RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES **DATE**: JANUARY 22, 2018

ITEM NO: 5

SUBJECT: **PURCHASE OF ULTRASONIC WATER METERS NEEDED FOR LARGE COMPOUND WATER METER REPLACEMENTS – $263,600**

ISSUE:

Approve an expenditure of $263,600 for the purchase of Master Meter Octave Ultrasonic water meters ranging in size from three-inch to ten-inch from Core & Main LP for large compound water meter replacements at various locations throughout the City of Riverside's water service territory.

RECOMMENDATION:

That the Board of Public Utilities approve an expenditure of $263,600 for the purchase of Master Meter Octave Ultrasonic water meters ranging in size from three-inch to ten-inch from Core & Main LP for large compound water meter replacements at various locations throughout the City of Riverside's water service territory.

BACKGROUND:

The City of Riverside Public Utilities Department (RPU) delivers water to roughly 65,000 customers and measures the water consumed by each customer using a meter located at each water service. Water meters are sized according to the individual customer's water consumption needs. Most of RPU's water meters serve residential customers and are sized two-inches or smaller. However, RPU employs roughly 480 large water meters that serve commercial and industrial customers and range in size from three-inch to ten-inch. This group represents less than 1% of RPU's water meter population yet generates nearly 20% of total monthly water revenues.

The rate at which commercial and industrial customers consume water can vary significantly throughout the day. For example, water consumption can be significant during periods when certain industrial processes are in effect yet much lower at other times. Mechanical meters are limited to recording flow rates within certain ranges based on their size. Therefore, in order to capture the entire range of flow rates of these customers, the meters have two measuring elements: one to measure low flows and a second to measure high flows. This type of meter setup is known as a compound water meter. Compound water meters are complicated and cumbersome and require extensive maintenance, and many of the internal repair and replacement parts for these meters are no longer available.

Compound water meters utilize turbines and other mechanical components to measure the volume of water that passes through the meter. As with any mechanical device, compound water meters are susceptible to wear over time. Mechanical wear in a water meter slows down its internal components leading to under-registering the volume of water flowing through the meter as compared to what is actually used by the customer.

In addition, the compound meters have a counterweight inside that regulates the flow between the two measuring elements. The counterweights of these older compound meters were originally manufactured with lead inside of them. The lead has since been mostly removed and sealed from the water stream by applying a special epoxy sealant. However, recent inspections have revealed that the epoxy seals of some counterweights have cracked.

The typical useful service life of a compound water meter is twenty years, and 58 of RPU's large compound water meters range in age between twenty and thirty-three years.

Figure 1 – Typical Cracked Epoxy Seal in the Counterweight

DISCUSSION:

Over the past four years, staff has replaced about forty antiquated compound water meters with Octave Ultrasonic water meters manufactured by Master Meter (Octave). These meters have performed very well during this time and have tested within the accuracy tolerances specified by the American Water Works Association (AWWA) at various flow rates when randomly tested in place. Ultrasonic water meters use sound waves to measure the flow and are ultra-sensitive to ensure customers are billed for their true consumption. Ultrasonic water meters offer many advantages over their mechanical counterparts such as increased sensitivity and better accuracy, no moving parts to wear, no maintenance required, a guaranteed battery life of ten years (pro-rated out to twenty years), maintain their accuracy throughout their useful life and ability to readily integrate into Advanced Metering Infrastructure (AMI) systems. In addition, ultrasonic water meters allow for a much more compact and straightforward installation.

Figure 2 – Typical Mechanical Compound Water Meter Installation

Figure 3 – Typical Ultrasonic Water Meter Installation

Although there are several companies who manufacture ultrasonic water meters for small size applications, Octave is the only large ultrasonic water meter currently available. Octave meets RPU's performance requirements and is used by other water agencies. The Octave has a proven track record achieving the necessary sensitivity, durability and other performance requirements.

Paragraph (c) of Section 602 of City of Riverside Resolution No. 23256 (Purchasing Resolution) allows for sole sourcing the procurement of goods. Core & Main LP is the regional distributor of the Octave in Southern California, and the Purchasing Manager has approved the appropriate sole source procurement justification.

The priority to replace the antiquated compound water meters has increased due to the improved low flow reading sensitivity offered by Octave and the cracked epoxy seal in the counterweights of the old compound meters. For example, a 3-inch turbine meter can read low flows as low as a 3 gallons per minute while the 3-inch Octave ultrasonic meter can read as low as 0.5 gallons per minute. Water field crews will work diligently to replace as many of the 58 old compound meters as possible during the remainder of Fiscal Year 2017-18. The balance will be replaced in the early part of Fiscal Year 2018-19.

Octave ultrasonic meters are approximately 45% less expensive than a new compound water meter. The savings are further enhanced by the demonstrated reduction in maintenance costs and enhanced ability to read lower flows that translates into more accurate customer billing over a large range of flows.

The table below summarizes the cost for purchasing 58 new Octaves at the established pricing from Core & Main LP:

Meter Size (Inch)	Meters > 20 Years Old	Meter Cost (Each)*	Extended Cost
3	2	$1,473.93	$2,947.87
4	3	$2,089.38	$6,268.14
6	12	$3,591.66	$43,099.96
8	35	$4,595.87	$160,855.50
10	6	$8,400.11	$50,400.66
Totals	**58**		**$263,572.13**

* Includes sales tax

FISCAL IMPACT:

Sufficient funds are available in the Water Meter Replacement Account No. 6230000-470702.

Prepared by: Michael L. Plinski, Interim Assistant General Manager/Water
Approved by: Todd L. Jorgenson, Interim Utilities General Manager
Approved by: John A. Russo, City Manager
Approved as to form: Gary G. Geuss, City Attorney
Certifies availability of funds: Laura Chavez-Nomura, Utilities Assistant General Manager/Finance

Attachment: Presentation