



# MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

*Rely on us.*

TO: Commissioners Helgeson, Simpson, Mital, Brown and Carlson  
FROM: Erin Erben, Chief Customer Officer; Chris Jones, AMI Project Manager  
DATE: May 16, 2017  
SUBJECT: Advanced Metering Infrastructure (AMI) Program  
OBJECTIVE: Provide Board with update on advanced metering

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## **Issue**

This update is intended to provide commissioners with a status on the project in preparation for the May 16 strategic board retreat.

## **Background**

The Board approved Resolution 1322 in October 2013, authorizing AMI under an “opt-in” approach. In April 2015, the Board authorized EWEB to sign contracts with Sensus and Harris Corporations to provide advanced electric and water meters, meter communication equipment and software, meter data management software and related services.

More background, as well as information about those contracts, is summarized in a February 5, 2015 memo to the Board and a second April 20, 2016 memo to the board, both attached as appendices herein.

## **Current status**

Management and staff continue to develop an AMI rollout plan that emphasizes customer choice (i.e. opt-in), focuses on the resource benefits, and allows for the tactical/ operational benefits to materialize in later years when adoption rates are high enough.

## **Current project status**

Advanced metering is in production from a software perspective. Field trials using EWEB facilities and EWEB employee residences have demonstrated that we can, at a small scale, process requests for meter upgrades, deploy advanced meters, collect accurate meter readings using automated processes, and correctly bill from those readings. Results of these field trials have identified where we need additional automation, refined processes, and resources for either a larger-scale meter deployment or a customer-driven deployment.

EWEB has constructed and tested the advanced metering communication network, which includes seven two-way communication points installed at substations in Eugene and a back-end

computer server, located in a Sensus-hosted data center. A test network located at the Roosevelt Operations Center with a single additional data collector and a test board that holds 75 electric meters has been used throughout this phase for testing of meters and business processes. The current communication points do not provide communication with meters in EWEB's upriver (Thurston, Walterville, and Leaburg) service area. Planning for coverage in that area has been deferred pending successful implementation within Eugene.

A project manager for operational deployment has been designated, training and documentation are underway in the meter shops, and targeted deployment is being planned for meters and services for when field trials are complete.

Advanced electric meters are being deployed for all residential meter replacements and new residential installations (in "opt-out" mode at this time unless customer is participating in field trials). The advanced meter population as of May 1 was 701 electric meters (0.8% of all electric meters), of which 109 (0.1% of all electric meters) were in "opt-in" communication mode.

Advanced water meters are being deployed with communications modules as part of field trials. The advanced meter population as of May 1, 2017 was 225 water meters (0.4% of all water meters), all of which were in "opt-in" communication mode.

Features in production:

- A communication network expected to cover 99% of in-town meters has been in production since mid-2016.
- Automated meter reading, including remote demand reset, for almost all types of water and electric services is active on 200+ meters as of late April 2017.
- Remote move-in and move-out – connect and disconnect of residential electric meters from the office, saving truck rolls – are being performed by EWEB connect and disconnect staff.
- A water leak detection service is in production from a technical standpoint; internal business processes, including customer communication processes, are being developed.

Features in final testing phases, expected to be deployed later this summer, include:

- Advanced outage management (integration of advanced electric meters with EWEB's existing Responder outage management software). Staff is working to make this feature available before the next storm season.
- Automation of manual processes involved in meter installation, which will reduce office labor and reduce data entry errors.
- Customer service "scripts" to engage customers in the "opt-in" process.

Features expected to be available after installation of a new Customer Information System (CIS) (after 2019):

- Electric and water information website for customers (may require additional software beyond the new CIS).
- Time-of-use rates.
- Prepaid service (may require additional software beyond the new CIS).

With current resources, we have the ability to install 200+ advanced electric meters and 60+

advanced water meters per week, in addition to normal meter shop work. Automations under development, along with staff reorganization in progress, will increase this capacity.

Before we move forward with a general opt-in customer recruitment, we want to ensure that we are being transparent with the community about the project's status. By June 2017, we anticipate being ready to offer remote reading services for any customers who request or require remote meter reading. For these customers, EWEB currently provides "radio read" meters that can be read by a meter reader in close proximity to the meter. In the future, we will be able to install advanced meters for remote read locations.

### **Project timeline update**

In February 2015, management described a plan for advanced metering to roll out in four distinct phases, as depicted below:

- Planning: 2014
- Development and testing: 2015–2017
- Deployment for resource benefits: 2018–2020
- Deployment for operational benefits: 2021–2022

The initial development and testing phase was anticipated to span January 2015 through December 2017, with a target deployment of 20% of electric meters and 15% of water meters. This phase has included installation of hardware and software, lab and field testing of meters, and field testing of system functionality with selected customers. However, the installation goals for this period will not be achieved.

As of early 2017, this phase also includes maintenance replacements of non-functioning electric meters with advanced meters. Residential customers who do not explicitly opt in for field trials have had their electric meter placed in opt-out mode where the radio does not broadcast.

In the 2015 board memo, the resource benefit phase (2018–2020) was accurately described as being dependent on implementation of a new CIS. That phase, which is expected to include new services like prepaid metering, time-of-use rates, and demand-management services, will be possible only after a new CIS is available.

Since the planned resource benefits are not available in the near term, management and staff are working to develop an advanced metering deployment plan for 2017 and 2018 that emphasizes customer choice (i.e. opt-in); engages early adopters; and focuses on deployments that have clear operational benefits that reduce costs, mitigate safety risks for field staff, or both.

### **Costs to date**

Total spending through the end of 2016 on advanced metering and related systems work is \$5.9 million, mostly in capital funds. Total spending on this program through the end of 2017 is anticipated to be \$8.5 million.

In some cases, deployment of advanced meters will eliminate or reduce activities, such as connecting and disconnecting electric meters, for which EWEB currently charges customers in

order to cover our costs. When those activities are reduced, there will likely be a corresponding decrease in revenue. In order to avoid reducing EWEB's net revenue, will need to ensure that the decrease in revenue is matched by a corresponding actual decrease in costs.

### **The cost of the opt-in approach**

Adoption of the opt-in approach was premised on the idea of customer choice. The decision to proceed with an opt-in approach, which is (as far as we know) unique among U.S. utilities, has significantly delayed software development and deployment, and has required new customer service practices and training. Continuing with the opt-in approach, especially if full deployment is desired, will entail tens of thousands of additional interactions with customers and may significantly delay deployment of advanced meters and the services on which they depend.

Management believes that the opt-in approach conflicts with the desire to improve the affordability of EWEB's services and position EWEB to be flexible and responsive to changing market conditions by partnering with customers. A well-advertised and robustly supported opt-out approach would enhance overall customer choice while allowing EWEB to pursue increased affordability and flexibility.

### **For discussion at the board retreat**

For 2017: Direct staff to bring the board a proposal to move to an opt-out approach as well to revise the advanced metering business case. Pending the outcome of that proposal, staff will use existing resources to deploy meters in ways that maximize operational benefits.

For 2018: Consider whether to continue a slow rollout with existing resources (less expensive in the near term, easier to manage) or to plan and implement a full rollout to achieve the full operational benefits described in the business case (higher near-term costs, maximum benefits realized sooner, more strategic flexibility available when new CIS is implemented).

### **Requested Board Action**

Management is requesting feedback and guidance on aligning the direction and pace of the advanced meter rollout, as well as introduction of new services that require advanced meters, in the context of EWEB's overall strategic direction.

**APPENDIX 1. FEB 2, 2015 BOARD MEMO**



# MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

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TO: Commissioners Mital, Simpson, Helgeson, Manning and Brown  
FROM: Roger Gray, Greg Armstead, Erin Erben, and Lance Robertson  
DATE: February 5, 2015  
SUBJECT: AMI Contracts submitted for Approval  
OBJECTIVE: Board Action: Approval of Sensus and Harris contracts for AMI implementation

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## Issue

Management has negotiated contracts with two providers of essential Advanced Metering Infrastructure services, hardware and software (Harris and Sensus). Management seeks approval of these two contracts to allow for the AMI project to proceed into the initial implementation phase during 2015.

The remainder of this memorandum describes the essential elements of the contracts, the key project elements these contracts enable, and re-summarizes the strategic interest EWEB has in pursuing this technology strategy.

## Background

The Board of Commissioners voted to adopt [Resolution 1322](#) in October 2013. This resolution granted approval to the creation and execution of an Advanced Metering Infrastructure (AMI) project using implementation strategy 2 (also known as “opt in”). Opt-in is a different approach than the traditional “opt-out” adopted by most other utilities, in which customers must inform the utility that they do not wish to have an AMI-enabled meter installed. It is also different than the “no option” approach adopted by some utilities, in which the utility just installed 100% AMI meters as part of a normal practice. Under “opt-in,” customers must request an AMI-enabled meter to take advantage of certain programs and value-added services. The resolution further directed the General Manager to negotiate AMI project contracts in conformity with the chosen “opt in” strategy, and then to present final contracts for approval before the Board as necessary.

## A brief history of AMI planning

AMI (or AMR) study and planning at EWEB has been taking place since 2007. The October 2013 action by the Board culminated years of evaluation, study, planning public engagement and assessment of key business case drivers for an AMI project, summarized as follows:

- At the March 2010, Strategic Planning retreat of the EWEB Board, commissioners supported further exploration of AMI.  
<http://eweb.org/public/commissioners/meetings/2010/100323/SBM032310.pdf>

- At the April 17, 2012, regular meeting of the Board, management brought to the Board a business case analysis of AMI which covered four scenarios:
  - Status quo (the base case)
  - Basic AMI for Electric Utility only (alternative #1)
  - Basic AMI for both Electric and Water Utilities (alternative #2)
  - Basic AMI for both Electric and Water Utilities, plus advanced AMI to create electric resource benefits for electric customers (alternative #3)

The Board directed management to further evaluate alternative #3 and directed management to reach out to the medical community to obtain input regarding RF (Radio Frequency) concerns presented by members of the public.

[http://eweb.org/public/commissioners/meetings/2012/120417/WS1\\_AMIBusinessCase.pdf](http://eweb.org/public/commissioners/meetings/2012/120417/WS1_AMIBusinessCase.pdf)

- At the September 4, 2012, regular meeting of the Board, Management presented its research regarding RF concerns raised.

[http://eweb.org/public/commissioners/meetings/2012/120904/WS1\\_AMIandCommunityEngagement.pdf](http://eweb.org/public/commissioners/meetings/2012/120904/WS1_AMIandCommunityEngagement.pdf)

- At the July 23, 2013, special session of the Board, Board members heard presentations from Dr. Peter Valberg and Dr. Paul Dart on their view on AMI and RF. This session also followed more than a year of public meetings, presentations and other community engagement activities related to AMI.

<http://eweb.org/smartmeter/documents#radio>

- At the August 6, 2013, regular meeting of the Board, Management presented an update to the Board on business case assumptions, incorporating feedback from new Board members and adopting the most conservative business case view to address uncertainty regarding timing of benefits realization. In this analysis, management compared two options:
  - Status quo
  - Basic AMI for the Electric & Water Utilities plus advanced AMI to create electric resource benefits for electric customers

[http://www.eweb.org/public/commissioners/meetings/2013/130806/M11\\_AMI.pdf](http://www.eweb.org/public/commissioners/meetings/2013/130806/M11_AMI.pdf)

- At the Board's October, 2013, regular meeting, the Board of Commissioners voted to adopt Resolution 1322.

[http://www.eweb.org/public/commissioners/meetings/2013/131001/M7\\_AMI.pdf](http://www.eweb.org/public/commissioners/meetings/2013/131001/M7_AMI.pdf)

## Discussion

A very basic function of an AMI system is to remotely read meters with technology rather than with the traditional meter reading approach. EWEB's business case shows that this traditional or "tactical" aspect of the business case is clearly positive.

While a fully deployed AMI system would realize operational benefits and reduce future cost, the key business drivers for deploying AMI technology also include the ability of the technology to enable achievement of key demand response/demand management (DR/DM) goals of the Integrated Energy Resource Plan (IERP) , help EWEB provide customers more timely information about water use in the event of a major water supply interruption and providing several value-added services to customers that can only be offered with advanced metering. Today, EWEB has no 2nd source of water and even after the Alternative Water Source (AWS) is completed it will only be able to meet a portion of EWEB's base demand. There are also clear customer choice benefits that customers have expressed interest in that a modern AMI system could provide (e.g. water leak detection, outage notification, pre-pay, etc.) In this view, AMI is a strategic tool that requires lower participation than a full-blown AMI rollout, and has strategic (as opposed to strictly tactical/operational) benefits to the utility and to customers.

With EWEB's current situation of being "energy (kWh) resource long," EWEB is afforded time to roll out the technology slowly, focusing on customers who want the technology and wish to participate in utility programs, including those that enable the resource benefits described in the business case documents. EWEB is presently "capacity (kW) resource short" and relies exclusively on the marketplace today to meet these shortages. The NW region is expected to go into capacity balance in 2018/19 and the marketplace for capacity will tighten. Since EWEB's IERP today relies solely on the marketplace we must develop alternatives such as DR/DM to provide alternative to close this shortfall or we risk depending on a potentially tight and volatile marketplace for power.

Adoption of the "opt-in" approach also shifts EWEB's strategy from one predominantly based on tactical and operational cost reductions (meter reading) to one that is predominantly focused on providing long-term strategic customer value and ability to manage our IERP and AWS, which are key components of EWEB's adopted Strategic Plan, seen here at:

[http://www.eweb.org/public/commissioners/meetings/2014/140304/M7\\_Proposed2014StrategicPlan.pdf](http://www.eweb.org/public/commissioners/meetings/2014/140304/M7_Proposed2014StrategicPlan.pdf)

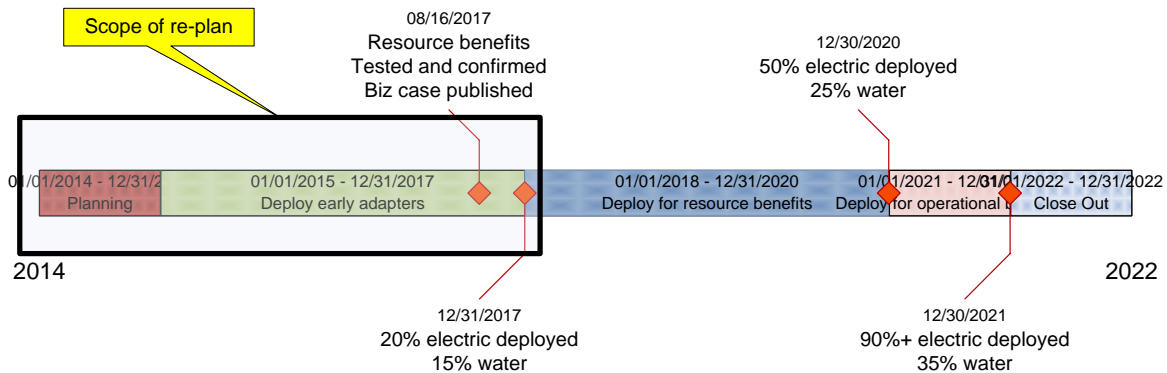
As detailed in Section 1 below, once the AMI infrastructure (hardware and software) is installed, EWEB will begin to offer customers added-value services and products that can only be provided efficiently with an AMI-enabled meter. The meter becomes secondary to the true "value proposition" for the customer, which is the ability to take advantage of added services. It is still expected that as the concentration of AMI meters grows larger that EWEB and our customers will also realize tactical and operational benefits such as lower O&M costs of meter reading.

Management has developed an AMI rollout plan that emphasizes customer choice (i.e. opt-in), focuses on the resource benefits, and allows for the tactical/operational benefits to materialize in later years when customer acceptance and adoption rates are high enough.



## Section 1 – Schedule

Management plans for AMI to roll out in three distinct phases, as follows:



- Phase 1 – 2015 through 2017: Includes lab and field testing of the meters and gradual meter replacement during routine maintenance. Lab testing will include testing by a 3rd party as well as EWEB. As part of routine replacement, customers that opt-in will receive AMI-enabled meters. Customers that do not Opt-in will receive AMI capable meters, but the radio transmission features will be turned off. This phase would include field testing and deployment of four new or improved services for Opt-in customers to take advantage of, including:
  - Advanced outage management – The meter notifies EWEB if an outage has occurred, instead of waiting for a customer call. Customers also may be able to receive an automated text message or other notification. This will allow EWEB to more quickly respond to outages, manage larger-scale outages and provide customers with timely and better two-way communications.
  - Remote Connect and Disconnect – Customers can schedule service turn on (and off) at a time of their convenience, instead of during a four-hour window during workdays. EWEB benefits by reducing the need for “truck rolls” to start or stop service, and customers benefit greatly by having instantaneous starts or stops to service, if desired. EWEB expects this service to be valued particularly by high-turner over customers such as students.
  - Customer energy usage – Customers can view and analyze interval readings to understand their usage, likely using a web portal. Interval readings can be more frequent to provide customers better information. This technology also may be available for water usage.
  - Leak Detection – Customers (and EWEB) are alerted to potential water leaks detected by advanced meters and are notified when detected, instead of when a high bill is received.

To prepare for rollout of these and other value-added services, EWEB will conduct surveys, pilots and other market-segmentation work. Market segmentation can help EWEB target specific customer groups with specific services, which will cost less than traditional marketing efforts that appeal to all customers. The goal is to offer services to customers who are most likely to adopt new services that are AMI-dependent.

In this first phase, there are two guiding principles: 1) while tactical and operational O&M cost-reductions is not an early outcome, that customer choice is a predominant value, and 2) that in maximizing customer choice in selecting value added programs, EWEB will seek efficiency in roll out strategies, target markets and early programs to seek win/wins for both

customers and the utility.

Management anticipates that at least 20% of electric customers will choose to have AMI meters by the end of this three year period. Water meters are expected to adopt at a lower rate, reflecting more gradual maintenance replacement and limited number of services to offer. Management also notes that we expect commercial adoption rates to be higher than 20%.

- **Phase 2 – 2018-2020:** This phase involves working to leverage the 20% (and a potentially greater percentage of commercial electric) of AMI-enabled customers created in Phase 1 to offer more advanced rates (such as time-of-use) and demand-management services that will enable realization of the resource benefits outlined in the business case and IERP, without requiring full scale roll out of meters to all customers. Management also expects Phase 2 to follow a successful replacement of our Customer Information System with a more modern CIS that can provide additional customer value, services and benefits. In Phase 2, the following new services would roll out to customers, enhancing the initial bundle:
  - Prepaid metering – Customers prepay for their electric consumption and manage their available usage. This is expected to greatly reduce EWEB-initiated disconnects for non-pay. For utilities that have implemented this program they have found a significant improvement in customer relationship and lowering of disconnect for non-pay situations.
  - Enhanced Pricing Programs – Customers can choose from multiple rate schedules that more closely match their lifestyle, such as the residential time-of-use pilot that is currently under way, or a commercial time-of-use rate structure or other rate offerings that match the customer’s business needs.
  - Enhanced automatic hookup – Large-scale landlords and property owners would receive services that allow them to better manage service connects and disconnects resulting primarily from the annual student migration.
  - Other services – EWEB staff has identified several other services that may be of potential interest to customers, but they will require further analysis and experience before a final mix of services can be determined.

Management anticipates that at least 50% of electric customers will have AMI meters by the end of this second three-year period.

- **Phase 3 – 2021 and beyond:** This final phase will be determined by the results of the first two phases. As larger concentrations of AMI meters are installed EWEB will retire meter reading routes and begin to realize additional O&M savings that were articulated in the business case.

## **Section 2 – Cost management**

With the shift to “opt in,” initial cost estimates become largely dependent on the number of customers who choose the services offered. The project moves from a fixed cost, \$27-million contract with Sensus that occurs over a 1-2 year period to a more gradual deployment of AMI over seven (7) years or longer. The contract with Sensus is also smaller now since the installation of AMI meters is largely expected to be performed by internal EWEB labor given the slower roll out. Total costs of a full AMI implementation over 7 to 10 years remain in the \$27-\$30 million range, but also are dependent on adoption rates in the out-years. This gradual-deployment strategy allows EWEB to reduce up-front investments significantly, until customer adoption rates can be gauged.

Management has updated the Long Term Financial Plan (LTFP) with the following capital and O&M expenditures. These figures were included in the most recent Board update on the LTFP. The 2015 figures represented in the chart below are included in the Board-approved 2015 budget.

	2015	2016	2017	Grand Total
AMI capital investment	\$2,013,000	\$1,600,000	\$900,000	\$4,513,000
AMI O&M costs	\$ 490,000	\$ 560,000	\$622,000	\$1,672,000

*Note: These figures combine both electric and water utility costs*

### **Section 3 – Sensus Contract**

At the Board’s regular March 5, 2013, meeting, commissioners received a briefing of the Sensus contract as it was constructed for a full-scale roll out. Many of the underlying provisions, such as commercial terms, pricing for meters, etc., remain unchanged. The initial analysis presented to the Board members can be found at:

[http://www.eweb.org/public/commissioners/meetings/2013/130305/M5\\_AMIContractwithSensus.pdf](http://www.eweb.org/public/commissioners/meetings/2013/130305/M5_AMIContractwithSensus.pdf)

The remainder of this section focuses on the changes made to that contract document in order to conform the Sensus contract to the “opt in” strategy adopted by the Board in October, 2013, as directed by Resolution 1322.

The follow table highlights the changes negotiated with Sensus after the adoption of Resolution 1322:

Original	Modified for Opt-in	Implications
Total contract price was \$27m	Total contract "not to exceed" \$20.5m	EWEB bears responsibility for meter installation work
Hosting of IT occurs on premise at EWEB	Hosting of IT occurs as a service, at Sensus	Allows EWEB to ramp up IT investment with customer uptake, instead of pre-buying hardware
EWEB to purchase radio spectrum at \$650k	EWEB to lease radio spectrum at \$50k/yr, with option to buy	Lower up -front costs; additional investment driven by customer demand. Sensus will manage airwaves, not EWEB
All meter prices fixed for 5 years	All meter prices fixed for 8 years	Allows greater cost certainty over longer period
Entire network to be built year 1 at \$2m (15 collector sites), by Sensus	Network built over time by EWEB. First year will be 3 sites. Additional as customer uptake dictates for capacity purposes.	Lower up-front costs; additional investment driven by customer demand. EWEB will have to monitor capacity and coverage and adjust when necessary
7% hold back on entire contract, paid at final acceptance, ~1 year after contract start.	10% hold back on services only (not meters); paid upon initial acceptance (18 months after start) and final acceptance (36 months after start)	Lower overall hold back, held for longer period.
Fixed meter price for backup residential electric meter (L+G) if Sensus meter does not pass tests	Sensus will sell EWEB communication modules, and EWEB has right to buy meters from 3rd parties (L+G, GE) and have them install comm boards.	Eliminates Sensus as middleman in meter procurement cycle. Per meter costs for L+G are higher than Sensus. Field testing conducted by EWEB will establish if L+G meters are higher quality
All installed meters are AMI enabled and broadcast 4 times a day.	Sensus will modify their meter and head-end software to add options to allow meters to be set to limited opt-in (broadcast reading once per month, broadcast alerts/events if they occur) or full opt-out (meter is listen-only)	Allows EWEB to place AMI "capable" meters everywhere, but turn off the RF if customer has privacy/health concerns. Off/on status can be set remotely. Maximizes customer choices, allow minimizing of RF.
All ~142,000 meters deployed in 12-18 months	Meters deployed at pace set by customer adoption (opt in)	Allows EWEB to purchase meters as needed. Smoothes overall project costs over a longer period of time.

## **Section 4 – Harris Contract**

In conjunction with the Sensus contract, Management also recommends a contract for Harris to provide Meter Data Management (MDM) software. The key implication is that the Sensus contract for an AMI system is a predecessor to acquiring MDM software, so both contracts would be approved simultaneously.

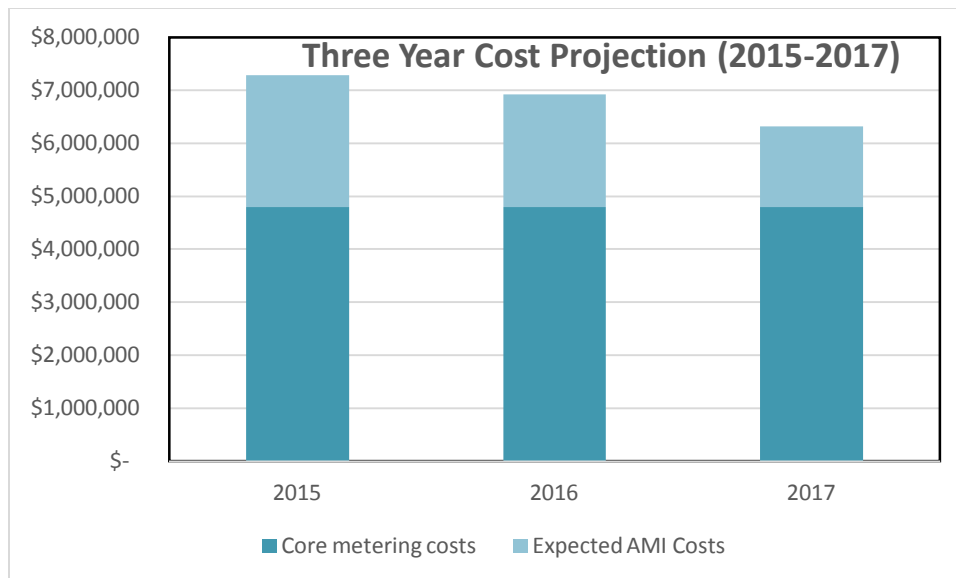
An MDM system is an adjunct system that utilities typically acquire with AMI. The AMI system typically handles the network and data collection, and the MDM system handles downstream analysis, historical data storage and integration with 3<sup>rd</sup> party systems such as Outage Management, CIS, etc.

After selecting the Sensus AMI system, EWEB allowed for a public bid for software companies to provide MDM software. Harris Utilities was the top ranked proposer, able to demonstrate multiple, successful implementation with Sensus AMI, along with being the low cost bidder.

Total contract value for Harris is \$1.2 million, which is included in the LTFP. The MDM software itself was priced at ~\$400,000, along with ~\$400,000 in implementation services. The implementation services are to be provided by Harris in setting up the system and integrating it with Sensus AMI. Payments made are to be milestone based, and 50% of the contract value is based on EWEB acceptance of the working system through stage gates referred to as “Initial Acceptance Test” and “Final Acceptance Test”. The final increment of this contract is ~\$85,000 per year in annual maintenance fees for five years, bringing the total paid over 5 years to \$1.2 million.

## **Section 5 – Strategic Considerations**

Perhaps the most important consideration at this time is to recognize that EWEB essentially has been on hold for almost a decade on meter replacement. Our average meter stock has aged beyond typically recommended lifecycle and we are falling further behind on use of technology. Using a fairly standard assumption that meters should be replaced approximately every 15 years EWEB needs to make a decision that is now long overdue. Not doing AMI at this time is not a zero cost option. A non-AMI decision would also require a significant investment. Although AMI meters (water and electric) are both more expensive than non-AMI meters that cost difference on a percentage basis shrinks as we factor in installation/labor costs. The figure below shows this difference for the initial phase of AMI. The cost difference continues to shrink over time as the upfront fixed elements of the AMI system are not incurred as new AMI meters are deployed. It is important to recognize that without this incremental investment, future benefits such as O&M reductions and resource benefits will not be created.



Given that a decision needs to be made to replace meter infrastructure, EWEB's basic options are: (1) AMI or (2) non-AMI. Furthermore, since meter life is about 15 years this decision is really a 15 year decision. If EWEB went non-AMI, it would be difficult to change to AMI for the next 15 years given the size of the investment. Non-AMI meters don't provide any tactical/operational or strategic benefits. They basically keep us on our 20th century utility model. Management has recommended the AMI choice for several years and the Board by various actions has approved that direction because of the obvious benefits it provides.

AMI does have an incremental cost over a non-AMI system, but it will position EWEB for the future and it will provide the following benefits that cannot be obtained from a non-AMI system:

- Most fundamentally it provides options and ability to provide services to customers that will enhance customer value.
- Will allow EWEB to formulate services and options working with customers to offer DR/DM to meet our IERP strategy of not building peaking power plants or placing EWEB in financial or physical risk of over-relying on the spot market.
- Provides various services that customers have already expressed strong interest in such as: water leak detection, advanced outage information, remote connect/disconnect energy usage information, water usage information, pre-paid service options and other services.
- At the expected larger concentration rates, EWEB expects to begin to realize O&M savings in the form of lower meter reading costs. Ultimately, this lower cost also benefits AMI customers.

Management remains convinced that AMI is the logical path forward to prepare EWEB for the future. The additional investment in AMI over non-AMI positions EWEB to provide new customer services and to realize savings over time. It is critical to supporting other strategic directions of EWEB such as our IERP and AWS.

Based on the opt-in direction approved by the Board, Management conformed the Sensus contract to be more a "pay-as-you-go" contract over several years as opposed to a shorter "big-bang" contract. EWEB still obtains the benefit of a larger scale contract with our favorable pricing in spite of the structural change to the expected AMI rollout.

### **Recommendation**

Management recommends that the Board authorize the General Manager to execute both the Sensus and Harris contracts as enumerated above.

**APPENDIX 2. APRIL 20, 2016 BOARD MEMO**





# MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

*Rely on us.*

TO: Commissioners Simpson, Brown, Helgeson, Manning and Mital  
FROM: Erin Erben, Power Resources and Strategic Planning Manager; Lance Robertson, Public Affairs Manager; and Greg Armstead, Modernization Program Manager  
DATE: April 20, 2016  
SUBJECT: Utility Modernization and Advanced Metering Infrastructure (AMI)  
OBJECTIVE: Provide Board with update on AMI portion of “EWEB Modernization” effort

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## Issue

EWEB staff is progressing toward readiness with the first phase of its Modernization Program, which includes installation of equipment, software and other systems needed for the utility’s Advanced Metering Infrastructure project as the foundation for new customer services. This off-cycle memo is intended to provide commissioners with an update and timeline on the multi-year project.

## Background and Discussion

EWEB staff is currently in “Phase 1” planning and deployment of our AMI system, following Board approval of Resolution 1322 in October 2013. Work to date has progressed under the “opt-in” strategy adopted by the Board. The Board also authorized EWEB in early 2015 to sign contracts with Sensus and Harris to provide meters, meter data management and other services.

More background, as well as information about those contracts, are summarized in a February 2015 memo to the Board:

[http://www.eweb.org/public/commissioners/meetings/2015/150217/M7\\_AMIContractsSubmittedforApproval.pdf](http://www.eweb.org/public/commissioners/meetings/2015/150217/M7_AMIContractsSubmittedforApproval.pdf)

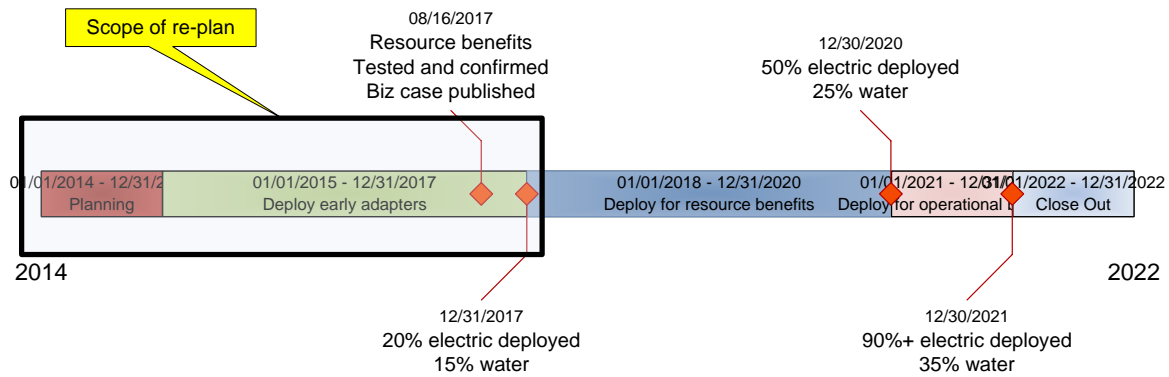
Traditional “opt-out” AMI deployments rely initially on operational savings and efficiencies to utilities, and ultimately, to customers who support operations through electric and water rates. While EWEB’s “opt-in” strategy will ultimately yield operational and cost savings, the primary goal of the current AMI program is to provide customers with enhanced services, such as outage detection and communications, remote start and stop of service, water leak detection and, eventually, time-of-use and other pricing plans. Opt-in provides customers with a higher level of choice.

The AMI infrastructure (hardware and software) is installed and is under-going tests (in the lab and with field trials). EWEB will soon begin to offer customers added-value services and products that can only be provided efficiently with an AMI-enabled meter. The meter becomes secondary to the true “value proposition” for the customer, which is the ability to take advantage of new services. It is still expected that as the concentration of AMI meters grows larger that EWEB and our customers

will also realize tactical and operational benefits such as lower O&M costs of meter reading.

Management developed an AMI rollout plan that emphasizes customer choice (i.e. opt-in), focuses on the resource benefits, and allows for the tactical/operational benefits to materialize in later years when customer acceptance and adoption rates are high enough.

Management plans for AMI to roll out in three distinct phases, as follows:



Phase 1 -- Now through 2017: Includes installation of hardware and software, lab and field testing of the meters, and field testing of services with selected customers. This phase also includes routine replacement of older meters. As part of routine replacement, EWEB will begin deploying only AMI-capable meters during routine maintenance/replacements. Customers who do not Opt-in will have their meter placed on Opt-out-mode, where the radio is turned off. If EWEB is unsure of the customer's preference, it will be placed in Opt-out mode. Where access issues create safety hazards for EWEB staff, EWEB has arranged with Sensus for a Limited Opt-in mode, where the meter will be off, but will "wake up" and transmit readings once per month, or transmit critical alarms if they occur. This feature will be limited to installations where a Customer does not desire to Opt-in, but a safety risk is present that the customer is unwilling or unable to resolve.

In 2016, field trials include:

1. Meter trial at EWEB facilities (currently under way) – This trial is limited to deploying meters at EWEB sites (pump stations, HQ, ROC) to evaluate the installation process, effects on downstream billing processes and establish an in-the-field evaluation of the metering equipment.
2. Field trial of new systems and services at unoccupied commercial facilities (ex. billboards, stoplights, RR crossings, etc.). Anticipated time frame – Spring to early summer.
3. Field trial of new systems and services at select residential sites (ex., employee- customer volunteers, Opt-in customer-volunteers) – This trial will involve deploying meters to select residential customer locations, and will trial (where practical) initial services as they become available (remote read, remote connect/disconnect). Estimated time frame: Summer to early fall.

4. Field trial of new systems and services at select commercial sites (ex., City of Eugene, 4J, Friends of EWEB other commercial customers with specific characteristics) – This trial will focus primarily on new services intended for this customer class. The initial focus of the trial will be replacing meters, and then evaluating customers’ interest in new services targeted at various segments of this customer class, such as “pick your read date”, and an early trial of viewing online consumption data. Anticipated time frame: Summer and fall.
5. Service trial of advanced outage management -- This trial will focus on evaluating the features and functions of advanced outage management services. Initial capabilities as drawn up by EWEB staff will be deployed to a limited number of customers, and their feedback/evaluation sought. Estimated time frame: Fall to early winter.

### **Rollout of services to customers:**

Once field trials are concluded by late 2016, EWEB anticipates that it will begin offering the first “bundles” of services to general customers in early to mid-2017. Staff continues to evaluate the order in which services will be offered, as well as which types or classes of customers will first be offered services. The rollout aims to achieve a level of efficiency while still offering opt-in services to general customers. For example, it may make more sense to target commercial customers first. Prior to rollout, EWEB will develop a comprehensive marketing plan for opt-in during the first and second phases of the project.

These are the customer services that will be offered first (immediately or within the first two years):

- Advanced outage management – The meter notifies EWEB if an outage has occurred, instead of waiting for a customer call. Customers also may be able to receive an automated text message or other notification. This will allow EWEB to more quickly respond to outages, manage larger-scale outages and provide customers with timely and better two-way communications.
- Remote move in and move out (start/stop service) – Customers can schedule service turn on (and off) at a time of their convenience, instead of during a four-hour window during workdays. EWEB benefits by reducing the need for “truck rolls” to start or stop service, and customers benefit greatly by having instantaneous starts or stops to service, if desired. EWEB expects this service to be valued particularly by high-turnover customers such as students.
- Customer energy usage – Customers can view and analyze interval readings to understand their usage, likely using a web portal or in-home device. Interval readings can be more frequent to provide customers better information.
- Water Leak Detection – Customers (and EWEB) are alerted to potential water leaks detected by advanced meters and are notified when detected, instead of when a high bill is received.

More advanced services are expected to be available during the second phase of the project (2018-20). Most of these services require EWEB to first replace its current Customer Information System (CIS) with a modern system that includes features and capabilities that the current system lacks. These services include:

- Pre-pay – Customers prepay for their electric consumption and manage their available usage. This is expected to greatly reduce EWEB-initiated disconnects for non-pay. For utilities that have implemented this program they have found a significant improvement in customer relationship and lowering of disconnect for non-pay situations.
- Enhanced Pricing Programs – Customers can choose from multiple rate schedules that more closely match their lifestyle, such as the residential time-of-use pilot that is currently under way, or a commercial time-of-use rate structure or other rate offerings that match the customer’s business needs.
- Enhanced automatic hookup – Large-scale landlords and property owners would receive services that allow them to better manage service connects and disconnects resulting primarily from the annual student migration.

Services offered during the third phase of the project, 2020-21, will largely depend on success of the first two phases.

### **Costs to date**

Total spending to-date on AMI, MDM and related systems work is \$1.4 million, mostly in capital funds. Actual spending is running slightly lower than projections. Total spending on this program through the end of 2017 is anticipated to be \$7.5 million.

### **Customer engagement**

To prepare for rollout of these and other value-added services, EWEB is conducting surveys, pilots and other market-segmentation work. Market segmentation can help EWEB target specific customer groups with specific services, which will cost less than traditional marketing efforts that appeal to all customers. The field tests in 2016 also will provide much-needed feedback from customers who voluntarily participate. The goal is to offer services to customers who are most likely to adopt new services that are AMI-dependent.

In April, EWEB tested these customer-facing services with our quarterly Customer Research Panel. We invited a broader range of customers to this quarterly session and asked them to provide feedback on the various services likely to be offered, and to suggest additional services and benefits that might be achieved through an AMI system. The report from that quarterly session is attached. This session will help Public Affairs and its contractors to structure future consumer focus group research on new services.

Initial marketing of services and solicitations of customers for participation in the 2016 field trials will be conducted by EWEB’s in-house team. Much of the customer engagement will be done via individual contacts, such as with key accounts, EMS Commercial staff based on recent program participation and relationships, and by getting back to customers who have proactively contacted EWEB to “opt-in” to new technology and services once available.

However, as EWEB prepares for more mass appeal of the various services and benefits, particularly in 2017 and beyond, EWEB will likely seek the services of an outside marketing firm to help in that effort. No budget has yet been formulated for that effort.

### **Employee engagement**

The project team has developed an employee-engagement strategy to help employees gain a higher understanding of the project, to create “ambassadors” for the project and the customer benefits that will be available, and to test messaging and other communications so that we may improve our engagement with customers.

A key component of the strategy was to feature EWEB’s Modernization Program – with a focus on AMI – at the utility’s all-employee meeting in late January. Additional engagement opportunities include Daily News articles about tangible progress on the project (installation of antennas, lab testing of meters, etc.), work group presentations, and a series of workshops on EWEB’s overall Modernization Program. In addition:

- We have created an intranet site with resources for employees and information to help them communicate with customers.
- About 60 employees attended one of the recent AMI “show & tell” sessions.
- We created an app that employees can use to capture customer feedback while in the field (or off duty). The app can also be used to generate an “opt-in” or “opt-out” service order.

The goal is to create a well-informed employee base that can talk confidently and authoritatively with customers when asked about the project, its benefits or the status of the project.

#### **Recommendation and requested board action**

None. This is informational only.