTY		
Salaries and Wages				
City Employee	$ 30.00	545	HR	$ 16,350.00
Fringe Benefits				
Travel				
Equipment				
Supplies and Materials				
510M Smart Point M2 Wired DP HR&LD	$ 190.00	1,090	EA	$ 207,100.00
Contractual/Construction				
Other				
TOTAL DIRECT COSTS				**$ 223,450.00**
Indirect Costs				
TOTAL INDIRECT COSTS				**$ 0.00**

2.3 Budget Narrative

The following categories were included in the notice of funding opportunity and provide the budget narrative for this project.

2.3.1 Salaries and Wages

The City pays their employees at a rate that comes out to an hourly wage of about $30.00 per hour. The City's plan is to install the SmartPoint heads themselves and at their own expense, so no reimbursement is being requested for "Salaries and Wages." The time and cost per meter replacement will go towards the City's cost share portion of the grant.

2.3.2 Fringe Benefits

The City's hourly rate schedule provides one rate for each employee class, which includes salaries, wages, and benefits. However, the hourly rate schedule does not provide the detailed breakout of salary compared to benefits. As such, the total rate was included under the 'Salaries and Wages' category.

2.3.3 Travel

Travel is not eligible and will not be requested for reimbursement.

2.3.4 Equipment

Because the City plans to install and conduct the improvements themselves, no new City equipment is anticipated; therefore, no reimbursement is requested.

2.3.5 Materials and Supplies

Reimbursement is being requested for the procurement of 1,090 Sensus SmartPoint 510M Non-Pit Set Modules. The costs for materials and supplies were provided from a nation-wide and local supplier, Core & Main via email from a representative, Gene Jordan, on January 2, 2024. Included in **Appendix A** are the data sheets for the respective infrastructure planned to be installed.

If the City of Watford City is selected for grant funding, the City would like to consider procuring the materials and supplies as soon as they are notified of the grant award (if allowed by the Bureau of Reclamation). Through discussions with various suppliers, the materials and supplies outlined in this grant application have long lead times due to post-pandemic labor shortages, foreign conflicts, growing inflation, supply chain issues, etc. Early procurement of the materials and supplies will help the City maintain the schedule outlined in the Project Implementation Plan.

2.3.6 Contractual

No contractual services are anticipated; therefore, no reimbursement is requested.

2.3.7 Third-Party In-Kind Contributions

No third-party in-kind contributions are anticipated; therefore, no reimbursement is requested.

2.3.8 Environmental and Compliance Costs

No environmental and compliance costs are anticipated; therefore, no reimbursement for this is requested.

2.3.9 Indirect Costs

No indirect costs are anticipated; therefore, no reimbursement is requested.

3.0 ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

The following questions were provided in the notice of funding opportunity (NOFO), and answers to the questions are provided in blue.

- 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 impact to the surrounding environment will be negligible during the installation of the SmartPoint heads given they will be installed on existing water meters. The City of Watford City staff and will take all necessary precautions and steps to minimize negative effects towards air, water, or animal habitat during installation of the telemetry base station and SmartPoint heads.
- 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?
  Within McKenzie County (county where Watford City is located), there are four federally listed threatened or endangered species: Dakota Skipper (insects), Whooping Crane (birds), Northern Long-Eared Bat (mammals), and Pallid Sturgeon (fish). Additionally, the candidate species, Monarch Butterfly, migrates through McKenzie County. Although there are threatened or endangered species listed in the project area, none will be affected with the installation of the SmartPoint heads. The SmartPoint heads will be installed within City residences and businesses on existing water meters.
- 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.
  Yes, but the project will not impact any ‘Waters of the United States’ because the installation of the telemetry base station and SmartPoint heads will be installed on an existing water tower and inside City residences on existing water meters.

- When was the water delivery system constructed?
  The water system was initially constructed between 1900 – 1950, around the time the City originated, which was founded in 1914. The City still has water system pipes in-service that were installed during the 1940s. Since then, the City has grown considerably and made significant investments in water system infrastructure. It is estimated that roughly 15% of the water system infrastructure was installed pre-1980s.
- 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 and describe the nature and timing of any extensive alterations or modifications to those features completed previously.
  No.
- 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.
  No.
- Are there any known archeological sites in the proposed project area?
  There are no known archaeological sites in the proposed project area.
- Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?
  The project will have positive impacts on low income and minority populations because every property owner with a SmartPoint installed on their water meter will have access to an online portal that allows them to view their recent water usage. Having this information will allow customers to be more cognizant of their water use and allow them to catch water spikes caused by leaks or plumbing fixtures left on inadvertently.
- Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?
  No.
- Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?
  No.

4.0 REQUIRED PERMITS OR APPROVALS

No permits are required for this project. Property owners will be notified in advance prior to installation of the SmartPoint head on their water meter.

5.0 LETTERS OF FUNDING COMMITMENT

The non-federal share for this project will be funded through the City of Watford City water fund. Therefore, no letters of funding commitment were included.

6.0 LETTERS OF PROJECT SUPPORT

The project has the support of City staff. The project was presented to Watford City's City Council at the April 4, 2022 Council meeting and has the support of the Council. The project has also been presented at a subcommittee level and has support of the subcommittee. The Official Resolution will be signed and adopted by the City Council at their next Council meeting.

7.0 Overlap of Effort Statement, Conflict of Interest Disclosure, SF-LLL: Disclosure of Lobbying Activities

This project does not overlap or duplicate any other future or ongoing funding ventures within the City at the time of this grant application.

There are no conflicts of interest or lobbying activities to disclose.

8.0 Uniform Audit Reporting Statement

The City has provided the "Uniform Audit Report" from 2021 in **Appendix B**. The City does not have the 2022 audit available at the time of application submission but will provide one to the Bureau of Reclamation upon request.

9.0 OFFICIAL RESOLUTION

The Watford City City Council meets the first Monday of every month. At the time of preparing this application, the City Council is holding a meeting on July 1st, 2024 to approve and sign the Official Resolution.

The Official Resolution will be adopted at the July 1st City Council meeting and submitted to the Bureau of Reclamation at *sha-dro-fafoa@usbr.gov* following its adoption. The official resolution can be found in **Appendix C.**

APPENDIX A – MATERIALS AND SUPPLIES – DATA SHEETS AND COST PROPOSALS

PMM® Water Meters

Multi-Jet Type Magnetic Drive Cold Water Meters

5/8" (DN 15mm), 3/4" (DN 20mm) and 1" (DN 25mm) Sizes

DESCRIPTION

Applications: Measurement of cold water where flow is in one direction only; in residential, commercial and industrial services.

Conformance To Standards: Sensus PMM Water Meters comply with ANSI/AWWA Standard C708, latest revision. Each meter is tested to insure compliance.

Construction: Sensus PMM Water Meters consist of three basic components: maincase; measuring chamber; and sealed register. Main cases are of bronze with externally-threaded spuds. Registers are housed in synthetic polymer ring and lid, a bronze bonnet, is available as an option. Measuring chambers are made of Polystyrene, Nylon, and Polycarbonate. They are corrosion-resistant, tailored thermoplastic material formulated for long-term performance and especially suitable for aggressive water conditions. Main case bottom plates are available in bronze.

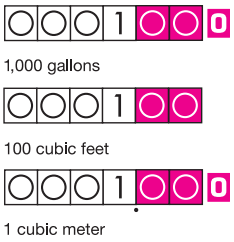
Sealed Register: Hermetically sealed; proven magnetic drive design eliminates dirt and moisture contamination, tampering and lens fogging problems. Standard register includes a straight-reading, odometer-type totalization display; a 360° test circle with center sweep hand; and a low flow (leak) detector. Gears are selflubricating, molded plastic for long life and minimum friction. No change gears are required for accuracy calibration. Encoder-type remote reading systems are available for all PMM Water Meters. (See other side of sheet for additional information.)

Tamperproof Features: A unique locking system prevents customer removal of the register to obtain free water. A special tool, available only to water utilities, is required to remove the register ring. When the optional bronze register bonnet is selected, a tamper detection seal is available.

Magnetic Drive: The PMM features a hydrodynamically cushioned design that eliminates premature wear of components. The meter utilizes a patented positive, reliable drive coupling. The high-strength magnets used will eliminate "drive slip" in normal use and also provide adequate strength to drive remote register units.

Operation: Water flows through the meter's strainer and into the measuring chamber where it drives the impeller. The impeller has a sapphire bearing and is balanced on a tungsten-based titanium stainless steel shaft. The drive magnet transmits the rotation of the impeller to a drive magnet located within the hermetically sealed register. The drive magnet is connected to the register gear train. It reduces the impeller's rotation into volume totalization units displayed on the register dial face.

5/8" PMM® (DN 15mm) **3/4" PMM® (DN 20mm)** **1" PMM® (DN 25mm)**



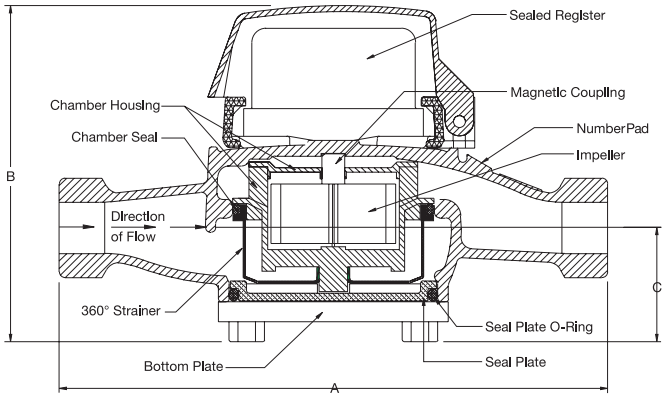
Maintenance: Sensus PMM Water Meters are engineered to provide long-term value and virtually maintenance-free operation. Simplicity of design and precise machining of components allows interchangeability of parts of like-size meters, reduced parts inventory requirements, and ease of maintenance. The register can be removed without relieving the water pressure or removing the case from the installation.

As an alternative to utility repair, Sensus offers maintenance programs to provide factory reconditioning of the main case and replacement component at low fixed prices. See bulletin MJ-299.

Connections: Tailpieces/Unions for installing the meters on a variety of pipe types and sizes are available.

AMR / AMI Systems: Meters and encoders are compatible with current Sensus AMR/AMI systems.

Guarantee: Sensus PMM Water Meters are backed by "The Sensus Guarantee." Ask your Sensus representative for details or see Bulletin G-500.



DIMENSIONS AND NET WEIGHTS

Meter Size	A	B	C	Width	Net Weight
5/8″ (DN 15mm)	7-1/2″ (190mm)	4-3/4″ (121mm)	1-5/8″ (41mm)	3-3/4″ (96mm)	4 lbs (1.8 kg)
5/8″ x 3/4″ (DN 15mm x 33mm)	7-1/2″ (190mm)	4-3/4″ (121mm)	1-5/8″ (41mm)	3-3/4″ (96mm)	4 lbs (1.8 kg)
3/4″ Short (DN 20mm)	7-1/2″ (190mm)	4-3/4″ (121mm)	1-5/8″ (41mm)	3-3/4″ (96mm)	4 lbs (1.8 kg)
3/4″ (DN 20mm)	9″ (229mm)	4-3/4″ (121mm)	1-5/8″ (41mm)	3-3/4″ (96mm)	4.5 lbs (2 kg)
3/4″ x 1″ (DN 20mm x 42mm)	9″ (229mm)	4-3/4″ (121mm)	1-5/8″ (41mm)	3-3/4″ (96mm)	4.5 lbs (2 kg)
1″ (DN 25mm)	10-3/4″ (273mm)	5-1/4″ (133mm)	2-1/4″ (57mm)	5-1/4″ (133mm)	7 lbs (3.2 kg)

SPECIFICATIONS

SERVICE	Measurement of cold water with flow in one direction only.
NORMAL OPERATING FLOW RANGE [1]	5/8″ (DN 15mm) size: 1 to 20 gal/min. (0.25 to 4.5 m^3/h) 3/4″ (DN 20mm) size: 2 to 30 gal/min. (0.45 to 7.0 m^3/h) 1″ (DN 25mm) size: 3 to 50 gal/min. (0.7 to 11.0 m^3/h)
ACCURACY	100% ± 1.5% of actual thruput in normal flow range.
LOW FLOW REGISTRATION	5/8″ size: 97% at 1/4 gal/min. (0.06 m^3/h) 3/4″ size: 97% at 1/2 gal/min. (0.10 m^3/h) 1″ size: 97 at 3/4 gal/min (0.15 m^3/h)
MAXIMUM PRESSURE LOSS	5/8″ size: 14.0 psi at 20 gal/min. (0.5 bar at 4.5 m^3/h) 3/4″ size: 14.0 psi at 30 gal/min. (0.6 bar at 7.0 m^3/h) 1″ size: 14.0 psi at 50 gal/min. (0.5 bar at 11.0 m^3/h)
MAXIMUM OPERATING PRESSURE	150 psi (10.0 bar)
MEASURING ELEMENT	Multi-Jet
REGISTER	Straight reading, hermetically sealed, magnetic drive. Remote reading unit optional.

[1] Maximum rates listed are for intermittent flow only. Maximum continuous flow rates as specified by AWWA are: 5/8″ (DN 15mm) — 10 gal/min (2.3 m^3/h), 3/4″ (DN 20mm) — 15 gal/min (3.4 m^3/h) 1″ (DN 25mm) — 25 gal/min (5.7 m^3/h)

REGISTRATION	10 gallons, 1 cubic foot or 0.01 m^3/sweep hand revolution. 10,000,000 gallons, 1,000,000 cubic feet or 10,000 m^3 capacity. 6 odometer wheels.
METER CONNECTIONS [2]	5/8″ (DN 15mm) size: 3/4″ (26.44mm) threads 5/8″ x 3/4″ (DN 15mm x 33mm) size: 1″ (33.25) threads 3/4″ (DN 20mm) size: 1″ (33.25 threads) 3/4″ x 1″ (DN 20mm x 42mm) size: 1-1/4″ (41.91mm) threads 1″ (DN 25mm) size: 1-1/4″ (41.91mm) threads (All threads are straight pipe, external type, conforming to ANSI B2.1)
MATERIALS	Maincase — Bronze Register box — synthetic polymer (standard), Bronze (optional) Measuring chamber — Nylon, Polycarbonate Bottom plate — Bronze Magnets — Ceramic material Casing bolts — Stainless steel Strainer — Synthetic polymer

[2] Unless otherwise noted, 5/8″ size and 5/8″ x 3/4″ characteristics are identical. (5/8″ x 3/4″ designates 5/8″ with 3/4″ connection thread.) Also unless otherwise noted 3/4″ size and 3/4″ x 1″ size characteristics are identical. (3/4″ x 1″ designates 3/4″ with 1″ connection thread.)
Metric designation is the normal bore x the outside diameter.

AUTHORIZED SENSUS DISTRIBUTOR

SENSUS

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h2oinfo@sensus.com

WDS-10021-02

RadioRead® AMR

Model 510R MXU Non-Pit Set Unit

Description

The Sensus Model 510R RadioRead Meter Transceiver Unit (MXU) is a non-pit set radio signal device which permits off site meter reading via radio signals. The 510R MXU interfaces with any compatible absolute encoder-equipped utility meter with a Sensus RadioRead interrogator device. The 510R MXU eliminates a number of meter reading problems such as lockouts, curbside reading estimates, estimated bills and errors associated with manual meter reading methods.

The Sensus Model 510R MXU is available in one and two port models. This feature provides enhanced cost effective AMR where multiple meter installations exist.

Features

TOUCHCOUPLER DESIGN

TouchCoupler utilizes the patented Sensus inductive coupling meter reading system (TouchRead) to communicate with its encoder. This allows for easy upgrade from Sensus TouchRead to RadioRead. And since the TouchRead system only requires two wires to communicate, the TouchCoupler unit enables customers who have only two-wire connections to their meters the ability to utilize that same wire instead of reinstalling new three wire cable. The TouchCoupler design provides a fast, efficient and reliable connection – the best available in the marketplace today. The TouchCoupler design minimizes installation time, which results in a cost-effective solution.

RADIOREAD OPERATION

When used with a Sensus hand-held or vehicle interrogation unit, the Sensus RadioRead system provides two-way communications between the reading unit and system equipped utility meters. The 510R MXU connected to the meter receives an activation wake up signal from the interrogation unit. The 510R MXU then obtains and transmits all of the meter's absolute encoder information which includes the identification number and meter reading. Low battery indicator is also transmitted. After the interrogation unit receives valid data, it transmits an acknowledgment signal back to the 510R MXU which returns it to the power down mode. This helps maintain battery life and also optimizes the efficiency of the system by eliminating unnecessary radio transmissions.

RADIOREAD INTEGRITY

When interfaced with an absolute encoder, RadioRead system meter reading is virtually error free. The meter read is taken from the actual positions of the encoder's odometer wheels to ensure valid up-to-date readings. Any errors or nonreads are immediately indicated on the meter reading equipment. This information can also be generated on management reports when the data is downloaded at the end of the reading cycle. In addition, high/low reading parameters can also be verified during the meter reading process.

RADIOREAD FEATURES

The RadioRead 510R MXU can identify leaks / continuous consumption as well as offer a tool for examining hourly readings of encoders. For leak detection the 510R MXU monitors the encoder at regular intervals. If continuous usage occurs over a period of time, during the next interrogation of the 510R MXU a message is sent identifying that a possible leak may exist. The 510R MXU also allows for hourly readings to be taken and stored internally. This feature enables the 510R MXU to store 45 days worth of hourly readings that can be extracted via the Sensus AutoGun and AR5502/FL6502 handheld or "over the air" with RadioRead equipment.

PROGRAMMABILITY

For special meter reading applications such as commercial routes and multi-utility installations, the 510R MXU can be programmed to respond only to certain meters through the use of class and password codes.

sensus

SPECIFICATIONS

SERVICE	Wall mounted (non-pit, non-submersible) installation interfacing the utility meter to Sensus RadioRead System.
PHYSICAL CHARACTERISTICS	Width: 5 9/16” x Height: 5 1/2” x Depth: 3”
WEIGHT	1.13 lbs/18.08 oz
COLOR	Tan
POWER	3.6 Volt Lithium Chloride battery with hybrid layer capacitor (HLC)
RF TRANSMITTER	Direct Sequence Spread Spectrum with synthesized channels, crystals controlled
RF RECEIVER	Amplifier – Sequenced Hybrid
APPROVALS	**US:** FCC Part 15 **Canada:** Industry Canada
OPERATING TEMPERATURE	- 30° F to +165° F - 34° C to + 74° C
OPTIONS	Dual or single port availability; Touchcoupler only, wired only, TouchCoupler and wired combination options available, integral Touch pad also available for TouchRead back-up capability
INSTALLATION ENVIRONMENT	The Model 510R is designed for non-pit, non-submersible applications. The Model 510R can be mounted indoors or outdoors where it is not subjected to submergence. The model 510R is not intended for outdoor meter pits or vaults.
COMPATIBILITY	**TouchCoupler and Wired Version:** Sensus ECRII, ICE and Badger ADE water registers **Wired Version Only:** Neptune ARB VI (ProRead); Elster (Sensus Protocol).
WARRANTY	20 years – Refer to Sensus G-500 for warranty.

8601 Six Forks Road, Suite 700
Raleigh, NC 27615
1-800-638-3748
www.sensus.com/water

iPERL Smart Water Meter

Electromagnetic Flow Measurement System

Sensus iPERL® smart water meters are designed to capture both lost water and lost revenue. The innovative magnetic technology delivers unmatched low flow registration and minimal pressure loss. With no moving parts, iPERL maintains its accuracy over a 20 year lifetime and is equipped with smart water alarms – delivering the intelligence you need to quickly resolve issues in the field.

Industry Leading Performance

The patented measurement technology of the iPERL water meter provides continuous and enhanced accuracy ranges at both low and high flows and perpetual accuracy over the life of the product. The iPERL meter has a 20-year accuracy warranty and a 20-year battery life guarantee. Over this 20-year lifespan, your iPERL will measure just as accurately as the day it was installed.

Construction

The iPERL meter body is available in two versions. The first version has a flow tube that is comprised entirely of composite polymer. The second version is comprised of lead-free bronze alloy with a composite polymer core. Both versions use the same thermal polymer shell with the same electronic register inside.

Electronic Register

The 9-digit hermetically-sealed electronic register with LCD display was designed to eliminate dirt, water, and moisture contamination in pit settings. The large, easy-to-read display includes AMI/AMR digits, direction of flow, units of measure, and empty pipe detection. The AMI/AMR digits and units of measure are fully programmable. The register also provides user configurable data logging.

Solid State Electromagnetic Technology

By avoiding the use of a mechanical measuring element inside the flow tube, metering performance is linear over the entire flow range – ensuring no reduction in accuracy at any flow rate over the life of the meter. The iPERL meter uses our patented remanent magnetic field technology – requiring far less energy and delivering superior accuracy.

Tamperproof

The integrated construction of the iPERL water meter prevents removal of the register to obtain free water. The magnetic tamper and low field alarms will both indicate any attempt to tamper with the magnetic field of the iPERL meter. The meter communication alarm indicates a possible cut cable.

Alarms

Quick resolution of field issues is made possible with smart water alarms including leak detection, reverse flow, empty pipe, magnetic tamper and low battery. When integrated with our FlexNet® communication network, remotely gathering and transmitting data has never been more reliable or profitable.

FEATURES

- 5/8", 5/8" x 3/4", 3/4" and 1" sizes available in potable and reclaim versions
- 3/4" and 1" available in residential fire service (UL 327b)
- Starts registering flow as low as 0.03 gpm (0.007 m³/hr)
- Can be installed horizontally, vertically or diagonally
- Compatible with current Sensus AMI/AMR systems

BENEFITS

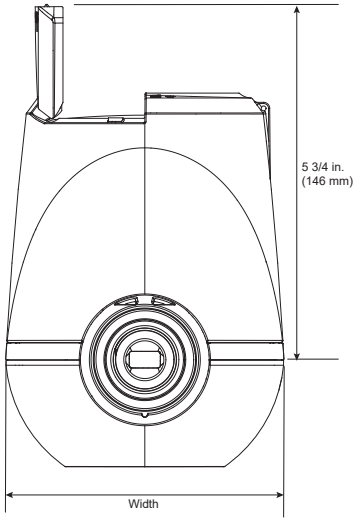
- Maximize investment with iPERL's electromagnetic technology, which delivers a 20-year accuracy warranty, with no required maintenance, and no loss in accuracy over 20 years
- Smart alarms detect issues such as leaks, reverse flow, empty pipe, etc.
- Improve low flow accuracy to drive additional revenue

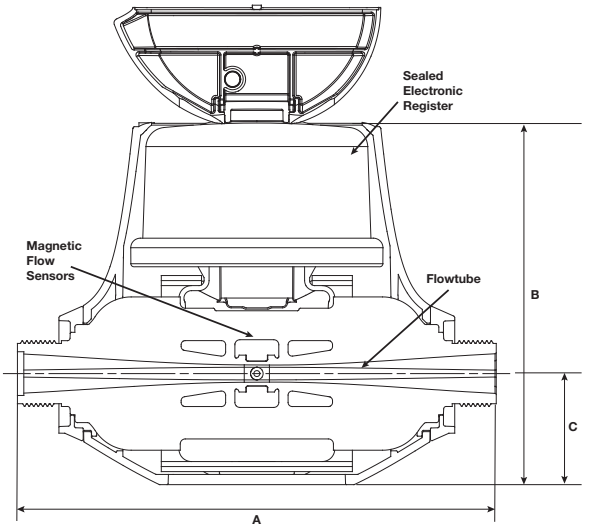
SPECIFICATIONS

Service	Measurement of potable and reclaim water, and Residential Fire Service (UL 327b). 0-100% humidity. Fully submersible. IP68+ rated.			
Temperature Ranges	Water operating: Ambient air operating: Storage air:	33 °F (0.55 °C) to 80 °F (26.7 °C) -22 °F (-30 °C) to 140 °F (60 °C) -30 °F (-34.4 °C) to 158 °F (70 °C)		
Starting Flow	5/8" (DN 15 mm) size: 0.03 gpm (0.007 m3/h)	5/8" x 3/4" (DN 15x20 mm) size: 0.03 gpm (0.007 m3/h)	3/4" (DN 20 mm) size: 0.03 gpm (0.007 m3/h)	1" (DN 25 mm) size: 0.11 gpm (0.025 m3/h)
Low Flow Range (±3%)	5/8" (DN 15 mm) size: >0.10 gpm (0.025 m3/hr) to <0.18 gpm (0.041 m3/hr)	5/8" x 3/4" (DN 15 mm) size: >0.10 gpm (0.025 m3/hr) to <0.18 gpm (0.041 m3/hr)	3/4" (DN 20 mm) size: >0.10 gpm (0.025 m3/hr) to <0.18 gpm (0.041 m3/hr)	1" (DN 25 mm) size: >0.3 gpm (0.068 m3/hr) to <0.4 gpm (0.09 m3/hr)
Normal Water Operating Flow Range (±1.5%)	5/8" (DN 15 mm) size: 0.18 to 25 gpm (0.04 to 5.7 m3/hr)	5/8" x 3/4" (DN 15x20 mm) size: 0.18 to 35 gpm (0.04 to 8.0 m3/hr)	3/4" (DN 20 mm) size: 0.18 to 35 gpm (0.04 to 8.0 m3/hr)	1" (DN 25 mm) size: 0.4 to 55 gpm (0.09 to 12.5 m3/hr)
Maximum Operating Pressure	5/8'', 5/8" x 3/4", and 3/4'' size: 200 psi (13.8 bar) 1'' size: 175 psi (12.1 bar)			
Measurement Technology	Solid state electromagnetic flow			
Register	Hermetically sealed, 9-digit programmable electronic register			
Capacity	10,000,000 gallons, 1,000,000 cubic feet or 100,000 m3 capacity			
Register Resolution	.01 gallons/imperial gallons, .001 cubic foot, or .0001 m3			
Conformance to Standards	Meets the requirements of NSF 61, Annex G and NSF 372. Exceeds the most current revision of AWWA Standard C-715.			
Materials	External housing – Thermal polymer Flowtube – Composite polymer or a bronze alloy flowtube with a composite polymer internal core		Electrode – Silver/silver chloride Register cover – Hermetically sealed glass	

iPERL Smart Water Meter

Electromagnetic Flow Measurement System





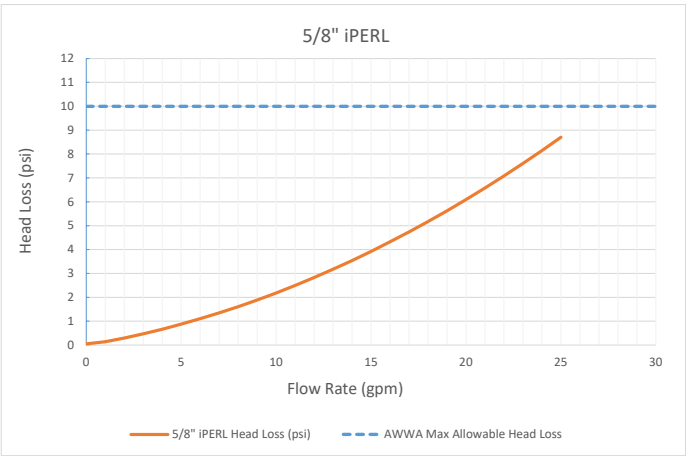
DIMENSIONS AND NET WEIGHTS

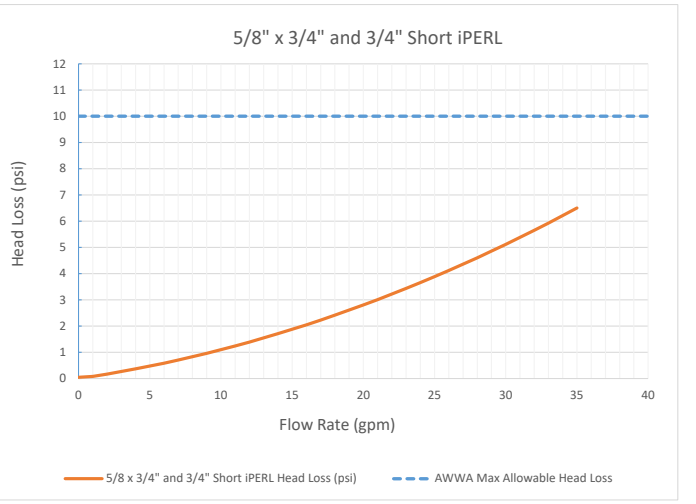
Meter Size	A	B	C	Spud Ends	NPSM Thread Size	Width	Net Weight
5/8″ (DN 15 mm)	7-1/2″ (190 mm)	6-1/10″ (155mm)	1-3/4″ (44 mm)	5/8″ (15 mm)	3/4″ (20 mm)	4-1/2″ (114 mm)	3.1 lb. (1.4 kg)
5/8″ x 3/4″ (DN 15mm x 20 mm)	7-1/2″ (190 mm)	6-1/10″ (155mm)	1-3/4″ (44 mm)	3/4″ (20 mm)	1″ (25 mm)	4-1/2″ (114 mm)	3.1 lb. (1.4 kg)
3/4″Short (DN 20 mm)	7-1/2″ (190 mm)	6-1/10″ (155 mm)	1-3/4″ (44 mm)	3/4″ (20 mm)	1″ (25 mm)	4-1/2″ (114 mm)	3.1 lb. (1.4 kg)
3/4″ (DN 20 mm)	9″ (229 mm)	6-1/10″ (155 mm)	1-3/4″ (44 mm)	3/4″ (20 mm)	1″ (25 mm)	4-1/2″ (114 mm)	3.2 lb. (1.45 kg)
1″ (DN 25 mm)	10-3/4″ (273 mm)	6-1/10″ (155 mm)	1-3/4″ (44 mm)	1″ (25 mm)	1-1/4″ (32 mm)	4-1/2″ (114 mm)	3.3 lb. (1.5 kg)

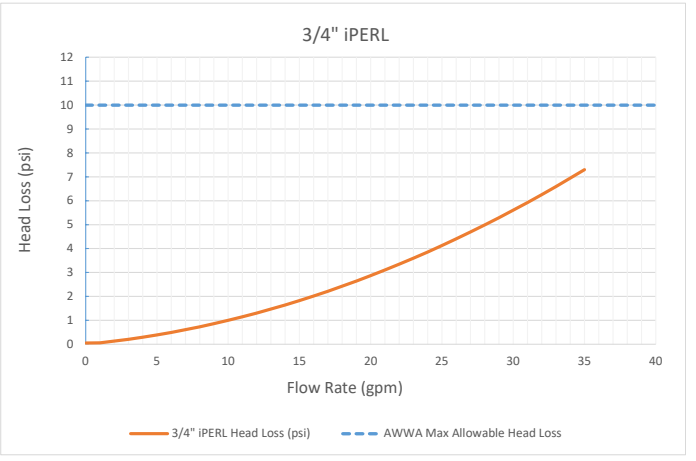
iPERL Smart Water Meter

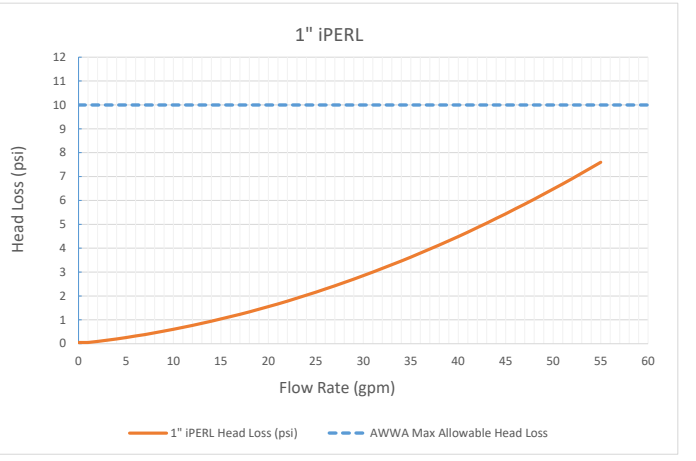
Electromagnetic Flow Measurement System

Head Loss Curves









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SmartPoint 510M

Non-Pit Set Module

The SmartPoint® 510M Non-Pit Set Module is a radio transceiver that provides water utilities inbound and outbound access to water measurement and ancillary device diagnostics via radio signal. The SmartPoint 510M Module is designed for non-submersible/non-pit installations.

TouchCoupler Design

The SmartPoint 510M Module utilizes TouchCoupler, the patented Sensus inductive coupling communication platform, to interface with the encoded meter. With TouchCoupler, the SmartPoint 510M Module can connect to the meter using existing two-wire AMR installations instead of requiring utilities to access the home to install a new three-wire system. This results in a fast, efficient and reliable connection at minimal cost.

BENEFITS

- Easily receives input from either walk-by/drive-by or fixed-base collection device
- Controls both deployment and lifetime operation costs
- Compact installation that saves time, space and money - without reducing system performance
- Delivers a fast, efficient, reliable connection at minimal cost
- Minimizes new infrastructure investment
- Enables effective leak detection

Operation

With its migratable, two-way communication ability, the M-Series SmartPoint functions as a walk-by/drive-by endpoint, fixed-base endpoint, or combination of the two. This flexibility increases utility data collection capabilities and streamlines operations. The SmartPoint 510M Module receives input from the meter register and remotely sends data to a walk-by/drive-by or fixed-base collection device. The SmartPoint 510M Module easily migrates from walk-by/drive-by to fixed base by simply installing a Base Station.

In walk-by/drive-by mode, the SmartPoint 510M Module collects data and awaits an activation signal from the Vehicle Gateway Basestation (VGB) or Hand-Held Device (HHD). Upon signal receipt, it transmits readings, the meter identification number and any alarms.

As a fixed-base endpoint, the SmartPoint 510M Module interacts with one or more strategically placed Base Stations located in the utility service area. Top of the hour readings and other diagnostics are instantly forwarded to the Regional Network Interface (RNI)™ at time of transmission. The FlexNet® communication network provides unmatched reliability by using expansive tower receiver coverage of metering end points, data/message redundancy, failover backup provisions and operation on FCC primary use (unshared) RF spectrum.

Powerful Transmission, Flexible Platform

The SmartPoint® 510M Non-Pit Set Module offers several advantages that control both deployment and lifetime operation costs. Its powerful, industry leading two watt transmitter broadcasts over large distances and minimizes collection infrastructure. And after the SmartPoint 510M Module is installed, its migratable, two-way system platform can be updated without requiring personnel to visit each meter and/or inconveniencing customers.

SmartPoint 510M

Non-Pit Set Module

Additional SmartPoint 510M Module Features

The SmartPoint 510M Module obtains hourly readings and can monitor continuous flow over a programmable period of time, alerting the utility to leak conditions. In addition, the SmartPoint 510M Module stores up to 840 consumption intervals (35 days of hourly consumption), providing the utility with the ability to extract detailed usage profiles for consumer information and dispute resolution. The SmartPoint 510M Module also incorporates a two-port design, allowing the utility to connect multiple registers and ancillary devices (such as acoustic monitoring) to a single SmartPoint. This results in a compact installation that saves time, space and money – without reducing system performance.

SPECIFICATIONS

Service	Wall mounted (non-pit/non-submersible) installation interfacing the utility meter to the Sensus FlexNet system.
Physical characteristics	Width: 5 9/16" x Height: 5 1/2" x Depth: 3"
Weight	1.13 lbs/18.08 oz
Color	Tan
Frequency range	900 – 950 MHz, 8000 channels X 6.25 kHz steps
Modulation	Proprietary Narrow Band
Memory	Non-Volatile
Power	Lithium Thionyl Chloride batteries
Approvals	US: FCC CFR 47: Part 24D, Part 101C, Part 15 Licensed operation Canada: Industry Canada (IC) RSS-134, RSS-119
Operating temperature	- 22° F to +185° F - 30° C to + 85° C
Options	Dual or single port availability; TouchCoupler only, wired only
Installation environment	The 510M is designed for side-of-home applications where it is not subject to submergence.
Compatibility	TouchCoupler and Wired Version: Sensus Encoder Registers, Badger ADE water registers, Master Meter AccuLinx, and Hersey Translator (approved TR/PL Lead) Wired Version Only: Elster Encoder (Sensus protocol), Neptune ARB VI (ProRead), Hersey Translator, Zenner PMN Nitro 01, McCrometer flowcom FC100-00M, and Kamstrup flowIQ 2100 Refer to the 510M/520M SmartPoint® Module Water Meter and Ancillaries Compatibility Quick Guide for the latest compatibility information.
Warranty	20 years – Based on six transmissions per day. Refer to Sensus G-500 for warranty.

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APPENDIX C – OFFICIAL RESOLUTION

CITY OF WATFORD CITY RESOLUTION NO.2024-11

OFFICAL RESOLUTION REGARDING PARTICIPATION IN FUNDING FOR A BUREAU OF RECLAMATION WATERSMART GRANT PROJECT.

WHEREAS, the United States Department of the Interior, Bureau of Reclamation, under its WaterSMART Grant Program, is accepting applications for Small-Scale Water Efficiency Projects (Funding Opportunity No. R24AS00059); and

WHEREAS, the City of Watford City, has identified a project that exemplifies the objectives of the WaterSMART grant program;

THEREFORE, be it resolved as follows:

1. The Watford City City Council verifies that (Justin Smith, Public Works Director) has legal authority to enter into an agreement with Reclamation.

2. The Watford City City Council has reviewed and supports the application submitted.

3. The Watford City City Council ensures that the City of Watford City is capable of providing the amount of funding and/or in-kind contributions specified in the funding plan.

4. That if selected for a WaterSMART Grant under the Fiscal Year 2025, the City of Watford City will negotiate and execute a Cooperative Agreement with Reclamation on/or prior to the established deadline, to fund at least 50% of the project costs and provide documentation showing the sources of non-Reclamation funding that totals 50% of project costs for the Project.

ADOPTED AND APPROVED this 1st day of July 2024.

Mayor, Philip Riely

ATTEST:

City Auditor, Peni Peterson

Roll Call: Ayes: Suter, Renville, Chavez, Sanford, Bulzomi; Nays: none. Absent: Devlin.