

PHASE THREE PROJECT UPDATE FOR ELECTRIC ADVANCED METER SYSTEM AND METER DATA MANAGEMENT SYSTEM

Riverside Public Utilities

City Council
November 9, 2021

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ADVANCED METER INFRASTRUCTURE

AMI is a system of:

1. **Advanced meters**
2. **Communications networks**
3. **Data management**

It allows **two-way communication** between a customer's meter and the utility. The system transmits near **real-time information** about usage.



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METER DATA MANAGEMENT SYSTEM

An MDMS **validates, estimates** and **edits** the meter data to ensure the data is **accurately transferred** to the Customer Information System (CIS) for billing.



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OVERALL BENEFITS

- Improved reliability
- Quicker restorations
- Access to usage info
- Reduced disputes
- Online tools

- Reduced carbon/ GHG emissions
- Lower energy consumption
- Increased conservation



- Automated meter reads
- Reduced outages
- Outage management
- Peak reduction
- System planning

- Cost-of-service studies
- Rate design
- Programs and rebates
- Theft detection

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Slide 4

TJ5 added from prior presentations and Board deep dives
Tavaglione, Jennifer, 6/23/2021

RIVERSIDE'S PROGRAM APPROACH

1. **Primary Goal:** maximize investment in existing meters.
2. **ERT Overlay:** install fixed network utilizing new AMI meters and collection devices to collect data from the existing meters, while providing new AMI functionality.
3. **Phased Approach:** Alpha and Beta Proof-of-Concepts, before rolling out Full Implementation.
4. **Best Practices:** utilize lessons learned from many other utilities that have already implemented AMI

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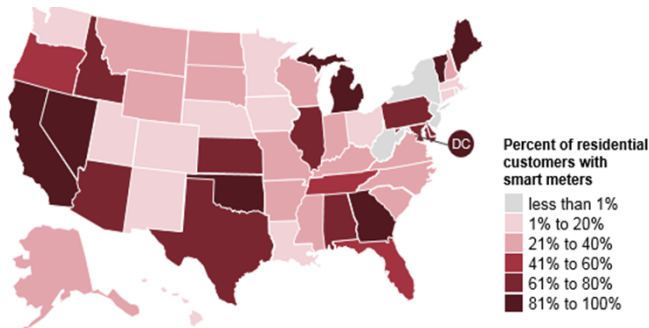
AMI IS THE CURRENT STANDARD FOR ELECTRIC METERING

In 2017, there were 78.9 million electric AMI installations in the US, which is over 50% of electric customers

By 2022, advanced meter installations worldwide will surpass 1.2 billion

Residential Smart Meter Adoption Rates by State - 2016

Source: U.S. Energy Information Administration



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CALIFORNIA IOU AMI DEPLOYMENT

4.1.2 ADVANCED METERING INFRASTRUCTURE DEPLOYMENT

Table 4. Advanced Metering Infrastructure (aka Smart Meters) Rollout⁹⁵ as of Oct. 2019⁹⁶

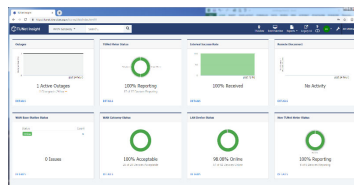
IOU	Total Number of Electric Smart Meters (Millions)	Cumulative Electric Smart Meter Opt-outs ⁹⁷ (No. of customers)	Percentage of Opt-outs	Annual Customer Complaints (escalated) ⁹⁸
PG&E	5.44	43,064	0.79%	9
SDG&E	1.45	4,217	0.29%	0
SCE	4.7	22,972	0.48%	495
Total	11.59	70,253	0.61%	504

Source: IOU 2019 Smart Grid Reports and Data Requests

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ALPHA PROOF-OF-CONCEPT

AMI Test Lab



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Field Install



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BETA PROOF-OF-CONCEPT

- ✓ Installed all remaining communication devices
- ✓ Installed approximately 1,000 AMI meters
- ✓ Completed the integrations between the AMI head-end system, the MDMS, and the CIS
- ✓ Conducted extensive system testing
- ✓ Re-engineered impacted business processes

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BETA PROOF-OF-CONCEPT (CONT'D)

- ✓ Verified design, security, and capabilities of the AMI HES and the MDMS
- ✓ Validated that data flows accurately from the meter all the way through to the billing system
- ✓ Configured the customer usage web portal
- ✓ Implemented initial staffing changes

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BETA LESSONS LEARNED EXAMPLES

1. Lack of coordination between the multiple vendors
2. Vendors utilized different versions Multispeak software
3. Car-hit-pole scenario - loss of communication device
4. Purchased back-up equipment
5. Identified issues at customer premise
6. Identified outage at downed powerline
7. Utilized other analytical software tools to conduct complex system testing and verify test results

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SYSTEMS AND SOFTWARE

1. During this Phase, it was determined that additional work will be necessary for the enQuesta system integration to automate an AMI manual work order process
2. Second Amendment to the Implementation Services Agreement to extend term to June 3, 2021, and increase the amount of the agreement by \$87,470
3. First Amendment to the Support and Maintenance Agreement in the amount of \$6,450

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COMMUNITY/CUSTOMER ENGAGEMENT CAMPAIGN

1. AMI program webpage
2. Postcard mailed to POC customers
3. Letter mailed to POC customers
4. AMI Program 1-page flyer, available at all customer service locations



5. Booth at Long Night of Arts and Innovation
6. Information sessions for Board, Council and City Management

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PHASE 3 - FULL IMPLEMENTATION

1. Full implementation of the "ERT overlay"
2. Full AMI network with the deployment of approximately 24,000 additional AMI meters
 - a) All commercial and industrial meters (approximately 12,500)
 - b) Approximately 11,500 residential meters
3. Fully automated electric meter reading process
 - a) AMI devices will collect data from all ERT meters

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PRIVACY AND SECURITY

1. All aspects of security for the AMI system adhere to the latest industry standards e.g. FCC, NERC CIP, NIST, etc.
2. Security techniques employed include:
 - a. 2-factor authentication
 - b. 256-bit encryption
 - c. Access logging and audit records
 - d. Role-based permissions
3. No personally identifiable information (e.g. names, payment information, addresses, etc.) are delivered over the radio network

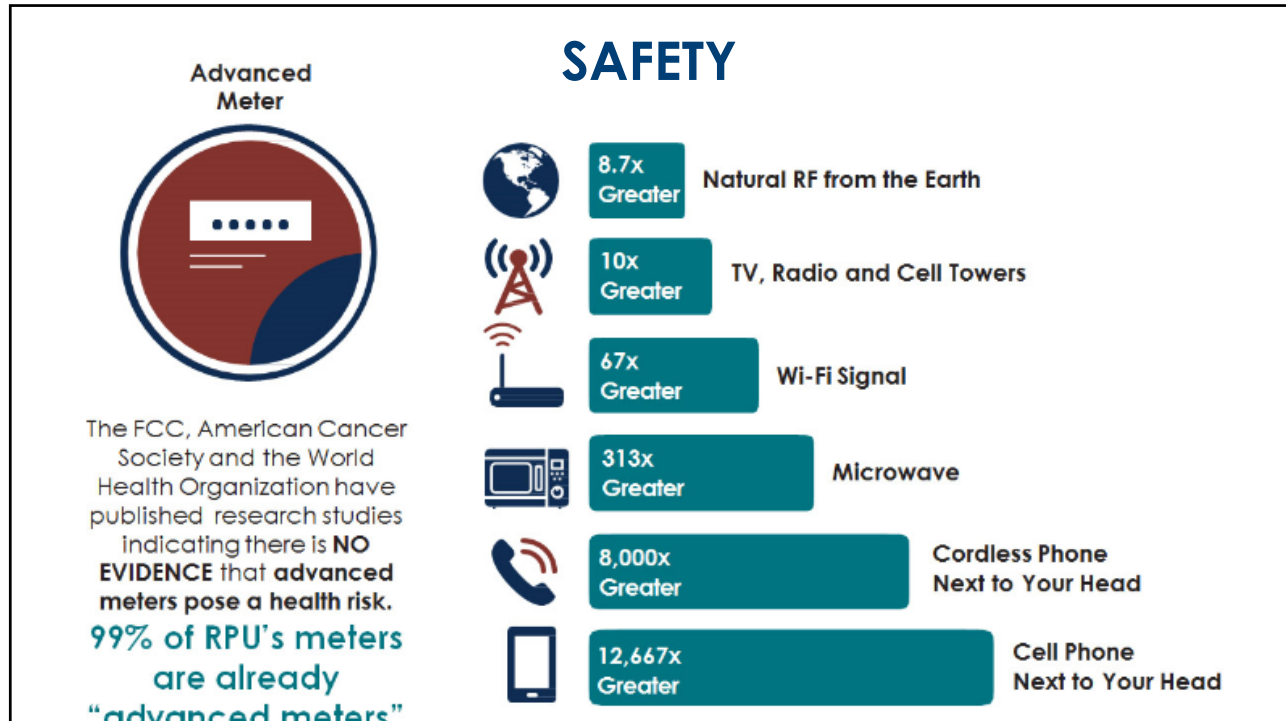
<https://www.riversideca.gov/privacy.asp>

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FISCAL IMPACT

- The total Fiscal Year 2020-21 impact associated with this recommendation is \$2,502,341 as summarized in the following table:

Item	18/19	19/20	20/21	21/22	22/23	TOTAL
Tantulus AMI System	\$140,000	\$5,800,000	\$1,327,644			\$7,267,644
SmartWorks MDMS	\$47,918	\$595,732	\$319,697	\$395,665	\$395,665	\$1,754,677
EnQuesta Integration	\$100,000	\$275,000	\$0	\$0	\$0	\$375,000
Innovation & Technology Labor	\$50,000	\$230,000	\$20,000	\$0	\$0	\$300,000
Meter Test, IT and other Equipment	\$150,000	\$100,000	\$0	\$0	\$0	\$250,000
Customer Engagement Campaign	\$150,000	\$150,000	\$0	\$0	\$0	\$300,000
Contingency	\$22,082	\$77,918	\$835,000	\$0	\$0	\$935,000
TOTALS:	\$660,000	\$7,228,650	\$2,502,341	\$395,665	\$395,665	\$11,182,321

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STRATEGIC PLAN ALIGNMENT

This item contributes to Strategic Priority No. 2
Community Well-Being, Strategic Priority No. 4.
Environmental Stewardship, Strategic Priority No. 6.
Infrastructure, Mobility & Connectivity, and addresses
all cross-cutting threads:

- a. Community Trust
- b. Equity
- c. Fiscal Responsibility
- d. Innovation
- e. Sustainability & Resiliency

RECOMMENDATION

That the City Council receive and file the phase three project update for implementation of an Electric Advanced Meter System and Meter Data Management System.