M E M O R A N D U M

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Schlossberg, Brown, Carlson, Barofsky and McRae

FROM: Rodney Price, Chief Engineering and Operations Officer and Simrat Khalsa,

Strategic Program Manager

DATE: March 2, 2021

SUBJECT: AMI Program Background and Update - Information only

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Issue

Advanced metering is a fundamental part of EWEB's efforts to modernize our electric grid and water distribution network. We want to provide customers with better service, build a more resilient community and create a cleaner energy future. Achieving these goals requires modernizing our community's power grid and water distribution network. As General Manager Frank Lawson stated at the January 2021 Board meeting, "The 2nd goal is about substantially completing the commissioning of the AMI project from a cash register perspective, in preparation for future data-analytic based new products and services. This is about scaling up."

The advanced metering program is strategically important piece of modernization and therefore tactical activities, including milestones and timelines, are included in EWEB's annual goals (2021 Goal #2) and reported in each Quarterly Report and occasionally as separate correspondence. As we have a new Board in place and upcoming policy updates, what follows is a review of smart meter benefits towards modernization, a , a brief history of the modern advanced meter system at EWEB, a financial update on smart meter deployment, and the next steps for the advanced metering program in whole.

Background

Moving to modernization, the benefits of Automated Meter Infrastructure (AMI)
Following is a basic list of benefits AMI systems will bring to EWEB, which we have been discussing with the Board and our Customers since 2018.

1. **Delivering Better Service**
   - Smart meters help protect property by detecting water leaks. EWEB will often be able to notify customers about a potential water leak long before they would otherwise become aware.
   - Smart meters will help EWEB respond faster to restore power during an outage, and can help prevent future outages by giving the utility better insight into system performance and health.

- With smart meters, customers won't have to wait for an EWEB representative to come to their home or business to start, stop or transfer service. Many of these services can be done remotely.
- Customers with smart meters will no longer need to provide a meter reader access to their property each month. There will be instances where EWEB may need to access property for inspections and service restorations. Smart meters will greatly reduce the need for billing estimates that are occasionally needed today when a meter reader cannot manually read a meter due to weather or other unforeseen events.

2. **Providing Customers with More Choice and Control**
   - In the future, smart meters will allow EWEB to offer flexible pricing plans to match customer budgets, lifestyles, and needs.
   - With smart meters in place, EWEB will be able to develop new payment solutions over the coming years that provide customers with more choice over how and when they pay, such as a prepay program.
   - In the next few years, customers will have insight into detailed water and electric usage, allowing them to monitor and adjust how and when they use services and even set up usage alerts. Customers will also be able to monitor electric and water usage when away from home for extended times.

3. **Keeping Services Affordable**
   - Smart meters help EWEB know exactly how much power we need to serve customers at any given time. The ability to synchronize power supply with demand will help keep generation and distribution costs down.
   - The ability to remotely connect and disconnect services will eventually result in lower and fewer fees.
   - With more information, EWEB can perform targeted preventive maintenance, resulting in fewer unplanned power outages, which can be costly to address.
   - Water smart meters can help catch leaky faucets and broken pipes before a high bill arrives.

4. **Creating a More Resilient Community**
   - Smart meters are one element in EWEB's efforts to modernize the electrical grid and water distribution network, which will help our community respond and recover in the event of a disaster.

5. **Creating a Cleaner Energy Future**
   - Smart meters reduce the vehicle emissions associated with manual connection, disconnection of water and electric service and meter reading.
   - While EWEB's power is nearly carbon-free, the additional power needed to meet peak energy demands is not as clean, and varies with time. Smart meters will help the community manage energy peaks and minimize the need to purchase fossil fuel-generated power.
   - Smart meters and the smart grid can assist in integration of additional renewable energy sources into the local and regional grid, and help pursue our energy and carbon emission programs.

History
Advanced Metering Infrastructure (AMI) has a long history at EWEB with consulting services for AMI first on the consent calendar in December 2008. Since that time, we have fully committed to transitioning to an Advanced Metering Infrastructure. We know quite a bit more now than we did in 2008. In addition, the technology has continued to evolve.

March 2010 saw the board supporting a goal of beginning implementation by 2012 and discussed financing options, including bonds. Commissioners expressed support for AMI and its deployment at an estimated cost of $27M. In May, staff highlighted early benefits of automatic power outage reporting and early water leak detection. Commissioners expressed interest in a public engagement plan.

In March 2011, staff presented three scenarios from 'bare bones to demand-response and a lot of new technology.' Staff recommended a two-phased approach; deployment followed by customer facing programs. A request for proposal was issued for AMI Technical and Cost Proposals with a closing date of August 23, 2011. In November, staff presented analysis on cost, economic benefits, triple bottom line, customer and community outreach and provided information on a demonstration pilot involving 100 customers.

In March of 2013, the board approved moving forward with a Sensus contract for delivery of an AMI system to be completed in 2017. In August of 2013, staff presented an AMI project plan with a large-scale roll-out in 2017. This was followed up in October with staff presenting three alternatives: no AMI, tactical AMI (full deployment in of 150,000 meters in 2017), and limited AMI, estimated to be about 30,000 meters (Opt-in). The board unanimously approved Resolution 1322 supporting the third option, Opt-in.

February 2015 management sought approval two contracts; Sensus (AMI implementation) with committed cost of $20.5 million; and Harris (Meter Data Management) with committed cost of $1.2 million. The Board unanimously approved the contracts as submitted. The Sensus and Harris contracts were executed in early 2015. The approved data, storage and radio communications systems system funding were based on Opt-in total meter counts.

In February 2018, management sought approval of amendments to the October 2013 resolution which limited AMI to Opt-in customers. The Board approved Resolution 1811 amending Resolution 1322 supporting standard deployment. The motion passed unanimously.

In July 2018, the Board approved accelerated deployment which included deploying electric and water meters to customers simultaneously, with a completion date of 12/31/2021. In the fall of 2019, based on deployment experience with the challenges of simultaneous water and electric meter installation, the deadline for full water deployment was moved out to 12/31/2023.

Deployment of water and electric smart meters began in September of 2018 and continued into 2019. As installations progressed, it became clear that improvements to both the network infrastructure and IS systems would be needed to support full deployment of all 150,000 EWEB meters. Two emergent projects were scoped and begun in 2019; The AMI IS Improvement

project and the AMI Infrastructure project. Meter deployment was slowed late in the year, with Electric installations pausing completely in December 2019.

The AMI Program was formed in March 2020 to bring all AMI related projects under coordinated oversight. These projects included the existing AMI Deployment project; The AMI Infrastructure project; the AMI IS Improvement project; and a newly formed project for analysis of and improvements to business processes impacted by AMI deployment, the Meter to Cash (M2C) project.

Water deployment paused as well in April 2020 due to COVID-19. Both utilities resumed smart meter deployment in June with water resumed at their previous rates of around 250/week. Electric resumed at approximately half the previous rate due to staffing constraints and was further impacted by the Holiday Farm Fire.

In July 2020, management decided to exercise an option in the Sensus contract to add contracted labor support for mass deployment of electric smart meters. Negotiations resulted in an amendment to the Sensus contract to engage Utility Partners of America (UPA) as a sub-contractor to Sensus.

Amendment 8 to the Sensus contract was on the consent calendar at the November 2020 board meeting, and passed unanimously. Planning began with UPA to begin mass deployment in Q1 2021 to complete single phase electric meter deployment by Q1 2022. UPA is scheduled to begin installations in April 2020.

For a complete AMI Program Timeline, please see Attachment 1.

<u>AMI Deployment update</u>

Details of the status of smart meter deployment and related programs are included in the latest quarterly report provided separately.

<u>AMI Program Financial Update</u>

As part of the AMI Program work in 2020, a comprehensive analysis was done on budget vs. actual spend from 2014 to the present. Project Managers on the program team are continuing to work on projections through 2023 and the end of smart meter deployment.

Attachment 2 contains tables detailing AMI related budgets and actual expenses between the years 2014 and 2021. A review of the budget versus actual expense data shows budgets and expenses have been uneven.

However, the main conclusion reviewing the data and variances in Attachment 2 is that current actual expenses lag projected budgets by about $6.2 million. This is mainly a reflection of the intentional reduction in deployment rates for electric meters starting in late 2019 to address process, radio communication infrastructure and IS related problems associated with moving from Opt-in to Opt-out. The impacts of the COVID-19 pandemic and the Holiday Farm fire also resulted in a slowdown in deployment for all meters in 2020.

Current Cost Projections

The Projected Budget numbers in Attachment 2 reflects the AMI project totals from early 2017. The budgeted total of $40.9 million, was based on assumptions that we have since tested against actual experience, resulting in a revised total project budget and expense timeline as shown in Table 1, Final Cost Projections.   Table 1 below shows current project cost projections using past actual spend, and projected completion estimates. Estimates are based on the current plan to complete meter deployment in early 2022 for electric and 2023 for water. Updated projected figures in the 2020 Q4 Quarterly Report are based on the new final projected cost of $44.3 Million.

Table 1. Final Cost Projections

|	Feb 2018 Budget	Actual Spend through 2020	2021 Budget	2022 projected	2023 projected	Final Cost projection
Electric Deployment	$18,800,000	$7,637,401	$6,534,959	$1,835,634	$0	$16,007,994
Water Deployment	$16,850,000	$7,676,117	$3,200,000	$3,698,810	$3,698,810	$18,273,738
AMI Shared IT	-	$7,062,293	$729,506	$0	$0	$7,791,799
AMI Shared Facilities	-	$1,590,819	$355,050	$300,000	$0	$2,245,869
Totals	$35,650,000	$23,966,630	$10,819,515	$5,834,444	$3,698,810	$44,319,399

Projected budgets from 2018, which we have been using in the quarterly reports though the 2020 Q3, differs from the new cost projections by $8.67 Million. This difference is due to:

- Additional meters and model changes from 2015 contract to current Opt-out projections for full deployment - $4.5M.
- Contract amendment for contracted labor to install single phase electric meters - $2.5M.
- Upgrade to Radio Communications to support Opt-out deployment – $1.1M.
- IS updates to support Opt-out deployment – $500K.

Budget figures in the 2020 Q4 Quarterly Report are now based on the current revised projected cost of $44.3 Million.

Chart 1 shows the annual cost with projections by utility indicating the impacts of the decision to move to full deployment.

Chart 1. Annual Cost and Projections
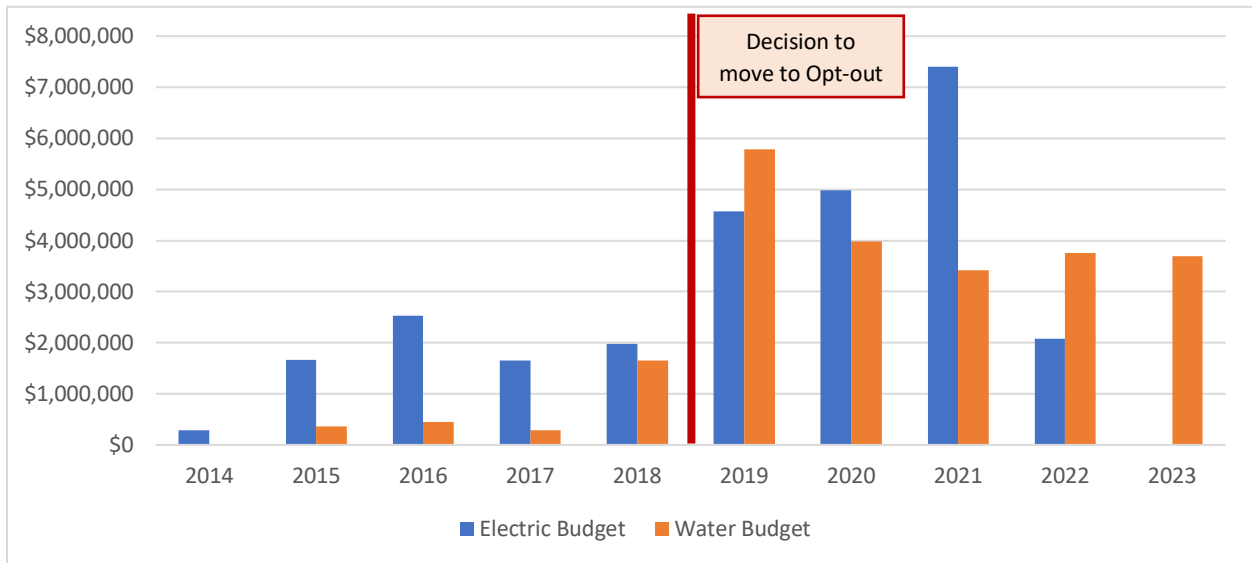
Discussion

What's next - 2021 Focus for the AMI Program
Per the EWEB's 2021 Goal 2, the primary focus for the program in 2021 is to successfully scale up EWEB advanced metering systems to full operation. This scale up will consist of the bulk of electric single phase meters installed by UPA, along with continued installation by internal staff of the majority of electric three phase meters, additional electric single phase meters, and continued installation of water smart meters.

The AMI Program staff have reviewed the Customer Service Policy for updates to support the transition from legacy to smart metering. Upcoming policy changes to support the transition of legacy metering to smart meter systems are covered under a separate backgrounder this month. Policies will continue to evolve over time as we transition from a deployment project to an operational system.

A third focus is operational readiness and applying change management to shift from the project work of deployment to full time operational work with smart meters. After most smart meters are installed, EWEB will need to further adjust our operations to the operate and maintain the new meters and to continue processes to accurately collect and bill for usage. Installing the meters is the beginning of creating an information system, not the end.

Table 2 outlines the major Milestones for the AMI Program with the major goals of full deployment, transition to a fully functioning and operating AMI System, and creation of an information system to support our upcoming Power Resource decision by 2025.

Table 2. AMI Program Schedule Milestones

| Year-Quarter	AMI Program Major Milestones
2020-Q4	Complete Radio Tower Installation/Upgrades Finalize Electric Meter Installation Contract
2021-Q1	Complete IT & Process Upgrades Mobilize Electric Meter Installation Contractor
2021-Q2	High-Volume Electric Meter Installation Commences
2022-Q1	Complete Electric Meter Installations
2022-Q2	Tune Meter Data Acquisition/Communication System
2023	Complete Water Meter Installation
2023	Plan for New Products and Services
2024	Finalize Integrations with Enterprise Systems
2025	Information available for Power Resource contracts

Request Board Action

None at this time.

Attachments

1. AMI Board Decisions Timeline Rev.2-2021
2. AMI Program budget and actual Expense tables

Smart Metering Discussions and Decisions at Board Meetings

EWEB

This timeline highlights smart metering discussions and decisions at Board meetings over 20 years.
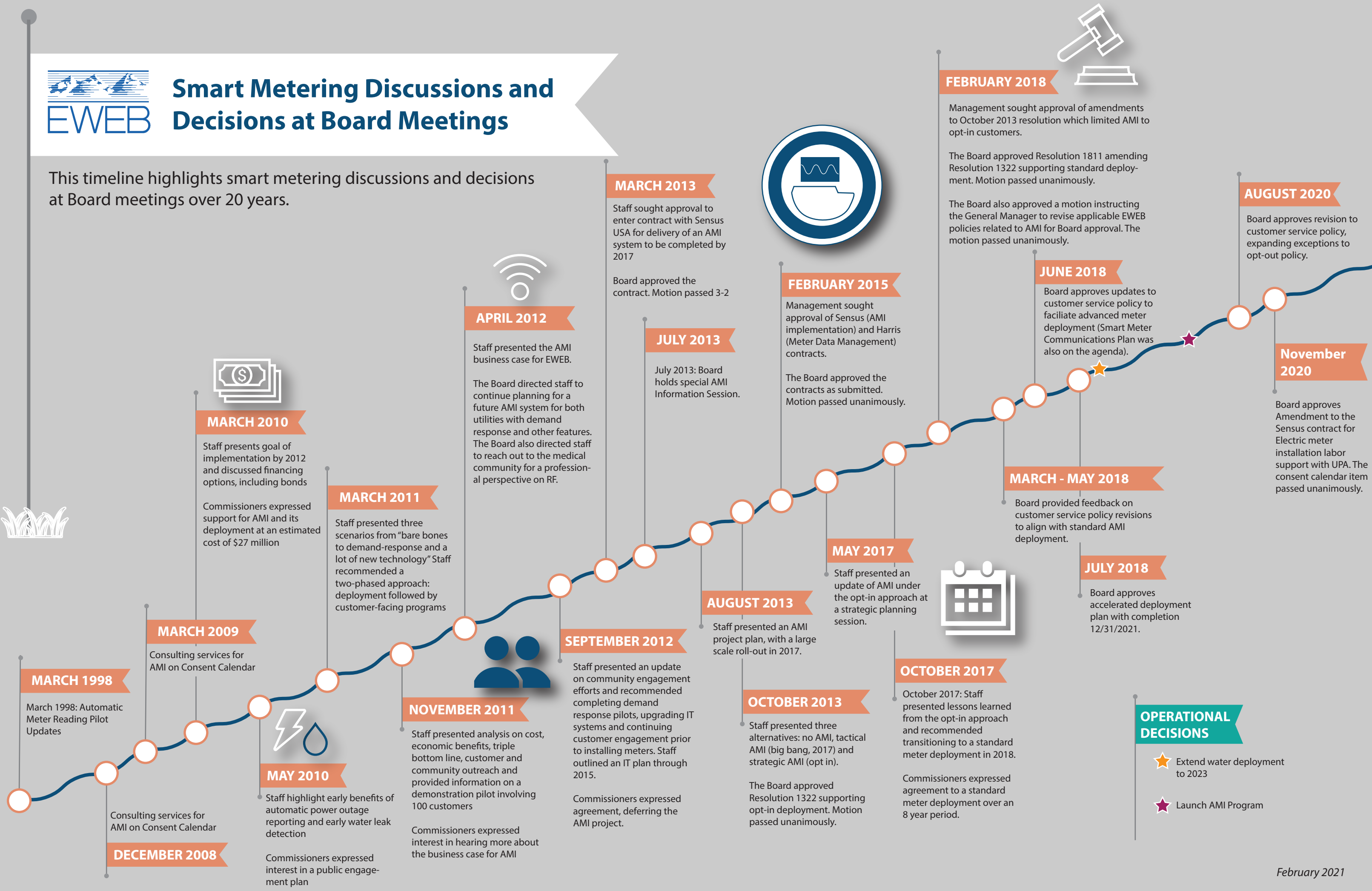
MARCH 1998

March 1998: Automatic Meter Reading Pilot Updates

DECEMBER 2008

Consulting services for AMI on Consent Calendar

MARCH 2009

Consulting services for AMI on Consent Calendar

MARCH 2010

Staff presents goal of implementation by 2012 and discussed financing options, including bonds

Commissioners expressed support for AMI and its deployment at an estimated cost of $27 million

MAY 2010

Staff highlight early benefits of automatic power outage reporting and early water leak detection

Commissioners expressed interest in a public engagement plan

MARCH 2011

Staff presented three scenarios from "bare bones to demand-response and a lot of new technology" Staff recommended a two-phased approach: deployment followed by customer-facing programs

NOVEMBER 2011

Staff presented analysis on cost, economic benefits, triple bottom line, customer and community outreach and provided information on a demonstration pilot involving 100 customers

Commissioners expressed interest in hearing more about the business case for AMI

APRIL 2012

Staff presented the AMI business case for EWEB.

The Board directed staff to continue planning for a future AMI system for both utilities with demand response and other features. The Board also directed staff to reach out to the medical community for a professional perspective on RF.

SEPTEMBER 2012

Staff presented an update on community engagement efforts and recommended completing demand response pilots, upgrading IT systems and continuing customer engagement prior to installing meters. Staff outlined an IT plan through 2015.

Commissioners expressed agreement, deferring the AMI project.

MARCH 2013

Staff sought approval to enter contract with Sensus USA for delivery of an AMI system to be completed by 2017

Board approved the contract. Motion passed 3-2

JULY 2013

July 2013: Board holds special AMI Information Session.

AUGUST 2013

Staff presented an AMI project plan, with a large scale roll-out in 2017.

OCTOBER 2013

Staff presented three alternatives: no AMI, tactical AMI (big bang, 2017) and strategic AMI (opt in).

The Board approved Resolution 1322 supporting opt-in deployment. Motion passed unanimously.

FEBRUARY 2015

Management sought approval of Sensus (AMI implementation) and Harris (Meter Data Management) contracts.

The Board approved the contracts as submitted. Motion passed unanimously.

MAY 2017

Staff presented an update of AMI under the opt-in approach at a strategic planning session.

OCTOBER 2017

October 2017: Staff presented lessons learned from the opt-in approach and recommended transitioning to a standard meter deployment in 2018.

Commissioners expressed agreement to a standard meter deployment over an 8 year period.

FEBRUARY 2018

Management sought approval of amendments to October 2013 resolution which limited AMI to opt-in customers.

The Board approved Resolution 1811 amending Resolution 1322 supporting standard deployment. Motion passed unanimously.

The Board also approved a motion instructing the General Manager to revise applicable EWEB policies related to AMI for Board approval. The motion passed unanimously.

MARCH - MAY 2018

Board provided feedback on customer service policy revisions to align with standard AMI deployment.

JUNE 2018

Board approves updates to customer service policy to facilitate advanced meter deployment (Smart Meter Communications Plan was also on the agenda).

JULY 2018

Board approves accelerated deployment plan with completion 12/31/2021.

AUGUST 2020

Board approves revision to customer service policy, expanding exceptions to opt-out policy.

November 2020

Board approves Amendment to the Sensus contract for Electric meter installation labor support with UPA. The consent calendar item passed unanimously.

OPERATIONAL DECISIONS

⭐ Extend water deployment to 2023

★ Launch AMI Program

February 2021

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EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Schlossberg, Brown, Carlson, Barofsky and McRae

FROM: Rod Price, Chief Engineering and Operations Officer and Simrat Khalsa, Strategic

             Program Manager

DATE: February 18, 2021

SUBJECT: AMI Program Background and Update - Attachment 2

AMI Program Financial Update

As part of the AMI Program work in 2020, a comprehensive analysis was done on budget vs. actual spend from 2014 to the present. Project Managers on the program team are continuing to work on projections through 2023 and the end of smart meter deployment.

This attachment contains tables detailing AMI related budgets and actual expenses between the years 2014 and 2021. A review of the budget versus actual expense data shows budgets and expenses have been uneven.

Budget by Year/Project

Table 1 below shows the budget each year by project.

Table 1: Budget by Year/Project

Budget	2014	2015	2016	2017	2018	2019	2020	2021	Totals
Electric Deployment	$0	$0	$375,001	$375,000	$1,900,000	$4,565,000	$1,462,000	$6,534,959	$15,211,960
Water Deployment	$0	$364,000	$0	$0	$1,607,000	$5,768,000	$3,600,000	$3,200,000	$14,539,000
AMI Shared IT	$280,064	$1,659,000	$2,602,004	$1,555,000	$113,000	$16,200	$1,876,178	$729,506	$8,830,952
AMI Shared Facilities	$0	$0	$0	$0	$0	$0	$2,023,000	$355,050	$2,378,050
Totals	$280,064	$2,023,000	$2,977,005	$1,930,000	$3,620,000	$10,349,200	$8,961,178	$10,819,515	$40,959,962

Actual Spend per Year/Project

Table 2 shows actual spend per year and project with variance from budget. Overall spend was lower than budgeted, despite emergent projects.

Note: actual costs include upgrades to meters in Water Districts which are later reimbursed at cost including labor. This is currently around $650,000.

Table 2: Actual Spend per Year/Project

Actual	2014	2015	2016	2017	2018	2019	2020	Totals
Electric Deployment	$0	$0	$0	$0	$3,035,369	$4,036,681	$565,351	$7,637,401
Water Deployment	$0	$0	$0	$0	$2,630,863	$3,327,605	$1,717,649	$7,676,117
AMI Shared IT	$0	$822,796	$2,209,110	$2,338,151	$76,612	$189,046	$1,426,578	$7,062,293
AMI Shared Facilities	$0	$0	$0	$0	$0	$57,466	$1,533,353	$1,590,819
Total Expenses	$0	$822,796	$2,209,110	$2,338,151	$5,742,844	$7,610,798	$5,242,931	$23,966,630
Variance to Budget	$280,064	$1,200,204	$767,895	-$408,151	-$2,122,844	$2,738,402	$3,718,247	$6,173,817