Attachment 4
Advanced Metering Infrastructure (AMI)
Benefits and Frequently Asked Questions

Board of Public Utilities
January 28, 2019

<u>**AMI Benefits**</u>

1. Quantitative Benefits
   a. AMI Benefits
      i. Meter Reading Reduction – Elimination of on-cycle manual meter reading expenses, including staff time, fuel, and vehicle maintenance costs.
      ii. Customer Call Reduction – Reduction of cost related to decreased number of customer calls. This reduction occurs from a combination of online usage information now available to a Customer Service Representative to better respond to inquiries, in addition to customers having access to their information via Customer Portal. Customers will also now have the ability to configure usage notifications via text or email.
      iii. Re-Read Reduction – Elimination of most check-read/skip/no-read field activities and expenses in reviewing skips report, creating the work orders and rolling a truck to collect the re-read. New billing routines will have a range of dates a read may be pulled to use on bill (e.g. read date or two days prior) and/or a read may be collected via on-demand read functionality.
      iv. Move-In / Move-Out Read Reduction – Elimination of most off-cycle read field activities when customers move in and out of a premise. This savings will result from new presentation of daily AMI reads and the ability to collect on-demand reads.
      v. Non-Pay Disconnect Reduction – Reduction in collections labor and field activities for non-paying customers. The majority of trips to a premise can be avoided due to remote disconnect/connect capability of electric AMI meters.
      vi. Billing Services and Exception Handling Reduction – Reduction in billing service expenses associated with increased efficiencies. The new MDMS will contain advanced Validation, Editing, and Estimation (VEE) routines and accurate real-time and historical meter information. This can translate to fewer bill estimations, billing errors, and adjustments.
      vii. Electric Distribution System Asset Performance Improvement – Reduction in O&M costs from utilizing real-time AMI data to assist with operational decisions. Manual adjustments or integration with a SCADA system can result in performance improvements via electrical distribution system controls.
      viii. Theft Identification Revenue – Alarms triggered in the AMI software can identify electric meter tampering and product diversion. This is a valuable tool for any utility to identify theft in near real time as compared to monthly when the meter reader puts eyes on a meter.
      ix. Electric Meter Accuracy Improvement – Electromechanical meters degrade over time. According to a study performed by the Electric Power Research Institute (EPRI), electromechanical meters register at a slower rate if not calibrated ranging from 0.5% after five years to 2.75% after 20 years. RPU has approximately 7,500 electromechanical meters that are older than 20 years, as well as manually read / probed meters, which will be replaced with more accurate AMI meters.
      x. Annual Meter Replacement Savings – Eliminate current annual meter replacement spending for faulty meters by installing new AMI ready meters with long-term warranties. Any capital cost for new meters will be accounted

        for in the capital costs of the financial model, so this is added as a benefit to avoid any double counting of the meter replacement budget.

    xi. Outage Supervision - The MDMS collects power outage and restoration data from AMI head end system, in real time, if available. With this interface, the system plots outages on a map with drillable links to view outage events; records and reports outage and restoration events; and calculates and tracks outage statistics.

  b. Prepay Benefits

    i. Outstanding Payments/Write Off Reduction – Reduction of debt through the Prepay program's requirement to pay for services "up front." Bad debt write offs can be reduced from transitioning regular non-pay disconnect customers to a Prepay program.

  c. Electric Volt/VAR Optimization Benefits

    i. Voltage Control – Load reduction during real-time "shock" event via optimized voltage control techniques. A modern AMI system is necessary for most Volt Var Optimization (VVO) systems since knowing the actual voltage at the customer level in near real time is critical to monitoring distribution voltage at various points along the circuit to prevent excursions above and below service standards.

    ii. Ability to discover incorrect metering and instances of damaged wiring.

2. Qualitative Benefits

  a. Improved System Planning Capabilities

    i. Information that can be produced and analyzed from an AMI system can facilitate the improved management and monitoring of electric, system performance leading to more informed capital investment decisions.

    ii. System engineering and maintenance programs can be supported with better, more frequent access to the more granular data that will be provided by the AMI system.

  b. Energy Management

    i. With interval consumption data (consumption, power factor, voltage, etc.) coupled with third-party portals and specialized metering, customers can more effectively manage their energy usage.

    ii. The AMI system will enable RPU to model the overall system demand and facilitate proactive management of the industrial customer base.

  c. Prevention of Customer Claims - An AMI system can identify events and alarms such as high voltage alarms from a customer meter. Such information correlated with improved system power quality indicators and notification of power quality issues reported by customers can lead to preventative maintenance of assets, reductions in truck rolls, reduction in staff hours used to research and analyze issues, and avoidance of customer-side equipment damage.

  d. Voltage Optimization - An AMI system, with properly programmed electric meters, can capture and record voltage readings which can help determine voltage levels throughout a feeder. Equipped with this information, operators can adjust line equipment and tap changers to optimize voltage throughout the distribution line.

Attachment 4
Advanced Metering Infrastructure (AMI)
Benefits and Frequently Asked Questions

Board of Public Utilities
January 28, 2019

e. Unauthorized Use Detection - Current generation AMI Systems provide flag or high priority alerts or reports for tamper detection. This information will be of significant benefit to RPU and should also facilitate reduction of unauthorized usage or theft.

f. Improved Safety - Ensuring safety for both utility employees and customers is essential. With the introduction of automated meter reading, RPU will have the ability to remotely read meters, initiate on-demand meter reads, and remotely disconnect/reconnect customers. This will dramatically reduce exposure to risky conditions on the road and at a customer premise, such as vehicle accidents, unfriendly pets, physically hard to access meters, and theft.

g. Reduced Carbon Footprint - Reductions in truck rolls and drive time for Meter Reading and field activities related to non-pay disconnect/reconnect, re-reads, and move in/out reads will all contribute to a reduction in carbon output.

h. Compliance with Future Legislative Requirements - The Energy Policy Act of 2005 requires states and non-regulated utilities to investigate and consider AMI for its customers. With the introduction of AMI, RPU will better prepare itself to address all legislative and/or CA state requirements regarding conservation, time-based rates and other energy-related issues.

i. Time-based Data - Enables RPU to conduct advanced rate studies of various customer classes to implement more effective Time-of-Use (TOU) rates, TOU for Electric Vehicles, and Net Metering for solar installations.

j. Smart City Capabilities - The AMI communication network is compatible with various Smart City applications, such as street lighting networking and control. Tantalus' partnerships with other value-add providers can enable and provide comprehensive solutions as RPU's needs grow for Smart City functionality.

FREQUENTLY ASKED QUESTIONS

Q1: What is AMI?

A1: AMI stands for Advanced Metering Infrastructure, a state-of-the-art technology that will enable RPU to read electric meters remotely. Reading the meters will no longer require someone physically visiting the site and manually reading the meter. This technology will allow data to be transferred back and forth from the meter. Advanced Metering Infrastructure combines several technologies, methods and hardware to provide a connection between customers' water/electric meter and RPU's billing system. AMI transmits meter reads and diagnostic codes using RF communication and a backhaul method from the customer meter to the utility for billing purposes.

Q2: Is AMI and a Smart Meter the same?

A2: Yes, an AMI or Smart Meter, is a digital electric meter equipped with wireless communications technology. Smart Meters are a key part of establishing the smart electric grid of the future and realizing the Utility 2.0 vision. Customers will be able to better manage their use of energy, save money, and reduce their impact on the environment with advanced meters.

Q3: What makes a meter "smart"?

A3: Smart Meters are equipped with wireless communications technology. This allows RPU to communicate with Smart Meters remotely so that certain service requests can be completed faster, such as meter reading, service connections, and outage notifications.

Q4: Will the existing meters be replaced?

A4: Through the Advanced Meter Program, RPU will replace approximately 25,000 electric meters with new AMI meters. The new AMI meters will act as collectors, automatically retrieving meter data from the remaining non-AMI meters, thus eliminating the need for any drive-by meter reading.

Q5: What does an AMI meter look like?

A5: An AMI enabled meter looks no different from a typical meter. One difference some customers may notice is that the meter installed at their location is digital instead of electromechanical.

Q6: Will meters still be read manually on occasion?

A6: Yes, although the AMI meters will be remotely read, RPU will need to inspect, monitor and service the system on occasion.

Board of Public Utilities
January 28, 2019

Q7: How will an AMI system benefit RPU customers?

A7: By deploying an AMI system, RPU will be able to provide its customers with more frequent, timely and accurate meter readings without a meter reader visiting each location to gather the readings. This will virtually eliminate the need for estimated bills. Also, the system will be used to monitor power outages resulting in more reliable service to the customers. As a result, the utility will lower overall operating costs while providing the customer with more information. The additional information will allow our customers to make more informed decisions about power and water usage.

Q8: What is the timeframe for installing AMI meters?

A8: In late 2019 through early 2020, RPU plans to replace 25,000 electric meters. The remaining legacy ERT meters (approximately 85,000) will be replaced at their normal end-of-life or as they fail through the normal annual replacement process and budget and are not included in this Program scope or budget.

Q9: How long will it take to install an AMI enhanced meter at a customer's location?

A9: A typical AMI installation will take approximately 15 minutes, during which time the customer will experience a brief outage.

Q10: Does the customer need to be at home for the meter replacement?

A10: No, it is not necessary for the customer to be at home for the meter replacement. When the technician arrives to replace the meter, he or she will attempt to contact and inform the customer by knocking on the door prior to the process, but if the customer is not at home, a notice will be left providing information.

Q11: How much will the AMI installation cost the customer?

A11: There will be no cost to the customer for the installation of the AMI technology or AMI enabled meter.

Q12: Who will be installing the AMI meters?

A12: RPU plans to utilize internal staff to replace the meters.

Q13: Will I have the option to opt-out of receiving an AMI meter?

A13: RPU will be evaluating the opt-out process in the first phase of the Advanced Meter Program. More information will be presented on this topic when determined.

Q14: I understand that AMI meters use radio frequency communication. Is this safe?

A14: AMI meters use the same FCC-approved radio frequencies as used for many years in devices such as baby monitors, portable phones, remote controlled toys and medical monitors.

RF fields from AMI meters have been studied and found to emit very low fields and then only intermittently, so any exposure to humans would be extremely small. There are no known adverse biological effects from these small fields. AMI meters provide significantly less RF exposure than a single cellular phone call of the same length.

Q15: Will it be easy to read the AMI meter's digital display?

A15: Yes. AMI meters have an easy-to-read digital display instead of a series of dials. Customers will also be able to check their usage online through the Riverside Public Utilities websites.

Q16: I'm concerned about privacy – do digital meters give my personal information away?

A16: No. The new digital meter does not have access to your personal information; it only records electricity usage.

Q17: Will my bill look different?

A17: No. The look of your utility bill will remain the same for now.

Q18: Will this affect meter reader jobs?

A18: Yes. AMI will mean a reduction in the meter-reading workforce, but not right away. Because AMI deployment is scheduled to take place over the course of 1-3 years, any impact to the RPU workforce will occur over time. Some of the current meter readers will be eligible for retirement by then, and others will be trained to move into other positions that become available.

Q19: How long will this new device work?

A19: The life expectancy of the devices installed in the field is approximately 10-15 years, depending on manufacturer, location, environment, etc. Periodic inspection and maintenance will be performed to ensure all devices are performing as expected.

Q20: What is the estimated total cost of the Advanced Meter Program?

A20: The cost of the Program is $10,285,000.

Q21: What did the Strategic Technology Plan estimate for the AMI project?

A21: The Plan outlines high-level business cases for implementing AMR/AMI hybrid deployments and recommended the AMI/AMR hybrid solution, at an estimated cost of $17.6 - $26.4M.

Q22: What is RPU's return on investment (ROI) for the AMI project?

A22: The estimated ROI for the Electric AMI Program is five (5) years.

Q23: What is the typical cost of an AMI meter?

A23: The typical cost for an AMI; residential electric meter is $100-$125; commercial electric meter is $250-$300.

Q24: How will RPU determine which meters will be replaced through the Alpha Proof-of-Concept?

A24: The Alpha POC consists of installing 100 new AMI meters in strategic "clusters" throughout the City that correspond to each of Riverside's seven (7) wards. The specific areas and meters will be determined by a joint review with key stakeholders following vendor selection and architectural reviews. The meters selected are to represent a cross-section of the most common, challenging and/or unique considerations and will encompass a mix of residential (including multi-family) units, solar PV owners and business customers, and will be a cross section of different meter types, customer types and configurations.

Q25: How will RPU determine which meters will be replaced through the Beta Proof-of-Concept?

A25: In the Beta POC, RPU will create a full AMI network with the deployment of approximately 25,000 AMI meters to collect data from all of the remaining legacy ERT meters in the system. Of the 25,000, all commercial and industrial meters (approximately 11,000) will be replaced and the remaining will be residential meters at ends of feeders to capture distribution voltage data, in high turn-over areas for automated meter connects and disconnects, and other strategic locations that maximize the return on investment.