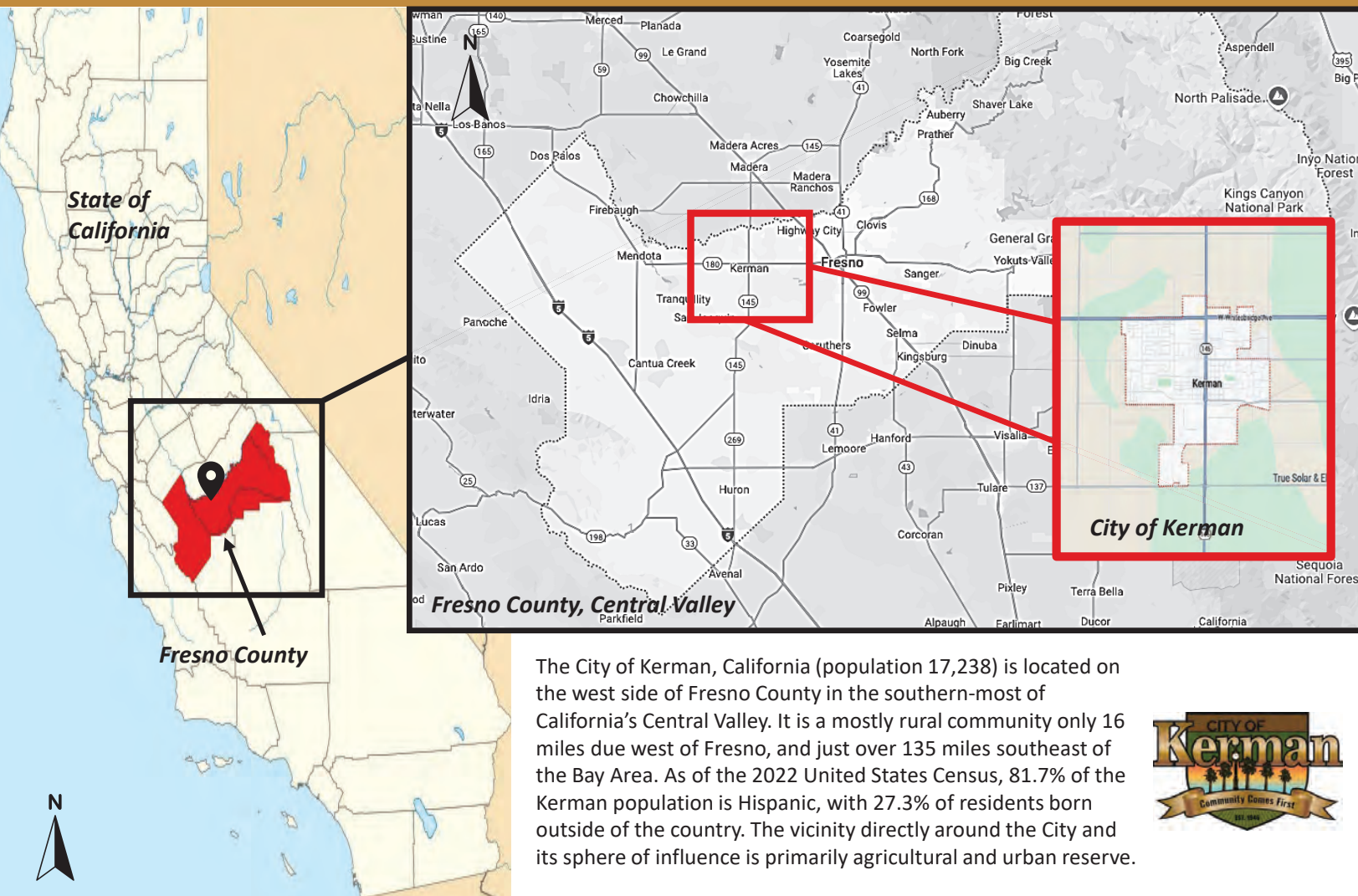


Appendix A – Figure 1
Project Location - State, County, City





City of Kerman

Advanced Metering Infrastructure for Water Conservation Project

Technical Proposal and Narrative

Water SMART: Water and Energy Efficiency Grants for Fiscal Year 2025

APPLICANT:

City of Kerman
15201 W. California Avenue
Kerman, CA 93630

PROJECT MANAGER:

Harmeen Kaur, Administrative Analyst
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Email: hkaur@cityofkerman.org

November 13, 2024

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SECTION 1: TECHNICAL PROPOSAL AND EVALUATION CRITERIA

Executive Summary

Date: November 13, 2024
Applicant Name: City of Kerman
City: Kerman
County: Fresno County
State: California
Applicant: **Category A** – The City of Kerman is a local authority, the members of which have water and power delivery authority.
Funding Group: Group II
Total Project Costs: \$3,194,174
Grant Request: \$1,597,087

As the governing agency and the jurisdiction’s sole purveyor of water, the City of Kerman (City) in Fresno County, California requests \$1,597,087 in Bureau of Reclamation (BOR) WaterSMART: Water and Energy Efficiency Grant (WEEG) funding to implement the Kerman Advanced Metering Infrastructure for Water Conservation Project (Project) throughout the Kerman service area. A funding award will enable the City to upgrade the entirety of the water system’s 4,086 connections with the following improvements: replacing 150 obsolete manual-read water meters with AMI compatible water meters and AMI endpoints; retrofitting the remaining 3,926 existing water meters with new AMI endpoints and software; installing cellular network infrastructure including transmitters and collector antennas; and implementing the “Eye on Water” water conservation customer interface application to mitigate water losses in this disadvantaged community.

The City is dependent on the underlying Kings Subbasin (part of the San Joaquin Valley Groundwater Basin) for 100% of its potable water supply. The City is eager to conserve crucial water supplies through the implementation of numerous water conservation policies and infrastructure projects as it is acutely conscious of the vulnerability of the water supply in the Kings Subbasin, classified by the California Department of Water Resources (DWR) as a high-priority, critically overdrafted subbasin. Existing Automatic Meter Reading (AMR) endpoints are beyond their useful life and failing, leading to inaccurate water usage readings and hampering the City’s ability to identify leaks and water line breaks and resulting in increased water and revenue losses. Additionally, 150 of the City’s meters are incompatible with AMR technology and meter-reading software, requiring manual reads. This Project will upgrade the City’s failing AMR endpoints with state-of-the-art Advanced Metering Infrastructure (AMI); replace the obsolete water meters with modern, AMI-compatible meters; implement the “Eye on Water” water usage monitoring service and customer interface application; and deploy a robust community outreach campaign to inform residents of Project activities and benefits and educate by providing drought resiliency and water conservation strategies. Grant funds will be used to purchase water meters, AMI components and software, licensing for the “Eye on Water” customer interface software, and support implementation activities completed by a contracted professional services provider. This Project will effectuate quantifiable water and energy savings as a result of real-time water

usage data and leak detection and increased conservation by consumers, conserving an estimated **381.6 acre-feet per year (AFY)** of drinking water and **216,367.2 kilowatt-hours (kWh) per year** of energy. As the whole of the City is designated as a disadvantaged community, 100% of Project outcomes will benefit marginalized residents.

Project Start Date, Duration, Estimated Completion Date.

The City is ready to begin Project implementation immediately upon notice of the funding award and execution of the grant agreement. It is estimated that the Project will take approximately 36 months to implement, beginning on October 31, 2025 and concluding by October 31, 2028.

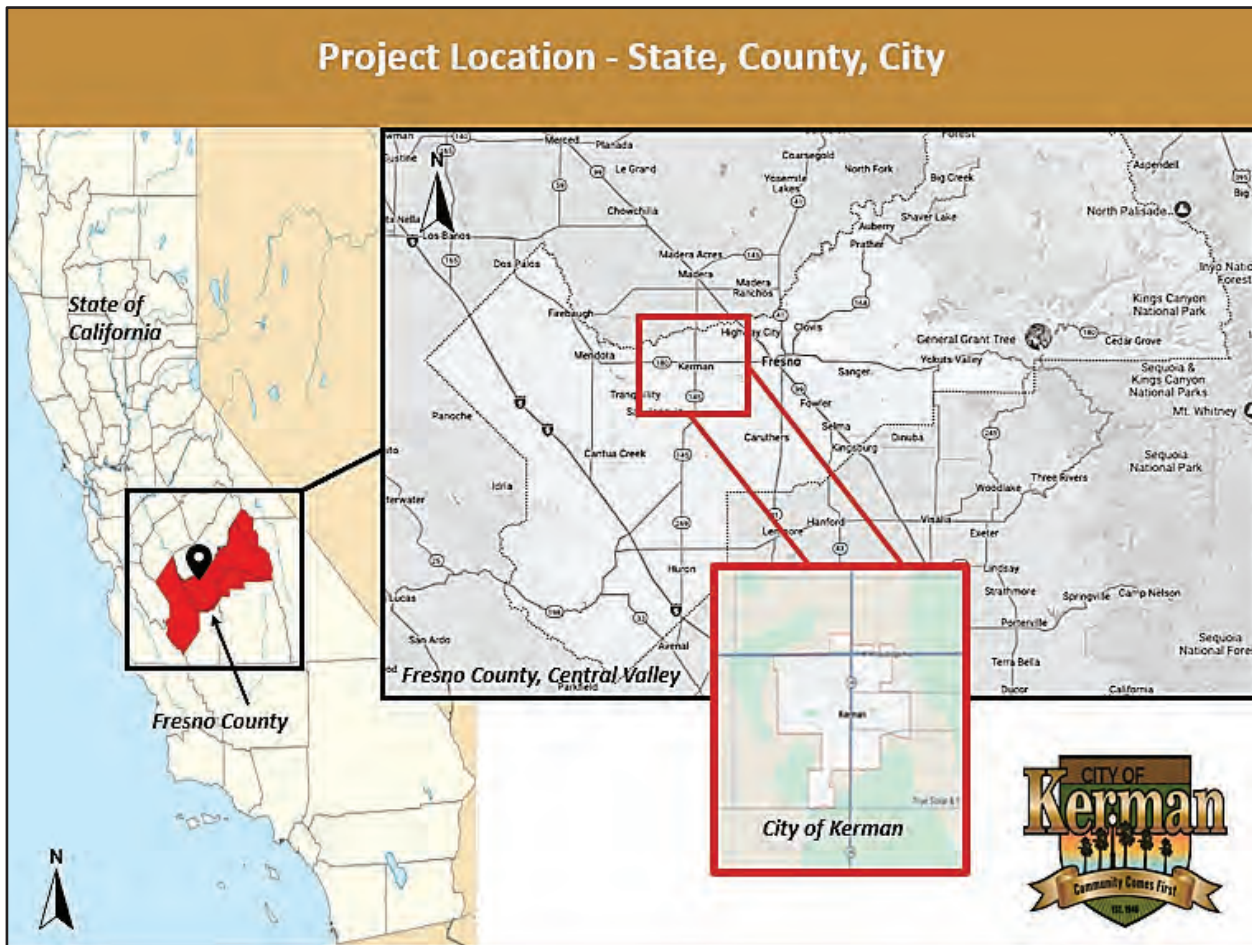
Federal Facility Location.

Project activities will not take place on any Federal facilities. AMI implementation will take place on private and City-owned property.

Project Location

The Project will upgrade the 4,086 water connections in the City of Kerman, California, population 17,238 (US Census Bureau 2023 estimate). Kerman (latitude 36° 43' 24" N and longitude 120° 3' 35" W) is a mostly rural community which is located on the west side of Fresno County in the midst of the San Joaquin Valley. See **Figure 1** below and **Appendix A** for a map of the Project location. Only 16 miles due west of Fresno, and just over 135 miles southeast of the Bay Area, Kerman proper is approximately 3.27 square miles (2,093 acres) with a sphere of influence cover of roughly 3,021 acres in area surrounding the city limits. The City lies at the intersection of State Routes 180 (SR-180) and 145 (SR-145) and sits at an elevation of only 220 feet. While the land use is mixed throughout the City, the majority is medium density residential, general commercial, and industrial, see **Appendix A** for the City Land Use map. The vicinity directly around the City and its sphere of influence is primarily agricultural and urban reserve, with primary crops grown in the Kerman area including raisin grapes, almonds, cotton, and alfalfa. Agriculture is the economic base for the City with nearly 20% of the labor force in agriculture-related occupations. Kerman is one of the fastest growing cities in Fresno County, with one of the lowest crime rates and most extensive parks system compared to cities of similar size. Because of its location in the San Joaquin Valley and the area's high dependency on the agriculture industry, Kerman is highly susceptible to dry years and risks of drought, making water conservation a priority to the City. Kerman is a vibrant and diverse community woven into the fabric of Fresno County and has a rich history in cultivation, irrigation, and agriculture. As development continues, the City is dedicated to protecting the water supply while enacting water conservation best management practices and investing in infrastructure that accommodates growth so that Kerman residents can continue to live and thrive in this rural community.

Figure 1: Project Location Map



Technical Project Description

The proposed Project will install AMI technology on the entirety of the City's 4,086 water meters and implement the "Eye on Water" customer interface application which includes a customer-friendly online portal and mobile app. Combined, these improvements will conserve approximately **381.6 AFY** of valuable drinking water and result in benefits of improved leak detection, improved utility operations, energy savings of **216,367.2 kWh/year**, enhanced drought resilience, and empowered residents.

WATER SYSTEM DETAILS

The City owns and operates a public water system (PWS# CA1010018) that provides potable water service to its population of approximately 17,238 residents, as well as commercial, industrial, institutional, and public facilities within its service area boundary. The City's Public Works department is responsible for the water system's operation and maintenance, including wells, distribution lines, water meters, and backflow prevention systems. The City's sole source of water is groundwater extracted by six (6) active wells distributed throughout the community. The groundwater underlying the City is part of the larger San Joaquin Valley Groundwater Basin within the San Joaquin River Hydrologic Region. The San Joaquin Valley Groundwater Basin is

further divided into nine (9) subbasins, with the City lying within the Kings Subbasin, a non-adjudicated groundwater subbasin, identified by the DWR as being in a critical state of overdraft. The City's six active groundwater wells, Well Nos. 09A, 10, 12, 14, 15, and 17, have individual capacities ranging from 900 gallons per minute (GPM) to 1,500 GPM, with a combined capacity of 6,700 GPM. Water is distributed through approximately 64.36 miles of water mains with 3.089 miles of laterals within the system ranging in diameter from 4- to 12-inches. The water mains are usually placed in a grid pattern with 12-inch mains every half-mile and 8-inch mains at the quarter mile locations. Depending on the number of units served, the intervening mains are either 6- or 8-inches in diameter. The City operates the system at a pressure that ranges from 50-60 pounds per square inch (psi). The water system also includes two 750,000-gallon water storage tanks. The City's water service area is approximately 3.27 square miles and includes small areas outside the City limits (see the Kerman Water System Service Area map in **Figure 5** and **Appendix A**). The City currently does not use recycled water to meet any of its water demands including drinking water, household/commercial needs, irrigation, and fire suppression, and wastewater is not treated to tertiary effluent quality where it can be used to meet any of the City's water demands. All of the City's residential, commercial, institutional/governmental, and industrial customers are metered. The bulk of existing customer meters consist of Badger water meters with Badger AMR endpoints. These meters are designed to be read via "drive by" reading, transmitting meter readings electronically when City Public Works staff drives by with a reading device (antenna). There are approximately 150 meters that are a range of different brands that are not compatible with the City's current meter reading software and require manual reading.

WATER SUPPLY SHORTAGES AND CONSERVATION EFFORTS

As Kerman's sole source of potable water is groundwater pumped from the high-priority and critically overdrawn Kings Subbasin, the City is extremely vulnerable to water shortages due to ongoing drought. The North Kings Groundwater Sustainability Agency (GSA) reports that the past eight years were on average 19% drier than average, with 2022 showing a 680,000-acre-foot reduction in groundwater storage and Kings River surface water deliveries were 47% of normal. In 2022, agriculture accounted for 91.6% of the groundwater pumped from the Kings Subbasin. The [US Department of Agriculture](#) reports that the 2012-2106 drought had significant impacts on local agriculture, resulting in one million acres of cropland being fallowed in the Central Valley. Reductions in surface water allocations from the State Water Project (SWP) and the Bureau of Reclamation (BOR) Central Valley Project (CVP) resulted in farmers relying more heavily on already stressed groundwater resources, increasing risks for groundwater depletion and subsidence in the Kings Subbasin. High agricultural water demands place increasing strain on water resources in the Central Valley and for the City of Kerman.

The [Kings Subbasin](#) faces challenges of surface water shortages in dry years, groundwater quality problems in certain areas, and groundwater overdraft, which is considered the largest regional problem. Local and regional efforts to conserve water and correct overdraft of the Kings Subbasin are imperative. The City has adopted and enforces a water waste ordinance (Ordinance No. 18-08 of the Municipal Code, adopted 6/6/18) that explicitly states that the waste of water is prohibited. Chapter 13.28 (adopted 6/6/18) established a water conservation plan that will reduce water consumption within the City through conservation, enabling more effective water

supply planning; assuring reasonable and beneficial use of water; preventing waste of water; maximizing the efficient use of water within the City to avoid and minimize the effect and hardship of water shortage to the greatest extent possible; and meeting state laws/regulations requiring water conservation. Chapter 13.28 also authorizes the City Council to adopt further measures to be implemented during times of a declared water shortage or declared water shortage emergencies, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies. Additionally, the City encourages customer water conservation and provides water conservation tools such as water nozzles, moisture meters, and toilet leak tablets which are distributed at community outreach events and during water conservation patrols. As the [California Department of Finance](#) projects that Central Valley counties will see a total growth of up to 4.7 million people by 2060, the San Joaquin Valley Groundwater Basin and the Kings Subbasin face increasing demands on already strained water resources. This underscores the need for projects and programs to maximize both jurisdictional and individual water conservation.

CURRENT METER FAILURES

The City's water meters have been malfunctioning and failing at staggering rates. The City's 2022 American Water Works Association (AWWA) Water Loss Audit indicates that 1,300 of the total 4,086 connections have meters that are either not providing accurate readings or are completely nonfunctional. Meters are not accurately recording water consumption, often reporting the same water usage rates month after month. Because the meters are still reporting water consumption figures (albeit inaccurate figures), it often takes City staff considerable time to pinpoint inconsistencies and identify locations of leaks if there is no visible surface water pooling. This results in leaks continuing for multiple weeks and sometimes even months before the City is able to identify the water loss and repair the leak. This has resulted in significant water losses as well as lost water revenue for the City. The City's AWWA Water Audit reports included in the 2020 UWMP report that customer metering inaccuracies between 2015-2020 resulted in an average of 37.81 AFY of water loss (see **Figure 2** below).

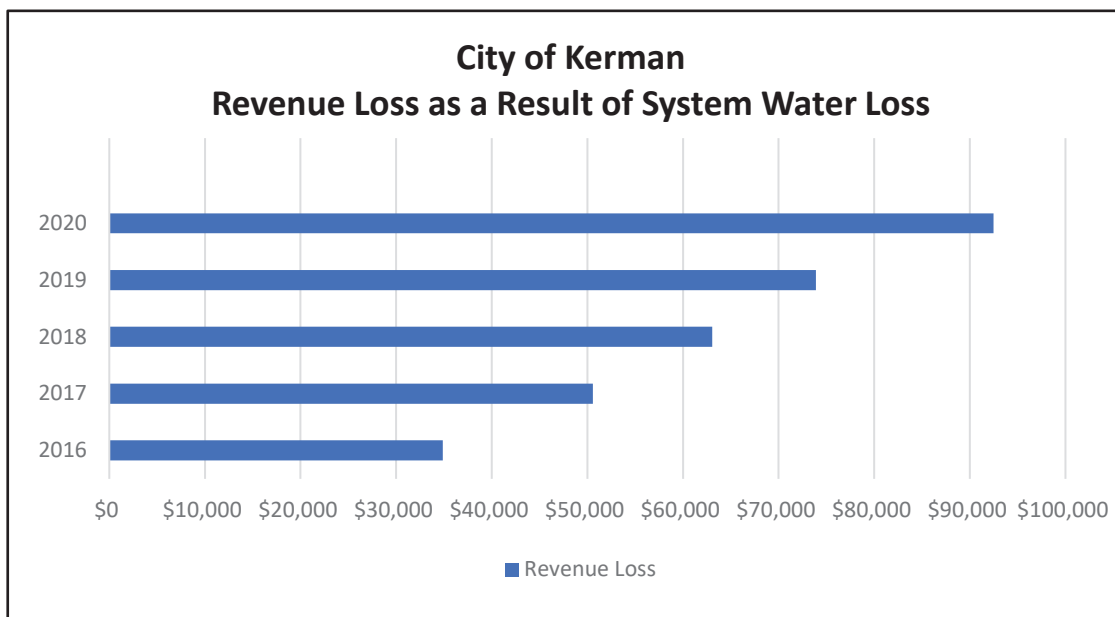
Figure 2: 2020 UWMP Customer Metering Inaccuracies Water Loss

Water Loss Due to Customer Metering Inaccuracies	
Year	Water Loss
2016	5.082 MG (15.60 AF)
2017	12.480 MG (32.30 AF)
2018	19.011 MG (58.34 AF)
2019	16.252 MG (49.88 AF)
2020	8.773 MG (26.92 AF)
TOTAL WATER LOSS	61.598 MG (189.04 AF)
AVERAGE YEARLY WATER LOSS	37.81 AF

Total water losses, which include Apparent Losses (unauthorized consumption, customer metering inaccuracies, and systematic data handling errors) and Real Losses (leakage on transmission/distribution main, storage tanks, and service connections) continue to increase

yearly as illustrated in **Figure 3** below. Over a five-year period, the City saw revenue losses totaling \$314,886. This is a crucial loss in a City that depends on this revenue to provide public services and infrastructure for its 17,238 disadvantaged residents.

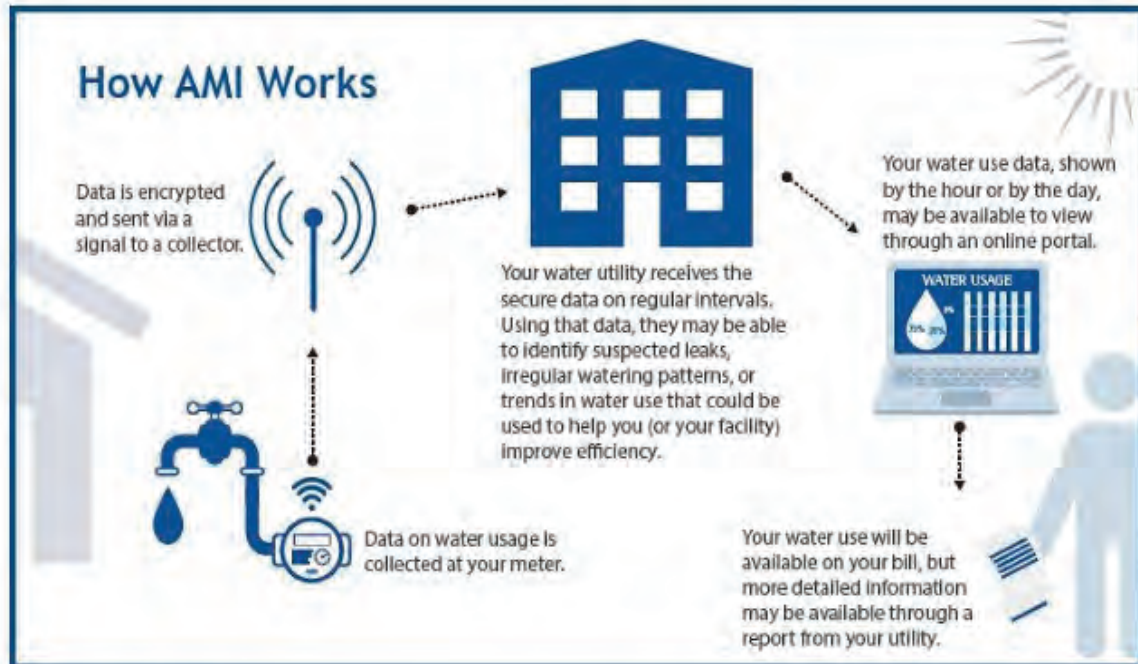
Figure 3: City of Kerman Revenue Loss as a Result of System Water Loss



PROJECT DESCRIPTION

The City will implement AMI technology on the entirety of the City's 4,086 water connections which include single family residential, multifamily residential, commercial, industrial, and institutional/governmental customers, as well as landscape irrigation. **Figure 4** below illustrates how the components of the integrated AMI system work. This technology starts at end user connections with the installation of endpoints which transmit data to a collector. The collector (antenna) unit then relays the water usage data through a secure wireless network to the water system owner/operator for analysis and billing. This real-time data is transmitted more frequently than the traditional once-a-month meter reading, enabling municipalities to quickly identify excessive water use which may be indicative of system leaks. Integration with the City's existing Meter Data Management Software (MDMS) will ensure that raw meter data is processed, analyzed, and validated. By enabling the City to perform remote meter readings instead of the current method of driving through neighborhoods to collect the data, AMI technology will create operational efficiencies and decrease the amount of harmful greenhouse gas emissions introduced to the environment. Additionally, this Project will implement the "Eye on Water" customer interface application which includes an online portal and mobile app that will enable consumers to track water usage, identify opportunities for conservation, and report anomalies that may indicate a leak or water theft. The Project also includes a robust public outreach element to keep end users apprised of Project implementation, while educating on Project benefits and water conservation strategies.

Figure 4: How AMI Works



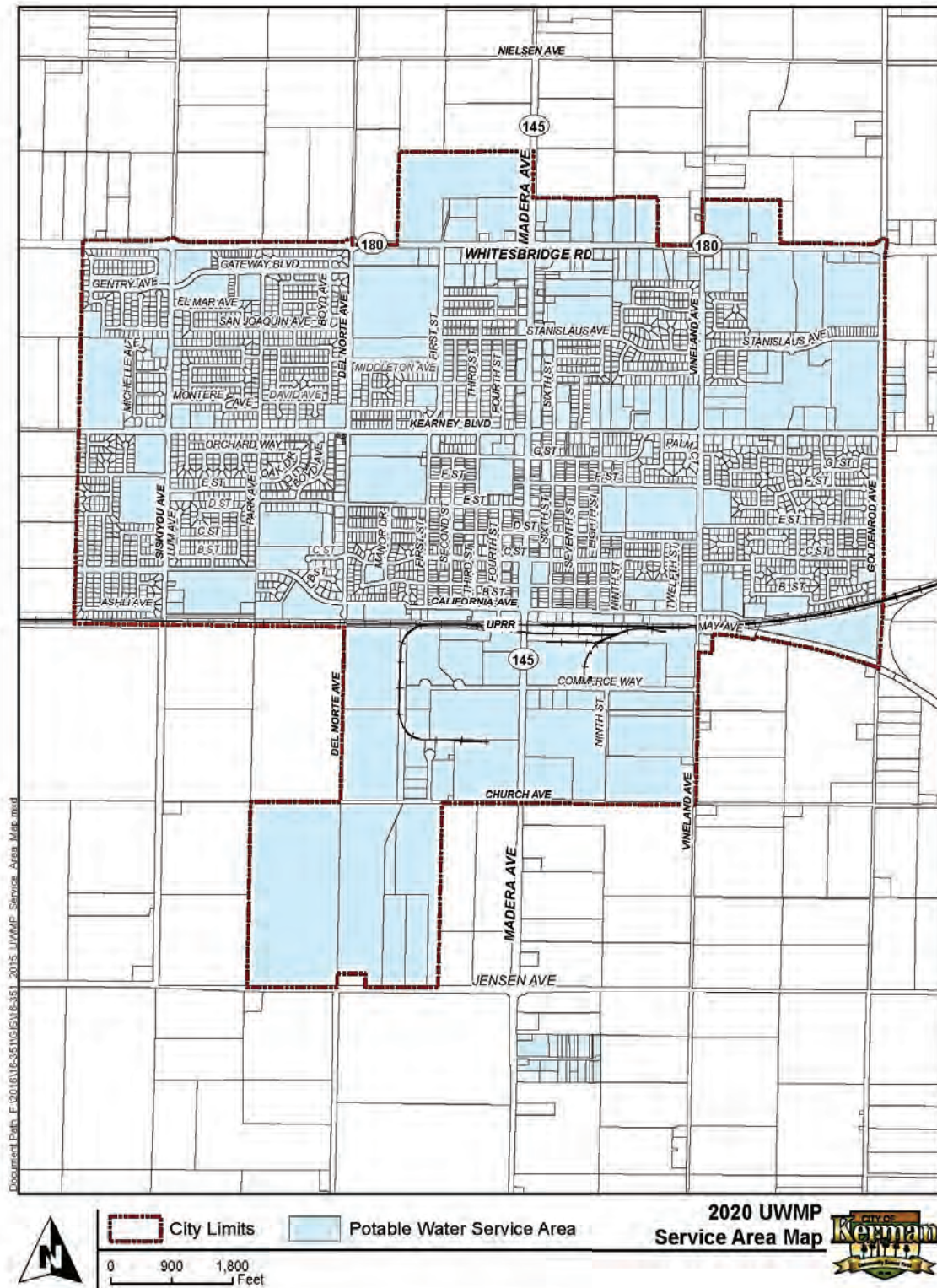
Source: US Environmental Protection Agency

<https://www.epa.gov/watersense/advanced-metering-infrastructure>

The City proposes to upgrade 4,086 metered water connections with new meters and/or AMI endpoints and install network collectors (antennas) atop City-owned light poles in this City-wide AMI Project. The majority of the City's water meter infrastructure is comprised of Badger meters and Badger AMR endpoints (3,936 meters). While this meter infrastructure is designed for "drive-by" readings obtained by a utility staff member driving through neighborhoods with a data collection antenna, approximately one-third of the existing endpoints are nonfunctional, requiring repeat trips to conduct manual readings. The remaining 150 meters are comprised of multiple different brands of meters which do not have automated meter reading endpoints. These meters are not compatible with the City's current meter reading software and require manual reading. Meter readings are currently taken twice per month and consist of drive-by radio reads which typically take two days to read the entire City, and readings of commercial meters which must be performed manually. This does not include additional time and trips to follow up on misreads or absent readings due to failing AMR components. The Project will update Kerman's water system metering with cutting edge AMI solutions which utilize cellular communications to provide operational efficiencies and improved water conservation. Approximately 91% (3,713) of the meter improvements will be installed at residential properties (single-family and multi-family). An additional 271 installations (7%) will benefit churches, commercial customers, industrial customers, institutional customers, and governmental connections. Landscape irrigation connections for churches, commercial, industrial, institutional, and residential properties make up another 80 metered connections (approximately 2%). The improvements will span the entirety of the City and extend to outlying areas that receive potable water service.

Figure 5 below and Appendix A show the City of Kerman's water service area which will benefit from the Project.

Figure 5: City of Kerman Water System Service Area



The 6.6% of connections that service churches, commercial, industrial, institutional, and governmental customers and the 2% that provide landscape irrigation represent a small number of the total meters receiving AMI upgrades. However, upgrades for these connections have the greatest potential for water conservation based on higher levels of water consumption. The whole of the City of Kerman is designated as a Disadvantaged Community (DAC) based on criteria established by the Climate and Economic Justice Screening Tool (CEJST). As such, this Project will entirely benefit disadvantaged residents.

In order to obtain the best possible pricing for the procurement of AMI equipment for this Project (meters, endpoints, and collector antennas), the City will issue a Request for Proposal (RFP) for competitive procurement. The City already has fully deployed Badger Meter BEACON Advanced Metering Analytics MDMS software that has supported the existing AMR technology. The City will require the new AMI endpoints, software, and network to seamlessly integrate with this existing MDMS and existing water meters, with the exception of the approximately 150 antiquated water meters that currently require manual reading. These obsolete meters will be replaced with new water meters in addition to AMI endpoints. The City has spent considerable effort researching possible AMI solutions and the selected vendor will be required to provide a system that includes (but is not limited to):

- Provides advanced, two-way communication technology (AMI);
- Includes software and cellular communication services;
- Can integrate with the City's existing MDMS, billing system, and meters;
- Is expandable to accommodate future population/water connection growth;
- Integrates with the "Eye on Water" customer interface application;
- Includes a communication network linking all of the above equipment.

It is possible that the City may be able to piggyback onto a collaborative purchasing opportunity. The City will utilize grant funds for the procurement of all AMI equipment, software, and cellular network service.

The City will then issue a separate RFP to select a professional contractor to provide project management and installation support. The City will use grant funds to pay the selected contractor to complete project management/installation activities including:

- Collaborate with the chosen AMI equipment vendor for delivery of AMI equipment (meters, endpoints, antennas) for installation on 4,086 connections;
- Obtain encroachment permits, as required;
- Distribute door hangers to inform water system users of AMI installation and impending water shutoff;
- Remove 150 old manual-read meters and replace with new AMI compatible meters;
- Remove AMR equipment and install AMI endpoints;
- Install collector antennas on existing City light poles;
- Conduct end-to-end testing to ensure meters, endpoints, and collector antennas are communicating properly;
- Collaborate with City staff to implement new AMI software;

- Collaborate with City staff to ensure seamless integration of new AMI technology with existing MDMS and billing systems; and
- Collaborate with City staff to implement “Eye on Water” customer interface application.

The Project also includes a robust community outreach campaign which will be spearheaded by City staff. This campaign will utilize a variety of methods to inform and educate residents about this Project, AMI benefits, the “Eye of Water” customer interface, and water conservation strategies. Proposed engagement methods include: the City website; social media (Facebook); the City newsletter; water bill inserts; town hall meetings; and booths at community events such as the Farmer’s Market. Residents will be encouraged to sign up for the “Eye on Water” customer interface application and educated on portal use and benefits. Publicization of the “Eye on Water” customer interface application will extend far beyond the grant performance period in order to continue to garner participation and water conservation benefits.

Evaluation Criteria

Evaluation Criterion A: Quantifiable Water Savings

The City of Kerman is committed to implementing proactive programs and projects to conserve water and achieve greater levels of water system efficiency. Every drop of water saved by the City and its residents reduces the amount groundwater pumped from the critically over drafted Kings Subbasin, improving water sustainability for the City and the region and ensuring the ability to withstand climate change impacts such as extended drought conditions and limited water supplies. This Project will result in significant water savings to increase the City’s and the region’s water sustainability.

1. Estimated Water Savings

The City of Kerman will conserve an estimated **381.6 AFY** of critical potable water as a result of improved leak detection and metering accuracy due to AMI technology (222.4 AFY) and customer behavior modification due to the “Eye on Water” customer interface application (159.2 AFY). These savings are comprised of the following estimates and calculations:

- a. **AMI Installation.** The City will upgrade the entirety of the City’s 4,086 water connections, replacing failing AMR technology with modern AMI endpoints and collector antennas to achieve greater metering accuracy and improved leak detection. Based on 2016-2020 water data, the City reported average Total Water Losses of 222.4 AFY or 7.6% of the total water supplied. This is equivalent to 0.0544 per meter ($222.4 \text{ AFY} \div 4,086 \text{ connections}$). As such, the City estimates that this Project will result in increased leak detection and metering accuracy throughout the City’s water system, reducing the City’s water loss and the demands for groundwater pumped from the Kings Subbasin, thereby conserving an estimated **222.4 AFY**.
- b. **Customer Behavior Modifications.** The Project includes a robust community outreach campaign to champion water conservation and the Project’s “Eye on Water” customer interface application. AMI technology will provide up-to-the-minute water consumption data and “Eye on Water” will put this information at the customer’s fingertips. giving

customers the necessary tools to monitor water use and empowering them to make cost-saving modifications to daily water use. In alignment with studies that show that consumers who receive regular home water reports reduced water consumption by 4.4 to 6.6%, the City estimates an additional 5.5% savings due to individual water conservation. Using historical data (2016-2020) for the City's average Total Water Supplied (2894.804 AFY) multiplied by the estimated rate for individual water conservation (5.5%), the City estimates an additional **159.2 AFY** of water saved by customer behavior modification.

2. Current Losses.

AWWA Water Loss Audit reports included in the 2020 UWMP illustrate the City's increasing water loss. The City tracks two types of system water loss:

- Apparent Losses – Unauthorized Consumption; Customer Metering Inaccuracies; and Systematic Data Handling Errors;
- Real Losses – Leakage of Transmission and/or Distribution Mains; Leakage and Overflows and Utility's Storage Tanks; and Leakage on Service Connections.

The City's AWWA reports detailed a Total Water Loss of 72.468 MG (1,111.98 AF) over the five-year period between 2016-2020 (see **Figure 6** below), averaging 222.4 AF per year or approximately 7.6% of the total water supplied during that time period.

Figure 6: 2020 UWMP Reported Water Losses

City of Kerman – Water Losses					
Year	Water Supplied	Water Losses			Percentage of Water Supplied
		Apparent Losses	Real Losses	Total Water Loss	
2016	882.902 MG	8.506 MG	17.366 MG	25.872 MG (79.398 AF)	2.9%
2017	929.300 MG	16.298 MG	45.585 MG	61.883 MG (189.912 AF)	6.7%
2018	950.560 MG	23.354 MG	68.866 MG	92.220 MG (283.012 AF)	9.7%
2019	944.070 MG	20.556 MG	73.964 MG	94.520 MG (290.071 AF)	10%
2020	1,009.548	13.421 MG	74.425 MG	87.846 MG (269.589 AF)	8.7%
TOTAL	4716.38 MG (14474.020 AF)	82.135 MG (252.063 AF)	280.206 MG (859.919 AF)	362.341 MG (1111.982 AF)	
AVERAGE	943.276 MG (2894.804 AF)	16.427 MG (50.413 AF)	56.04 MG (171.980 AF)	72.468 MG (222.396 AF)	7.6%

Where are Current Losses are Going/How are Losses Being Used.

Water lost as a result of Real Losses (leakage at the transmission/distribution main, storage tank, or service connection level) is dissipating due to evaporation, absorbing into the soil, or draining into storm drain basins to be percolated back into the groundwater aquifer for future use. Water from Apparent Loss, which includes unauthorized consumption and metering inaccuracies, is utilized by Kerman residents and eventually returned to the wastewater treatment system.

Benefits from Losses.

While Apparent Loss provides water use benefits to the unauthorized user, it is at a cost to the water system as a whole. Unauthorized use results in revenue loss for the City, limiting its ability to invest in programs and infrastructure that benefits the entirety of the City's residents. Ultimately, the lost revenue can result in water rate increases which negatively impact all the residents of this disadvantaged community. Portions of Real Losses may re-enter the groundwater aquifer for future local and regional use.

3. Documentation of Estimated Water Savings.

This Project's estimated **381.6 AFY** of water savings will result from a combination of water conserved as a result of enhanced AMI infrastructure and the ability to quickly remedy water system leaks and breaks and identify overuse (especially during periods of drought), and water conserved due to customer behavioral modifications.

- a. **AMI Installation:** Upgrading the City's 4,086 water connections with AMI technology will conserve 0.0544 AF per meter, for a total of **222.4 AF of water conserved each year** by quickly identifying real losses. Over the 2016-2020 reporting period, the City's average amount of water supplied to its customers was 2,894.80 AFY. The average Apparent Water Losses were 50.41 AFY and average Real Losses were 171.98 AFY, for a total average Water Loss of **222.4 AFY** or approximately **7.6%** of the water supplied (see **Figure 6** above). Divided by the 4,086 systemwide water connections, this 222.4 AFY is equivalent to approximately 0.0544 AF of water loss per connection.

*0.0544 AF water loss per connection x 4,086 connections = **222.4 AFY water savings***

- b. **Customer Behavior Modifications:** The Project's robust community outreach campaign will publicize AMI meter benefits and encourage use of the "Eye on Water" customer interface application to yield an estimated additional 159.2 AFY of water savings. The January 2002 report prepared by the AWWA, "Increasing consumer benefits & engagement in AMI-based conservation programs" states that "Online customer usage portals can be an important part of the AMI infrastructure. When used effectively, AMI portals have the potential to benefit both utilities and customers by facilitating streamlined, near real-time communications." User-friendly customer interface online portals and mobile apps, such as the proposed "Eye on Water" customer interface application, put water consumption data at the customer's fingertips while providing an interactive method of delivering water conservation feedback and tips. Residential households can even receive information on water use in similar-sized households

within their neighborhood, which can compel consumers to match or even exceed their neighbors' conservation efforts. The 2013 [*Evaluation of EBMUD Pilot of WaterSmart Home Water Reports*](#) by Mitchell and Chesnutt found that consumers who receive regular home water reports reduced water consumption by **4.4% to 6.6%** more than those who do not. As seen in **Figure 6** above, the City of Kerman's average water use was 2894.804 AFY. The proposed 4,086 upgrades constitute 100% of the City's water connections. Based on the results of the Mitchell and Chesnutt pilot project and the proposed robust community outreach plan, the City estimates an additional 5.5% average water consumption reduction due to individual water conservation.

2894.804 AFY average water use X .055 = 159.2 AFY savings due to customer conservation
222.4 AF conserved with AMI implementation + 159.2 AF customer conservation =
381.6 AF of crucial drinking water saved each year

The City will continue to advertise "Eye of Water" and encourage its use long after the end of the Project performance period, continually gaining new users and expanding water conservation efforts. Individual water conservation has far-reaching influence on the climate, our ecosystems, and reliable water sustainability.

"Water, lands, and air are all connected, so the actions people take at home have far-reaching effects."

-National Park Service

The National Park Service's *Conservation at Home* initiative advises that small actions in our homes, community, and region make strides towards protecting our natural world. Watersheds can span a few square miles up to several thousand, with water flowing in and out of our communities and neighboring lands. This means that our water use habits can ultimately impact the other people, animals, and lands both near and far that are also dependent on this water. The United States Environmental Protection Agency (EPA) advises that "Efficient water use can have major environmental, public health, and economic benefits by helping to improve water quality, maintain aquatic ecosystems, and protect drinking water resources." The Project's "Eye on Water" customer interface application will make water use data readily available, enabling individuals to monitor water consumption and identify ways to increase conservation every day. Water saved through conservation helps bolster both local and regional drought resilience and helps offset the over drafting of the King's Subbasin.

4. Municipal Metering

Determining Estimate for Annual Water Savings: As detailed in Question 3 above, the City utilized data from the 2020 UWMP (including Water Supplied, Apparent Losses, and Real Losses) to calculate estimated water savings from AMI implementation. Figures for Apparent Losses and Real Losses (as seen in **Figure 6** above) indicate great potential for improving meter effectiveness in curtailing water loss. Malfunctioning meters result in ongoing leaks that are often undetected

for weeks or even months. Replacing broken meters and upgrading the entirety of the City's water meters with AMI technology will help solve water loss by providing real-time data that can help both City staff and residents partner to quickly identify water-use anomalies, and more quickly mobilize repair teams.

Determining System Losses and Potential for Water Use Reductions: Kerman's AWWA Water Loss Audits published in the 2020 UWMP (detailed in Question 3) are the basis for determining current system losses. These reports showed Total Water Losses of 1,112 AF for the five-year reporting period, comprised of 252 AF of Apparent Losses and 860 AF of Real Losses. As approximately one-third of the City's meters are currently nonfunctional and are either unable to be read or providing inaccurate readings, AMI technology will significantly improve meter efficiency and accuracy, resulting in quicker leak detection/repair and improved water conservation.

The City has estimated a mid-range 5.5% potential reduction in water use by individual users based on the findings of the Mitchell and Chesnutt report (referenced in Question 3) which found that consumers who receive regular home water reports reduced water consumption by **4.4% to 6.6%** more than those who do not. This estimate is further substantiated by the City's robust plan for community outreach and publicity of the "Eye on Water" customer interface application. Studies conducted for the development of the *Increasing consumer benefits & engagement in AMI-based conservation programs* report prepared by The Behavioralist for the AWWA (January 2022) found that customer engagement with the AMI portal is highly determinant of decreases in daily water usage, with portal use resulting in water conservation of 6.3 to 12.1% daily. The City plans to learn from this report which details strategies for increasing customer engagement and thereby, water conservation. The City plans to highlight not only the local and regional benefits of water conservation, but also the cost savings that each household/business can glean from consistent engagement and tracking of AMI data.

"... signing up for an AMI portal led to an average decrease in daily water usage in the range of 6.3 to 12.1%."

Excerpt from the *Increasing consumer benefits & engagement in AMI-based conservation programs* Report

Relevant Water Use Pattern Studies: As detailed above, the City utilized historical water loss data to estimate the potential for reducing both apparent and real water losses in Kerman. Additionally, the City looked to established studies to corroborate the estimated potential water savings including the [Western Municipal Water District](#) in Riverside County, California. After a 2020 deployment of AMI, the utility has seen overall gains in water system efficiency including reducing water losses from 3.5% to 12%. Additionally, AMI reduced the need for manual meter reads and eliminated instances of re-reads. Additionally, the City utilized published studies to develop the 5.5% estimate of consumer water savings resulting from the implementation of AMI and the "Eye on Water" customer interface application. As referenced above, The Behavioralist determined that a credible range of water savings associated with AMI-based programs falls within a range of 2 to 10%, and the Mitchell and Chesnutt report found that consumers who

utilize customer portals/apps to access regular home water reports reduced water consumption by 4.4% to 6.6% more than those who do not.

Proposed AMI Devices: The City will purchase AMI equipment to upgrade the entirety of the water system's 4,086 meters citywide. A breakdown of the customer type and number of meters targeted for upgrade is included in **Figure 7** below.

Figure 7: Breakdown of Kerman Meter Connections	
Customer Type	Number of Connections to be Upgraded
Church	22
Landscape Church	5
City of Kerman	30
Commercial	175
Landscape Commercial	35
Industrial	11
Landscape Industrial	9
Institutional	33
Landscape Institutional	12
Residential	3,503
Landscape Residential	19
Multifamily	210
Outer City	22
TOTAL	4,086

The City has spent considerable time and effort researching possible AMI solutions including a variety of manufacturers and devices. The City will issue an RFP for procurement immediately following notice of award. As a small agency, the City is hopeful to piggyback onto a collaborative purchasing opportunity to obtain the best pricing for Project equipment and materials. While the final selection of AMI solution will be determined by competitive procurement procedures, **Figure 8** below details some of the AMI solutions that have been researched by the City and it is anticipated that one of these solutions will ultimately be implemented in the City.

Figure 8: Potential AMI Metering Equipment

Manufacturer/Model	Description	Image
Master Meter Bottom Load Multi-Jet (BLMJ) Meter	The BLMJ is the standard in multi-jet measurement due to excellent sensitivity to leaks and microflows, it has the ability to measure flow as low as 1/8 gallon per minute.	
eLinx Encoder	This universal encoder can interconnect mechanical meters with standardized bayonet bodies to any AMR/AMI system using the universal communications UI-1203 protocol.	
Neptune T-10 Meters	These water meters are time-proven for accuracy and dependability even at low flow rates and provide a wide effective flow range for maximum revenue.	
Neptune Cellular ProCoder R900i	Designed as an all-in-one package – pairing absolute encoder technology with the reliable connectivity of Neptune’s R900 System cellular endpoint.	
Neptune R900 System Endpoints	Neptune’s R900 System endpoints work seamlessly with prior generations of equipment and can transit meter reading data via a variety of methods without reprogramming.	
Octave Meters	Highly advanced, all-digital technology meter for commercial and industrial applications achieves precise measurement without any moving parts to ensure optimum revenue without waning performance.	

Allegro AMI UTG Endpoint	This durable endpoint design technology features no external connecting wires or antennas. These flexible, migratable endpoints can be used on 95% of traditional mechanical meters.	 A circular, metallic endpoint device with a digital display screen and a cable attached to the top.
Orion Cellular Endpoints	These innovative endpoints utilize existing cellular infrastructure for efficient and secure two-way communication of high-resolution meter reading data.	 A small, black, rectangular device with a white connector on top.

Post-Project Verification of Water Savings: The City conducts AWWA Water Loss Validation Audits annually, as seen in [Appendix D](#) of the 2020 UWMP. Water savings will be verified by comparing historical Water Loss Validation Audit reports to post-Project water use/water loss readings. The City will track and analyze data for a minimum of two years following Project implementation. The City will also track “Eye of Water” account enrollments to monitor customer engagement. Surveys on the portal/app will help quantify portal engagement and the resultant behavioral water savings.

Evaluation Criterion B – Renewable Energy
Sub criterion B.2 – Increasing Energy Efficiency in Water Management

Project Energy Efficiency Benefits: This Project will result in significant energy efficiencies due to increased water savings and the resultant reductions in energy utilized for water management activities from point of diversion to end user, including pumping, treatment, and distribution. The entirety of the City of Kerman’s water supply is derived from groundwater pumped from six active wells located throughout the community. As such, the 381.6 AFY of water saved as a result of AMI implementation and the “Eye on Water” customer interface application also results in a reduction of the energy needed to pump, treat, and distribute that water. Based on energy calculations included in the 2020 UWMP (see **Figure 9** below), the City calculates that this Project will result in **216,367.2 kWh/year** in water management energy savings.

The United States Environmental Protection Agency (EPA) reports that drinking water and wastewater systems account for approximately 2% of overall energy use in the United States; however, in many states (including California) this percentage is much higher. According to the [California Department of Water Resources](#) (DWR), approximately 12% of the state’s total energy use is related to water, with end customer uses (i.e., heating, cooling, pressurizing, industrial processes, etc.) accounting for 10%, and 2% attributed to water conveyance, treatment, and

distribution (). Mitigating water loss at the municipal level creates energy efficiencies by reducing the electricity needed for groundwater pumping, treatment, and conveyance to end users. Reducing energy consumption at the local level reduces pollution and conserves natural resources, creating a healthier environment for the City and the region.

Energy Savings Calculations: In accordance with California Water Code Section 10631.2(a), the City performed an energy intensity analysis for the reporting period of January 1, 2020 through December 30, 2020. The results of this analysis were reported in Table 6-10 of the 2020 UWMP (Figure 9 below).

Figure 9: 2020 UWMP Energy Reporting

Table 6-10 Recommended Energy Reporting - Total Utility Approach (DWR Table O-1B:)				
Enter Start Date for Reporting Period		1/1/2020	Urban Water Supplier Operational Control	
End Date		12/30/2020		
☐ Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
		Total Utility	Hydropower	Net Utility
Volume of Water Entering Process (MG)		1,010	0	1,010
Energy Consumed (kWh)		1,756,689	0	1,756,689
Energy Intensity (kWh/MG)		1,740	0	1,740

This analysis utilized a Total Utility Approach in accordance with recommendations made by the DWR, calculating the Energy Consumed for the sum of all water management processes. The final calculated energy intensity for the year-long reporting period was 1,740 kilowatt-hours per million gallons (kWh/MG). Utilizing these figures, the following calculations can be made to quantify the Project's energy savings:

1,010 MG per year converted to acre foot = 3,099 AFY

1,756,689 kWh energy consumed ÷ 3,099 AF = 567 kWh of energy consumed per AF of water

381.6 AF of water conserved X 567 kWh = 216,367.2 kWh/year in energy savings

- 1. Impact of Energy Savings on Climate Change:** This Project will combat the impacts of climate change by reducing harmful CO₂ emissions related to the energy consumption necessary to pump, treat, and distribute water and the fossil fuel required for drive-by meter readings. Additionally, implementation of this Project's "Eye on Water" customer interface application will inspire water use behavioral modifications and enhanced water conservation awareness, affecting far-reaching impacts on water resiliency and climate change.

Reduction in Greenhouse Gas Emissions: This Project will eliminate an estimated **155.27 metric tons of harmful CO₂ emissions** through energy savings of 216,367.2 kWh/year from 381.6 AFY of conserved water (151 metric tons of CO₂). Additionally, by eliminating the need to use vehicles to collect drive-by meter readings, the City will save 480 gallons of gasoline per year (20 gallons/month for initial meter readings + 20 gallons/month for additional trips

to re-read meters due to nonfunctional AMR equipment = 40 gallons/month x 12 months) for drive-by meter readings (4.27 metric tons of CO₂).

The [U.S. EPA's](#) Greenhouse Gas Equivalencies Calculator (uses the Avoided Emissions and generation Tool (AVERT) U.S. national weighted average CO₂ marginal emission rate to convert reductions of kilowatt-hours into avoided units of carbon dioxide emissions. This emission factor is detailed below:

$$1,540.1 \text{ lbs. CO}_2/\text{MWh} \times 1 \text{ metric ton}/2,204.6 \text{ lbs.} \times 0.001 \text{ MWh/kWh} = 6.99 \times 10^{-4} \text{ metric tons CO}_2/\text{kWh}$$

Multiplying the previously calculated energy savings by this emission factor results in the corresponding greenhouse gas emissions avoided due to Project implementation:

$$216,367.2 \text{ kWh} \times 6.99 \times 10^{-4} \text{ metric tons CO}_2/\text{kWh} = 150,914 \text{ kilograms (kg) of avoided CO}_2 \text{ emissions per year due to energy savings (**151 metric tons**).$$

Additionally, the City estimates that implementation of this AMI Project and the elimination of drive-by meter reading will eliminate 4,265,760 grams (or **4.27 metric tons**) of CO₂ from tailpipe emissions each year:

$$8,887 \text{ grams of CO}_2 \times 480 \text{ gallons of gasoline} = 4,265,760 \text{ grams of CO}_2 \\ 4,265,760 \text{ grams of CO}_2 \div 1,000 = 4265.76 \text{ Kilograms (kg) (**4.27 metric tons**)}$$

$$151 \text{ metric tons} + 4.27 \text{ metric tons} = \underline{\underline{155.27 \text{ metric tons of CO}_2 \text{ eliminated}}}$$

2. **Project Impacts on Pumping and Energy Use:** As Kerman's sole water source is groundwater pumped via the City's six active municipal wells, this Project's 381.6 AFY of water savings will result in reduced pumping. **Figure 10** below includes information from Table 6-1 of the 2020 UWMP which details Kerman's active well pumps and their relative horsepower (hp) and production. As seen in **Figure 9** above, the City's energy intensity analysis utilized a Total Utility Approach to calculate 567 kWh of energy consumed per AF of water pumped, treated, and conveyed. The [California Energy Commission](#) reports that the average energy required to pump an acre-foot of groundwater is 200 kWh. Using this average, the City estimates the Project's water savings of 381.6 AFY will result in pumping energy savings of 76,230 kWh (381.6 AF of water conserved X 200 kWh average energy = 76,230 kWh).

Figure 10: Kerman System Well Pump Capacity

Table 6-1 Existing Groundwater Well Capacity				
Well No.	HP	Design Capacity		
		gpm	MGD	MGY
09A	200	1,200	1.73	630.72
10	150	1,500	2.16	788.4
12	100	1,200	1.73	630.72
14	150	900	1.30	473.04
15	150	900	1.30	473.04
17	125	1,000	1.44	525.6
TOTAL		6,700	9.65	3,522

3. **Site of Origin:** Project energy savings will be the result of reducing the amount of water pumped, treated, and conveyed to end users. The energy savings estimate detailed above originates from the point of diversion. Groundwater pumped via six municipal wells is the sole source of water for the City; therefore, there is not an alternate site of origin.

4. **Energy for Treatment:** The energy intensity analysis included in the City's 2020 UWMP reflects a Total Utility Approach (in accordance with recommendations made by the DWR), calculating the energy consumed for the sum of all water management processes, including pumping, treating, and conveying the water. As detailed in Question 2 above, the California Energy Commission estimates the average energy used for pumping an acre foot of groundwater to be 200 kWh. By subtracting this average from the City's energy analysis figure of 567 kWh for all water management processes, the energy for treating and conveying the City's water is approximately 367 kWh (567kWh – 200kWh = 367 kWh). As there is not a full breakdown of energy usage for treatment and conveyance, Kerman Public works staff have estimated that 60% of the remaining energy use is for treatment processes. As such, the City anticipates an energy savings from treating less water as **84,028 kWh/ year**, as shown in the following calculation:

$$367 \text{ kWh} \times .60 = 220.2 \text{ kWh}$$

$$220.2 \text{ kWh} \times 381.6 \text{ AFY} = \mathbf{84,028 \text{ kWh/year}}$$

5. **Reduction in Vehicle Miles Driven and Greenhouse Gas Emissions:** AMI technology will allow the City to remotely collect customer water usage data in real time via cellular end points and transmission towers. Currently, the City utilizes a drive-by meter reading method which entails a City Public Works staff member driving throughout the City in a Chevrolet Silverado 250 pickup to obtain meter readings. This method requires approximately 20 gallons of fuel each month for initial readings. However, the high number of malfunctioning water meters requires multiple staff members deploying in individual trucks to conduct re-reads and investigate missing readings. The City conservatively estimates that extra miles driven as a

result of missed/inaccurate readings double the fuel used for meter readings, resulting in approximately 480 gallons of fuel dedicated to meter reading operations each year. Implementation of this AMI project will eliminate the need for multiple drive-by meter readings, creating operational efficiencies and saving approximately 480 gallons of gasoline used for meter readings. The [EPA](#) provides calculations used to convert greenhouse gas emission numbers into different types of equivalent units. The EPA estimates that the average vehicle emits approximately 8,887 grams of CO₂ per gallon of gasoline consumed based on the following calculation:

$$8,887 \text{ grams of CO}_2/\text{gallon of gasoline} = 8.887 \times 10^{-3} \text{ metric tons CO}_2/\text{gallon of gasoline}$$

Using this formula, the City estimates that implementation of this AMI Project and the elimination of drive-by meter reading will eliminate 4,265,760 grams (or **4.27 metric tons**) of CO₂ from tailpipe emissions each year:

$$8,887 \text{ grams of CO}_2 \times 480 \text{ gallons of gasoline} = 4,265,760 \text{ grams of CO}_2$$
$$4,265,760 \text{ grams of CO}_2 \div 1,000 = 4265.76 \text{ Kilograms (kg) or}$$
$$\underline{\underline{4.27 \text{ metric tons (rounded) of CO}_2 \text{ avoided}}}$$

6. **Project Renewable Energy Components:** This Project will not include any renewable energy components.

Evaluation Criteria C – Other Project Benefits

Resilience and Sustainability Benefits

Water Resilience and Sustainability Issues: Located within the Central Valley of California, Kerman faces significant impacts from recent drought and the resultant water scarcity. The climate within Kerman’s service area is characterized as Central Valley desert climate; summers

“Decades of groundwater overdraft in California’s Central Valley have lowered groundwater levels near well screens and hence, even small fluctuations in groundwater levels during periods of average decline, or droughts that increase reliance on pumped groundwater, can be enough to cause thousands of wells to run dry.”

- Scientific Reports
September 8, 2023

are typically warm and dry, while winters are mild, humid and slightly wetter with average monthly lows near 35° F. According to the Western Regional Climate Center (WRCC), annual precipitation within the City’s service area averages approximately 10.90 inches and snow is a rare occurrence for the City. Agricultural farmland in the Central Valley constitutes 17% of the nation’s irrigated land (and 75% of California’s) and the water supply for this irrigation is largely derived from local groundwater pumped from the [San Joaquin Basin](#) and the Kings Subbasin. While agriculture is the lifblood of the Central Valley and a large economic factor for the City of Kerman, the incredible water demands result in unsustainable

groundwater depletion and overdraft of the Kings Subbasin. As Kerman's sole source of water is groundwater from one of the top [aquifers](#) in the US, groundwater depletion directly impacts the City's wells, water resilience, and its residents.

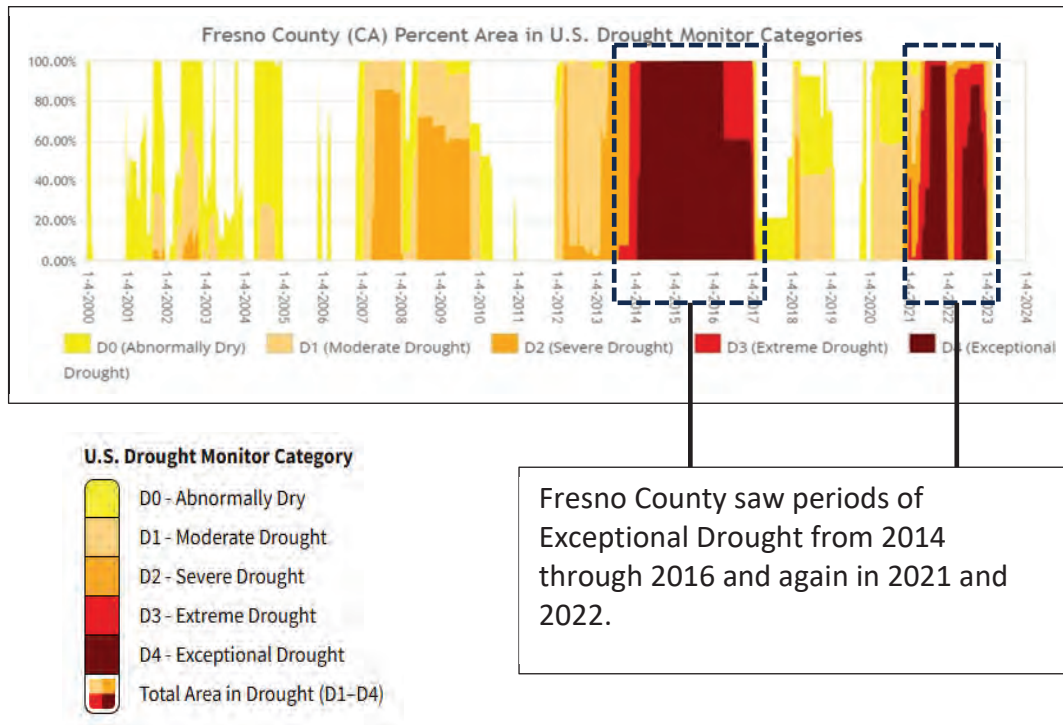
Drought Conditions in the Project Area: California's Central Valley region sits over the San Joaquin Basin and the [Kings Subbasin](#) which are categorized as high-priority and critically overdrafted, making these groundwater sources particularly vulnerable to changing hydrologic conditions precipitated by the effects of climate change. Both surface water and groundwater sources are dependent on rainfall to maintain water supply and drought conditions can result in groundwater decline and wells going dry. During the 2014-2017 drought, the City implemented strict water conservation rules which mandated a limit on outdoor irrigation (one to two days per week), banned run-off, and enforced mandated emergency water conservation measures which including water wasting violations.

The Water Year 2022 Kings Subbasin Annual Report states that the period between 2014-2022 was on average 19% drier than average conditions. Historical data compiled by the U.S. Drought Monitor and Drought.gov substantiates that Fresno County and the City of Kerman have experienced more severe and more extended periods of drought in the last ten years, than between 2000-2013, detailed below and illustrated in **Figure 11**:

- In 2007, 2008, and 2009, approximately 68% to 85% of Fresno County was in "Severe Drought" for the greater part of the year.
- In June 2013, the entirety of Fresno County was in "Severe Drought," worsening to 99% in "Extreme Drought" by December.
- The timespan between 2014 to 2017 was bleak: 100% of Fresno County in "Exceptional Drought" in 2014 and 2015, and 2016 conditions ranged between "Extreme" and "Exceptional."
- Drought returned in 2021 and 2022, with 88-98% of Fresno County in "Exceptional Drought" for the latter half of both years.

The City is ever-cognizant of the precarious nature of its groundwater supply and the effect drought has on that supply. The City has enacted numerous water conservation policies and programs, including watering schedules and water waste reporting, and offers water conservation strategies on the City website.

Figure 11: US Drought Monitor Historical Data for Fresno County, California



Drought Projections: Although the U.S. Drought Monitor indicates that Fresno County and the City of Kerman are currently experiencing “Abnormally Dry” conditions, the region has suffered progressively more severe climate change impacts resulting in more frequent, longer, and more intense drought conditions. Cal-Adapt is a web-based climate adaptation planning tool that provides climate change information and data produced by California’s leaders in the scientific and research community. According to Cal-Adapt’s *Local Climate Change Snapshot* tool, Kerman is projected to have increasing temperature and precipitation climate change impacts over the next 30 years.

Temperature

Overall temperatures are projected to rise in California during the 21st century with specific impacts in Kerman predicted to be the following:

- Annual Average Maximum Temperature = increasing between 3.8° - 4.7°
- Extreme Heat Day = increasing between 19-26 days
- Annual Average Minimum Temperature = increasing 3.1° to 4.0°
- Warm Nights = increasing between 14 – 21 nights

Precipitation

While California climate typically varies between wet and dry years, research suggests that the state is shifting towards larger year-to-year fluctuations. California's dry years will become drier and are likely to be followed by dry years, increasing the risk of drought. Specific predictions for Kerman include:

- Maximum 1-day precipitation = increasing by 0.031 to 0.050 inches
- Maximum length of dry spell = increasing by 4-5 days
- Annual precipitation = decreasing by 0.1 to 0.3 inches

The City must prepare for these future climate change impacts and their effect on drought, continued groundwater decline, and water insecurity. This Project's AMI technology and "Eye on Water" customer interface application will bolster both local and regional water sustainability. A copy of the *Cal-Adapt Local Climate Change Snapshot* report for Kerman is included in **Appendix B**.

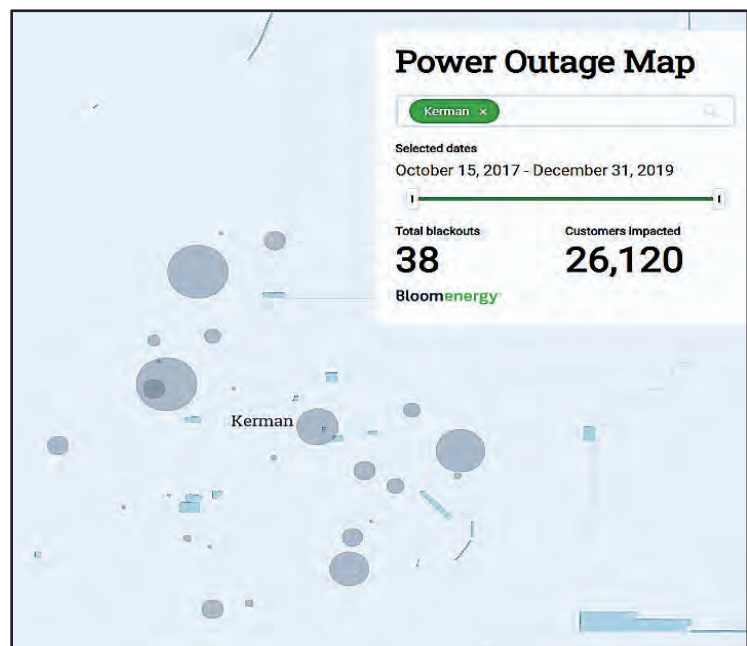
Energy Sustainability Issues: The State of California faces significant energy sustainability challenges. The [U.S. Energy Information Administration](#) reports that the California is the second-largest consumer of motor gasoline in the nation. This statistic paints a distressing picture as burning fossil fuels is a major source of air pollutants such as carbon dioxide (CO₂). The [California Air Resources Board](#) reports that 90% of Californians breathe unhealthy levels of air pollutants which have significant health and wellness impacts. In addition to these impacts, CO₂ absorbs and radiates heat creating the "greenhouse effect." As human activities such as burning fossil fuels for power generation, transportation, and industrial processes places increasing levels of harmful CO₂ emissions into the atmosphere, there is an overall increase in the Earth's temperature, commonly known as "global warming." According to observations by the [National Oceanic and Atmospheric Administration's](#) (NOAA) Global Monitoring Lab, CO₂ was responsible for approximately two-thirds of the total heating influence of all human-produced greenhouse gases in the year 2021, with the global average for CO₂ setting a new record high of 419.3 parts per million in 2023. Human activities are the main driver of global warming and the long-term shifts in temperatures and weather patterns that are climate change. Climate change is having statewide impacts including more variable weather patterns (higher temperatures, longer heat waves, decreased precipitation) that result in increased drought conditions, threats to water supplies, and wildfires. In alignment with state challenges, Kerman struggles with the following energy sustainability issues:

- **Reliance on Fossil Fuel:** While the City currently relies heavily on fossil fuel energy sources, it is striving to meet state requirements for reducing fossil fuel use and greenhouse gas emissions. As a small jurisdiction, the City faces financial challenges for implementing greener technology and converting City fleet vehicles to meet state mandates for zero-emission vehicles.
- **Air Pollution:** Kerman is located in the heart of the San Joaquin Valley, an area that the [EPA](#) identifies as having some of the nation's worst air quality in the nation with failures to meet federal health standards for both ozone (smog) and particulate pollution. The

valley is surrounded by the Coast Range and the Sierra Nevada mountain ranges, creating a bowl where air pollutants are trapped by an inversion layer of warm air. While the common source of both CO₂ and particulate pollution is the burning of fossil fuels, the [University of California Agricultural Issues Center](#) reports that farm activities account for more than half of direct emissions of particulate in the San Joaquin Valley. As seen in the Disadvantaged Community Documentation in **Appendix C**, Kerman is identified by the Climate and Economic Justice Screening Tool (CEJST) as being in the 99th percentile for small particulate matter (PM2.5).

- Service Interruptions:** While California's zero-emissions strategy can deliver cleaner air and reductions in climate-warming pollution, it also places increasing demands on the state's electric grid. California residents are increasingly suffering the effects of power outages. According to [Bloom Energy](#), the state of California experienced 25,281 blackout events in 2019 that affected 28.4 million utility customers, a 23% increase over 2018's 20,598 events that affected 19 million customers. Between 2017-2019, the City of Kerman experienced 38 blackouts that impacted 26,120 customers (see **Figure 12** below). These blackouts were the result of a variety of precipitating factors including weather events, planned power outages to prevent power lines from sparking wildfires during hot and dry days, and power grid overload. While the City has a backup generator to ensure continuity of operations and services during power outages, Kerman residents disproportionately suffer from loss of electricity. Disadvantaged residents are less resilient to the impacts of power outages and have fewer resources to deal with refrigerators full of spoiled food, loss of air conditioning, and the potentially life-threatening results of loss of ability to use electric medical equipment such as oxygen concentrators, infusion pumps, and mobility devices.

Figure 12: Kerman Power Outages



Source: Bloom Energy
<https://www.bloomenergy.com/bloom-energy-outage->

Project Impact on Energy Sustainability Issues: It is imperative that individuals and municipalities make every effort to create better energy sustainability and combat climate change. This Project does this by addressing the above concerns through the following outcomes:

- **Reduced Energy.** The Project will conserve 381.6 AFY of water, thereby reducing the amount of energy required to pump, treat, and distribute groundwater and resulting in an estimated energy savings of **216,367.2 kWh/year**. This energy savings reduces the City's demand for electricity to help counteract grid overload, reducing strain on the system and lessening the likelihood of service interruptions to ensure more reliable electricity for all.
- **Reduced Fossil Fuel Use.** The Project will eliminate the need for drive-by meter readings and manual readings, thereby saving 480 gallons of gasoline burned by vehicles each year for this purpose. This fuel savings decreases the environmental and energy impacts associated with oil extraction and transportation while helping to meet Senate Bill 350 (The Clean Energy and Pollution Reduction Act) goals of reducing greenhouse gas emissions to 40% below 1990 levels by 2030.
- **Reduced Carbon Dioxide.** This Project will eliminate a total of 155.27 metric tons/year of harmful CO₂ emissions from the atmosphere as a result of 216,367.2 kWh/year of energy savings (151 metric tons) and reducing fossil fuel use by 480 gallons a year (4.27 metric tons). These CO₂ savings help combat global warming and climate change including drought conditions.

Project Impacts on Water Supply Management: The Project will greatly improve the City's ability to efficiently manage the water system and water supply by improving meter accuracy and data reliability. Improved data will enable the City to more accurately assess water system usage/losses and plan for shortages due to drought, enhancing water sustainability for the City and its residents. The improved data will also help the City identify and rectify revenue lost due to inaccurate metering and authorized use. AMI technology will enhance leak detection, allowing the City to more quickly mobilize crews to complete repairs thereby saving overtime pay. Finally, remote meter reading will create operational efficiencies by saving staff time and fuel costs associated with drive-by meter reading.

How Project Water Savings Will Be Used: Kerman's AMI Project will conserve 381.6 AFY of critical potable water which will remain in the Kings Subbasin, offsetting overdrafting of this high-priority Subbasin and mitigating further groundwater depletion. This water savings will benefit the other agricultural and urban users who depend on Subbasin water. Additionally, by making more groundwater available for pumping, other regional users will have access to greater amounts of groundwater resources, potentially offsetting regional demands for imported surface water.

Interstate Compacts: This Project will not directly assist states and water users in complying with interstate compacts. However, the Project's 381.6 AFY of conserved water will remain in the high-priority Kings Subbasin, helping to offset over drafting and increasing the sustainability of this crucial groundwater source.

Kings Subbasin Conflict: This Project will conserve water, thereby creating greater sustainability for the San Joaquin Basin, the Kings Subbasin, and all the people who depend on

its precious water. Frequent droughts increase the potential for water-related crisis and conflict, especially in a critically over drafted subbasin where nearly one million people depend on the groundwater for health, wellness, and economic sustenance. The goal of the seven GSAs of the Kings Subbasin, including the North Kings GSA, is to correct and end the long-term trend of a declining water table and achieve groundwater sustainability by 2040. This Project will help offset critical over drafting by 381.6 AFY, helping to increase local and regional sustainability.

Ecological Benefits

The proposed Project has the potential to help reduce the San Joaquin Valley region's reliance on surface water deliveries. This would assist in minimizing surface water withdrawals taken from the San Joaquin and Kings Rivers, thus benefitting several endangered and threatened species that rely on them. Numerous Central Valley communities receive surface water deliveries from the CVP through a contract with Reclamation, which utilizes water reserves from the Friant Dam on the San Joaquin River. Species that are endangered or threatened in the San Joaquin River include the following:

Surface water in the Kings Subbasin comes from several sources including the San Joaquin River. By reducing water use as a result of implementation of this AMI Project, the City decreases its demand on groundwater from the Kings Subbasin. This in turn makes more water available for other jurisdictions, reducing the need for surface water and protecting critical ecosystems. The San Joaquin River is the habitat for numerous threatened, endangered, and species of concern, see **Figure 13**. Less pumping of groundwater from the critically over drafted Kings Subbasin means greater sustainability of the surface water in the San Joaquin River which ultimately benefits all of the plants and animals which depend on the river for habitat, including threatened and endangered species, as identified by the [US Fish and Wildlife Service](#).

Figure 13: San Joaquin River Endangered Species	
Mammals	Status
San Joaquin Kit Fox	Endangered
Fresno Kangaroo Rat	Endangered
Fisher	Endangered
Reptiles	Status
Blunt-Nosed Leopard Lizard	Endangered
Giant Garter Snake	Threatened
Amphibians	Status
California Red Legged Frog	Threatened
California Tiger Salamander	Threatened
Fish	Status
Delta Smelt	Threatened
Fall-Run Chinook Salmon	Species of Concern
Birds	Status
California Condor	Endangered

The proposed Project has the potential to help support the improvement of the status of the aforementioned (and other) species by reducing the regional need for the diversion of San Joaquin water by conserving 381.6 AFY of groundwater resources.

Water Savings Will Remain in the System: As 100% of the City's potable water is groundwater pumped from the Kings Subbasin, the 381.6 AFY of saved water will remain in the groundwater

aquifer for longer periods of time; thereby, making more water available for collective use. As some jurisdictions supplement their groundwater supplies with surface water, the Project's water savings ultimately results in reduced draws on critical surface water, supporting water flow and water levels in the San Joaquin River.

Project Impact on Species Status: While this Project's primary goal is not to reduce the likelihood of a species listing or otherwise improve the species status, water conservation helps maintain both groundwater and surface water levels. This in turn help support recovery of endangered and threatened species within the San Joaquin River.

Project Ecosystem Benefits: Improved overall water management is one of the main benefits of AMI technology. Real-time data allows municipalities to quickly identify leaks, reducing the time between leak identification and repair and thereby quelling water loss. Unidentified leaks result in extensive runoff and soil erosion, introducing both natural and manmade contaminants which ultimately are either reabsorbed into the soil and the groundwater sources or are carried to the San Joaquin River. This negatively impacts both groundwater and surface water quality and the ecosystems that depends on these water sources. Additionally, climate change significantly affects ecosystems by altering weather natural hazard risks, and other environmental factors. This Project will result in energy savings and greenhouse gas emissions reductions that will combat climate change and safeguard ecosystems near and far.

Stream flows and Aquatic Habitat: This Project is not intended to improve stream flows or aquatic habitat; therefore, the City does not have plans to monitor stream flow and aquatic habitat benefits. While improved streamflow and aquatic habitat is not the main goal of Kerman's Project, water conservation and improved water system management will reduce water drawn from the critically overdrawn Kings Subbasin, thereby indirectly benefitting both stream flows and aquatic habitat.

Climate Change Benefits

Project Benefits to Climate Change and Climate Resiliency: Kerman's Project addresses climate change by reducing water and energy use and the resultant greenhouse gas emissions, thereby improving climate and drought resilience for the City and the region. The 381.6 AFY of critical drinking water conserved by this Project will remain in the high-priority Kings Subbasin, offsetting the critical over drafting of this groundwater basin and resulting in 216,367.2 kWh of energy savings. The Project's energy savings and reduced fossil fuel use will eliminate 155.27 metric tons of CO₂ from the environment to slow down the impacts of global warming and the resultant increased instances of drought.

One of the most potentially impactful elements of this Project is the commitment to modifying water use behaviors. By implementing and publicizing the "Eye on Water" customer interface application, the City prioritizes individual water conservation, empowering residents with the necessary tools to achieve greater climate change responsibility and accountability. While it may seem that individual actions have limited impact on climate change, the collective efforts of many

can make a substantial difference in ensuring reliable water supplies for today and for future generations.

Project Improvements to Ecological Resiliency: Ecological resiliency to climate change is the capacity of the system to “bounce back” from disturbances to maintain function, such as recovering from multiple years of drought conditions. The Project’s water savings, energy savings, and eliminated CO₂ all make strides towards slowing the effects of climate change and increasing resiliency. Thereby, these Project benefits ultimately help ecosystem resiliency.

Climate Pollution: The Project will mitigate climate pollution through the elimination of 155.27 metric tons of CO₂ from the environment, which is comprised of 151 metric tons of CO₂ equivalent due to energy savings (216,367.2 kWh) and 4.27 metric tons of CO₂ savings due to a 480-gallons reduction in fossil fuel which is currently used by vehicles used for drive-by meter readings. The Project will also reduce surface and groundwater pollution from urban runoff due to leaks, breaks, spills, and overuse.

Project Sustainable Infrastructure: While the AMI components being implemented through this Project are not considered sustainable infrastructure, the Project will provide community climate resilience benefits. These benefits include conservation of 381.6 AFY of water and 216,367.2 kWh/year of energy, as well as the elimination of 4.27 metric tons of CO₂ from the atmosphere. The increased water and energy resiliency and improved atmosphere improves community wellbeing and climate resilience.

Additional Project Impacts on Climate Change Resiliency: One of the greatest ways this Project will contribute to climate change resiliency is by effecting behavioral modifications. The Project’s robust community outreach plan will engage, inform, and educate residents about the benefits of the AMI technology, water conservation, and the “Eye on Water” customer interface application. The customer interface platform will allow customers to track water consumption and compare use with that of similar households. The portal will also provide a platform for the City to share information about water restrictions and water conservation tips. Publicity for the “Eye on Water” customer interface application will continue long after the end of the grant performance period, continually gaining new users, expanding conservation efforts, and positively influencing social norms towards climate awareness.

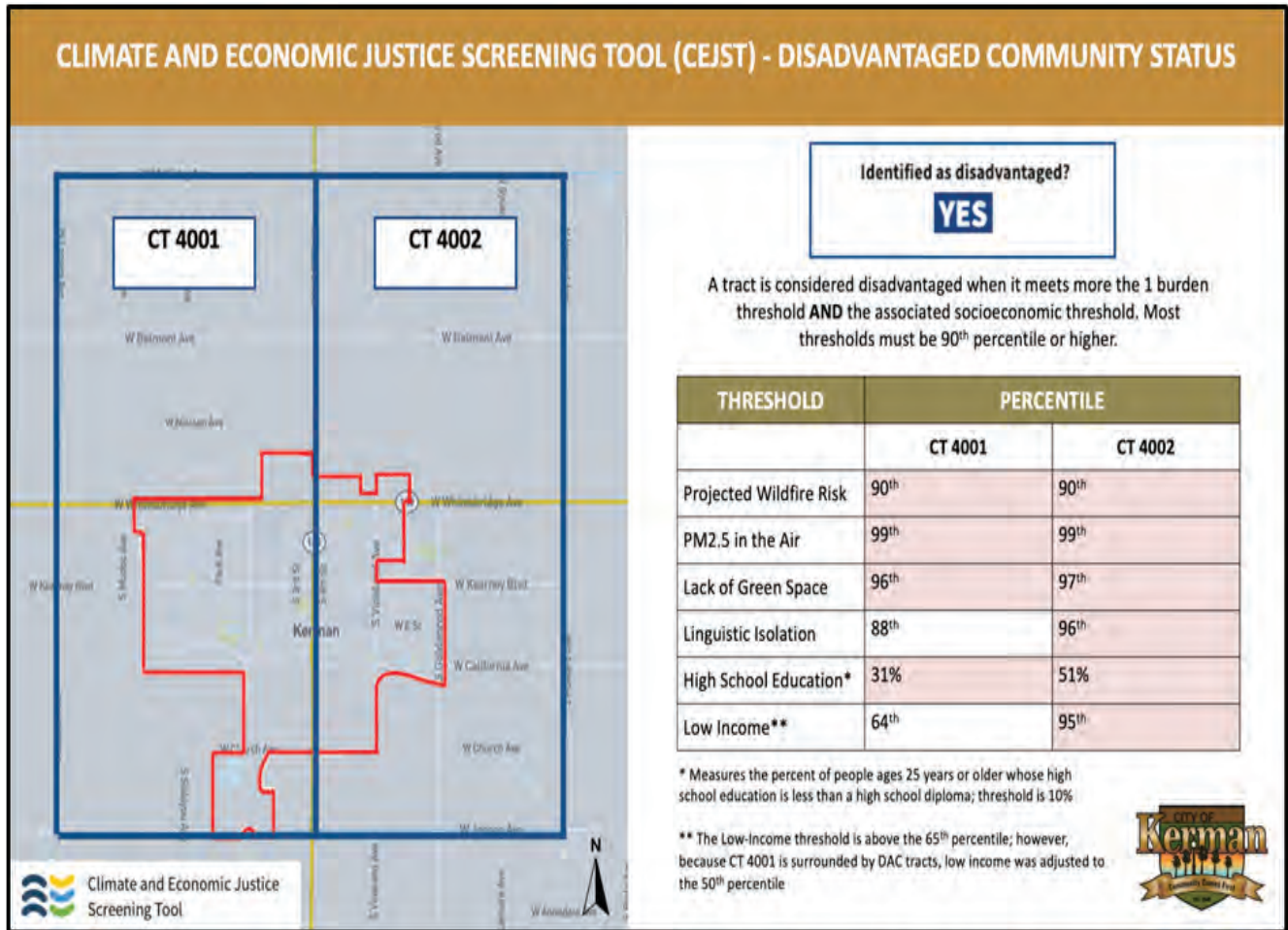
Evaluation Criterion D – Disadvantaged Communities, Insular Areas, and Tribal Benefits
Sub criterion D.1. Disadvantaged Communities

Climate and Economic Justice Screening Tool (CEJST)

The entirety of Kerman is a designated disadvantaged community (DAC) according to the White House Council on Environmental Quality’s interactive CEJST Tool (**Figure 14** below and **Appendix C**). The City lies entirely within two Census Tracts—06019004001 (CT 4001) and 06019004002 (CT 4002)—both of which share a DAC status in CEJST for meeting environmental and socioeconomic burden thresholds in the Climate Change, Energy, Housing, and Workforce Development categories as well as being surrounded by other disadvantaged tracts. The City is a diverse rural community with a low-income, predominantly minority population that has limited access to higher education, and increased risk of negative environmental exposures – factors that impact Kerman residents’ health, water supply, and quality of life.

The west side of Kerman, which contains a significant portion of the City-limit borders and sphere of influence, lies within CT 4001 (population 8,458). With its land use comprised primarily of low-density residential, commercial, and agricultural areas, this tract falls above the 90th percentile for projected wildfire risks, elevated fine inhalable particulate matter (PM2.5) levels, and a lack of green space. This tract also falls well above the CEJST’s 10% threshold for residents 25 years and older who’s education is less than a high school diploma (31%). Although CT 4001 is in the 64th percentile for low-income (falling just shy of the 65th percentile threshold), because the tract is surrounded by other disadvantaged tracts, according to CEJST methodology, the tract is also classified as disadvantaged. The east side of the City lies within CT 4002 (population 7,209). This tract falls above the 90th percentile for projected wildfire risk, elevated PM2.5 levels, lack of green space, and linguistic isolation. This tract is significantly above the 65th percentile threshold for low-income population status, at the 95th percentile. Additionally, 51% of residents 25 years and older who have less than a high school diploma.

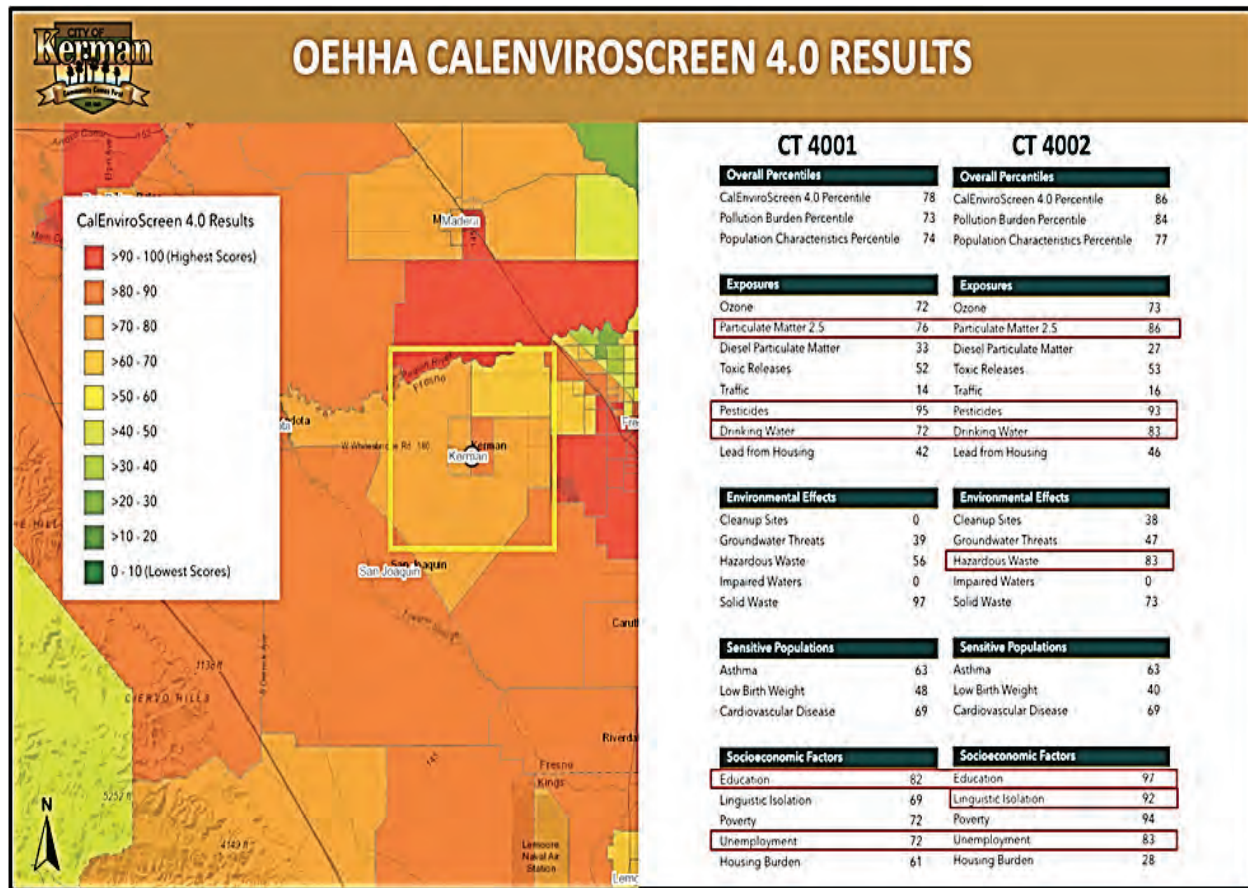
Figure 14: City of Kerman CEJST Disadvantaged Community Status



CalEnviroScreen 4.0

Kerman's Census Tracts also ranked in the California Office of Environmental Health Hazard Assessment's CalEnviroScreen 4.0 mapping tool's top 25% for disadvantaged and environmentally burdened tracts with scores of 78% (CT 4001) and 86% (CT 4002) (see **Figure 15** below). Some of the standout indicators with the highest percentiles include: PM2.5 in the air; exposure to pesticides; hazardous waste; and poverty. Complete CalEnviroScreen 4.0 Maps for the City of Kerman are included in **Appendix C**.

Figure 15: City of Kerman CalEnviroScreen 4.0 Results



Project Benefits for Disadvantaged Residents

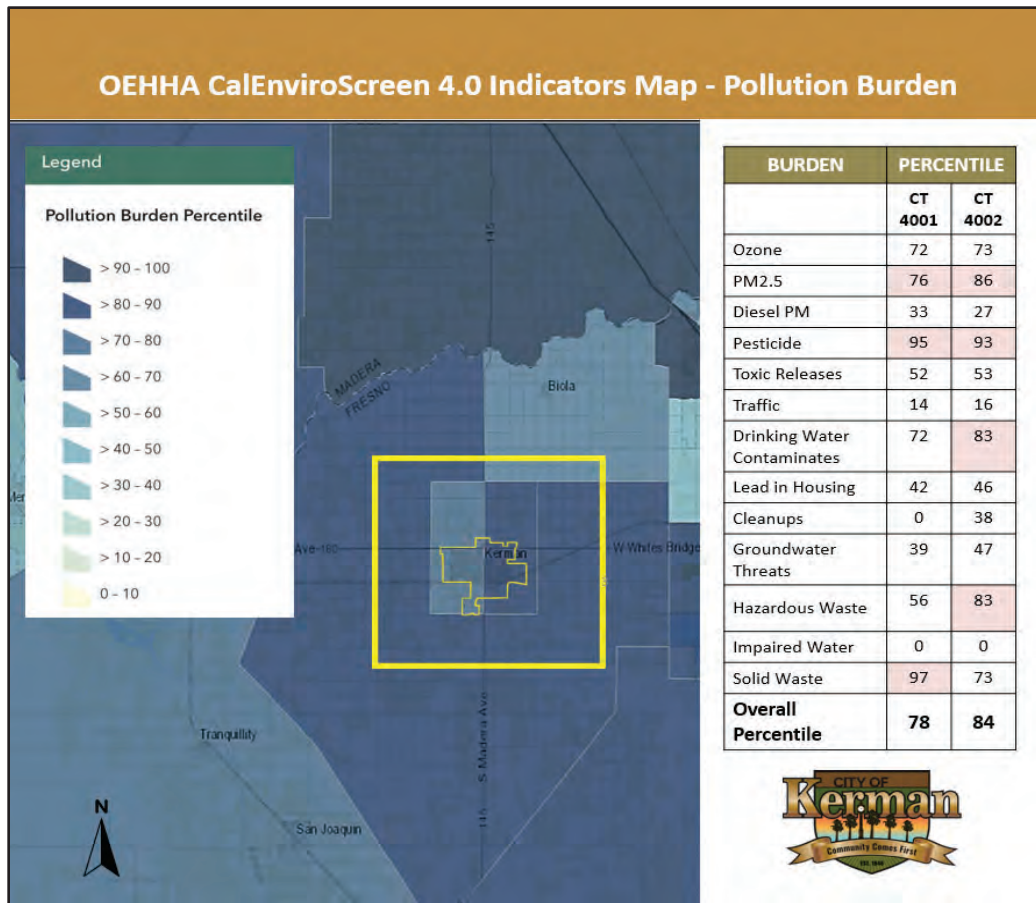
This Project will address many of the burdens that contribute to Kerman's CEJST and CalEnviroScreen 4.0 disadvantaged community designation, including:

Water Contamination. Real-time data from AMI technology will enable the City to identify leaks, pipe failures, and well discrepancies more quickly to preserve water quality. Leaking pipes can potentially negatively impact water quality. When pressure drops in a damaged section of pipe, water surrounding the pipe can be sucked in through the hole, introducing contaminants to the water system. This is of particular concern in Kerman, as the City's water supply is at a higher risk of contamination from hazardous waste and pesticides due to its location and ties to industrial and agricultural land usage. As a rural community which is surrounded by farmland where pesticides are frequently used for crop management purposes, residents and their water supply are at greater risk of the health complications caused by extreme exposure. Both of the City's Census Tracts fall within either in the 95th percentile (CT 4001) or 93rd percentile (CT 4002) for pesticides, according to CalEnviroScreen 4.0, which tracks 132 of the most toxic pesticides that people may be exposed to in California agriculture and adds up the number of pounds per square mile of the select pesticides. Also, CT 4002 falls in the 83rd percentile for hazardous waste, which

calculates the number of permitted hazardous waste facilities and generators in each census tract. The southern portion of the City is comprised mostly of industrial land use, with warehouses that can generate hazardous waste through exhaust from delivery and transport trucks operating on diesel engines, or from the treatment, storage, or disposal of chemical waste. While these pollution indicators often have a significant effect on air quality, they can also severely impact groundwater supply contamination. The City routinely monitors for the presence of drinking water contaminants and promptly notifies residents if contaminants (including uranium or 1,2,3-trichloropropane) are determined to be above drinking water standards. Through consistent detection and public notices, the City works to ensure the Kerman community is kept safe from water contaminants.

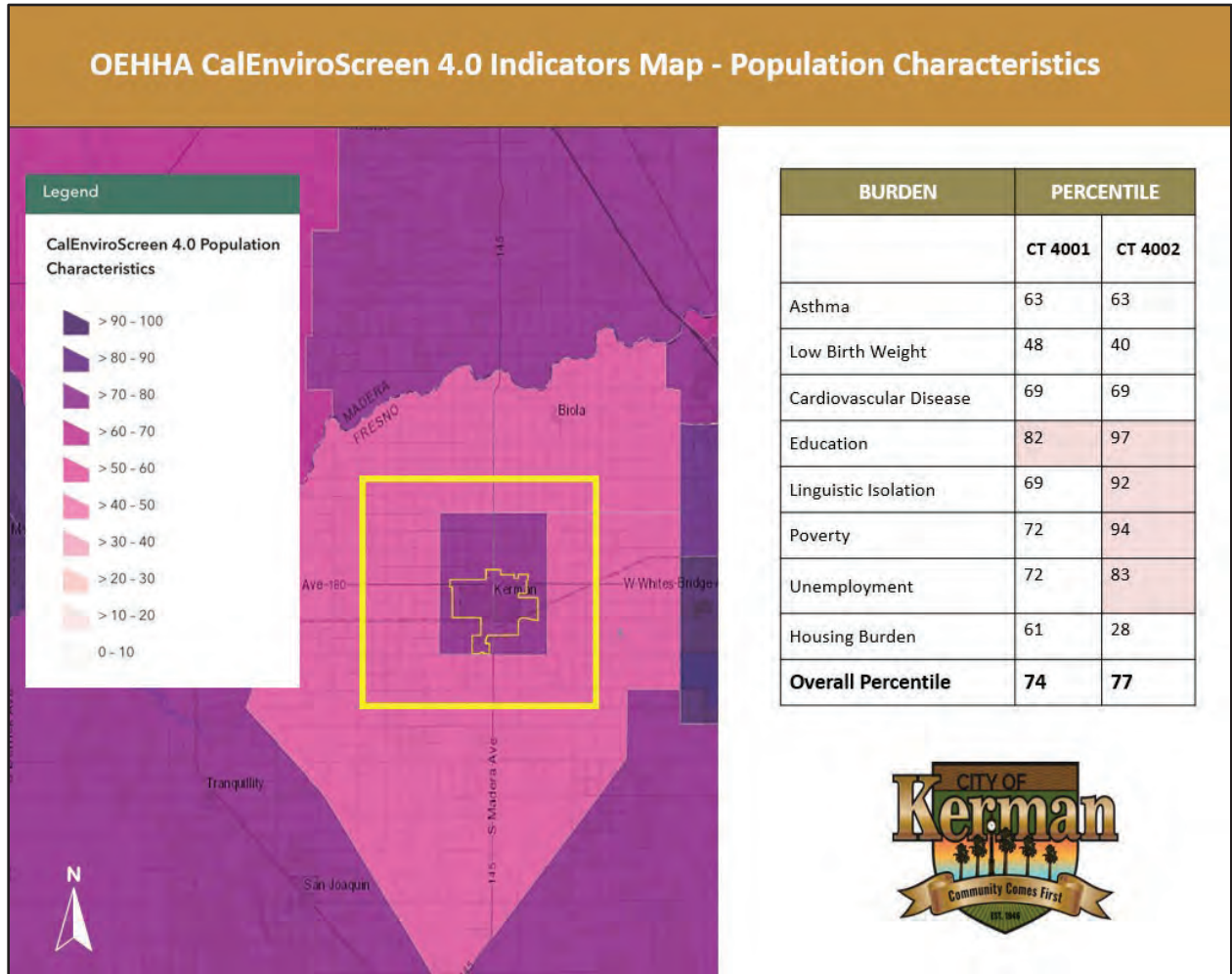
Air Pollution: The Project will eliminate an estimated 155.27 metric tons of harmful CO₂ emissions from the environment, improving air quality in Kerman. This savings is comprised of: 151 metric tons of CO₂ as a result of energy savings of 216,367.2 kWh/year from 381.6 AFY of conserved water; and 4.27 metric tons of CO₂ saved as a result of reducing the City's gasoline consumption by 480 gallons each year through eliminating drive-by and manual meter reading. Both CEJST and CalEnviroScreen 4.0 identify the air pollution burdens that the City bears. As seen in **Figure 14** above, the CEJST Tool identifies both CT 4001 and CT 4002 as being among the very worst in the nation for high levels of PM_{2.5}, in the 99th percentile. CalEnviroScreen 4.0 places CT 4002 in the 86th percentile for PM_{2.5} and CT 4001 in the 76th percentile. This means that only 13-24% of all other California tracts have air quality that is worse than Kerman, see **Figure 16** below and **Appendix C**. The U.S. EPA reports that communities of color and low-income communities (such as Kerman) are disproportionately impacted by air pollution, often experiencing increased health impacts from air pollution due to environmental, social, and economic factors. High air pollution levels can negatively impact health, including increased incidences of respiratory conditions and cardiovascular disease. CEJST ranks CT 4001 in the 54th percentile for asthma and the 38th percentile for heart disease; and CT 4002 in the 70th percentile for asthma and 59th percentile for heart disease. CalEnviroScreen 4.0 ranks both tracts within the 63rd percentile. The harmful CO₂ emissions saved by implementation of this Project will have beneficial impacts on the health and wellness of the residents of this disadvantaged community.

Figure 16: City of Kerman CalEnviroScreen 4.0 Pollution



Economic Burdens. The Project will upgrade the City’s water system with AMI technology, ensuring more accurate water use readings and improved leak detection that allow both the customer and the City to react quickly to mitigate losses, control costs, and conserve invaluable water resources. Furthermore, implementation of the “Eye on Water” customer interface application will provide Kerman residents with access to real-time data for water usage and billing information, empowering them to make informed decisions about their consumption and its associated costs. The upgraded water infrastructure would also save costs for the City by reducing the overhead to continuously fix failing meters, allowing them to invest more in their water conservation initiatives and pass savings along to the customers. Kerman residents bear numerous population characteristics which make it increasingly difficult to manage rising utility costs (see **Figure 17** below and **Appendix C**) including poverty, unemployment, linguistic isolation, and limited education. According to the California State Water Resources Control Board’s ["Recommendations for Implementation of a Statewide Low-Income Water Rate Assistance Program"](#) report, the average California household paid around 45% more per month for drinking water service in 2015 than in 2007. The median household income (MHI) for the City is \$53,956, which is significantly lower than California’s statewide average of \$89,870 and the national average of \$80,610. The per capita income for Kerman residents is \$21,308 versus a

Figure 17: City of Kerman CalEnviroScreen 4.0 Population Characteristics



national average of \$68,531. The largest employment sectors in the City are Healthcare (16.9%), Agriculture (16.5%), and Construction (11.9%), which accounts for the highly industrial and agricultural vicinity. However, the Fresno Regional Workforce Development Board (FRWDB) reported that available infrastructure construction jobs have been on a steady decline over the last four years in the Central Valley region and within Fresno County. Between 2021 and 2022 the employment rate declined in Kerman by 5.8%. As stated before, CT 4002 falls within CEJST's 95th percentile for low-income—placing it significantly above the threshold of concern (65th percentile). While CT 4001 falls within the 64th percentile for low-income, the CEJST has further adjusted the low-income threshold to the 50th percentile due to it being completely surrounded by DAC status tracts. The 2022 U.S. Census indicates that 21.9% of the Kerman population live in poverty, which disproportionately impacts residents under 18 years of age. This Project will ensure that all community members, especially those with fewer resources, have access to valuable information that can help them proactively save money.

Sub criterion D.2. Tribal Benefits

Does the proposed project directly serve and/or benefit a Tribe? Will the project increase water supply sustainability for an Indian Tribe? Will the project provide renewable energy for an Indian Tribe?

While Kerman's Project does not directly serve and/or benefit a Tribe, the water conserved as a result of AMI implementation will ensure greater water availability for other users, including area Tribes.

Does the proposed project support Tribal led conservation and restoration priorities, and/or incorporate or benefit Indigenous traditional knowledge and practices?

Not applicable.

Does the proposed project directly support tribal resilience to climate change and drought impacts or provide other Tribal benefits such as improved public health and safety through water quality improvements, new water supplies, increased renewable energy, or economic growth opportunities? Does the proposed project support Reclamation's Tribal trust responsibilities or a Reclamation activity with a Tribe?

Not applicable.

Evaluation Criterion E – Complementing On-Farm Irrigation Improvements

Evaluation Criterion E is not applicable to the City of Kerman's Project. The City's public water system serves residential, commercial, and industrial customers within the service area. However, implementation of this Project's AMI technology and water management software will result in notable water conservation; thereby, making 381.6 AFY of potable water available for other users, including the City's agricultural neighbors.

Evaluation Criterion F - Readiness to Proceed

Major Tasks for Project Implementation: The City of Kerman is ready to proceed with Project implementation immediately following an award of funding. The City has already completed numerous planning activities including: researching potential AMI solutions; conducting meter inventories; collaboration with the local GSA; and assembling the internal Project team to assist with implementation. A summary of the major tasks necessary to complete the City's AMI Project include:

Task 1: Grant Management

Following a notice of funding award, the City will collaborate with BOR representatives to finalize the grant agreement. For the duration of the 36-month Project performance period, the City will complete financial activities and Project reporting as set forth in the grant agreement to include,

but not limited to: submitting financial and program performance reports on a semiannual basis; submitting Financial Reimbursement Requests; completing and submitting Performance Reports, including calculations of water savings, energy savings, greenhouse gas emission reductions, and water system operational efficiencies.

Task 2: Environmental Review

As per requirements set forth in the California Environmental Quality Act (CEQA) Statute and Guidelines, Title 14 (California Code of Regulations), Chapter 3, Article 19, Section 15302c, the City will file for a Categorical Exemption given that the Project will replace existing meters with upgraded AMI meters which will be located on the same site and will have substantially the same purpose and capacity as the original infrastructure. Following environmental and compliance review, it is anticipated that the BOR will issue a Categorical Exclusion or Finding of No Significant Impact (FONSI) under NEPA for Project activities.

Task 3: Procurement

The City will utilize established procurement procedures to issue two separate RFPs to:

1) secure equipment/software vendors; and 2) obtain a contractor for installation and testing. The City will try to obtain the best possible pricing for equipment/materials by piggybacking on a collaborative purchasing opportunity with nearby communities. The successful professional services vendor will provide turnkey Project implementation including: removal of nonfunctional meters, installation of new meters/AMI endpoints, installation of collector units, integration with existing MDMS, and implementation of the new “Eye of Water” customer interface. The City is currently researching potential AMI equipment to find the best solution for all of the City’s residential, commercial, and industrial metering needs. Possible makes/models of equipment being considered are detailed in **Figure 8**, located in Question 4d of Evaluation Criteria 1. This is not an all-inclusive listing of possible AMI equipment. It is anticipated that competitive bidding may result in some of these potential solutions being implemented.

Task 4: Community Outreach

The City wishes to minimize customer inconvenience during Project implementation and maximize “Eye on Water” customer engagement to reap optimal water conservation. As such, a robust community outreach and education campaign will ensure customers are aware of upcoming AMI installation at their homes and businesses and apprised of the many benefits of AMI technology. Additionally, customers will be encouraged to access the “Eye on Water” customer interface application through an online portal and/or mobile app to proactively manage water use for maximum conservation benefits. The City plans to utilize a variety of outreach methods to inform and educate residents throughout the Project implementation including:

- Project information and updates on the City website.
- Informational inserts included with water bills.
- Project information/updates and water conservation education in the City newsletter.
- Social media posts (Facebook).
- Community outreach events including a booth at the Farmer’s Market and Town Hall meetings.

Additionally, one day before meters/endpoints are scheduled for replacement, door hangers will be distributed at each home/business to ensure that residents are prepared for impending water shutoffs. The City plans to make every effort to time installation activities and water shutoffs during lower-use periods, avoiding the typical morning rush of getting ready for work/school. Promotion of “Eye on Water” will extend far beyond the Project performance period to expand customer use and reap better conservation benefits.

Task 5: Installation of AMI Components, Software Integration, and Customer Interface

The selected contractor will collaborate with City staff to plan AMI deployment and mobilize to disconnect and remove faulty meters, install new water meters and AMI endpoints, and install transmission collectors on City-owned property. The vendor will collaborate with City staff to implement AMI, ensuring integration with the City’s existing MDMS software and billing systems. The vendor will also coordinate implementation of the “Eye on Water” customer interface application, ensuring customers can track their monthly, weekly, daily, and hourly water consumption, detect leaks, and set alerts to avoid costly water waste.

Required Project Permits: In order to complete the AMI installation activities, the contractor will apply for encroachment permits through the City’s Public Works department. Encroachment permits are required to ensure that any work that occurs on public streets and sidewalks is performed according to City construction standards and codes while ensuring the safety of the traveling public, workers and permittees. It is estimated that the permitting process will take approximately 2-3 weeks. The Contractor will also be required to have a City of Kerman business license.

Project Engineering/Design: The City’s Public Works department will collaborate with the contracted professional services vendor to develop a Project Implementation Plan. As installation of collector antennas will take place on existing light/power poles and will connect to existing electric facilities, this Project does not require engineering or design work.

Project Administrative Policies/Actions: No new policies or administrative actions are required to implement the Project. A Resolution that authorizes the acceptance and management of grant funding for the Project will be adopted at the time of grant award by the City of Kerman City Council as per grant requirements.

Project Design Status: The Project does not require design work as AMI components will be installed on existing infrastructure/facilities. The City is ready to proceed with Project implementation upon an award of funding.

Project Schedule: **Figure 18** below contains a detailed schedule for the Project. As the City’s application falls within the Funding Group II award range, the schedule reflects the three-year Project performance period with a start date no sooner than October 31, 2025 and a completion date of October 31, 2028.

Figure 18: Project Schedule

No.	Major Tasks and Activities	Planned Start Date	Estimated Completion Date
Task #1: Grant Management			
1.1	Award Funding	Aug. 2025	Oct. 2025
1.2	Grant Administration (i.e., reporting, requests for reimbursement, etc.)	Oct. 2025	Oct. 2028
Task #2: Environmental Review			
2.1	Complete and submit request for CEQA Class 2 Categorical Exemption	Nov. 2025	April 2026
2.2	Complete NEPA Environmental Review	April 2026	Dec. 2026
Task #3: Procurement			
3.1	RFP release for equipment, review of proposals, and award of contract	Sept. 2026	Dec. 2026
3.2	RFP release for professional services vendor, review of proposals, and award of contract	Sept. 2026	Dec. 2026
3.2	Procure new meters, AMI endpoints, collectors, and software	Jan. 2027	Mar. 2027
Task #4: Community Outreach			
4.1	Publicize AMI Project and “Eye on Water” customer interface application	Dec. 2025	Ongoing
4.2	Conduct outreach at community events and meetings	Jan. 2026	Sept. 2026
4.3	Conduct notifications of impending water shutoffs and AMI installation	Mar. 2027	Sept. 2028
Task #5: AMI/software & “Eye on Water” Implementation			
5.1	Install new AMI meters/endpoints/collectors	Mar. 2027	Sept. 2028
5.2	Project implementation – 50% complete	Nov. 2027	Nov. 2027
5.4	Complete software integration	May 2027	June 2027
5.5	Implement “Eye on Water” customer interface application	July 2027	Aug. 2027
5.6	Project implementation – 100% complete	Sept. 2028	Sept. 2028

Evaluation Criterion G - Collaboration

Project Collaborative Efforts: The City of Kerman has widespread support for this Project, including residents, stakeholders, elected officials, and regional water management entities. The City has received numerous complaints from residents who are frustrated with metering and billing inaccuracies and are requesting the City identify solutions to these problems. The City collaborates with local and regional partners to increase water sustainability in the Central Valley in order to support municipal and agricultural demands. Letters of support from these collaborative partners are included in **Appendix D** and include:

- John Duarte – Congressman, California District 13
- Esmeralda Soria - Assemblywoman, California District 27
- Brian Pacheco - Fresno County Supervisor, District 1
- Kassy Chauhan - Executive Officer, North Kings GSA

Significance of Project Support: As the Kings Subbasin is a high-priority, critically over drafted groundwater basin, it is imperative that regional stakeholders are included in collaboration to ensure all needs are represented. Collaboration with regional water management entities ensures that all projects that potentially impact water supply and sustainability maintain a “big picture” view. Additionally, Kerman’s efforts to create greater water sustainability and positive climate change benefits will set an example for other Kings Subbasin users, encouraging individual support of both regional and state initiatives for water conservation. Collaboration, participation, and support on the local level is crucial for optimum water conservation as studies have shown that implementation of AMI technology alone does not achieve maximum water savings. Continued publicization of the Project and the “Eye on Water” customer interface application will maximize portal/mobile app use to increase individual water savings, which in turn, will benefit all users of Kings Subbasin groundwater.

Project Impact on Regional Water Conservation: As described above, Kerman’s Project will increase the likelihood of future water conservation by setting the example for other Kings Subbasin groundwater users. The Project will serve as a model for other municipalities, providing insight into costs, implementation strategies, program marketing, and community outreach. Additionally, the “Eye on Water” customer interface application will be a conduit for individual water conservation and savings, prompting positive word-of-mouth recommendation to increase portal sign-ups, daily use, and individual water conservation.

Project Regional Benefits: Implementation of AMI technology in Kerman will result in water savings of 381.6 AFY. This water will remain in the critically overdrafted King Subbasin, benefitting other users who depend on this water for both agricultural and urban use. The 976,000-acre Kings Subbasin includes parts of Fresno, Kings, and Tulare counties, including the cities of Clovis, Fresno, Kerman, Kingsburg, Reedley, Sanger, and Selma. The Subbasin is the source of both surface water and groundwater for the region. According to the [Kings Subbasin 2023 Annual Report](#), subbasin groundwater is used extensively for crop irrigation throughout the area,

amounting to approximately 83% of the total groundwater pumped from the subbasin. In the North Kings GSA (which includes the City of Kerman), approximately 45% of groundwater extracted from the subbasin was used for agricultural purposes and approximately 55% was for urban use. According to the [Public Policy Institute of California](#), the San Joaquin Valley produces more than half of the state's agricultural output and is a key contributor to the nation's food supply. Agriculture in the Valley employs approximately 340,000 people and its crops are responsible for more than \$24 billion in revenues. As such, Project water savings will benefit the residents of the many cities that depend on subbasin water while supporting agricultural operations that are critical for the area's economic vitality and the nation's sustenance. The Project will provide benefits to multiple sectors including residential, municipal, environmental, and agricultural.

Documentation of Support: Letters of Support for the City of Kerman's AMI Project are included in **Appendix D**.

Evaluation Criterion H- Nexus to Reclamation

Project Nexus to Bureau of Reclamation: The proposed Project is directly connected to the Central Valley Project (CVP), one of the largest water storage and transport systems in the world. Constructed and operated by the Bureau of Reclamation, the [CVP](#) provides water for nearly 2.5 million Californians and more than 3 million acres of farmland. Surface water in the Kings Subbasin comes from several sources including the Kings River and the San Joaquin River with smaller amounts imported from other areas including CVP water. This imported surface water helps recharge the critically overdrafted Kings Subbasin. By conserving 381.6 AFY of critical groundwater, the Project creates greater water sustainability and helps offset both Subbasin overdrafting and the need for CVP water to replenish the aquifer. Additionally, this water savings can potentially offset regional demands for imported water which is especially critical as CVP allocations have suffered due to ongoing drought.

Project Performance Measures

The City will use the following performance measures to evaluate the AMI Project following its completion:

Performance Measure 1: Water Savings from Improved Leak Detection

The City will compare pre- and post-Project data on water losses for at least two years following Project implementation. Kerman's annual AWWA Water Loss Audit includes evaluation of the amount of water lost due to system leaks (Real Water Losses) which will provide the necessary data to compare trends and analyze the impact of AMI technology's improved leak detection capability.

Performance Measure 2: Water Savings from Reduced Consumption

The City will compare two years of consumption data following Project completion to evaluate changes in pre- and post-Project overall water consumption. Data from the annual AWWA Water Loss Audit will be used for the analysis.

Performance Measure 3: Water Savings from Reduced Metering Inaccuracies

The City will utilize a variety of methods to evaluate improvements in metering accuracy as a result of AMI Project implementation, including:

- Water meter accuracy testing will be conducted within a year of installation of new AMI technology to ensure increased accuracy of water metering.
- Post-Project AWWA Water Loss Audit data for Apparent Water Losses will be evaluated to identify decreases in the volume of water lost as a result of metering inaccuracies.
- It is anticipated that more accurate meter readings may initially result in increases in both water use and water losses. As one-third of the water system's meters are currently non-functional, the City's water use/loss data has not been accurate for a significant amount of time. Once a new baseline for both water use and losses are established, the City will be better able to determine the true impact of AMI technology.

Performance Measure 4: Increased Water Revenue

The City will compare pre- and post-Project water revenues to evaluate the financial impact of increased metering accuracy through AMI implementation. As one-third of the water system's meters were not accurately measuring water consumption, it is anticipated that the City will see an increase in water revenues. Going forward, the City will be able to more accurately predict City revenue streams.

Performance Measure 5: Customer Engagement

The City will track customer engagement through a variety of methods and modify both the message and methods of engagement based on public feedback. Proposed methods of tracking engagement include the following:

- The City will track resident participation at community outreach events, including booths at the Farmer's Market and planned community town hall meetings. Number of points of contact and individual comments will be recorded and compiled.
- The City will track engagement/comments received for social media posts regarding Project implementation, the "Eye on Water" customer interface application, and water conservation tips. Engagement/comments will be analyzed to determine effectiveness and opportunities for improving outreach.
- Resident sign-ups for the "Eye on Water" customer interface application will be tracked and analyzed to identify opportunities to increase usage and therefore, individual water conservation.

~ End of 50-page maximum Technical Proposal narrative ~

SECTION 2: ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

The City will file a Categorical Exemption for the Project in accordance with CEQA Title 14 of the California Code of Regulations, Chapter 3, Article 19, Section 15302c. The City anticipates that a Categorical Exclusion (CE) under NEPA will be issued as the project will complete minor retrofit activities to existing facilities.

(1) Will the project impact the surrounding environment (i.e., soil [dust], air, water [quality and quantity], animal habitat, etc.)? 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 City does not anticipate impacts on the surrounding environment as a result of the proposed Project. All Project activities will occur on City-owned or private property and will not require any earth-disturbing work. Implementation activities will not result in impacts to the air, water, or animal habitat in Project areas. Noise and dust associated with Project implementation will be minimal.

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

According to the [US Fish & Wildlife Service Information for Planning and Consultation \(IPac\)](#) tool, there are five endangered/threatened species that can be found in the Kerman area; however, there are **no critical habitats in the Project location**. Endangered/threatened species include:

- Fresno Kangaroo Rat – Endangered
- San Joaquin Kit Fox – Endangered
- Blunt-nosed Leopard Lizard – Endangered
- Vernal Pool Fairy Shrimp – Threatened
- Palmate-bracted Bird’s Beak (flowering plant) – Endangered

All Project activities will take place in suburban/urban areas on established residential, commercial, and industrial properties within the City of Kerman. Analysis of potential Project impact will be conducted in accordance with Bureau of Reclamation recommendations and NEPA guidelines.

(3) Are there wetlands or other surface waters inside the project boundaries that potentially fall under Federal Clean Water Act jurisdiction as “waters of the United States?” If so, please describe and estimate any impacts the project may have.

There are no wetlands or other surface waters located within the City of Kerman, and as such, this Project will not impact “waters of the United States.” All Project activities will take place on existing private or City-owned residential, commercial, and industrial properties.

(4) When was the water delivery system constructed?

As per State Water Board records, the water system (including distribution system) has been active since January 1, 1976. Existing water meters are approximately 8-10 years old, installed between 2014-2016.

(5) Will the 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.

This Project will not make any modifications to City-owned irrigation systems that affect headgates, canals, or flumes. Project activities will only modify residential, commercial, and industrial water meters through the removal of old meters/AMR endpoints and the installation of new AMI components.

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

There are no known buildings, structures, or features in the Project area that are listed or are eligible for listing on the National Register of Historic Places

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

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

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

The Project will not have a disproportionately high and adverse effect on low income or minority populations. In fact, the Project will provide water resiliency and economic benefits to this community that is classified as 100% disadvantaged by the CEJST mapping tool.

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

The proposed Project will not have any impact on Tribal lands. Project activities are taking place entirely on private of City-owned property.

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

The proposed Project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

SECTION 3: REQUIRED PERMITS OR APPROVALS

In order to complete the AMI installation activities, the contracted professional services vendor must apply for encroachment permits through the City's Public Works department. It is estimated that the permitting process will take approximately 2-3 weeks. Encroachment permits are required in order to ensure that AMI installation activities align with City construction standards/codes while protecting public safety and the integrity of City's roadway system.

SECTION 4: OVERLAP OR DUPLICATION OF EFFORT STATEMENT

The City of Kerman confirms that it has thoroughly reviewed all current and pending projects and initiatives, both internal and external to its organization. It certifies that there is no overlap or duplication of effort between the proposed project and any other project, research, or initiative that the City is currently engaged in or has plans to engage in the foreseeable future. This statement is made in good faith, and the City of Kerman understands that any misrepresentation or omission of material information can lead to penalties, including but not limited to revocation of funding and legal action. If at any time a proposal is awarded funds that would be duplicative of the funding requested from Reclamation, the City of Kerman will notify the BOR point of contact or the Program Coordinator immediately.

SECTION 5: CONFLICT OF INTEREST DISCLOSURE STATEMENT

At the time of this submission, the City of Kerman declares that, to the best of its knowledge and belief, no conflict of interest exists, either current or foreseeable in the future, that could compromise the integrity, objectivity, or fairness in the execution or outcomes of the proposed project as related to the Bureau of Reclamation request for financial assistance described in this application. All involved entities and individuals have been adequately informed about the necessity to disclose any conflicts of interest and have affirmed their compliance. Should any actual, potential, or perceived conflict of interest arise during the project, the City of Kerman will promptly notify the BOR and provide detailed information on the nature and extent of the conflict(s) that could influence the project's outcomes.

SECTION 6: UNIFORM AUDIT REPORTING STATEMENT

This statement affirms the City's compliance with the uniform audit requirements stipulated by the federal government for grant recipients. The City adheres to the standards and guidelines outlined in 2 CFR 200, Subpart F – Audit Requirements. It is committed to undergoing a single or program-specific audit conducted by an independent auditor, as required, based on the nature and amount of federal funds expended during the audit period.

The City submitted a Single Audit Report for the 2022/2023 Fiscal Year. This report is available on the Federal Audit Clearinghouse website under Unique Entity Identifier (UEI) Number DCN1D4BJ3DM5.

SECTION 7: CERTIFICATION REGARDING LOBBYING

Please see form SF-424 uploaded directly to Grants.gov and the AOR signature submitted under separate cover certifying the statements in 43 CFR § 18.

SECTION 8: SF-LLL: DISCLOSURE OF LOBBYING ACTIVITIES

While the City of Kerman contracts the lobbying firm of Joe A. Gonsalves & Son (925 L Street, Suite 250, Sacramento, CA 95814) for lobbying services before the California State Legislature, the City does not employ a Federal lobbyist.

SECTION 9: LETTERS OF SUPPORT

The City of Kerman's Project is supported by multiple agencies and elected officials. Letters of Project Support from the following entities are included in **Appendix D**:

SECTION 10: LETTER OF PARTNERSHIP

Not applicable. The City of Kerman is applying under Category A, and thus does not have a required partner for this project.

SECTION 11: OFFICIAL RESOLUTION

A copy of the draft Resolution committing the City to the legal and financial obligations associated with the receipt of a financial assistance award under WEEG is included in **Appendix E**. The fully adopted Resolution will be provided upon an award of funding.

SECTION 12: LETTERS OF FUNDING COMMITMENT

Not applicable. The Project does not include third-party cost share.

JOHN DUARTE

13TH DISTRICT, CALIFORNIA

1535 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-1947

90 S. FIRST STREET
TURLOCK, CA 95380
(209) 226-6880

COMMITTEES

COMMITTEE ON AGRICULTURE

COMMITTEE ON NATURAL RESOURCES

COMMITTEE ON TRANSPORTATION
& INFRASTRUCTURE

Congress of the United States
House of Representatives
Washington, DC 20515

November 5, 2024

The Honorable Camille Calimlim Touton
Commissioner
U.S. Bureau of Reclamation
1849 C Street NW
Washington, DC 20240-0001

Re: Application for the City of Kerman, Advanced Metering Infrastructure Project

Dear Commissioner Touton:

As a representative of California's 13th Congressional District, I am writing in support of the City of Kerman's Advanced Metering Infrastructure Project (Project) application to the Bureau of Reclamation's Water and Energy Efficiency Grants (WEEG) Program. If awarded funding, the City will be able to replace outdated and failing water meters in Kerman homes, businesses, schools, and community spaces with Advanced Metering Infrastructure (AMI) that will help customers and City staff to collaborate on proper water usage reporting within this rural community.

As a member of the Subcommittee on Water Resources, I recognize the hard work, support, and funding needed for water infrastructure projects. As a fourth-generation farmer and Central Valley native, I support investments for water infrastructure projects that improve our water systems, especially in rural communities. Water is one of California's most valuable and most at-risk resource. Kerman's Project will replace 4,086 failing water meters with AMI technology to accurately record water usage, detect leaks and line breaks, mitigate revenue losses for the City, and offer improved customer-interface services. By replacing failing meters and installing new metering technology, the City hopes to conserve 381 AFY of water and 216,027 kWh per year in energy savings, which will be critical for supporting and meeting our region's most pressing water needs. Currently, Kerman residents are unable to detect water leaks or over-usage. Inaccurate meter readings have created a significant barrier for the City to provide efficient water services to customers.

Sustainable and efficient water management is best accomplished through improved water infrastructure. This Project will allow the City of Kerman to offer their customers an upgraded, lasting meter system. It is for these reasons; I offer my strong support of the City of Kerman's application for grant funding. Thank you in advance for your consideration of their AMI Project.

Sincerely,



John Duarte
Member of Congress

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0027
(916) 319-2027
FAX (916) 319-2127

DISTRICT OFFICE
512 WEST 18TH STREET, SUITE 512
MERCED, CA 95340
(209) 726-5465
FAX (209) 726-5469

<https://a27.asmdc.org/>

Assembly California Legislature



ESMERALDA SORIA
CHAIR, AGRICULTURE COMMITTEE
ASSEMBLYWOMAN, TWENTY-SEVENTH DISTRICT

COMMITTEES
BANKING AND FINANCE
BUSINESS AND PROFESSIONS
GOVERNMENTAL ORGANIZATION
JOBS, ECONOMIC DEVELOPMENT, AND
THE ECONOMY

SELECT COMMITTEES
CALIFORNIA-MEXICO BI-NATIONAL AFFAIRS
DOMESTIC VIOLENCE
DOWNTOWN RECOVERY
MASTER PLAN FOR HIGHER EDUCATION IN
CALIFORNIA
MENTAL HEALTH ACCESSIBILITY WITHIN
NON-ENGLISH SPEAKING COMMUNITIES
NATIVE AMERICAN AFFAIRS
RECONNECTING COMMUNITIES

October 28, 2024

Mr. Josh German
WEEG Grants Program Coordinator
Bureau of Reclamation
P.O. Box 25007
Denver Federal Center
Denver, CO 80225-0007

RE: City of Kerman's Bureau of Reclamation Water and Energy Efficiency Grants Program Application

Dear Mr. German:

As the Assemblywoman for California's 27th Assembly District, I write on behalf of the City of Kerman (City) to offer my support for their application to the Bureau of Reclamation's Water and Energy Efficiency Grants (WEEG) Program for their Kerman Advanced Metering Infrastructure Project (Project).

Water is an invaluable resource to the communities throughout California's Central Valley. As the City continues to prioritize water conservation programs and infrastructure that benefits Kerman residents and their quality of life, implementation of updated and advanced meters will assist the City in their efforts. This Project will allow the City to overhaul their current water meter system with Advanced Metering infrastructure (AMI) that is geared toward innovative water management, improved reporting, and enhanced customer support, all while conserving water.

The City seeks to replace 4,086 outdated meters with new and improved AMI metering technology that will better gauge water usage, result in roughly 381 acre-feet per year in water savings, and support the water needs of all Kerman customers. Because of the state of the current meters, Kerman residents are at risk of unidentifiable water leaks and inaccurate water readings. These issues have prevented the City from being able to collect accurate and timely usage data that helps to inform water conservation decisions across the area. By installing new AMI meters across Kerman, the City is taking strides to bring this disadvantaged community—which is afflicted by severe environmental and socioeconomic burdens that disproportionately impact rural areas—into the future with more efficient water and energy infrastructure.

This Project, which aligns directly with WEEG Program goals, will help Kerman to better conserve water and mitigate burdens caused by the severe impacts of climate change and threats to their groundwater supply. As such, I strongly urge your support for the City's application for grant funding. If you have any questions, please contact my District Director Gilbert Felix at Gilbert.Felix@asm.ca.gov or (559) 890-2705.

Sincerely,

A handwritten signature in black ink, appearing to read 'Esmeralda Soria', with a stylized flourish at the end.

ESMERALDA SORIA

Assemblywoman, 27th District



County of Fresno

BOARD OF SUPERVISORS
SUPERVISOR BRIAN PACHECO – DISTRICT ONE

October 29, 2024

Mr. Josh German
WaterSMART Grants Program Coordinator
Bureau of Reclamation
P.O. Box 25007
Denver Federal Center
Denver CO 80225-0007

Dear Mr. German:

As the Fresno County Supervisor representing western Fresno County, I urge your support for the City of Kerman's application for funding of its Advanced Metering Infrastructure Project (AMI) to the Bureau of Reclamation's WaterSMART – Water and Energy Efficiency Grant (WEEG) Program.

In the San Joaquin Valley, we face risks of high temperatures, droughts, wildfires, and threats to water supply, making water conservation more important than ever. AMI will allow Kerman (population 16,000), to upgrade 4,086 water connections and reclaim 381 acre-feet of lost water annually. AMI supports Kerman's water conservation and sustainability efforts, will reduce water risks, and bolster climate resiliency through adaptation to improved water management practices.

As a rural disadvantaged community, Kerman is often overburdened by extreme weather and climate risks that threaten water supplies. Recently, Kerman has recorded meter failures and inaccurate meter readings, along with unidentified water leaks, overuse, and related billing issues.

As a member of boards addressing western Fresno County's most pressing water issues - the North Kings Groundwater Sustainability Agency and McMullin Area Groundwater Sustainability Agency - I apply my agricultural, government, and business experience to help solve water sustainability issues that impact my constituents.

As a 4th generation Kerman-area farmer, I recognize the benefits of upgrading Kerman's water infrastructure with this advanced technology, allowing the City to more accurately measure and report water use in a timely manner and allow data-informed water conservation decisions. With AMI, customers will have real-time access to usage information, allowing them to gauge their water use and better manage their water bills. With these water and cost savings in mind, the AMI Project is an opportunity to bring Kerman into the future of water infrastructure technology.

I urge your support for Kerman's WEEG funding application. Thank you for your consideration.

Sincerely,

Brian Pacheco
Fresno County Supervisor, District 1

Biola • Cantua Creek • Easton • Firebaugh • Five Points • Helm • Herndon • Highway City
Kerman • Mendota • Mercy Hot Springs • Rolinda • San Joaquin • Three Rocks • Tranquillity



October 30, 2024

Member Agencies

*Bakman Water Company
Biola Community Services District
City of Clovis
City of Fresno
City of Kerman
County of Fresno
Fresno Irrigation District
Fresno Metropolitan Flood
Control District
Garfield Water District
International Water District*

Board of Directors

*Chairman Jerry Prieto, Jr.
Fresno Irrigation District
Vice-Chairman Brian Pacheco
County of Fresno
Steve Pickens
Bakman Water Company
Mathew Basgall
City of Clovis
Jerry Dyer
City of Fresno
Kyle Moeller
Seat 7 – Members At Large
Karl Kienow
Garfield Water District*

Executive Officer

Kassy D. Chauhan, P.E.

Internet

www.NorthKingsGSA.org

Mail

*North Kings GSA
c/o Fresno Irrigation District
2907 S. Maple Ave.
Fresno, CA 93725*

Phone

559-233-7161

Mr. Josh German
WaterSMART Grants Program Coordinator
Bureau of Reclamation
P.O. Box 25007
Denver Federal Center
Denver, CO 80225-007

Subject: Letter of Support for United States Bureau of Reclamation (USBR) WaterSMART Grant for City of Kerman's Advanced Metering Infrastructure Project

Dear Mr. German:

The North Kings Groundwater Sustainability Agency (NKGSA) is writing in strong support of the City of Kerman's Advanced Metering Infrastructure Project application to the Bureau of Reclamation FY 2025 WaterSMART Water and Energy Efficiency Grant (WEEG) Program. With the assistance of WEEG funding, the City of Kerman seeks to improve 4,086 water meters across the Kerman community with advanced metering infrastructure (AMI) that will improve water usage measurement and reporting, thereby helping to preserve water supplies for Fresno County's rural residents.

The North Kings GSA is a joint powers authority representing the Fresno Irrigation District, the County of Fresno, the City of Fresno, the City of Clovis, the City of Kerman, the Biola Community Services District, Garfield Water District, and the International Water District. Our goal is to support these public agencies in groundwater resource management and sustainability efforts. Through initiatives like the Groundwater Sustainability Plan, North Kings GSA has collaborated with the City of Kerman on best water management methods, intra-basin coordination agreements, and general components to groundwater sustainability plans that prioritize water quality, access to drinking water, and water infrastructure.

The City's Public Works Department and Water Division manages the City's wells, distribution lines, water meters, and back-flow prevention systems. They provide service for over 16,000 customers in their homes and businesses, including the installation and management of water meters. The City's most recent water audit indicated 1,300 nonfunctional meters throughout the City of Kerman which has led to unreported leaks, over-usage, inconsistent water readings, billing discrepancies, pressure fluctuations, and water damage. Because water meters are an essential component of water conservation and

About NKGSA: The North Kings Groundwater Sustainability Agency is a Joint Powers Authority formed in December 2016. Composed of local public agencies and others engaged through binding agreements, the NKGSA is the governing body of a portion of the Kings Subbasin (DWR Bulletin 118, 5-22.08) in compliance with the Sustainable Groundwater Management Act of 2014. NKGSA members are Bakman Water Company, Biola Community Services District, City of Clovis, City of Fresno, City of Kerman, County of Fresno, Fresno Irrigation District, Fresno Metropolitan Flood Control District, Garfield Water District, and International Water District.

consumption management, ensuring access to updated equipment will help mitigate these concerns. Through this project, the City of Kerman will install 4,086 AMI meters, equipped with cloud-based software to support customers with up-to-the-minute information regarding their water usage. The implementation of a user-friendly customer interface will empower residents with water consumption information and water conservation tips. Studies show that water consumption can be reduced by up to 30% with updated metering infrastructure to track water usage, trends, and rates. As one of the fastest growing cities in Fresno County, the City of Kerman is dedicated to protecting their water supply while practicing water conservation; this project will help them adapt their water sustainability approaches with new technology and upgraded utility infrastructure.

The North Kings GSA offers its support for the City of Kerman's proposed AMI Project and appreciates their commitment to implementing citywide groundwater sustainability initiatives. We hope to hear good news as it relates to their application for funding from the Bureau of Reclamation's WEEG Program.

Please do not hesitate to contact me at 559-233-7161 x. 7109 or by email at kchauhan@fresnoirrigation.com, should you have any questions.

Sincerely,



Kassy Chauhan
Executive Officer



City of Kerman
Advanced Metering Infrastructure for Water Conservation Project
WaterSMART: Water and Energy Efficiency Grants for Fiscal Year 2025

APPENDIX E
Draft Resolution

DRAFT RESOLUTION NO. [REDACTED]

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KERMAN
APPROVING APPLICATION FOR GRANT FUNDS FOR THE WATER AND ENERGY EFFICIENCY PROGRAM
FROM THE BUREAU OF RECLAMATION WATERSMART PROGRAM

WHEREAS, the City of Kerman proposes to implement the Kerman Advanced Metering Infrastructure (AMI) Project to increase water conservation; and

WHEREAS, the City of Kerman has the legal authority and is authorized to enter into a funding agreement with the Bureau of Reclamation; and

WHEREAS, the City of Kerman intends to apply for grant funding from the Department of the Interior's Bureau of Reclamation Fiscal Year 2025 WaterSMART: Water and Energy Efficiency Grants (WEEG) Program for the Kerman AMI Project.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF KERMAN does resolve as follows:

- SECTION 1. The City Manager or designee are hereby authorized and directed to prepare and submit an application for funding with the Bureau of Reclamation.
- SECTION 2. The City Manager or designee is hereby authorized and directed to enter into, execute, and deliver on behalf of the City of Kerman, a grant or cooperative agreement and any and all other documents required or deemed necessary or appropriate to evidence and secure grant funding with the Bureau of Reclamation.
- SECTION 3. The City Manager or designee will collaborate with the Bureau of Reclamation to meet established deadlines for entering into the aforementioned grant or cooperative agreement.
- SECTION 4. The City of Kerman shall be subject to the terms and conditions as specified by the Bureau of Reclamation under the WEEG Program Notice of Funding Opportunity and in the grant or cooperative agreement. All activities funded, information provided, and established deadlines represented in the City of Kerman's application will be enforceable through the fully executed grant or cooperative agreement.
- SECTION 5. The City of Kerman hereby agrees to use the funds for eligible uses and allowable expenditures in the manner presented and specified in the approved application.
- SECTION 6. The City Council agrees to provide matching funds as required by the WEEG Notice of Funding Opportunity.

The foregoing resolution was approved and adopted by the City Council of the City of Kerman at a regular meeting held on the [REDACTED] day of [REDACTED] 2024, by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

The foregoing resolution is hereby adopted.

Maria Pacheco
Mayor

ATTEST:

Josie Camacho
City Clerk