



# County of Los Alamos

1000 Central Avenue  
Los Alamos, NM 87544

## Agenda - Final Board of Public Utilities

*Jeff Johnson, Chair; Carrie Walker, Vice-chair; Paul  
Frederickson, Stephen McLin and Kathleen Taylor, Members  
Tim Glasco, Ex Officio Member  
Harry Burgess, Ex Officio Member  
Christine Chandler, Council Liaison*

---

Wednesday, September 19, 2018

5:30 PM

1000 Central Avenue  
Council Chambers

---

### REGULAR SESSION

Complete Board of Public Utilities agenda packets, past agendas, videos, legislation and minutes can be found online at [losalamos.legistar.com](http://losalamos.legistar.com). Learn more about the Board of Public Utilities at [rebrand.ly/LACBPU](http://rebrand.ly/LACBPU).

#### PUBLIC COMMENTS:

Please submit written comments to the Board at [bpu@lacnm.us](mailto:bpu@lacnm.us). Oral public comment is accepted during the two periods identified on the agenda and after initial board discussion on a business item, prior to accepting a main motion on an item. Oral comments should be limited to four minutes per person. Requests to make comments exceeding four minutes should be submitted to the Board in writing prior to the meeting. Individuals representing or making a combined statement for a large group may be allowed additional time at the discretion of the Board. Those making comments are encouraged to submit them in writing either during or after the meeting to be included in the minutes as attachments. Otherwise, oral public comments will be summarized in the minutes to give a brief succinct account of the overall substance of the person's comments.

#### 1. CALL TO ORDER

#### 2. PUBLIC COMMENT

*This section of the agenda is reserved for comments from the public on Consent Agenda items or items that are not otherwise included in this agenda.*

#### 3. APPROVAL OF AGENDA

#### 4. BOARD BUSINESS

##### 4.A. Chair's Report

##### 4.B. Board Member Reports

##### 4.C. Utilities Manager's Report

**4.D. County Manager's Report****4.E. Council Liaison's Report****4.F. Environmental Sustainability Board Liaison's Report****4.G. General Board Business****4.G.1 [10696-18](#)** Approval of Possible Updates to the Board of Public Utilities Policies and Procedures Manual and Annual Affirmation

**Presenters:** Jeff Johnson, Chair of the Board of Public Utilities

*PG. 1-2*

**4.G.2 [10916-18](#)** Approval of Department of Public Utilities Mission, Vision and Values, Strategic Goals and Objectives

**Presenters:** Tim Glasco, Utilities Manager

*PG. 3-5*

**4.G.3 [11084-18](#)** Quarterly Conservation Program Update

**Presenters:** James Alarid, Deputy Utilities Manager - Engineering

*PG. 6*

**4.H. Approval of Board Expenses****4.I. Preview of Upcoming Agenda Items****4.I.1 [11190-18](#)** Tickler File for the Next 3 Months

**Presenters:** Board of Public Utilities

*PG. 7-8*

**5. PUBLIC HEARING(S)**

*There are no public hearings scheduled for this meeting.*

**6. CONSENT AGENDA**

*The following items are presented for Board approval under a single motion unless any item is withdrawn by a member for further Board consideration in the "Business" section of the agenda.*

**CONSENT MOTION -**

*I move that the Board of Public Utilities approve the items on the Consent Agenda as presented and that the motions in the staff reports be included in the minutes for the record.*

*OR*

*I move that the Board of Public Utilities approve the items on the Consent Agenda as amended and that the motions contained in the staff reports, be included in the minutes for the record.*

- 6.A**    [11188-18](#)    Approval of Board of Public Utilities Meeting Minutes

**Presenters:**    Department of Public Utilities

*PG. 9-32*

- 6.B**    [AGR0595-18](#)    Approval of Task Order No. 03 Under Services Agreement No. AGR17-45 with Alpha Southwest, Inc. in the amount of \$77,866.52, plus Applicable Gross Receipts Tax, for the Purpose of Chlorine Generator Equipment Acquisition and Installation for Guaje Booster Station No 2.

**Presenters:**    Jack Richardson, Deputy Utilities Manager - GWS Services

*PG. 33-36*

- 6.C**    [AGR17-914](#)    Approval of Amendment No. 1 to Services Agreement No. AGR17-914 with Alpha Southwest, Inc. in the amount of \$300,000.00 and Task Order No. 02 in the amount of \$66,254.50, Plus Applicable Gross Receipts Tax, For the Purpose of Inspection, Repair, and Ancillary Services on County Well and Booster Pumps.

**Presenters:**    Jack Richardson, Deputy Utilities Manager - GWS Services

*PG. 37-44*

- 6.D**    [RE0382-18](#)    Approval of Incorporated County of Los Alamos Resolution No. 18-21; A Resolution Authorizing the County Council Chair or Los Alamos County Utilities Manager to Approve Submission of Completed Applications and Necessary Documents for 2019 Applications to the Water Trust Board for Funding Non-Potable Water Systems Projects

**Presenters:**    James Alarid, Deputy Utilities Manager - Engineering

*PG. 45-51*

**7.        BUSINESS**

- 7.A**    [AGR0590-18](#)    Approval of Services Agreement AGR19-912 with Ferguson Incorporated in the Amount of \$5,559,480.00, Plus Applicable Gross Receipts Tax for Advanced Metering Infrastructure (AMI) Equipment and Services, Approval of the License and Technical Support Agreement with Sensus Incorporated, and Approval of Related Budget Revision 2019-04

**Presenters:**        Bob Westervelt, Deputy Utilities Manager - Finance/Admin

*PG. 52-235*

- 7.B**    [11150-18](#)    Consideration of Change Order No. 5 to Services Agreement AGR17-30 and Budget Revision 2019-16 for the Otowi Well #2 Design, Drilling and Development Project

**Presenters:**        James Alarid, Deputy Utilities Manager - Engineering

*PG. 236-258*

- 7.C**    [OR0816-18](#)    Incorporated County of Los Alamos Code Ordinance No. 687, An Ordinance Authorizing the Incorporated County of Los Alamos to Enter Into a Loan Agreement and Promissory Note With the New Mexico Environment Department for the Purpose of Obtaining Loan Funds for the Construction of a New Wastewater Treatment Facility, Declaring the Necessity for the Loan, Restricting the Use of the Loan Funds Solely for the Project, and Pledging Loan Will be Payable from the Revenues of the Wastewater System; and Incorporated County of Los Alamos Resolution No. 18-18, a Resolution Authorizing the Utilities Manager to Execute Documents With the New Mexico Environment Department on Behalf of Los Alamos County Relating to the White Rock Waste Water Treatment Plant, Project Number CEWRF083 and Authorizes the Designation of Official Representatives and Signatory Authorities

**Presenters:**        Bob Westervelt, Deputy Utilities Manager - Finance/Admin

*PG. 259-275*

- 7.D**    [10947-18](#)    Update on Using Low Flow Hydro on Some of the In-town Systems

**Presenters:**        Steve Cummins, Deputy Utilities Manager - Power Supply

*PG. 276-290*

- 7.E**    [11039-18](#)    Present Indicative Pricing for Distributed Generation Photovoltaic Solar

**Presenters:**        Steve Cummins, Deputy Utilities Manager - Power Supply

*PG. 291-299*



**8. STATUS REPORTS****8.A [11189-18](#) Status Reports**

**Presenters:** Board of Public Utilities

*PG. 300-308*

**9. PUBLIC COMMENT**

*This section of the agenda is reserved for comments from the public on any items.*

**10. ADJOURNMENT**

If you are an individual with a disability who is in need of a reader, amplifier, qualified sign language interpreter, or any other form of auxiliary aid or service to attend or participate in the hearing or meeting, please contact the County Human Resources Division at 662-8040 at least one week prior to the meeting or as soon as possible. Public documents, including the agenda and minutes can be provided in various accessible formats. Please contact the personnel in the Department of Public Utilities (505) 662-8132 if a summary or other type of accessible format is needed.



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 4.G.1  
**Index (Council Goals):** BCC - N/A  
**Presenters:** Jeff Johnson, Chair of the Board of Public Utilities  
**Legislative File:** 10696-18

---

### **Title**

Approval of Possible Updates to the Board of Public Utilities Policies and Procedures Manual and Annual Affirmation

### **Recommended Action**

Each member of the Board of Public Utilities signs the “Annual Reaffirmation of the Policies and Procedures Manual” signature sheet (Appendix A to the PPM). A blank copy will be provided to the Chair for signatures.

### **Staff Recommendation**

None

### **Body**

Article 1.9 of the Board of Public Utilities (BPU) Policies and Procedures Manual (PPM) states that each year during the July BPU meeting each board member will affirm that he/she has received, read, understands, and agrees to abide by the PPM and the applicable documents referenced in its Appendix. Appendix A is the re-affirmation signature sheet. The Board discussed review and potential changes to the PPM over the 2018 July and August Board of Public Utility meetings and the Board collectively did not recommend any changes to the PPM and affirmed that they had read the PPM.

### **Alternatives**

None

### **Fiscal and Staff Impact**

None

### **Attachments**

A - BPU PPM Appendix A

Los Alamos County Board of Public Utilities  
Policies and Procedures Manual

Appendix A  
Annual Reaffirmation of the Policies and Procedures Manual

I affirm that I have received, read, understand, and agree to abide by the current Board of Public Utilities Policies and Procedures Manual.

Board member printed name

Signature

Date

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 4.G.2  
**Index (Council Goals):** BCC - N/A  
**Presenters:** Tim Glasco, Utilities Manager  
**Legislative File:** 10916-18

---

### Title

Approval of Department of Public Utilities Mission, Vision and Values, Strategic Goals and Objectives

### Recommended Action

**I move that the Board of Public Utilities affirm the existing Mission, Vision and Values statements, and the FY2020 Goals and Objectives as presented.**

### Staff Recommendation

Staff recommends affirmation of the Objectives, Goals and Mission, Vision and Values statements.

### Body

DPU Senior Staff held our annual Strategic Planning Meeting on August 30th of this year. The emphasis this year was less on development of new goals and objectives and more on evaluation of performance data and presentation format. As we are planning on preparing a Quality New Mexico Zia application in satisfaction of the County Charter requirement for a five-year Management Audit, we evaluated each goal and analyzed the associated performance data with a view to its inclusion in the report. Staff felt that the existing Mission, Vision and Values are still appropriate and did not recommend any changes. The FY2019 Goals and Objectives also remain unchanged for FY2020. Action Plans were reviewed in terms of suitability for inclusion in the proposed application.

The Mission Vision and Values statements are provided below for reference. The Goals and Strategic Objectives are provided in the attachment.

### MISSION

Provide safe and reliable utility services in an economically and environmentally sustainable fashion.

### VISION

Be a high-performing utility matched to our community, contributing to its future with diversified and innovative utility solutions.

---

## **VALUES**

We value our:

CUSTOMERS by being service oriented and fiscally responsible;

EMPLOYEES AND PARTNERSHIPS by being a safe, ethical and professional organization that encourages continuous learning;

NATURAL RESOURCES through innovative and progressive solutions;

COMMUNITY by being communicative, organized and transparent.

## **Alternatives**

The Board can accept the Mission, Vision and Values as retained by the DPU, or change them.

Similarly, the Board can change the Goals and Objectives if necessary.

## **Fiscal and Staff Impact**

None

## **Attachments**

A - DPU Goals and Strategic Objectives (For Approval)

### FOCUS AREA - OPERATIONS & PERFORMANCE

#### **GOAL - 1.0 Provide safe and reliable utility services.**

- 1.1 OBJECTIVE - WATER (WP/NP/DW) - Efficiently deliver safe and reliable water utility services.
- 1.2 OBJECTIVE - GAS - Efficiently deliver safe and reliable gas utility services.
- 1.3 OBJECTIVE - SEWER (WC & WT) - Efficiently deliver safe and reliable sewer utility services.
- 1.4 OBJECTIVE - ELECTRIC (EP) - Efficiently deliver safe and reliable electric production utility services.
- 1.5 OBJECTIVE - ELECTRIC (ED) - Efficiently deliver safe and reliable electric distribution utility services.
- 1.6 OBJECTIVE - BUSINESS SYSTEMS - Efficiently implement and maintain secure and reliable business systems.
- 1.7 OBJECTIVE - Utility control and mapping systems and processes are accurate, safe and secure.
- 1.8 OBJECTIVE - Develop a culture of continuous improvement.

### FOCUS AREA - FINANCIAL PERFORMANCE

#### **GOAL - 2.0 Achieve and maintain excellence in financial performance.**

- 2.1 OBJECTIVE - Utilize revenues to provide a high-level of service while keeping rates competitive with similar utilities.
- 2.2 OBJECTIVE - Conduct cost of service studies for each utility at least every 5 years.
- 2.3 OBJECTIVE - Meet financial plan targets by 2025.
- 2.4 OBJECTIVE - Achieve workplans while operating within budget.

### FOCUS AREA - CUSTOMERS & COMMUNITY

#### **GOAL - 3.0 Be a customer service oriented organization that is communicative, efficient, and transparent.**

- 3.1 OBJECTIVE - Customer service processes and systems are efficient and user-friendly.
- 3.2 OBJECTIVE - Stakeholders are engaged in and informed about Utilities operations affecting the community.

### FOCUS AREA - WORKFORCE

#### **GOAL - 4.0 Sustain a capable, satisfied, engaged, ethical and safe workforce focused on customer service.**

- 4.1 OBJECTIVE - Leaders invest in employee training and professional development.
- 4.2 OBJECTIVE - Employees promote a culture of safe and ethical behavior.
- 4.3 OBJECTIVE - Employees are engaged, satisfied and fairly compensated.

### FOCUS AREA - ENVIRONMENTAL SUSTAINABILITY

#### **GOAL - 5.0 Achieve environmental sustainability.**

- 5.1 OBJECTIVE - ELECTRIC (EP & ED) Be a carbon neutral electric provider by 2040.
- 5.2 OBJECTIVE - ELECTRIC (ED) - Electrical efficiency is promoted through targeted energy conservation programs.
- 5.3 OBJECTIVE - WATER (DW) – Gallons per capita per day (GPCD) potable water use is reduced by 9% by 2030.
- 5.4 OBJECTIVE - GAS – Customer heating efficiency is improved to reduce gas usage by 3% by 2030.
- 5.5 OBJECTIVE - SEWER (WT) - Class 1A effluent water is provided in White Rock.

### FOCUS AREA - PARTNERSHIPS

#### **GOAL - 6.0 Develop and strengthen partnerships with stakeholders.**

- 6.1 OBJECTIVE - Communicate with stakeholders to strengthen existing partnerships and identify new potential mutually beneficial partnering opportunities.



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 4.G.3  
**Index (Council Goals):** BCC - N/A  
**Presenters:** James Alarid, Deputy Utilities Manager - Engineering  
**Legislative File:** 11084-18

---

**Title**

Quarterly Conservation Program Update

**Recommended Action**

None

**Staff Recommendation**

None

**Body**

Summary of fall conservation activities will be presented.

**Alternatives**

N/A

**Fiscal and Staff Impact**

None

**Attachments**

None



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 4.I.1  
**Index (Council Goals):** BCC - N/A  
**Presenters:** Board of Public Utilities  
**Legislative File:** 11190-18

---

### **Title**

Tickler File for the Next 3 Months

### **Attachments**

A - Tickler File for the Next 3 Months





# County of Los Alamos

Los Alamos, NM 87544  
www.losalamosnm.us

## Tickler

**Criteria: Agenda Begin Date: 10/1/2018, Agenda End Date: 12/31/2018, Matter Bodies: Board of Public Utilities**

---

File Number	Title
-------------	-------

---

**Agenda Date: 10/17/2018**

<b>10375-18</b>	<b>Calendar</b>	<b>04A Chair's Report</b>
	Reminder for Upcoming Boards & Commissions Luncheon	
	<b>Department Name:</b> DPU	<b>Length of Presentation:</b> Apx. 5 Min.
	<b>Drop Dead Date:</b>	<b>Sponsors:</b> Board of Public Utilities
<b>10418-18</b>	<b>Briefing/Report (Dept, BCC) - No action requested</b>	<b>04G General Board Business</b>
	Quarterly Update on Utility System - (System TBD)	
	<b>Department Name:</b> DPU	<b>Length of Presentation:</b> Apx. 20 Min.
	<b>Drop Dead Date:</b>	<b>Sponsors:</b> Tim Glasco, Utilities Manager
<b>AGR0594-18</b>	<b>General Services Agreement</b>	<b>06 Consent</b>
	Approval of Amendment No. XX to Services Agreement No. AGR16-4289 with Paymentus Corporation in the amount of \$_____, for a Revised Total Agreement Amount of \$_____, plus Applicable Gross Receipts Tax, for the Purpose of Credit Card and Electronic Payment Processing Services.	
	<b>Department Name:</b> DPU	<b>Length of Presentation:</b>
	<b>Drop Dead Date:</b>	<b>Sponsors:</b> Bob Westervelt, Deputy Utilities Manager - Finance/Admin

**Agenda Date: 11/21/2018**

<b>11085-18</b>	<b>Briefing/Report (Dept, BCC) - No action requested</b>	<b>04G General Board Business</b>
	Annual Board of Public Utilities Self-evaluation (2018) - Initial Discussion	
	<b>Department Name:</b> DPU	<b>Length of Presentation:</b> Apx. 10 Min.
	<b>Drop Dead Date:</b>	<b>Sponsors:</b> Jeff Johnson, Chair of the Board of Public Utilities

**Agenda Date: 12/19/2018**

<b>10376-18</b>	<b>Calendar</b>	<b>04A Chair's Report</b>
	Reminder for Upcoming Boards & Commissions Luncheon	
	<b>Department Name:</b> DPU	<b>Length of Presentation:</b> Apx. 5 Min.
	<b>Drop Dead Date:</b>	<b>Sponsors:</b> Board of Public Utilities



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 6.A  
**Index (Council Goals):**  
**Presenters:** Department of Public Utilities  
**Legislative File:** 11188-18

---

### Title

Approval of Board of Public Utilities Meeting Minutes

### Recommended Action

**I move that the Board of Public Utilities approve the meeting minutes of August 15th, 2018 as presented.**

### Body

### REQUESTED REVISIONS TO THE DRAFT MINUTES

Draft minutes are sent to members after each meeting for their review. Members may then send changes to be incorporated prior to final approval of the minutes at the next regular meeting.

The following changes were incorporated into the minutes presented for approval:

1. Kathleen Taylor - In item 7.A., Ms. Taylor asked that Mr. McLin's call for the question be included in the minutes. The following statement was added: "During discussion, Mr. McLin called for the question. As there was no motion on the floor at the time, Ms. Walker could not call for a vote; however, she did end discussion and asked if any member would like to make a motion."

### Attachments

A - Draft BPU Regular Session Minutes - August 15th, 2018



LOS ALAMOS

# County of Los Alamos

## Minutes

### Board of Public Utilities

1000 Central Avenue  
Los Alamos, NM 87544

*Jeff Johnson, Chair; Carrie Walker, Vice-chair; Paul Frederickson, Stephen McLin and  
Kathleen Taylor, Members  
Tim Glasco, Ex Officio Member  
Harry Burgess, Ex Officio Member  
Christine Chandler, Council Liaison*

Wednesday, August 15, 2018

5:30 PM

1000 Central Avenue  
Council Chambers

#### REGULAR SESSION

#### 1. CALL TO ORDER

The regular meeting of the Incorporated County of Los Alamos Board of Public Utilities was held on Wednesday, August 15th at 5:30 p.m. at 1000 Central Ave., Council Chambers. Board Chair Jeff Johnson was absent. Board Vice-chair Carrie Walker called the meeting to order at 5:30 p.m.

**Present** 4 - Vice-chair Walker, Board Member Frederickson, Board Member McLin and Board Member Taylor

**Absent** 1 - Board Member Johnson

Deputy Utility Manager for Electric Distribution Rafael De La Torre attended for Mr. Glasco. Deputy County Manager Steven Lynne attended for Mr. Burgess.

#### 2. PUBLIC COMMENT

Ms. Walker opened the floor for public comment on items on the Consent Agenda and for those not otherwise included on the agenda. Members of the public gave the following summarized comments:

1) Mr. Phil Gurskey, 223 El Viento - He has one of the newer meters. The meter riser and box on his house had a catastrophic failure and the Fire Department is conducting an investigation. He does not know at this time if the meter itself was the issue, but he suggested the Board delay approval of a contract for Advanced Metering Infrastructure until the Fire Inspector's report is completed. Even if the meter was not the cause, he recommends an evaluation of the safety of the bases and risers be conducted prior to the installation of new meters or contract approval.

#### 3. APPROVAL OF AGENDA

\*\*\*\*\*

**Mr. McLin moved that the agenda be approved as presented. The motion passed by the following vote:**

\*\*\*\*\*

**Yes:** 4 - Vice-chair Walker, Board Member Frederickson, Board Member McLin and Board Member Taylor

**Absent: 1 - Board Member Johnson**

**4. BOARD BUSINESS**

**4.A. Chair's Report**

Ms. Carrie Walker reported on the following items:

1) Ms. Walker is schedule to attend the Boards and Commissions luncheon in September.

**4.B. Board Member Reports**

Board members had nothing to report.

**4.C. Utilities Manager's Report**

Mr. De La Torre provided a written report, which is included in the minutes as an attachment. Mr. De La Torre was asked to expand on some of the billing issues discussed during the report. Public Relations Manager Ms. Julie Williams-Hill and Business Operations Manager Ms. Cathy D'Anna also provided additional information about the billing issues.

**4.D. County Manager's Report**

Mr. Lynne had nothing to report.

**4.E. Council Liaison's Report**

Ms. Christine Chandler was absent. No report was given.

**4.F. Environmental Sustainability Board Liaison's Report**

Ms. Susan Barns provided a written report, which is included in the minutes as an attachment.

**4.G. General Board Business**

**4.G.1 10808-18**

Planning for Upcoming Board of Public Utilities Annual Boards & Commissions Presentation to Council on September 25th, 2018

**Presenters:** Jeff Johnson and Board - Commission or Committee Member Carrie Walker

Ms. Walker presented this item in Mr. Johnson's absence. The following is the substance of the item being considered.

On September 25th, 2018, the Board of Public Utilities is scheduled to give its annual Boards & Commissions presentation to Council. The agenda will be a presentation of 2018 Department and Board initiatives and actions. The Board was asked to provide input to the Chair for possible topics for the presentation. The Board discussed this item and requested clarification where necessary.

The following actions were identified for follow-up:

1) When Mr. Johnson presents information about the sewer rate increase and other rate

increases, Mr. McLin would like for him to include and address comments and concerns expressed by the public.

**4.G.2     [11024-18](#)     Review of Any Proposed Changes to the Board of Public Utilities Policies and Procedures Manual**

**Presenters:**     Board - Commission or Committee Member Carrie Walker

Ms. Walker presented this item in Mr. Johnson's absence. The following is the substance of the item being considered.

The Board was asked to provide any proposed changes to the Policies and Procedures Manual (PPM). The Board will affirm the PPM at the September meeting.

The Board discussed this item and requested clarification where necessary. No changes to the PPM were requested.

**4.H.     Approval of Board Expenses**

There were no expenses.

**4.I.     Preview of Upcoming Agenda Items**

**4.I.1     [11076-18](#)     Tickler File for the Next 3 Months**

**Presenters:**     Board of Public Utilities

No additional items were identified for the tickler.

**5.     PUBLIC HEARING(S)**

**5.A     [10955-18](#)     Incorporated County of Los Alamos Code Ordinance No. 02-288, An Ordinance Amending Chapter 40, Article III, Section 40-201 and 40-202 of the Code of the Incorporated County of Los Alamos Pertaining to the Sewage Service Rate Schedule and Determination of Charges**

**Presenters:**     Bob Westervelt

Deputy Utility Manager of Engineering Mr. James Alarid presented this item. The following is the substance of the item being considered.

In July, the Board heard a preliminary presentation of the proposed sewer rate increase presented for approval at this meeting. After discussion, the Board indicated they were prepared with the information provided to move forward with the public hearing on this item in August. The ten-year forecast for the sewer utility presented with the FY2018 budget included a series of incremental rate increases to generate revenues needed for current operations and to build cash reserves necessary for future infrastructure replacements, most notably the needed replacement for the White Rock waste water treatment facility. Several alternatives have been considered as to timing of that plant replacement and financing alternatives. The scenario adopted by the Board included an 8% increase in FY18 and another in FY19, with declining increases in years following.

The Board discussed this item and requested clarification where necessary.

Ms. Walker opened the floor for public comments. Members of the public gave the following summarized comments:

1) Mr. Brady Burke, 2310 39th Street - Mr. Burke noted that for the past six years, the Department has requested and received 8% increases on the sewer rate. During Council's approval of the previous sewer increase last year, he commented that the justification should be tied to replacing the White Rock Waste Water Treatment Plant and the money should be used for that. He doesn't believe that has happened. He is concerned about what he sees is a pattern of rate increases to increase the cash reserves rather than to fund projects, after which, the public could see a reduction in rates. He recommended the Board vote no on the rate increase.

\*\*\*\*\*

**Mr. McLin moved that the Board of Public Utilities approve Incorporated County of Los Alamos Code Ordinance No. 02-288 as presented and forward to Council for adoption. The motion passed by the following vote:**

\*\*\*\*\*

**Yes: 4 - Vice-chair Walker, Board Member Frederickson, Board Member McLin and Board Member Taylor**

**Absent: 1 - Board Member Johnson**

## **6. CONSENT AGENDA**

\*\*\*\*\*

**Mr. McLin moved that the Board of Public Utilities approve the items on the Consent Agenda as presented and that the motions contained in the staff reports be included in the minutes for the record. The motion passed by the following vote:**

\*\*\*\*\*

**Yes: 4 - Vice-chair Walker, Board Member Frederickson, Board Member McLin and Board Member Taylor**

**Absent: 1 - Board Member Johnson**

### **6.A 11074-18 Approval of Board of Public Utilities Meeting Minutes**

**Presenters:** Board of Public Utilities

**I move that the Board of Public Utilities approve the meeting minutes of July 18th, 2018 as presented.**

### **6.B 10915-18 Approval of Budget Carryovers from FY2018 to FY2019**

**Presenters:** Bob Westervelt

**I move that the Board of Public Utilities approve Budget Revision 2019-07 for carryovers from FY2018 to FY2019 and forward to Council with a recommendation for approval. I further move that the budget revision be included as an attachment in the minutes for the record.**

### **6.C AGR0586-18 Request for Consent to Assignment of Agreement for Services Agreement**

AGR17-01 Changing the Assignment from Diversified Data Processing & Consulting Inc. (DivDat) to Diamond Marketing Solutions Group, Inc.

**Presenters:** Tim Glasco and Bob Westervelt

**I move that the Board of Public Utilities approve the Consent to Assignment of Agreement for Services Agreement AGR17-01, changing the assignment from Diversified Data Processing & Consulting Inc. (DivDat) to Diamond Marketing Solutions Group, Inc., and forward to Council for approval.**

## **7. BUSINESS**

- 7.A AGR0576-18** Approval of Services Agreement AGR19-912 with Ferguson Incorporated in the Amount of \$5,559,458.00, Plus Applicable Gross Receipts Tax for Advanced Metering Infrastructure (AMI) Equipment and Services, Approval of the License and Technical Support Agreement with Sensus Incorporated, and Approval of Related Budget Revision 2019-04.

**Presenters:** Bob Westervelt

In the absence of Mr. Bob Westervelt, Deputy Utility Manager for Electric Distribution Mr. Rafael De La Torre, presented this item. The following is the substance of the item being considered.

This contract is for equipment, supplies, installation, software, and project management services for implementation of a systemwide advanced metering infrastructure (AMI). The system will provide accurate, near real time read capability for electric, water, and gas services for DPU customers. DPU began considering implementation of AMI several years ago as the capabilities of the available systems improved in response to the development of more complex pricing models which began to emerge, primarily in the electric industry, in the early 2000s. The DPU conducted a pilot deployment as part of the New Energy and Industrial Technology Development (NEDO) Project in 2012 through 2014. While the project was limited in scope and distribution, the Department did learn and realize the impact advanced metering could have on its systems and business model and made the strategic decision to explore the business case for system-wide deployment. In 2015, the Department engaged Power Systems Engineering, a consulting firm specializing in electric grid modernization and utilities metering systems, to conduct a business case analysis for full implementation of advanced metering in all of the metered services (electric, gas, and water) system wide. The study identified both economic benefits and non-economic benefits, both of which have been considered in the decision to move forward.

The Board discussed this item and requested clarification where necessary.

Ms. Walker opened the floor for public comments. Members of the public gave the following summarized comments:

1) Phil Gurskey, 223 El Viento - With regards to Mr. Gurskey's comments during the public comment period of the meeting, he did not feel that Mr. De La Torre's discussion during this item was either accurate or representative of what happened in his situation. He feels that any catastrophic failure that happens, either in the riser or meter, is 100% unacceptable. He does not believe an acceptable answer to the problem is that it doesn't happen very often. He was offended at the implication that the failure could have been his fault and feels the Department should do better due diligence to assess the safety of the installations.

2) Brady Burke, 2310 39th Street - Looking at the \$6.5 million cost for implementation, a fourteen year return on investment, and coupling that with other rate increases, he believes the Department needs to be able to show the community that it is saving money by spending money. Even though the Department is not for-profit, it doesn't need to spend all the money collected. The community is entitled to expect the government to work efficiently and reduce costs where it can. Given the rate increases, he questions how the Department can do this project without showing how money is being saved. Additionally, he is concerned about the disruptions in service and interruptions the changes will cause.

During discussion, Mr. McLin called for the question. As there was no motion on the floor at the time, Ms. Walker could not call for a vote; however, she did end discussion and asked if any member would like to make a motion.

\*\*\*\*\*

**Ms. Taylor moved that the Board of Public Utilities approve Services Agreement AGR19-912 with Ferguson Incorporated in the amount of \$5,559,458.00, plus a contingency in the amount of \$971,946.00, for a total of \$6,531,404.00, plus applicable gross receipts tax, and forward to Council for approval. She further moved that the Board of Public Utilities approve execution of the License and Technical Support Agreement between the Incorporated County of Los Alamos and Sensus, Incorporated, funding for which is included in and payable through the Ferguson agreement. She further moves that the Board of Public Utilities approve budget revision 2019-04 and forward to Council for approval. She further moved that the budget revision be included in the minutes as an attachment for the record. The motion died due to lack of a second.**

\*\*\*\*\*

## **8. STATUS REPORTS**

### **8.A 11075-18 Status Reports**

**Presenters:** Board of Public Utilities

The following informational status reports were provided to the Board in the agenda packet:

- 1) Electric Reliability Update
- 2) Safety Report

## **9. PUBLIC COMMENT**

Ms. Walker opened the floor for public comment on any items. There were no comments.

## **10. ADJOURNMENT**

The meeting adjourned at 7:04 p.m.

\*\*\*\*\*

APPROVAL

\_\_\_\_\_  
Board of Public Utilities Chair Name



\_\_\_\_\_  
Board of Public Utilities Chair Signature

\_\_\_\_\_  
Date Approved by the Board

**Budget Revision 2019-07 Utilities Carryovers**

**Board of Public Utilities August 15, 2018**

**Council Meeting Date: August 28, 2018**

	<b>Fund/Dept</b>	<b>Munis Org</b>	<b>Revenue (decrease)</b>	<b>Expenditures (decrease)</b>	<b>Transfers In(Out)</b>	<b>Fund Balance (decrease)</b>
1	Joint Utilities Fund - Water Prod Otowi 2 Pipeline	54285699- 8369		\$ 1,130,000		\$ (1,130,000)
2	Joint Utilities Fund - Elec Prod Abiquiu Jib Crane	51185199- 8369		\$ 140,000		\$ (140,000)
3	Joint Utilities Fund - Elec Dist LA Switchgear Substation	51285299- 8369		\$ 334,000		\$ (334,000)
4	Joint Utilities Fund - Finance Customer Care Center Remodel	51285930- 8369		\$ 277,000		\$ (277,000)
5	Joint Utilities Fund - Finance Management Audit	51285930- 8369		\$ 50,000		\$ (50,000)
6	Joint Utilities Fund - Finance Customer Care Center Remodel	54185420- 8369		\$ 40,000		\$ (40,000)
7	Joint Utilities Fund - Wastewater SCADA Upgrade & Maint	55185525- 8833		\$ 80,000		\$ (80,000)
8	Joint Utilities Fund - Water Prod LA Reservoir	54285645- 8369		\$ 16,700		\$ (16,700)
9	Joint Utilities Fund - Water Prod Non Potable SCADA Upgrade	54285645- 8369		\$ 20,000		\$ (20,000)
10	Joint Utilities Fund - Water Prod Non Potable SCADA Upgrade	54285645- 8369		\$ 75,000		\$ (75,000)

**Description:** The purpose of this budget revision is to carry over budget authority to FY2019. Details for each carryover request are included in the staff report.

**Fiscal Impact:** The net fiscal impact to the Joint Utilities Fund in FY2019 is to increase expenditures and decrease Fund Balance by \$2,162,700.

ATTACHMENT  
OFFICER REPORTS  
SUBMITTED AT THE MEETING

Manager's report for August 15, 2018, Utilities Board Meeting:

1. **EL Vado Trunnion Seal Repair** was completed last week by Voith, the manufacturer of the turbine. We consider this work as warranty work which is the responsibility of the contractor who performed the refurbishment project. We will request reimbursement of the cost which will be approximately \$85,000. We will also evaluate any quality issues that were found on the parts that were removed and discuss alternative actions with our Attorney's office. We will probably not have enough flow, or the required lake levels, until early 2019 to put the plant back online.
2. **Work on the Otowi Well #2 is progressing slowly.** Last week the steel casing was installed to 700 feet depth which stabilized the layer of basalt which has caused difficulty over the last 4 months. A second layer of basalt has been encountered and is currently being drilled through at a depth of 830'. We are reviewing a change order from the contractor for costs associated with months unanticipated drilling due to unknown conditions. DPU will review the request and evaluate the future of the project. We will be presenting a recommendation for additional funding and/or a recommended path forward with the project in an upcoming meeting.
3. **Golf Course Water Break:** A 16" diameter water transmission line between Diamond and Arizona broke midway between the two roads this past weekend; repairs were completed by Sunday morning around 1:30 AM. The break is still under investigation but we suspect it was due to *water hammer* or *pressure surge*. We lost over 1 million gallons of water with the break resulting in low water pressure in the North Community, North and Barranca Mesas and the LA Middle School. We did receive calls about the water discoloration after the water line break. The water appeared milky white as the system is re-pressurized and the oxygen in the pipes is released (as the customers use water). The water clarity is back to normal.

**Environmental Sustainability Board (ESB) liaison report**

*Susan Barns, ESB Liaison*      8/15/2018

Recent activities of the ESB include:

- Approval of recommendation for Environmental Services to purchase and utilize Recycle Coach, a web and mobile app to help with education and schedule information about solid waste services available to residents. Program now goes to County Council for approval.
- Review of the new yard trimmings roll cart program. Adjustment to the new recycling and yard trimmings roll cart pick up schedule has been challenging for some residents. Despite this, Los Alamos recycled four more tons in July than before the schedule change, and also diverted 95 tons of yard trimmings in the first month. Additional tan carts are being delivered to residents this week.

Tomorrow night's meeting topics will include:

- Review of the Environmental Services FY18 4<sup>th</sup> Quarter Budget Report
- A presentation by the LA High School EcoClub on plastic bag fees
- An update on the yard trimmings roll cart program



## BOARD OF PUBLIC UTILITIES

# ADDITIONAL MEETING DOCUMENTS

Additional or revised information or documents are often passed out to the Board at the meetings.  
Whenever possible, this informational cover page will accompany those documents.

**MAKE 20 COPIES OF ANY DOCUMENTS, INCLUDING THIS COVER SHEET, AND RETURN TO JAIME KEPHART PRIOR TO THE MEETING.**

MEETING DATE	8/15/2018
AGENDA ITEM	4.C. Utilities Manager Report
DOCUMENT TITLE(S)	Update on the Munis System & Utilities
FROM	Rafael De La Torre, Deputy Utility Manager for Electric Distribution and Acting Utilities Manager
NEW OR REVISED?  Is this a revision that is different from what was in the agenda packet or is it something entirely new?	New
RECOMMENDED ACTION  If you have a new or revised recommended motion for the Board, enter it here.	<u>N/A</u>
ADDITIONAL INFORMATION  Please VERY BRIEFLY explain the purpose of this information or document.	Mr. De La Torre presented this information during the manager's report.

## **UPDATE ON THE MUNIS SYSTEM AND UTILITIES**

**August 15, 2018**

Los Alamos County went live on July 1, 2018 (start of the new fiscal year) with the new Munis ERP software system which included utility billing.

### **BILLING DELAYS**

- As of August 6 - July utility bills have been mailed to all DPU customers.
  - We intentionally held bills for the first half of July to ensure that the data transferred correctly from the old system (Cayenta) into the new system (Munis), and that bills were calculating correctly the amount charged to each customer. (Staff was very focused on the dollar amount billed).
  - We began sending bill files to our bill-print vendor to be printed and mailed on July 23rd. Because we didn't hear from the vendor that there were any problems, we incorrectly assumed that bills were being mailed.
  - The vendor later told us that they ran into complications printing the bills at the current location in Las Vegas, Nevada. They transferred the files and the supplies to their Michigan office. They also needed to retool their equipment in Michigan to print the bills with the new file format and color specifications.
  - Bills began to drop in the mail on August 3<sup>rd</sup>. (It took seven days for bills to arrive from Michigan to Los Alamos, New Mexico).
  - To speed up delivery of future bills, DPU has requested the vendor to print the bills with black ink only – which can be handled at the Nevada office. This will actually reduce the price slightly of printing the bill and speed up the turn-around time.
- Because the bills were delayed – DPU is waiving all late fees until we can get back onto a regular billing schedule

**LOS ALAMOS DPU APP (SUSPENDED) - view utility account balances, bills and make payments on line of on smart mobile devices.**

- Coinciding with the billing software change, staff has been working through a conversion for its Los Alamos DPU App so that it points correctly to the new software while maintaining history from the previous software.
- Therefore, Los Alamos DPU app is not registering any utility account activity post-July 1 and it is not allowing payments.
- We will be testing the reworked Los Alamos DPU app on Monday, August 20 and hope to have it fully functional before the end of August 2018.
- In the meantime, we made arrangement for customers to be able to make payments through the Paymentus website with a credit card, debit card, or e-check. There is no fee to process a payment this way. The website is: <https://ipn.paymentus.com/rotp/LACU>

**UTILITY BILL PRESENTATION**

- We thank our customers for scrutinizing the bills and pointing out various anomalies that we are currently working with the Munis Tyler Forms team to fix these.
- I am pleased to report that the changes are more with the bill presentation, as opposed to the dollars charged for the commodity used.
- The corrections are as follows:
  - A. **Service Period:** The bills incorrectly printed that the service period was from **May 1 to July 20**. However, the bill actually covers the period from the last meter read to the current meter read (unfortunately – most customers had 40 or more days in this period – so it may appear that their bill is larger than normal).
  - B. **Electric:** For large electric customers – While the “**Demand**” and “**Demand Rate**” did not appear on the bill, it was calculated correctly and included in the charge to the customer.
  - C. **Gas:** Bill is not showing the pro-rated charge for each billing rate during the billing period. However, the total on the actual bill is correct.
  - D. **Water:** Everything above 8,000 gallons was bumping up to the Tier 2 charge of \$5.29 rather than the \$4.98. This caused an overcharge of \$0.31. This has been



corrected. The Tier 1 rate will now be applied to 8,999 gallons (to comply with the tiered water rate code).

- E. **Graphs:** Several customers have asked that we apply a “measurement” on the Y axis of the graphs.
- F. **Water Graph:** The “*current*” bar is pulling data from “current meter read” less the “previous meter read” which is in hundred gallons. The graph is then multiplying it by 1000 (since we bill in thousand gallons). In the example bill:  $1041 - 874 = 167$ . Thus 16,700 gallons, but it is being graphed as 167,000 gallons. We have changed the parameters of the graph to pull the data from the “Usage” column. In the example, the “Usage” column is 16, therefore 16,000 gallons.
- G. **Auto-pay customers:** For customers who have signed up for “auto-pay,” the bottom portion of the bill indicates, “Make Checks Payable to:” ... This has been changed to state “Do Not Remit Payment” for ACH customers only.

#### **ACH CUSTOMERS (Customers signed up for Auto-Pay)**

- Our standard practice is to transfer funds from a customer’s specified checking or savings account 20 days from the bill date.
- Because of the delay that resulted in mailing the July utility bills, we postponed drafting the balance due from customers’ checking or savings accounts until they had an opportunity to receive and review their bill.
- Earlier this week, we sent a letter out to those customers who would have already had their funds transferred by now. We notified them that we would be drafting those funds this Friday, August 17<sup>th</sup>, unless we heard from them that the dollar amount or the date was a problem.

#### **ADMINISTRATIVE STAFF**

- We need to acknowledge that several members of our staff have worked tirelessly before, during and after this conversion. They have given up evenings, weekends, and holidays to make this go as smoothly as possible.

- The Customer Care Center has been fielding numerous phone calls, emails, and walk-ins. Yesterday we had approx. 1700 phone calls.
- The Customer Care staff, is listening and responding to each customer's concern – but they are only five people. Some calls are being missed.
- For the most part, customers have been very understanding. We appreciate and thank them for their patience.



County of Los Alamos

Customer Care (505) 662-8333, [customer care@lacnm.us](mailto:customer care@lacnm.us)  
Pay your bill online: <https://rebrand.ly/DPUmyaccountportal>

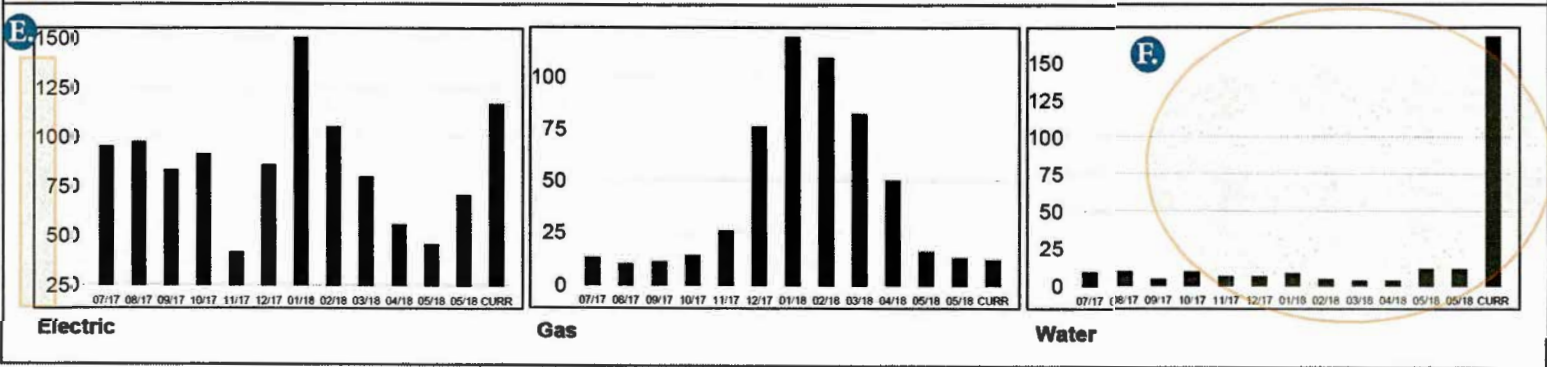
BALANCE DUE

Customer Name: [Redacted]  
Service Address: [Redacted]  
Bill Number: [Redacted]

Cycle 12

Bill Date	07/23/2018
Due Date	08/17/2018
Service Period	05/01/2018 to 07/13/2018
Customer ID	[Redacted]
Account Number	[Redacted]
Previous Balance	0.00
Payments	0.00
Current Billing Amount	345.90
TOTAL AMOUNT DUE	345.90

Description	Meter	Read Type	Previous Meter Reading	Current Meter Reading	Demand	Demand Rate	Multi.	Usage	Commodity Rate	Charge
ELECTRIC	KWH	A	22960	24128			1	1168	0.115200	134.55
										12.00
										146.55
GAS	THERM	A	3233	3248			1	13	0.340000	4.42
									0.370000	4.81
										9.50
										14.28
WATER	KGAL	A	874	1041			1	16	4.980000	39.84
									5.290000	37.03
									6.320000	6.32
										9.42
										92.61
SEWER							1			47.45
										47.45
REFUSE							1			25.00
										25.00
7.3125% Electric and Gas GRT										11.76
5.0% Water, Sewer and Refuse										8.25
										345.90
										0.00



THIS MONTHS MESSAGE:

✂ Detach and return the portion below with your payment ✂



COUNTY OF LOS ALAMOS  
PO BOX 99  
LOS ALAMOS, NM 87544-0099

ELECTRONIC SERVICE REQUESTED



Bill Date	07/23/2018
Customer ID	[Redacted]
Account Number	[Redacted]
BALANCE DUE	345.90
Due Date	08/17/2018
Enter Amount Paid	
Low Income Family Assistance	
Enter Contribution in Excess of Bill	



Make Checks Payable to:  
COUNTY OF LOS ALAMOS  
PO BOX 99  
LOS ALAMOS, NM 87544-0099

0000638201980000161800000345900



## BOARD OF PUBLIC UTILITIES

# ADDITIONAL MEETING DOCUMENTS

Additional or revised information or documents are often passed out to the Board at the meetings.  
Whenever possible, this informational cover page will accompany those documents.

**MAKE 20 COPIES OF ANY DOCUMENTS, INCLUDING THIS COVER SHEET, AND RETURN TO  
JAIME KEPHART PRIOR TO THE MEETING.**

MEETING DATE	8/15/2018
AGENDA ITEM	5.A. Public Hearing for Sewer Rate Ordinance 02-288
DOCUMENT TITLE(S)	Open Forum Responses
FROM	Julie Williams-Hill, Public Relations Manager
NEW OR REVISED?  Is this a revision that is different from what was in the agenda packet or is it something entirely new?	New
RECOMMENDED ACTION  If you have a new or revised recommended motion for the Board, enter it here.	<u>N/A</u>
ADDITIONAL INFORMATION  Please VERY BRIEFLY explain the purpose of this information or document.	Attached are the public comments from the County's online Open Forum

# Board of Public Utilities to Consider Proposed Sewer Rate Increase

*The Board of Public Utilities will consider a proposed sewage rate increase at the August 15th Board meeting. Do you have any feedback for the Board?*

All Statements sorted chronologically

As of August 13, 2018, 10:54 AM



*Open Forum is not a certified voting system or ballot box. As with any public comment process, participation in Open Forum is voluntary. The statements in this record are not necessarily representative of the whole population, nor do they reflect the opinions of any government agency or elected officials.*

## Board of Public Utilities to Consider Proposed Sewer Rate Increase

*The Board of Public Utilities will consider a proposed sewage rate increase at the August 15th Board meeting. Do you have any feedback for the Board?*

As of August 13, 2018, 10:54 AM, this forum had:

Attendees:	64
All Statements:	14
Minutes of Public Comment:	42

This topic started on July 26, 2018, 12:40 PM.

~~Board of Public Utilities to Consider Proposed Sewer Rate Increase~~

The Board of Public Utilities will consider a proposed sewage rate increase at the August 15th Board meeting. Do you have any feedback for the Board?

Name not available (unclaimed)

August 10, 2018, 6:08 PM

I don't see a need for the rates raised when they just were last year.

---

Name not available (unclaimed)

August 5, 2018, 10:39 PM

I thought I read this is to help replace the White Rock sewer plant? Is it going into a special fund to guarantee that is how it is used? What is the advantage to having money set aside for this project? when is the replacement going to happen? Is this really what it is being used for? I think the need for this rate increase should be explained better. Increasing the base rate can place more hardship on limited income residents because you cannot control this aspect of the bill through personal choices (conservation).

---

Name not available (unclaimed)

August 4, 2018, 9:31 AM

The utilities are constantly at the board on increasing the cost. I don't believe we should increase the sewage.

---

Name not shown inside WHITE ROCK (registered)

July 28, 2018, 6:49 PM

The draft ordinance as published on the LA County website is incomplete: Under Section 40-202, (a) lists how residential charges will be calculated using Section 40-203. This is not included in the published copy. "For calculation of charges under 40-203, the volume measurement for residential customers will be 1,000 gallons times the number of occupants of the residence." This statement leaves the door open for additional charges based on the three months winter usage volume. Please complete the ordinance before holding the Board meeting and sending this incomplete ordinance to the Councilors.

---

Dann Alison inside WHITE ROCK (registered)

July 28, 2018, 7:43 AM

The rate at which one consume water has only a small bearing in sewer. Six months per year we are watering. Why isn't the rate based more accurately on the consumption seen during winter. I don't understand the overall billing scheme as it stands.

---

Name not shown inside WHITE ROCK (registered)

July 27, 2018, 2:14 PM

Continually reducing services and raising rates is absurd. This needs to stop NOW. Vote NO

---

David North inside LA SENDA (registered)

July 27, 2018, 11:35 AM



~~Board of Public Utilities to Consider Proposed Sewer Rate Increase~~

The Board of Public Utilities will consider a proposed sewage rate increase at the August 15th Board meeting. Do you have any feedback for the Board?

As one of the minority on a septic system, I have no direct interest. But I suspect those who will have to pay this bill might be interested to see how much of the increase is related to the wastewater system used at the golf course, etc -- or at least how much that costs. Is there any connection between the sewer charges and the pipeline to the ski hill? Overall, the rates seem to be in line with costs in other areas, especially as older systems wear out all over the country.

---

Name not available (unclaimed)

July 27, 2018, 11:14 AM

I am an older single woman who lives in White Rock. Currently, the sewer portion of my utility bill is approximately 25 percent of my bill. I live in a small, recently built, energy-efficient home. My yard is xeriscaped in the front- I have not used any water in the small front yard- and I water a small portion of yard in the back (approximately 300 square feet). I can manage most of the other parts of my spending, keeping my total bill to about 150 dollars per month. I don't use trash hauling every week- I can get by with my recycling cart being used once a month or once every 5 weeks. The garbage roll cart goes out once every two weeks. The sewer bill is one part of my utility bill that I can't control, and I feel that the amount I pay for sewer is already high. Please consider my opinion when you make this decision.

---

Alex V inside ASPEN - WALNUT (registered)

July 27, 2018, 8:50 AM

Sewage fees are already \$47! My biggest complaint is the fixed service charges. Having to pay \$73 before any usage is maddening. If DPU needs to fund improvements, I actually don't mind paying a higher rate, \*for what I use\*, and sewage charges should be related to water usage. I think it used to be like that, with lower sewer rates in the summer to account for outdoor watering. I am out of town for extended periods and my overall utility usage is pretty low, so paying almost as much in fixed service fees as my actual usage just seems wrong and super unfair. Build the actual cost into the rates and get rid of the fixed service fees.

1 Supporter

---

Name not available (unclaimed)

July 27, 2018, 7:28 AM

Will there be compensatory lowering of electric rates with installation of solar/carbon free resources? The rising utility rates are proving a drain on fixed income residents.

---

Name not shown (unverified)

July 27, 2018, 7:03 AM

There should be a better background statement for this. Not enough information. How much is the anticipated debt service? What is the cost basis for this rate change?

---

Name not shown inside WESTERN (registered)

July 27, 2018, 7:02 AM



## Board of Public Utilities to Consider Proposed Sewer Rate Increase

The Board of Public Utilities will consider a proposed sewage rate increase at the August 15th Board meeting. Do you have any feedback for the Board?

This is absolutely Ridiculous!. Residents recently had a significant sewer rate increase of around 30% to pay for White Rock sewer repairs and this past year, water rates went up. Recycling services went down. Stop gouging the resident of LA to accomodate mismanagement of costs. Why haven't we used GRT money to support any of this?

1 Supporter

---

Name not shown inside NORTH COMMUNITY (registered)

July 27, 2018, 6:47 AM

Vote NO. DPU cannot continue to raise rates.

1 Supporter

---

Name not shown inside NORTH COMMUNITY (registered)

July 27, 2018, 5:29 AM

Residential rates for water and other charges have already gone up recently. It is unacceptable to increase residents further. Increase commercial to make up the difference. They will be able to handle the increase more than low income and elderly residents.

1 Supporter

---



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 6.B  
**Index (Council Goals):** BCC - N/A  
**Presenters:** Jack Richardson, Deputy Utilities Manager - GWS Services  
**Legislative File:** AGR0595-18

---

### Title

Approval of Task Order No. 03 Under Services Agreement No. AGR17-45 with Alpha Southwest, Inc. in the amount of \$77,866.52, plus Applicable Gross Receipts Tax, for the Purpose of Chlorine Generator Equipment Acquisition and Installation for Guaje Booster Station No 2.

### Recommended Action

**I move that the Board of Public Utilities approve Task Order No. 03 Under Services Agreement No. AGR17-45 with Alpha Southwest, Inc. in the amount of \$77,866.52, and a contingency of \$5,000.00, for a total of \$82,866.52, plus Applicable Gross Receipts Tax, for the Purpose of Chlorine Generator Equipment Acquisition and Installation for Guaje Booster Station No. 2.**

### Staff Recommendation

Staff recommends that the BPU approve the motion as presented.

### Body

This is the third of four Chlorine Generator Equipment purchases we have planned for in Water Production in the FY 2017 through FY2020 time frame. It is the only purchase scheduled for FY 2019. This unit is slated to be installed at the Guaje Booster Station No. 2 to replace the aging equipment at that booster station. Staff is requesting this Task Order be approved so that we may move forward with the purchase of the new chlorine generating unit for the Water Production system.

The scope of this Task Order # 03 is identical to the original scope as detailed in the original Services Agreement (AGR 17-45) and the scope of Task Order # 01 Amendment # 1 and Task Order # 02 except the installation will be at a different location with slightly different labor and material conditions. The schedule has been developed to accommodate the seasonal variation of Water Production requirements and is to be completed during the colder low water use period of FY 2019. We have an exact estimate for what this work will entail but we are requesting a small \$5,000 contingency just in case something comes up in the field during installation that causes some unforeseen costs.

### Alternatives

DPU could delay the project but that would adversely affect the ability of Water Production to meet its regulatory requirements for maintaining an adequate chlorine reserve in the water systems. The existing equipment is old and has little active life remaining and Water Production has already scavenged parts from redundant systems to keep the active system equipment

---

operating.

**Fiscal and Staff Impact**

Funds are budgeted for this work in the O&M budget. Project Management will be absorbed within the routine functioning of the DPU with personnel from Water Production expected to be involved.

**Attachments**

A - Task Order No 03 Under AGR17-45

**TASK ORDER #03**

**COUNTY OF LOS ALAMOS UTILITIES DEPARTMENT  
PRICE AGREEMENT AGR 17-45  
Alpha Southwest INC  
September 20, 2018**

**PROJECT TITLE: Chlorine generator install For Guaje Booster 2**

Description: Provide and install new chlorine generating unit and hypochlorite storage tank at GB2.  
Provide necessary materials for installation and onsite training for county personnel.

---



---

**Estimated Project Term:** 30 Days

1. Bid Item 3: Control panel.....Included w/generator
2. Bid Item 4: 20# day Sodium Hypochlorite Generator.....\$61,867.52
3. Bid Item 5: Rectifier.....Included w/generator
4. Bid Item 6: Hypo Storage Tank ( 300 gallon) includes mounts, ultrasonic sensor.....\$4,224.00
5. Bid Item 11: Supervisor, 40 hours @ \$125.00/hr (not to exceed), demolition, remove old tank,  
install new piping, tank and training..... \$4,000.00
6. Bid Item 10: Technician 1 week @ \$85.00/hr (not to exceed), demolition, remove old tank,  
install new piping, tank and training.....\$3,400.00
7. Bid Item 12: Travel to site, 5 trips @ \$75.00/trip, two men.....\$375.00
8. Materials: piping, mounts, wire.....\$4,000.00

**Estimated Construction Cost: \$ \$77,866.52(less GRT)**

**Charge Code Number: WP 1114**

**Acceptance of Conditions and Items of Work**

Department of Public Utilities: \_\_\_\_\_  
Timothy Glasco

\_\_\_\_\_ Date

Alpha Southwest INC: \_\_\_\_\_  
Name: \_\_\_\_\_  
Date \_\_\_\_\_  
*Print*



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

Agenda No.:	6.C
Index (Council Goals):	BCC - N/A
Presenters:	Jack Richardson, Deputy Utilities Manager - GWS Services
Legislative File:	AGR17-914

---

### Title

Approval of Amendment No. 1 to Services Agreement No. AGR17-914 with Alpha Southwest, Inc. in the amount of \$300,000.00 and Task Order No. 02 in the amount of \$66,254.50, Plus Applicable Gross Receipts Tax, For the Purpose of Inspection, Repair, and Ancillary Services on County Well and Booster Pumps.

### Recommended Action

**I move that the Board of Public Utilities approve Amendment No. 1 to Services Agreement No. AGR17-914 with Alpha Southwest, Inc. in the amount of \$300,000.00, for a revised total agreement amount of \$450,114.00, plus applicable gross receipts tax, for the purpose of Inspection, Repair, and Ancillary Services on County Well and Booster Pumps, and forward to Council for approval. I further move that the Board of Public Utilities approve Task Order No. 02 under AGR17-914, in the amount of \$66,254.50, plus applicable gross receipts tax, pending Council approval of Amendment No. 1 to AGR17-914.**

### Staff Recommendation

Staff recommends approval of the agreement per the motion as presented.

### Body

The DPU is occasionally in need of services for inspection, repair and ancillary activities for our well and booster station pumps. The Water Production budget includes funds to cover typical estimated costs for these types of services. Some years no work is required on any of our major facility pumps or motors. Some years multiple facilities require servicing. The original Agreement was for a four year period (October 2016 through October 2020). The original Agreement compensation was for a total of \$150,114.00. A single well pump repair project in FY2018 for Pajarito Well # 4 totaled \$138,935.70. Based on typical costs for a typical Los Alamos County well pump repair project, The Department of Public Utilities projects that planning for an annual cost for pump repair projects of \$150,000 per year for the remaining two years of this contract is appropriate and will be sufficient to enable us to move quickly whenever any additional well pump projects are required.

This year, so far, the pump in Gualle Well # 3A has failed. We need to pull this pump, troubleshoot it, repair it and return it to service. The pumps in the Guaje well field are all now 20 years old and are the youngest well pumps in the system as a group. Alpha Southwest has a good history of providing these services to the DPU. The estimate from Alpha Southwest for this GW-3A pump repair project is \$66,254.50 as shown in the cost estimate of Task Order No. 02. Hopefully this

---

will be the only well pump requiring pulling and repair services this year. However, the majority of our existing well pumps are 20 years old or older and so with each additional year the possibility of well pump repair costs increase.

Our water production well system has enough source capacity to maintain adequate service to our customers during this temporary GW-3A well outage. Water demand versus supply throughout the system has been adequate such that no water volume problems have, or are likely to, occur this year.

The proposed agreement between Alpha Southwest and the DPU is a piggybacking off of the Albuquerque/Bernalillo County Water Utility Authority Contract # RFP 2013000021. This contract between ABCWUA and Alpha Southwest is for the same services as required by the DPU. This ABCWUA contract was competitively bid through the public procurement process when it was established. In utilizing this piggyback approach the DPU saves time and administrative effort while securing good prices for these services.

#### **Alternatives**

The alternative approach to amending the Agreement with additional funds, beyond those required for Task Order No 02, for the remainder of the original contract period would be to bring back individual Agreement amendments along with additional task orders at the time of well pump failure. The alternative to not approving this amendment and Task Order No 02 is to leave well GW-3A inoperable.

#### **Fiscal and Staff Impact**

Original Agreement amount of \$150,114.00 to be increased by \$300,000.00 for a revised total Agreement compensation amount of \$450,114.00. FY2018 expenditure, and total expenditure to date, is \$138,935.70. Estimated amount for GW-3A well pump is \$66,254.50 leaving \$244,923.80 remaining in the contract for services on other pumps between now and October 2020.

#### **Attachments**

A - Amendment No 1 to AGR17-914

B - Task Order No 02 Under AGR17-914



**AMENDMENT NO. 1  
INCORPORATED COUNTY OF LOS ALAMOS  
SERVICES AGREEMENT NO. 17-914**

This **AMENDMENT NO. 1** is entered into by and between the **Incorporated County of Los Alamos**, an incorporated county of the State of New Mexico ("County"), and **Alpha Southwest, Inc.**, a New Mexico corporation ("Contractor"), to be effective for all purposes September 26, 2018.

**WHEREAS**, County and Contractor entered into Agreement No. AGR17-914, dated October 20, 2016, for inspection, repair and ancillary services on all County well pumps; and

**WHEREAS**, the term of the Agreement is October 20, 2016 through October 19, 2020, with the option to extend the term for up to three (3) one-year periods; and

**WHEREAS**, the original amount of compensation was ONE HUNDRED FIFTY THOUSAND ONE HUNDRED FOURTEEN DOLLARS (\$150,114.00) and ONE HUNDRED THIRTY-EIGHT THOUSAND NINE HUNDRED THIRTY-FIVE AND 70/100 DOLLARS (\$138,935.70) of the original compensation amount has been expended for a well pump repair project in FY2018; and

**WHEREAS**, the historic annual amount required for well inspection and repair services is approximately ONE HUNDRED FIFTY THOUSAND DOLLARS (\$150,000.00) in years when a well pump (or pumps) inspection and repair is required; and

**WHEREAS**, all of the County well pumps are at or nearing their anticipated expected useful life and it is likely that a well pump repair project will be possible in each of the next two (2) years; and

**WHEREAS**, both parties wish to increase the compensation and extend the term of this Agreement; and

**WHEREAS**, the Board of Public Utilities approved this Amendment No. 1 at a public meeting held on September 19, 2018; and

**WHEREAS**, the County Council approved this Amendment No. 1 at a public meeting held on September 25, 2018.

**NOW, THEREFORE**, for good and valuable consideration, County and Contractor agree as follows:

To delete **SECTION B. TERM** in its entirety and replace it with the following:

**SECTION B. TERM:** The term of this Agreement shall commence October 20, 2016 and shall continue through October 19, 2021, with the option to extend the term for up to two (1) one-year periods, unless sooner terminated, as provided herein.



To delete SECTION C. COMPENSATION in its entirety and replace it with the following:

**SECTION C. COMPENSATION:**

- 1. Amount of Compensation.** County shall pay compensation for performance of the Services in an amount not to exceed FOUR HUNDRED FIFTY THOUSAND ONE HUNDRED FOURTEEN DOLLARS (\$450,114.00), which amount does not include applicable New Mexico Gross Receipts Taxes ("NMGR"). Compensation shall be paid in accordance with the rate schedule set out in Exhibit "A," attached hereto and made a part hereof for all purposes.
- 2. Monthly Invoices.** Contractor shall submit itemized invoices to County's Project Manager showing amount of compensation due, amount of any NMGR, and total amount payable. Payment of undisputed amounts shall be due and payable thirty (30) days after County's receipt of the invoice. All disputes related to performance and payment shall be governed by the County's Procurement Code, Chapter 31.

Except as expressly modified by this Amendment, the terms and conditions of the Agreement remain unchanged and in effect.

**IN WITNESS WHEREOF**, the parties have executed this Amendment No. 1 on the date(s) set forth opposite the signatures of their authorized representatives to be effective for all purposes on the date first written above.

**ATTEST**

**INCORPORATED COUNTY OF LOS ALAMOS**

\_\_\_\_\_  
NAOMI D. MAESTAS  
COUNTY CLERK

By: \_\_\_\_\_  
TIMOTHY A. GLASCO, P.E.                      DATE  
UTILITIES MANAGER

**Approved as to form:**

\_\_\_\_\_  
J. ALVIN LEAPHART  
COUNTY ATTORNEY

ALPHA SOUTHWEST, INC., A NEW MEXICO  
CORPORATION

By: \_\_\_\_\_  
DATE

**Exhibit "A"**  
**AGR17-914-A1**

The following are the Parties' agreed upon pricing pursuant to the Albuquerque/Bernalillo County Water Utility Authority publicly bid and awarded Contract No. "RFP2013000021."

<b>Item Description:</b>	<b>Unit Price:</b>	<b>Annual Price Increase:</b>
Shop drawings, Reports, O&M Manuals, Calculations, Permits and Scheduling(TS-1)	\$65.50/Hour	5%
Work Site Preparation, Cleanup, Disinfection and Gathering Materials (TS-2)	\$69.00/Hour	10%
Pull and Reinstall Pumps with Related Equipment as Provided in the Scope or Approved Task Order (TS-3)	\$8.35/L.F.	10%
Lower Pump (TS-4)	\$24.75/L.F.	10%
Well Abandonment and Rehabilitation (TS-5)	\$220.00/Hour	10%
Well Inspection Video Surveys and Logs (TS-6)	\$1,210.00/Each	10%
Repair/Replacement of Well, Booster Station and Reservoir Equipment (Mechanical/Miscellaneous Laborer) (TS-7a)	\$69.00/Hour	10%
Repair/Replacement of Well, Booster Station and Reservoir Equipment (Journeyman Electrician) (TS-7b)	\$84.00/Hour	20%
Fabrication and Machine Shop Work (TS-8)	\$71.50/Hour	5%
Percent of Blue Book Price (Not to Exceed 100%) (TS-9)	100%	0%
Inspection Labor (TS-10)	\$65.50/Hour	5%
Percent Over Invoice for Repair Parts (TS-11)	1.29%	3%
Operation of Driver Equipment (TS-12)	\$73.50/Hour	5%
Jobsite Security (TS-13)	\$23.50/Hour	5%
Percent Over Invoice for Rental Equipment (TS-14)	1.15%	0%
Percent Over Invoice for Subcontract Work (TS-15)	1.15%	0%
Performance Evaluation of Wells, Well Pumps and Booster Pumps (TS-16)	\$73.50/Hour	5%

**Notes:**

- L.F. is price per Linear Foot.
- Prices do not include NMGR.
- Annual increases are based on the County's fiscal year from July 1<sup>st</sup> through June 31<sup>st</sup>.
- Items that include a "TS-#" are tasks described in more detail and which are cross-referenced to the Albuquerque Bernalillo County Water Utility Authority RFP Solicitation No. P2013000021 released February 6, 2013. See attached.



**TASK ORDER #02**

**COUNTY OF LOS ALAMOS UTILITIES DEPARTMENT  
PRICE AGREEMENT AGR 17-914  
Alpha Southwest Inc.  
September 10, 2018**

**PROJECT TITLE: Guaje Well 3A Repair Work**

Description: Pull the pump out of G3A and repair/replace pump. Reset and hook up pump.

---

---

**Estimated Project Term:** 90 Days

1. Bid Item 1: Equipment and labor to pull, repair/replace pump, reset pump....\$66,254.50

**Estimated Construction Cost:** \$ 66,254.50 (less GRT)

**Charge Code Number:** WP 1301\_\_\_\_\_

**Acceptance of Conditions and Items of Work**

Department of Public Utilities: \_\_\_\_\_  
Timothy Glasco Date

Alpha Southwest: \_\_\_\_\_  
Date  
Name: \_\_\_\_\_  
*Print*



205 Rossmoor Rd SW  
Albuquerque, NM 87105  
Ph (505) 877-0287  
Fax 505-877-0459

### Estimate Sheet

<b>Customer:</b>	
County of Los Alamos	
Guaje Well 3A - Pull & Repair	
WO#	Pending
PO#	

Job No.	Pending
Job Estimate	
Estimate Date: 7/16/2018	
By: Warren Ellis	

Description of work or materials provided:	TS #	Quantity	Price ea.	Total
Item 1: <b>TS-1 Labor:</b> Shop Drawings, Reports, Submittal Data, Calculations, Project Management & Scheduling.	TS-1	15	\$ 65.50	\$ 982.50
Item 2: <b>TS-2 Labor:</b> Work Site Prep, Gathering Materials, Disinfection & Cleanup.	TS-2	120	\$ 69.00	\$ 8,280.00
Item 3: <b>TS-3 Labor:</b> Pull and Set Well Pump Column Assembly - 560' Setting	TS-3	1120	\$ 8.35	\$ 9,352.00
Item 4: <b>TS-6 Video Well Survey:</b> Video the well after the pump is pulled out of the well to obtain the current condition of the well casing if desired.	TS-6	1	\$ 1,210.00	\$ 1,210.00
Item 5: <b>TS-7a Labor:</b> Field Labor, Repair or replacement of auxiliary mechanical or electrical equipment, modifications to equipment. Testing of parts equipment or material, field verification of pump and equipment operation, demolition or removal of existing structures, any non rig associated field work. Hauling off old Drop Pipe from the site.	TS-7a	120	\$ 69.00	\$ 8,280.00
Item 6: <b>TS-8 Labor:</b> Shop Labor	TS-8	100	\$ 71.50	\$ 7,150.00
Item 7: <b>TS-9 Alpha Owned Equipment</b> Boom truck to take down / put up walls & lift motor	TS-9	20	\$ 25.00	\$ 500.00
Item 8: <b>TS-11 Materials:</b> Budgetary number for new equipment that may be required for the repair of the well pump.	TS-11	1	\$ 30,000.00	\$ 30,000.00
Item 9: <b>TS-11 Materials:</b> Miscellaneous Materials, 1/2" SS Bandit & Buckles Pipe Dope, Tape, 1-1/4" Rope, Chlorine, Bleach, Splices etc.	TS-11	1	\$ 500.00	\$ 500.00

Note: These rates are based on a contract we currently hold with ABCWUA. The contract agreement number is CCN2013-0143.

These prices are based on Alpha being able to use our standard pump pulling rigs to pull and set this pump. If a crane should be needed the price for the crane rental will need to be added to this estimate.

Respectfully Submitted *Warren Ellis*

Total Estimated Cost \$ 66,254.50

Alpha Southwest, Inc. Terms: Net 30 for acceptance within 30days, & all applicable taxes not included in prices quoted.

If you have any questions please feel free to give me a call at 1-505-877-0287 or by e-mail at warrene@alphasw.com.





# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 6.D  
**Index (Council Goals):** BCC - N/A  
**Presenters:** James Alarid, Deputy Utilities Manager - Engineering  
**Legislative File:** RE0382-18

---

### Title

Approval of Incorporated County of Los Alamos Resolution No. 18-21; A Resolution Authorizing the County Council Chair or Los Alamos County Utilities Manager to Approve Submission of Completed Applications and Necessary Documents for 2019 Applications to the Water Trust Board for Funding Non-Potable Water Systems Projects

### Recommended Action

**I move that the Board of Public Utilities Approve Incorporated County of Los Alamos Resolution No. 18-21; A Resolution Authorizing the County Council Chair or Los Alamos County Utilities Manager to Approve Submission of Completed Applications and Necessary Documents for 2019 Applications to the Water Trust Board for Funding Non-Potable Water Systems Projects, and forward to Council for approval.**

### Staff Recommendation

Staff recommends approval of Resolution 18-21 as presented.

### Body

Applications for the 2019 Water Trust Board (WTB) funding cycle are due on October 4, 2018. The DPU proposes to apply for funding to construct a new effluent water booster station at Overlook Park in White Rock. A requirement by the WTB is to submit a resolution by the governing body with the application. Resolution 18-21 is provided as Attachment A, which if approved, authorizes the DPU to apply for funding in the 2019 cycle.

The existing booster station at Overlook Park was built in 1982 and has served as the primary irrigation water source to all of Overlook Park since. The existing booster pumps are installed outdoors and are exposed to the elements and the electric gear is the original equipment which is antiquated. The major components of the booster station are at the end of their service life and in need of replacement. DPU is seeking approval to apply for \$800,000 to the WTB for construction of a new replacement booster station. The project qualifies for WTB funding since it is a treated effluent water infrastructure project and supports conservation of potable groundwater. The new booster station will be designed by DPU engineering staff and will be "shovel ready" if Los Alamos County is granted the funds.

Funding from the WTB is in the form of a grant and loan award. The County would also have to match 10% of the construction cost. Awards can vary from a 60% grant/40% loan to a 90% grant/10% loan, the WTB determines the split and we will not know until awarded. The cost to the county will be 10% of the construction cost which is \$88,000 plus the loan amount. The loan

---

amount could vary from \$320,000 (40%) to \$80,000 (10%). Loans are typically for a 20 year term at 3% interest. A table of the range of possible loan amounts and the associated annual payments is provided in Attachment D

Loan payments would be made from the Water Production fund. To assist in evaluating the impact to the Water Production fund we have attached a summary of existing loans that represent the existing debt against the fund (Attachment B). In addition, we have provided a summary of the total annual loan payments for the ten loans that exist (Attachment C).

**Fiscal and Staff Impact**

None

**Attachments**

A - Resolution 18-21

B - List of Existing Water Production Loans

C - Summary of Annual Water Production Loan Payments

D - Range of Possible Loan Amounts and Associated Annual Payments

**INCORPORATED COUNTY OF LOS ALAMOS RESOLUTION NO. 18-21**

**A RESOLUTION AUTHORIZING THE COUNTY COUNCIL CHAIR OR LOS ALAMOS COUNTY UTILITIES MANAGER TO APPROVE SUBMISSION OF COMPLETED APPLICATIONS AND NECESSARY DOCUMENTS FOR 2019 APPLICATIONS TO THE WATER TRUST BOARD FOR FUNDING NON-POTABLE WATER SYSTEM PROJECTS**

**WHEREAS**, the 2001 Legislature enacted the Water Project Finance Act which created the Water Project Fund ("Fund") in the State's New Mexico Finance Authority ("NMFA") and charged the NMFA with the administration of the Fund and the Water Trust Board ("WTB"); and

**WHEREAS**, the Incorporated County of Los Alamos ("County") is a qualified entity under the New Mexico Finance Authority Act, NMSA 1978, §§ 6-21-1 through 6-21-31 (1992) ("Act"), and the County is authorized to borrow funds and/or issue bonds for financing of public projects for the benefit of the County; and

**WHEREAS**, the NMFA has instituted a program for financing of projects from the Fund created under the WTB Act (Sections 19.25.10.1 through 19.25.10.20, NMAC 2008) and has developed an application procedure whereby the County Council ("Governing Body") may submit an application ("Application") for financial assistance from the NMFA for public projects; and

**WHEREAS**, the County intends to undertake replacements for its Non-Potable Water System projects ("Projects") for the benefit of the County and its citizens; and

**WHEREAS**, the County acknowledges a commitment to provide the necessary match funding and funding for future operations and maintenance for these Projects for the benefit of the County and its citizens; and

**WHEREAS**, the WTB requests, as part of the application process, adoption and submittal of a resolution of commitment to the implementation of an asset management plan; and

**WHEREAS**, the County's and WTB's investments will be protected and maintained for optimum longevity through the County's asset management plan; and

**WHEREAS**, the Applications for WTB funding, as prescribed by NMFA, together with this Resolution, will be completed and submitted by the Governing Body to NMFA for its consideration and review; and

**WHEREAS**, the Applications for WTB funding, as prescribed by NMFA, together with this Resolution was recommended to be forwarded to the County Council by the County's Board of Public Utilities ("Board") on September 19, 2018; and

**WHEREAS**, a meeting of the County Council was held on this date to consider the authorization and submission of the Applications for 2019 WTB Funding Requests for the County's Non-Potable Water System projects, implementation of and administration of an asset management plan, and authorization for match and operation and maintenance funding.



**NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE**  
Incorporated County of Los Alamos:

**Section 1.** That the Chair of the Incorporated County of Los Alamos Council, the County's Utility Manager ("Utilities Manager") and necessary employees are hereby directed, authorized and requested to submit the necessary documents and applications to NMFA for its review of the project ("Project") which is Construction of a Replacement Wastewater Effluent Booster Station for Overlook Park, and are further authorized to take such other action as may be requested by the NMFA in its consideration and review of the Application(s) and to further proceed with arrangements for financing the Project.

**Section 2.** The Council further provides authorization for the Utilities Manager to allocate required matching grant funding for the Project and for any future operation and maintenance costs of the Project if the Projects and applications are accepted.

**Section 3.** All acts and resolutions in conflict with this Resolution are hereby rescinded, annulled and repealed.

**Section 4.** This Resolution shall take effect immediately upon its adoption.

**PASSED AND ADOPTED** this 2<sup>nd</sup> day of October 2018.

**COUNCIL OF THE INCORPORATED  
COUNTY OF LOS ALAMOS**

---

**David Izraelevitz**  
**Council Chair**

**ATTEST:**

---

**Naomi D. Maestas**  
**Los Alamos County Clerk**

### Water Production Fund Loans

	Source	Project	Loan Amount	Loan Term (years)	First Payment (Year)	Last Payment (Year)
1	2010 Bond	Water Production	\$1,631,766.00	20	2011	2030
2	WTB 89	Diamond II Effluent	\$77,654.00	20	2010	2028
3	WTB 156	Diamond III Effluent	\$147,500.00	20	2011	2030
4	WTB 157	San Juan Chama PER	\$50,000.00	20	2011	2030
5	ARRA CWSRF 09	Effluent Washwater System @ LAWWP	\$234,812.00	20	2012	2031
6	WTB 220	LA Reservoir Reconstruction	\$600,000.00	20	2013	2032
7	WTB 221	Non-Potable Master Plan & Design	\$140,000.00	20	2013	2032
8	WTB 318	North Mesa Booster & Pipeline, Group 12 Tank	\$562,400.00	20	2016	2035
9	WTB 340	NP Kwage Mesa Surface Pipeline	\$182,000.00	20	2017	2036
10	WTB 3557	LA Reservoir NP line replacement	\$53,840.00	20	2019	2038
<b>Total</b>			<b>\$3,679,972.00</b>			

### Total Annual Payments for Water Production Loans

YEAR	PRINCIPLE	INTEREST	TOTAL
2010	\$3,996.00	\$194.14	\$4,190.14
2011	\$13,648.00	\$68,400.77	\$82,048.77
2012	\$22,420.68	\$92,125.68	\$114,546.36
2013	\$51,295.34	\$93,175.77	\$144,471.11
2014	\$69,369.36	\$93,141.86	\$162,511.22
2015	\$70,257.99	\$92,563.27	\$162,821.26
2016	\$130,343.96	\$93,202.74	\$223,546.70
2017	\$135,336.52	\$91,796.73	\$227,133.25
2018	\$145,493.44	\$90,241.74	\$235,735.18
2019	\$149,941.97	\$88,490.88	\$238,432.85
2020	\$152,130.89	\$106,242.52	\$258,373.41
2021	\$155,121.49	\$130,820.88	\$285,942.37
2022	\$158,122.05	\$156,881.25	\$315,003.30
2023	\$428,520.82	\$175,654.81	\$604,175.63
2024	\$437,427.26	\$191,171.88	\$628,599.14
2025	\$329,704.54	\$196,353.49	\$526,058.03
2026	\$177,767.03	\$199,933.06	\$377,700.09
2027	\$180,634.57	\$226,449.01	\$407,083.58
2028	\$184,076.51	\$230,080.27	\$414,156.78
2029	\$182,218.70	\$224,757.68	\$406,976.38
2030	\$185,677.51	\$219,330.11	\$405,007.62
2031	\$94,934.32	\$213,718.61	\$308,652.93
2032	\$79,807.00	\$213,059.88	\$292,866.88
2033	\$41,143.00	\$212,860.38	\$254,003.38
2034	\$41,246.00	\$212,757.52	\$254,003.52
2035	\$41,349.00	\$212,654.40	\$254,003.40
2036	\$12,463.00	\$212,551.02	\$225,014.02
2037	\$2,759.00	\$212,519.86	\$215,278.86
2038	\$2,766.00	\$212,512.97	\$215,278.97
	<b>\$3,679,971.95</b>	<b>\$4,563,643.17</b>	<b>\$8,243,615.12</b>

## RANGE OF POSSIBLE LOAN AMOUNTS AND ASSOCIATED ANNUAL PAYMENTS

Percent Loan	Amount of Loan	Annual Payment / 20-yr @ 3%
10	\$80,000.00	\$5,377.00
20	\$160,000.00	\$10,754.00
30	\$240,000.00	\$16,132.00
40	\$320,000.00	\$21,509.00



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 7.A  
**Index (Council Goals):** BCC - N/A  
**Presenters:** Bob Westervelt, Deputy Utilities Manager - Finance/Admin  
**Legislative File:** AGR0590-18

---

### Title

Approval of Services Agreement AGR19-912 with Ferguson Incorporated in the Amount of \$5,559,480.00, Plus Applicable Gross Receipts Tax for Advanced Metering Infrastructure (AMI) Equipment and Services, Approval of the License and Technical Support Agreement with Sensus Incorporated, and Approval of Related Budget Revision 2019-04

### Recommended Action

**I move that the Board of Public Utilities approve Services Agreement AGR19-912 with Ferguson Incorporated in the amount of \$5,559,480.00 plus a contingency in the amount of \$971,950.00 for a total of \$6,531,430.00, plus applicable gross receipts tax, and forward to Council for approval. I further move that the Board of Public Utilities approve execution of the License and Technical Support Agreement between The Incorporated County of Los Alamos and Sensus, Incorporated, funding for which is included in and payable through the Ferguson agreement; and the I further move that the Board of Public Utilities approve budget revision 2019-04 and forward to Council for approval. I further move that the budget revision be included in the minutes as an attachment for the record.**

### Staff Recommendation

Staff recommends that the Board approve the contract, support agreement, project budget and budget revision as presented.

### Body

This item was first presented for consideration at the August 15, 2018 regular meeting of the Board of Public Utilities. The recommended motion was made but was not seconded. There was some discussion on the resulting status of the item for further consideration. A synopsis of standard parliamentary procedure in such circumstances is presented below.

Source:

[https://en.wikipedia.org/wiki/Second\\_\(parliamentary\\_procedure\)#When\\_no\\_second\\_is\\_made](https://en.wikipedia.org/wiki/Second_(parliamentary_procedure)#When_no_second_is_made)  
<[https://en.wikipedia.org/wiki/Second\\_\(parliamentary\\_procedure\)](https://en.wikipedia.org/wiki/Second_(parliamentary_procedure))>

“After a motion is proposed, if the motion requires a second and none is immediately offered, the chair of the body will usually ask, “Is there a second?” If no second is obtained within a few moments of proposing the motion, then the motion is not considered by the assembly, and is treated as though it was never offered. Such a motion may be introduced again at any later time.”

The Chair has approved inclusion of this item for further discussion and possible action on the

---

September 2018 agenda.

In March of 2016, the Board of Public Utilities adopted, as part of a strategic policy, several recommendations from the July 7, 2015 "Future Electrical Energy Resources" report. A summary of those adopted recommendations is included as attachment C to this staff report. The first recommendation is "Complete smart meter implementation for all customers", as several of the remaining recommendations are dependent on Advance Metering Infrastructure for implementation.

The staff report presented in August is re-presented below. Specific points and questions raised at the August meeting will be addressed first.

During public comment one customer raised a point about a potential safety issue related to meter base failure or improper installation. While going into specifics about that particular incident is outside the scope of this agenda topic, we can assure the Board and the public that qualifications of the installers and the safety of their process were considered and included in the RFP, each bidder's response, and the evaluation team's consideration of each proposal. The contractor will photograph existing conditions, test the meter base and existing connections, and ensure a safe installation. If conditions preclude safe installation, DPU crews will be notified and will work with customers to rectify such conditions before installing the new meter.

Another customer expressed concern that the project was not justified on an economic basis. This is a concern expressed also in some of the Board discussion. It is important to recognize that the fundamental justification for the project is not that it will result in significant cost savings, but rather that it will result in numerous operational benefits for the department and our customers. Those benefits have been discussed at numerous previous meetings, and several of them are highlighted in the bullets below and are also covered in the Power Systems Engineering, Inc. (PSE) report, which is discussed below. Internal analysis has repeatedly indicated that in addition to the operational benefits to be achieved, there is also a positive economic benefit to the department, which of course translates into lower costs for our customers. This internal assessment has been repeatedly validated by an external analysis performed by a recognized industry expert, Power System Engineering (PSE). Again, their report will be further discussed below.

Based on discussion, there seems to be some confusion regarding anticipated system life expectancy vs guaranteed duration of system support vs duration of hardware warranties. These are all covered in the contract and attachments provided. The individual hardware components are warranted for periods ranging from one to twenty years. (Exhibit G to the Services Agreement). The installation warranty is one year (page 12 of the Services Agreement). This does not equate to the anticipated life of the product or installation. The warranty covers manufacturing or installation defects, which normally would present within that specified period. The anticipated life of the hardware is considerably longer.

Further, the warranty and expected life of the hardware does not equate to the anticipated life of the AMI System, which is covered in section M of the Services Agreement, and refers primarily to the anticipated life of the current generation of the software and programming. This reflects how long the software developer will commit to support any major release of its product. It would not

---

be practical for a software developer to support a single release of its product forever. For example, Microsoft Windows v3, 3.1, 95, 98, 2000, NT, XP, and Vista, are all no longer supported, yet Microsoft's standard product support promise did apply to each major release of the product. Per section M of the Services agreement, Ferguson warrants that the system will be supported for a minimum of twelve years. If the Sensus system we deploy is after that time no longer supported, and has not been updated through interim releases, it is very unlikely that Sensus or a successor company would not have a replacement offering that would continue to work with our "infrastructure," or that another company would not have developed a replacement system. This clause simply assures that we would not need to address this issue for at least twelve years. All the hardware - meters, collectors, repeaters, communications modules, etc., would continue to work, and to be supported for the duration of each component's anticipated life, typically twenty or more years.

A question has been raised concerning the inclusion of a twenty percent contingency for the project. The purpose of the contingency is so if some unknown or unforeseen circumstance develops it can be addressed through a contract modification immediately, preventing potential long delays of the project's progress. Especially on a project of this nature where large and numerous crews of contractor personnel are on site, long delays can cause significant cost increases for demobilization and remobilization of contractor crews and equipment, or housing of crews for extended non-productive periods. Long delays can also lead to significant scheduling or rescheduling complications, as contractors typically will not leave their crews idle while change orders are running through a long approval process. On a project of this scope and complexity, a twenty percent contingency is common. Of course, the Board could consider any alternative contingency percentage deemed appropriate and modify the recommended motion accordingly. The twenty percent contingency is staff's recommendation.

There has been discussion about if the meter data collected through the AMI system is public information. As part of the project, usage data is expected to be available to an individual customer on a near real time basis, through a secure logon and a secure and feature-rich portal provided by Sensus. Individuals desiring access to data that is not tied directly to that individual's account would have to request such data through an Inspection of Public Records (IPRA) request, and it would be provided according to relevant law and procedures at the time. Such data would not be available real time, nor through the feature-rich user portal, but rather would be an after-the-fact download of the raw data in plain text format. No privacy or sensitive customer specific information would be provided. Compliance with Law Enforcement or other parties seeking data through a valid and enforceable court order would be in accordance with applicable statutes at the direction of the County Attorney's office.

Finally, there have been several questions regarding the often referenced "Business Case Study," or PSE Report, mentioned above. The initial study was completed in 2015 at the request of department staff, to determine the economic viability of pursuing an AMI deployment. The study was conducted primarily to give staff an understanding of the status of the developing technology and viability of full deployment as a follow-on to our successful pilot conducted as part of the NEDO project in 2012. As such, the study was never presented in its entirety to the Board. The report has been referenced several times and excerpts from it presented at several discussions with the Board and individual Board members. Relevant excerpts from the report were included for the January 2018 Board discussion which was pulled from the agenda and the

---

February 2018 informational discussion regarding the merits of AMI deployment. In preparation for the August discussion, staff did review the assumptions and costs included in the 2015 report and considered both to still be relevant to the current proposal being considered, and so presented that report and discussion in the August agenda. Based on Board comments and concerns, however, we did contact Power Systems Engineering, with whom we are maintaining a support agreement for the duration of the project and asked them to update the analysis. That updated report and analysis is included in its entirety herewith and will be presented in full tonight. The report is in Power Point format. Covered is:

- 1) A brief history of the evolution of meter reading technology,
- 2) An overview of the capabilities and benefits of an AMI deployment, both from a customer perspective and from a utilities operational perspective,
- 3) A presentation of some samples of reports and analytics that are typical of a robust AMI system such as is contemplated here, and finally
- 4) An economic analysis comparing the projected project cost with the anticipated net present value of future cost savings, including a description of the assumptions used to determine those potential savings. Note the projected project cost has been updated to reflect this proposed project specifically.

It is noteworthy that the previous PSE analysis did not consider the positive financial impact of a reduction in FTE's, as their assumption at the time was that those FTEs would simply be absorbed into other roles in the department, rather than used to backfill openings as they occur. That misunderstanding has been corrected for this revision, and as a result, as shown on page 46 of the PSE presentation, the expected break-even falls between years five and seven, compared to the breakeven between years ten and thirteen previously presented.

\*\*\*\*\*

The remainder of this staff report is a representation of the information provided at the August 2018 meeting. (Original text is presented in "strikeout" with corrections inserted where necessary). The Alternatives and Fiscal Impact sections have been updated to include the most recent updates from the PSE report and staff discussion.

This contract is for equipment, supplies, installation, software, and project management services for implementation of system-wide advanced metering infrastructure (AMI). The system will provide accurate, near real-time read capability for electric, water, and gas services for DPU customers.

BACKGROUND: DPU began considering implementation of AMI several years ago as the capabilities of the available systems improved in response to the development of more complex pricing models which began to emerge, primarily in the electric industry, in the early 2000s. The DPU conducted a pilot deployment as part of the NEDO Project in 2012 through 2014. While the project was limited in scope and distribution, the Department did learn and realize the impact advanced metering could have on our systems and business model and made the strategic decision to explore the business case for system-wide deployment. In 2015 the Department engaged Power Systems Engineering, a consulting firm specializing in electric grid modernization and utilities metering systems, to conduct a business case analysis for full



---

implementation of advanced metering in all of the metered services (electric, gas, and water). The study identified economic benefits and non-economic benefits, both of which have been considered in the decision to move forward. Only considering the economic benefits, the analysis indicated indicates a fourteen five to seven-year payback for a representative system—the system under consideration. Excerpts from the The PSE report are included as attachment G D to this staff report.

In 2016 the DPU issued RFP 2016-2031 for system-wide deployment of Advance Metering Infrastructure. This was in about the same time as the County's ERP project was being competed and moving forward, and to better coordinate the two projects the decision was made to postpone the AML project, so that RFP was cancelled. We reissued the RFP in late 2016 as a multi-step procurement.

PROJECT OBJECTIVES: System-wide deployment of advanced metering offers many benefits to customers of the DPU.

- More accurate metering. While some customers may see increases in their bills, this is a result of more accurate metering. It is important to remember that any consumption that is not metered simply adds to the “socialized cost of doing business”. More accurate metering yields the result that those customers using the metered commodities pay for them, rather than some portion of their consumption being spread to all customers.
- Reduced Meter reading costs. The five-person crew of meter readers, plus equipment and vehicles, will no longer be required. The department has been working with affected personnel to transition them into other vacancies as they materialize. We also anticipate that one or two “metering technicians” will be required to manage the metering system, but the net result is anticipated reduction of staffing by three to four FTE's upon full system implementation.
- Reduced billing costs. Again, because of the constraints of manually reading meters, the billing is required to be handled in 22 separate read cycles. The billing staff runs billing essentially every business day of the month. With full deployment of advanced metering, we will be able to establish more efficient billing schedules.
- Reduced costs for turn on/turn offs, move in/move outs, rereads, and other account management issues. For example, when a customer comes in with a question about their readings, the customer service representative can “ping” the meter real time, right then and there, and get an accurate reading to correct or confirm the billing in question. This functionality has been in place in the pilot project deployment area for two years or more, and has proven to be extremely useful and reliable for resolving billing disputes or errors.
- Two-way communications. The system provides for true two-way communications, so customers can be notified of service events or issues by way of an in-home display, text message, or mobile app.
- Real-time leak detection and notification. All three meters can be set to monitor and detect potential leaks. If consumption is registered constantly for a defined period of time, notice can automatically be generated to the Utility or the customer advising them of a possible leak. This can save customers thousands of dollars in consumption and potential damages, compared to not being aware of the abnormal consumption until their

---

next regular read and billing cycle.

- Customers can also realize savings by monitoring and managing their consumption real-time. If you only get your consumption information in monthly totals and only once per month, it is harder to recognize and take advantage of incremental opportunities for savings.
- Functionality of the Smart Customer Mobile app, is realized. We implemented the customer mobile application last year, but with only limited functionality, as many of the capabilities and features require real-time, or at least incremental reads, to be fully realized.
- Improved outage management. Through advanced metering, the Utility can be notified of actual or impending outages, and may be able correct the situation, often before customers are even aware that an event was occurring. Staff can also monitor the system and determine the exact scope of an outage and can monitor restoration efforts.
- Advanced rate design. There are many exciting rate options that can improve system reliability, reduce costs system wide, and save individual customers money, all facilitated by the advanced metering's measurement of incremental consumption. For example, demand response programs can be initiated, allowing customers to choose to shift their consumption to lower cost non-peak periods.
- Account management is improved. For example, Account Pre-pay can be enabled, allowing a customer to pay in advance, and notifying that customer as available funds reach predetermined thresholds. This allows the customer to make real-time decisions whether to curtail consumption. This is especially helpful to households that have trouble keeping up with their bills.

**SELECTION PROCESS:** Award was through a multi-step competitive process. Power Systems Engineering remained under contract to assist with the procurement, and provided consulting expertise on requirements definition, scoring criteria and weighting, coordination of offeror inquiries, and evaluation of proposals. Step One invited proposals from qualified offerors in response to a defined set of requirements and scoring criteria. Eight proposals were received and reviewed. The top three, based on the criteria specified in the Step One Solicitation, were invited to participate in Step Two, which included additional specified written responses and an on-site product demonstration, following a defined demonstration script. One of those finalists was initially selected based on criteria specified in the Step Two solicitation and we undertook contract negotiations with that offeror. Unfortunately, an impasse was reached in contract negotiations, so that award was rescinded. The selection committee reviewed the proposals and scoring and determined that award to the next highest scoring responsive bidder is in the best interest of the County, and we initiated contract negotiations with that offeror. The proposed agreement is the result of those negotiations.

**PRIVACY OR HEALTH CONCERNS:** In some areas of the US, citizens have expressed concern over having "smart meters" installed at their properties. The concern most often expressed relates to having RF transmissions in close proximity to the customer's domicile and any potential subsequent health impacts. This health concern has been studied and the extremely low power of the RF transmission from meters has not been shown to have any adverse health effects. The other most common concern heard relates to the potential for loss of privacy should someone be able to access the data from a customer's meter. All AMI systems that would be

---

considered have extremely advanced data encryption and security protocols. No instance has yet, to our knowledge, occurred where anyone has hacked into a smart meter data transmission and used the information for nefarious purposes. More information on these issues and links to relevant and credible studies are posted on the DPU website.

#### **Alternatives**

If the Board does not approve this service agreement the DPU will continue metering and billing with existing meters and processes and would seek other, potentially less effective methods to realize the cost savings and service and reliability enhancements the project provides. The existing residential dial electrical meters and mechanical commercial electric meters will be programmatically replaced with standard electronic meters over the course of 2-4 years since many of those meters are currently operating past their useful 50-year life.

#### **Fiscal and Staff Impact**

The project involves an initial cash outlay of approximately \$4.9M and continuing annual operating costs of approximately \$100k. Due to the scope and complexity of this project, we have requested additional budget authority for a twenty percent contingency of \$972k. It is anticipated that the meter reading function, currently a crew of five FTE's, will be eliminated, but would be replaced by a Metering Technician function of one or two FTE's. With reductions in system losses due to more accurate metering, reduction in account costs due to the ability to service meters and accounts remotely rather than having to dispatch a crew, and improved outage and restoration management, the expected fiscal payback (economic breakeven point) for the system is between five and seven years. There are also significant operational benefits that do not have direct fiscal or staffing impacts, as discussed in the body of the PSE report.

#### **Attachments**

- A - Services Agreement AGR19-912 and Exhibits as noted therein
- B - Budget revision 2019-04 - Advanced Metering Infrastructure
- C - BPU Strategic Initiative for Implementation of FEER Recommendations
- D - Power Systems Engineering Business Case Study updated September, 2018
- E - Flexnet System Overview



**ADVANCED METERING INFRASTRUCTURE  
EQUIPMENT, PARTS, SUPPLIES, INSTALLATION, SOFTWARE AS A SERVICE  
LICENSING, AND SUPPORT AGREEMENT**

**AGR#19-912**

**BY AND BETWEEN**

**THE INCORPORATED COUNTY OF LOS ALAMOS  
AND  
FERGUSON, INC.**

## Table of Contents

I.	RECITALS .....	4
II.	SERVICES:.....	5
A.	Purpose.....	5
B.	Software Licensing & Support Services. ....	6
C.	Project Schedule and Time for Performance. ....	7
D.	Deployment Plan:.....	8
E.	Coverage Commitment: .....	8
F.	Equipment Forecasts: .....	9
G.	Licenses. ....	9
H.	Right to Use Accepted System: .....	10
I.	Right to Use System Not Yet Accepted: .....	10
J.	Tests and Inspections: .....	10
K.	System Acceptance Test. ....	10
L.	Major Meter/Module Failure: .....	11
M.	System Life Expectancy: .....	11
N.	Defective Work and System (Warranty):.....	12
O.	Zero Consumption (Zero Usage) Meters. ....	12
P.	Non-Associating Meters. ....	13
Q.	Meter/Module Replacement for Zero Consumption and Non-Associating Meters: .....	13
R.	Cancellation and Modifications: .....	14
III.	TERM: .....	14
IV.	COMPENSATION: .....	14
A.	Amount of Compensation.....	14
B.	Payment to Ferguson:.....	14
V.	TAXES: .....	16
VI.	STATUS OF FERGUSON, STAFF, AND PERSONNEL:.....	16
VII.	STANDARD OF PERFORMANCE: .....	17
VIII.	DELIVERABLES AND USE OF DOCUMENTS: .....	17
IX.	EMPLOYEES AND SUB-CONTRACTORS: .....	17
X.	INSURANCE:.....	18
A.	General Liability Insurance:.....	18
B.	Workers' Compensation:.....	18
C.	Automobile Liability Insurance for Ferguson and its Employees:.....	18
XI.	RECORDS: .....	18

XII.	APPLICABLE LAW:	18
XIII.	NON-DISCRIMINATION:	19
XIV.	INDEMNITY:	19
XV.	FORCE MAJEURE:	19
XVI.	NON-ASSIGNMENT:	19
XVII.	LICENSES:	19
XVIII.	PROHIBITED INTERESTS:	20
XIX.	TERMINATION:	20
A.	Generally:	20
B.	Funding:	20
XX.	NOTICE:	20
XXI.	INVALIDITY OF PRIOR AGREEMENTS:	21
XXII.	CAMPAIGN CONTRIBUTION DISCLOSURE FORM:	21

#### Exhibits

Exhibit A. Pricing and Listing of Equipment Schedule  
Exhibit B. Responsibility Matrix  
Exhibit C. System Functionality Requirements and Specifications  
Exhibit D. Sensus FCC License, Software as Service License, and Professional Services Agreement  
Exhibit E. Ferguson Proposed and Estimated Project Schedule and Times (Draft)  
Exhibit F. System Acceptance Test Requirements (F1. Electrical, F2. Water System, and F3. Gas System Acceptance Test Plans)  
Exhibit G. Warranty Documents

*Request for Proposal 17-32 and Proposal by Ferguson and Sensus dated April 11, 2017 incorporated by reference.*



## INCORPORATED COUNTY OF LOS ALAMOS SERVICES AGREEMENT

This **SERVICES AGREEMENT** ("Agreement") is entered into by and between the **Incorporated County of Los Alamos**, an incorporated county of the State of New Mexico ("County"), and **Ferguson, Inc.** a Virginia corporation ("Ferguson" or "Contractor").

### I. RECITALS

This Agreement is entered into by and between the **Incorporated County of Los Alamos**, an incorporated county of the State of New Mexico ("County"), and **Ferguson, Inc.** a Virginia corporation ("Ferguson" or "Contractor"), to be effective for all purposes on the date of last signature below.

**WHEREAS**, the County Purchasing Agent determined in writing that the use of competitive sealed bidding was either not practical or not advantageous to County for procurement of the Services and County issued Request for Proposals No. 17-32 ("RFP") on January 25, 2017, requesting proposals for Advanced Metering Infrastructure ("AMI"), as described in the RFP; and

**WHEREAS**, Ferguson timely responded to the RFP by submitting a response dated April 11, 2017 ("Ferguson's Response"); and

**WHEREAS**, based on the evaluation factors set out in the RFP, Ferguson was the successful Offeror for the services listed in the RFP; and

**WHEREAS**, the Board of Public Utilities recommended and approved of this Agreement at a public meeting held on August 15, 2018; and

**WHEREAS**, the County Council approved this Agreement at a public meeting held on August 28, 2018; and

**WHEREAS**, Ferguson will provide the Services, as described below, to County.

**NOW, THEREFORE**, for and in consideration of the premises and the covenants contained herein, County and Ferguson agree as follows:

## II. SERVICES:

### A. Purpose.

1. The purpose of this Agreement between the Parties is for Contractor to procure, deliver install and make functional, in accordance with the requirements set forth herein, the public utility metering parts, supplies, equipment ("AMI Equipment") and Software (as defined herein) necessary to allow County to remotely monitor and collect County utility customer billing information for gas, water and electric services through the use of the AMI Equipment ("Project" or collectively, the "Services" or "Work"). The combination of AMI Equipment, Software and Services that will be acquired hereunder by County from Contractor and any required third parties including Sensus USA Inc. shall collectively be referred to as the "System." The Project is to automate the reading of gas, water, and electric meters throughout the utility system and to provide remote functionality for meter maintenance, meter reading, account servicing, and two-way communications to customer locations throughout the service area pursuant to the parameters provided in the RFP and as proposed and accepted by County in the Contractor's proposal ("Proposal"). The Project is divided into several key stages which begins with a Pilot Test installation and testing of Contractor's supplied parts and services ("Phase 1"). Once the first phase of the installation is completed, tested, and approved by County, County shall then issue to Contractor authorization to proceed with installation of the remaining metering parts, supplies and installation services ("Phase 2"). The specific Project related deliverables, schedules, deadlines, and mutual responsibilities of the Parties are more fully provided below. **IT IS SPECIFICALLY UNDERSTOOD AND AGREED BY THE PARTIES THAT THIS IS A PERFORMANCE AGREEMENT AND THAT CONTRACTOR OR ITS SUPPLIER SHALL BE RESPONSIBLE FOR ANY AND ALL SERVICES, SOFTWARE, SUPPORT, AND EQUIPMENT NECESSARY TO DELIVER TO COUNTY A FULLY FUNCTIONAL AND OPERATIONAL ADVANCED METERING INFRASTRUCTURE ("AMI") PROJECT, SUBJECT TO ONLY THE EXPRESSED LIMITATIONS IDENTIFIED IN CONTRACTOR'S PROPOSAL, INCORPORATED BY REFERENCE HERE, AND THIS AGREEMENT.** The Agreement and exhibits, where attached hereto or included by reference ("Contract Documents") are complementary; what is required by one is as binding as if required by all. It is the intent of Agreement to describe a functionally complete project to be constructed in accordance with the Contract



Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to County. Any required repairs or replacements of Meter Bases shall be the responsibility of County. Any electrical work required to energize SENSUS network equipment (e.g. transformer, cable drop) shall be the responsibility of County. Any maintenance or repairs required of water and gas meters and pits/cans, unless otherwise agreed or provided herein, shall be the responsibility of County.

2. County Responsibilities. Ferguson agrees to provide the Services and Equipment as set forth in Exhibit A, Exhibit B, Exhibit C, and Exhibit D, as coordinated with County pursuant to Exhibit E, and County agrees to provide all necessary management, supervision, resources and materials required (but not to be supplied by Ferguson hereunder) to permit Ferguson to provide the Work as set forth herein, including but not limited to:
  - a. providing Ferguson, in a timely manner and at no cost to Ferguson, with assistance, information, data, and materials specified as County responsibility in Exhibit B and C or which Ferguson reasonably deems necessary for the performance of the Services;
  - b. agreeing to be bound by the provisions of any direct license agreements applicable to software provided to County, if any, in connection with the System;
  - c. providing Ferguson Personnel with such access to County's property and County Personnel as may be necessary for Ferguson to perform the Services;
  - d. complying with all applicable federal and state laws and regulations, and any of County's, but not others, procedures, and complying with Ferguson's and any sub-contractor's reasonable safety requests;
  - e. devoting sufficient time and resources, including qualified personnel, to perform its obligations in accordance with this Agreement; and
  - f. ensuring that County Personnel cooperate with Ferguson in the timely and efficient performance of Ferguson's obligations under this Agreement.

## **B. Software Licensing & Support Services.**

As part of the Project, Contractor's supplier, Sensus USA, Inc. ("Sensus"), shall license to County the use of proprietary enterprise and end-user software ("Software") through a software license and spectrum agreement and provide Software technical support services through a

support agreement, between Sensus and the County. Attached hereto as Exhibit D is Contractor's agent executed license and technical support agreement ("License and Technical Support Agreement"). Contractor further agrees and warrants that any Software it or its supplier provides, including network components, shall perform according to the RFP and Proposal and Exhibit C. Contractor further agrees and warrants that:

- a. The Software fully meets the functionality requirements as provided in Contractor's Response to County's RFP, both incorporated herein by reference.
- b. Contractor shall directly bill County for the one-time License fee(s) and is solely responsible for remitting any or all fees to Sensus or agent for the Software. The one-time license fee is for integration and training and does not include software licensing terms and conditions which is pursuant to separate agreement between the County and Sensus. Contractor will bill fees under the software licensing agreement and pass those fees through to Sensus.

**C. Project Schedule and Time for Performance.**

- a. Project Schedule. Ferguson shall meet with County onsite within thirty (30) days after the execution of this Agreement to develop the final Project Schedule and the Project and Work shall begin shall begin as agreed in the final project schedule. Ferguson and County shall designate project managers who shall have primary responsibility for monitoring the Project Schedule to ensure that the milestone and/or delivery dates shown in the Project Schedule are met and who shall be the designated point of contact for receiving notices as provided below. The proposed timeline and schedule, including the estimated time for each milestone of the Project and Project Schedule is attached hereto as Exhibit E. The draft schedule shall be modified by the parties as provided in this paragraph to accomplish the purpose of this Agreement.
- b. Ferguson and its agents or contractors shall use commercially reasonable efforts to perform the Work as set forth in Exhibit A, Exhibit B, Exhibit C, and Exhibit D and in accordance with the schedule developed in accordance with the agreed upon Project Schedule. County understands and agrees that the ability of Ferguson to make such deliveries and provide such Service within such times is dependent upon the timely issuance of purchase orders by County (if required) and the timely performance of County's obligations hereunder, and County agrees that it will use commercially

reasonable efforts to perform their respective obligations in a timely fashion and to reasonably cooperate with Ferguson.

- c. Neither Party shall be liable to the other for failure or delay in performance of a required obligation if such failure or delay is caused by an act or omission of the other Party or a third party or is due to a cause outside the ability of either party to control through commercially reasonable efforts.
- d. Neither Party shall be liable to the other for failure or delay in performance of a required obligation if such failure or delay is caused by unavoidable delays in shipment, delivery or taking receipt of any items sold hereunder, including delays caused by Ferguson's suppliers, or loss or damage thereto, acts of God, acts of the other Party, acts of civil, regulatory or military authority, U.S. Governmental restrictions or embargoes, war, terrorism, riot, fires, strikes, flood, epidemics, quarantine, restrictions, unavoidable delays in transportation or uncontrollable difficulties in obtaining necessary materials, labor or manufacturing facilities due to such causes, or any other cause beyond a Party's reasonable control. In the event of such occurrence, performance shall be suspended to the extent made necessary by such forces, and the time for performance shall be extended by a period equal to the time of delay. Upon the occurrence of such an event the Party whose performance is adversely affected shall promptly notify the other Party of the nature and extent of the occurrence and the anticipated period of delay in performance. No event described in this Section A (3) shall excuse any obligation to pay any amount due to the other Party.

#### **D. Deployment Plan:**

Contractor shall accomplish the Work in two phases. Phase I shall mean initial deployment as defined and provided in the RFP and Contractors Proposal. Phase I shall end on the date of Final System Acceptance as defined herein. Phase II shall commence upon the completion of Phase I and shall mean deployment within the remaining service territory of County not covered in Phase I. Contractor shall provide a final Deployment Plan within thirty (30) day from the effective date of this agreement. System acceptance shall be pursuant to Exhibit F, attached hereto and incorporated by reference.

#### **E. Coverage Commitment:**

- 1. Ferguson agrees to satisfy the Coverage Commitment as defined herein for the duration of the Coverage Commitment Term.

2. Coverage Commitment shall mean reaching ninety-eight point five percent (98.5%) of the installed base of active electric, gas, and water meters over a five day reading window via on-request read twenty four (24) hours per day and seven (7) days a week in all weather conditions, excluding non-reporting meter/modules found to be in failure due to County-side problems (such as meter tampering, a damaged meter, a damaged transformer, or other County-related or non-AMI related problem), and except for a Force Majeure event.
3. Provided County maintains system to Manufacturer's requirements and keeps System Support current, Coverage Commitment Term shall mean five (5) years from the date that ninety-five percent (95%) of electric, gas, and water AMI meters and modules are installed and have associated with the AMI master system.
4. Regardless of the number of towers or collectors quoted in the pricing schedule, Ferguson must achieve the Coverage Commitment. In the event the Coverage Commitment is not met, the costs of additional equipment, including additional collectors, repeaters, base stations, higher towers/poles, etc., will be the responsibility of Ferguson.
5. The County shall calculate the meter read rate monthly and summarize the information according to categories agreed upon by both the County and Ferguson. County shall make the summary information available to Ferguson.
6. County will investigate any meter read rates less than required above within fifteen (15) days and report County's findings to Ferguson in writing according to Ferguson's instructions. Both County and Ferguson will work together to determine an acceptable strategy to resolve the problem within fifteen (15) days after the County notifies Ferguson of the problem. Once a strategy is identified, Ferguson and County commit to resolve the source of the failure in a timely manner.

#### **F. Equipment Forecasts:**

Within thirty (30) days after the Effective Date of this Agreement, Ferguson shall supply to County a written forecast of total anticipated Ferguson Equipment needs by month. Any changes to the Equipment forecast should also be furnished by Ferguson. Failure to provide an accurate forecast, within reason, may negate the stated Ferguson Equipment lead times and may adversely impact delivery of product to County.

#### **G. Licenses.**

Ferguson shall provide to County all necessary licenses (i.e., software and others as may apply) for the System and the Work. These licenses shall be paid in full and permanent and provide all

rights described in this Agreement regardless of whether or not such rights are included in any license agreement form made part of this Agreement or applied otherwise.

**H. Right to Use Accepted System:**

County shall have the right to use, modify, and adapt the System in any manner it desires as long as it is in accordance with the terms and conditions of this Agreement and the Software License and User agreement between County and Sensus.

**I. Right to Use System Not Yet Accepted:**

During the testing period, County shall have the right to use System that has been installed even if not yet accepted by County. Use of the System shall not result in any waiver of any County rights under this Agreement. The use of the System is primarily conducted as a System Acceptance Test ("SAT") prior to the Final System Acceptance. If the System is in productive use for more than six (6) months, it shall be deemed accepted. Upon completion of the SAT for Phase I, County shall have the right to fully utilize all portions of Phase I during the implementation of Phase II. These rights survive this Agreement.

**J. Tests and Inspections:**

The equipment furnished pursuant to the Specifications shall be in compliance with all of the standard commercial inspections and tests normally performed by Ferguson and its Sub-contractors or other Fergusons. Ferguson shall furnish the County with such certified information and test certificates as are normally made available to customers of Ferguson's manufacturing divisions and subsidiaries and other manufacturers of equipment specified within. County or its agent has the right to witness all factory and/or site tests and inspections. The County shall not be required to accept any equipment until the equipment has undergone and successfully met such tests and inspections.

**K. System Acceptance Test.**

1. The term "Final System Acceptance" means the County has, within six (6) months of installation, accepted the Work, or portion thereof provided by Ferguson after County has performed a System Acceptance Test, the results of which County has determined, in County's sole discretion, to be satisfactory.
2. Ferguson and County will complete a System Acceptance Test ("SAT") to validate the completion of the Phase I, in accordance with the requirements specified in this

Agreement and the Functional Testing and System Acceptance Testing Criteria set forth in the attached Exhibit F.

3. If all testing meets the pass criteria as set forth in Exhibit F, the SAT will be considered successful. Final System Acceptance, as that term is used herein, shall occur on the date County indicates in writing its acceptance of satisfactory completion of the SAT, which acceptance shall be provided within ten (10) days of the successful completion of the SAT. In the event pass criteria cannot be met or a defined functionality requirement cannot be remedied as part of the testing, Ferguson shall notify the County in writing as soon as is practicable and suggest alternate remedies to resolve the problem without further costs to the County. In all such cases, the County, without stating any reasons, reserves the right to accept or reject any and all remedies proposed by Ferguson and treat this as a breach of contract.

**L. Major Meter/Module Failure:**

1. If in the first seven (7) years following the signing of this Agreement, a major failure occurs with the meters and/or modules provided by Ferguson (with "major" being defined as five percent (5%) of the installed base within any rolling twelve (12) month period), Ferguson shall provide County replacement meters and/or modules as needed in excess of the 5% at no cost and pay for shipping.
2. Meter/module failures will be tracked by the County and reported to Ferguson on a mutually agreed schedule.

**M. System Life Expectancy:**

Ferguson represents and warrants that the installation services performed by Ferguson shall be completed in a good and workmanlike manner in accordance with industry standards. Work, System and AMI equipment purchased from Ferguson or its supplier shall be supported for a minimum of twelve (12) years from the date of Final System Acceptance, said term being the Life Expectancy. Ferguson shall make available spare parts for all equipment ordered under this Agreement and corrections for any software ordered for the Life Expectancy of the System, starting from the date of Final System Acceptance. In the event System support is terminated by Ferguson during the term of the Life Expectancy, other than for Force Majeure, the County shall receive compensation pro-rated based on the initial cost of the contracted goods and services. All equipment provided by Ferguson shall be warranted by Sensus and copies of all such

warranties are attached hereto as Exhibit G. Ferguson, as an authorized distributor of Sensus, will coordinate warranty service with Sensus on behalf of County.

**N. Defective Work and System (Warranty):**

1. Ferguson warrants that the installation of System for one year from date of acceptance of the System. Any defective installation shall be corrected by Ferguson within fourteen (14) days after receipt of notice from County.
2. All equipment shall be warranted by Sensus as set forth in Exhibit G. Ferguson, as authorized distributor for Sensus, will coordinate all warranty service on behalf of County.
3. Any repairs or replacements made to Ferguson's System during the warranty period shall be warranted for the remaining term of such warranty period or 180 days, whichever is longer. All manufacturer warranties will be assigned to County. During the manufacturer's warranty period, Ferguson shall coordinate all service on such warranties, and County may rely upon and deal only with Ferguson with respect to such warranties. Ferguson warrants that the sale, use, or incorporation into manufactured products of all machines, parts, components, services, devices, material and rights furnished or licensed hereunder which are not of County's design, composition or manufacture shall be free from any patent, copyright, trademark, or other proprietary rights for the payment of any license fee or royalty to others by County. Ferguson shall be liable for and save County harmless from any loss, damage, or expense whatsoever that County may suffer from Ferguson's breach of any of these warranties.
4. Ferguson warrants that the Work shall be performed and the System provided in the manner set forth in the Agreement. Ferguson warrants that the Work will comply with and has been delivered, and sold in conformity with all applicable federal, state, and local laws and administrative regulations and orders. The foregoing warranties will survive inspection, testing, delivery, installation, and payment and shall run in favor of the County and his successors and assigns.
5. Ferguson shall deliver to the County all Original Equipment Manufacturer ("OEM") warranty documentation prior to receiving final payment for the Work. All warranties begin on date of the formal Final System Acceptance.

**O. Zero Consumption (Zero Usage) Meters.**

1. County shall provide Ferguson a "zero consumption" report for all deployed meters once per week during both the Phase I and Phase II deployment timeframe. The zero-

consumption report will list all meters that have not recorded any consumption within 24 hours of installation.

2. Upon receiving the daily zero consumption report, County's personnel will review the meters listed on the report and remove meters listed as zero consumption due to legitimate, County-side reasons such as a meter located at a vacant property.
3. Remaining zero consumption meters will be replaced by Ferguson at no cost to County.

**P. Non-Associating Meters.**

1. If County finds that a recently installed meter has not associated with the AMI master system within 24 hours of the installation time during Phase I and Phase II Deployment, County will dispatch personnel to visit the meter. If the meter is found to be defective, the electric, gas, or water meter/module will be replaced by County. The defective meter's/module's serial number will be reported to Ferguson and the meter/module returned to Ferguson for replacement at no cost, plus reimbursement for installation costs as specified above.
2. For both zero consumption and non-associating meters/modules, Ferguson will examine the defective meter/module and report the cause of meter/module failure to County within a 30-day period. If the diagnosis leads Ferguson or County to suspect other meters may have the same defect, Ferguson will identify the appropriate serial numbers. Ferguson will then dispatch technicians to County offices to identify and recover defective meters/modules and ship them to the appropriate location for repair or further inspection at no cost to the County.

**Q. Meter/Module Replacement for Zero Consumption and Non-Associating Meters:**

1. For all zero consumption and non-associating meter/modules discovered during Phase I and Phase II Deployment and any warranty period, Ferguson shall provide County replacement meters and/or modules as needed at no cost and pay for shipping, plus one hundred dollars (\$100) per meter and/or module to reimburse County for installation costs to install the new meters and/or modules.
2. Coverage Commitment Testing relates specifically to coverage of the radio frequency ("RF") signals to meters/modules located at County customer sites. This procedure will test for zero consumption (zero usage) and meter/module or non-associating meter/modules (described below).



#### **R. Cancellation and Modifications:**

County may, without penalty, cancel or reduce an Equipment Order on written notice to Ferguson no later than sixteen (16) weeks prior to scheduled delivery of the Equipment Order. County may not cancel or modify an Equipment Order within sixteen (16) weeks prior to delivery. Notwithstanding the foregoing, cancellation charges do not apply to Software or Services Orders which will be established in a separate Software services agreement, or as provided below.

#### **III. TERM:**

The term of this Agreement shall commence on the date of last signature below and shall continue for four (4) years and can be renewed by mutual written agreement the parties for three one-year periods, unless otherwise provided herein. Contractor's responsibilities after the Final System Acceptance shall include transmittal of Sensus payments and coordination of warranty services on behalf of Sensus, and other requirements as provided herein.

#### **IV. COMPENSATION:**

##### **A. Amount of Compensation.**

County agrees to purchase the Materials and Services, as set forth in Exhibits A from Ferguson and Sensus. Ferguson agrees to sell to County the Materials and Services at the prices and in the quantities set forth on Exhibit A, as applicable, and on the terms and conditions set forth in this Agreement. County shall pay compensation for performance of the Services in an amount NOT TO EXCEED **FIVE MILLION FIVE HUNDRED FIFTY-NINE THOUSAND, FOUR HUNDRED EIGHTY DOLLARS (\$5,559,480)**, which amount does not include applicable New Mexico gross receipts taxes ("NMGRT").

##### **B. Payment to Ferguson:**

1. Ferguson will issue invoices to County for all amounts owed to Ferguson hereunder. Invoices: (i) for Work and Services will be issued upon completion of the Work or Service; and (ii) for the System shall be issued upon shipment of the System.
2. Contractor shall provide a performance bond in the amount of the total contract price for the duration of all phases of the project until completion of final acceptance of the Project.
3. The "Milestone Description" as stated below in the Milestone Schedule is provided as a summary only; this entire Agreement provides the detail of what comprises deliverables for each Milestone.

**Table 1: Milestone Payment Schedule**

<b>Milestone</b>	<b>Description</b>	<b>Payment</b>
Phase I*	Initial Deployment Area	100% of completed work billed monthly. All invoices shall provide sufficient documentation to support each billing/invoice.
SAT	Successful completion of the System Acceptance Test (SAT) for the Phase I Initial deployment area.	
Phase II	Full Deployment	After successful completion of the SAT for Phase 1, and starting with the Phase II full deployment, Ferguson may invoice 100% of the actual cost on a monthly basis for all equipment and items associated with the Phase II deployment area according to a mutually accepted schedule.

4. \*Phase I shall include, but not be limited to:
- a. Project design meeting; receipt of standard System documentation and training manuals covering the scope of this Agreement; review and approval of County's coverage area and design drawings for the initial deployment area; receipt of proof of insurance.
  - b. Configuration of Master System server and hardware components and delivery of configured software and hardware to County; training on use of the AMI Master software System.
  - c. Application for and delivery of Licensed Frequency(ies) necessary for operation of the system.
  - d. Delivery of Phase I base stations, collectors, repeaters, load management end devices, gateways, electric meters and/or modules as determined prior to Agreement signing.

- e. Completion of onsite support and training covering equipment installation, meter/module, inspection of work and training installation, Master System training including support on report generation.
  - f. Once Phase I is complete and accepted pursuant to the SAT, or as may be mutually agreed by the parties, Contractor shall then begin Phase II.
- 5. County will pay Ferguson by no later than thirty (30) days from receipt of each accurate monthly statement with a late fee of one and one-half percent (1.5%) of the invoiced amount if not paid in the thirty (30) day period.
  - 6. After delivery and inspection at destination, the County will be responsible for any loss, theft, physical damage, or abuse that affects the operation of the System and occurs while System is in the control of the County.
  - 7. Notwithstanding any provision in this Agreement to the contrary, County may withhold any or all payment or payments for Work done to the extent of protecting County against loss on account of:
    - a. Defective workmanship and materials;
    - b. Failure of Ferguson to make payments promptly to Sub-contractors or Fergusons for material or labor.
  - 8. Unless otherwise provided for in the Agreement, all prices for Work and Equipment are firm and fixed.

## **V. TAXES:**

Ferguson shall be solely responsible for timely and correctly billing, collecting and remitting all local, state, or federal taxes that may be levied on the amounts payable under this Agreement.

## **VI. STATUS OF FERGUSON, STAFF, AND PERSONNEL:**

This Agreement calls for the performance of services by Ferguson as an independent contractor. Ferguson is not an agent or employee of County and will not be considered an employee of County for any purpose. Ferguson, its agents or employees shall make no representation that they are County employees, nor shall they create the appearance of being employees by using a job or position title on a name plate, business cards, or in any other manner, bearing the County's name or logo. Neither Ferguson nor any employee of Ferguson shall be entitled to any benefits or compensation other than the compensation specified herein. Ferguson shall have no authority to bind County to any agreement, contract, duty or obligation. Ferguson shall make no

representations that are intended to, or create the appearance of, binding County to any agreement, contract, duty, or obligation. Ferguson shall have full power to continue any outside employment or business, to employ and discharge its employees or associates as it deems appropriate without interference from County; provided, however, that Ferguson shall at all times during the term of this Agreement maintain the ability to perform the obligations in a professional, timely and reliable manner.

## **VII. STANDARD OF PERFORMANCE:**

Ferguson agrees and represents that it has and will maintain the personnel, experience and knowledge necessary to qualify it for the particular duties to be performed under this Agreement. Ferguson shall perform the Services described herein in accordance with a standard that meets industry standard of care for performance of the Services.

## **VIII. DELIVERABLES AND USE OF DOCUMENTS:**

All deliverables required under this Agreement, including material, products, reports, policies, procedures, software improvements, databases, and any other products and processes, whether in written or electronic form, shall remain the exclusive property of and shall inure to the benefit of County as works for hire; Ferguson shall not use, sell, disclose, or obtain any other compensation for such works for hire. In addition, Ferguson may not, with regard to all work, work product, deliverables or works for hire required by this Agreement, apply for, in its name or otherwise, any copyright, patent or other property right and acknowledges that any such property right created or developed remains the exclusive right of County. Ferguson shall not use deliverables in any manner for any other purpose without the express written consent of the County.

## **IX. EMPLOYEES AND SUB-CONTRACTORS:**

Ferguson shall be solely responsible for payment of wages, salary or benefits to all employees or sub-contractors retained by Ferguson in the performance of the Services. Ferguson agrees to indemnify, defend and hold harmless County for all claims that may arise from Ferguson's relationship to its employees and sub-contractors.

## **X. INSURANCE:**

Ferguson shall obtain and maintain insurance of the types and in the amounts set out below throughout the term of this Agreement with an insurer acceptable to County. Ferguson shall assure that all sub-contractors maintain like insurance. Compliance with the terms and conditions of this Section is a condition precedent to County's obligation to pay compensation for the Services and Ferguson shall not provide any Services under this Agreement unless and until Ferguson has met the requirements of this Section. County requires Certificates of Insurance or other evidence acceptable to County that Ferguson has met its obligation to obtain and maintain insurance and to assure that sub-contractors maintain like insurance. General Liability Insurance and Automobile Liability Insurance shall name County as an additional insured.

### **A. General Liability Insurance:**

\$1,000,000 combined single limit per occurrence; \$2,000,000 aggregate.

### **B. Workers' Compensation:**

In an amount as may be required by law. County may immediately terminate this Agreement if Ferguson fails to comply with the Worker's Compensation Act and applicable rules when required to do so.

### **C. Automobile Liability Insurance for Ferguson and its Employees:**

An amount at least equal to the minimum required by state law on any owned, and/or non-owned motor vehicles used in performing Services under this Agreement.

## **XI. RECORDS:**

Ferguson shall maintain, throughout the term of this Agreement and for a period of six (6) years thereafter, records that indicate the date, time, and nature of the services rendered. Ferguson shall make available, for inspection by County, all records, books of account, memoranda, and other documents pertaining to County at any reasonable time upon request.

## **XII. APPLICABLE LAW:**

Ferguson shall abide by all applicable federal, state and local laws, regulations, and policies and shall perform the Services in accordance with all applicable laws, regulations, and policies during

the term of this Agreement. In any lawsuit or legal dispute arising from the operation of this Agreement, Ferguson agrees that the laws of the State of New Mexico shall govern. Venue shall be in the First Judicial District Court of New Mexico in Los Alamos County, New Mexico.

### **XIII. NON-DISCRIMINATION:**

During the term of this Agreement, Ferguson shall not discriminate against any employee or applicant for an employment position to be used in the performance of the obligations of Ferguson under this Agreement, with regard to race, color, religion, sex, age, ethnicity, national origin, sexual orientation or gender identity, disability or veteran status.

### **XIV. INDEMNITY:**

Ferguson shall indemnify, hold harmless and defend County, its Council members, employees, agents and representatives, from and against all liabilities, damages, claims, demands, actions (legal or equitable), and costs and expenses, including without limitation attorneys' fees, of any kind or nature, arising from Ferguson's performance hereunder or breach hereof and the performance of Ferguson's employees, agents, representatives and sub-contractors.

### **XV. FORCE MAJEURE:**

Neither County nor Ferguson shall be liable for any delay in the performance of this Agreement, nor for any other breach, nor for any loss or damage arising from uncontrollable forces such as fire, theft, storm, war, or any other force majeure that could not have been reasonably avoided by exercise of due diligence.

### **XVI. NON-ASSIGNMENT:**

Ferguson may not assign this Agreement or any privileges or obligations herein without the prior written consent of County.

### **XVII. LICENSES:**

Ferguson shall maintain all required licenses including, without limitation, all necessary professional and business licenses, throughout the term of this Agreement. Ferguson shall require and shall assure that all of Ferguson's employees and sub-contractors maintain all required licenses including, without limitation, all necessary professional and business licenses.

## **XVIII. PROHIBITED INTERESTS:**

Ferguson agrees that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services hereunder. Ferguson further agrees that it will not employ any person having such an interest to perform services under this Agreement. No County Council member or other elected official of County, or manager or employee of County shall solicit, demand, accept or agree to accept a gratuity or offer of employment contrary to Section 31-282 of the Los Alamos County Code.

## **XIX. TERMINATION:**

### **A. Generally.**

County may terminate this Agreement with or without cause upon thirty (30) days prior written notice to Ferguson, or as provided herein. Upon such termination, Ferguson shall be paid for Services actually completed to the satisfaction of County at the rate set out in Section C. Ferguson shall render a final report of the Services performed to the date of termination and shall turn over to County originals of all materials prepared pursuant to this Agreement.

### **B. Funding.**

This Agreement shall terminate without further action by County on the first day of any County fiscal year for which funds to pay compensation hereunder are not appropriated by the County Council. County shall make reasonable efforts to give Ferguson at least ninety (90) days advance notice that funds have not been and are not expected to be appropriated for that purpose.

## **XX. NOTICE:**

Any notices required under this Agreement shall be made in writing, postage prepaid to the following addresses, and shall be deemed given upon hand delivery, verified delivery by telecopy (followed by copy sent by United States Mail), or five (5) days after deposit in the United States Mail:

County:

Tim Glasco, Utility Manager  
Incorporated County of Los Alamos  
Department of Public Utilities  
1000 Central Avenue

Ferguson:

Bob Ferlic  
Ferguson, Inc.  
452 N Locust Grove Road  
Meridian, Idaho 83642

**XXI. INVALIDITY OF PRIOR AGREEMENTS:**

This Agreement supersedes all prior contracts or agreements, either oral or written, that may exist between the parties with reference to the services described herein and expresses the entire agreement and understanding between the parties with reference to said services. It cannot be modified or changed by any oral promise made by any person, officer, or employee, nor shall any written modification of it be binding on County until approved in writing by both County and Ferguson.

**XXII. CAMPAIGN CONTRIBUTION DISCLOSURE FORM:**

A Campaign Contribution Disclosure Form was submitted as part of Ferguson's Response and is incorporated herein by reference for all purposes. This Section acknowledges compliance with Chapter 81 of the Laws of 2006 of the State of New Mexico.

**IN WITNESS WHEREOF**, the parties have executed this Agreement on the date(s) set forth opposite the signatures of their authorized representatives to be effective for all purposes on the date first written above.

**ATTEST**

**INCORPORATED COUNTY OF LOS ALAMOS**

\_\_\_\_\_  
**NAOMI D. MAESTAS**  
**COUNTY CLERK**

BY: \_\_\_\_\_  
**TIMOTHY A. GLASCO, PE** **DATE**  
**UTILITIES MANAGER**

**Approved as to form:**

\_\_\_\_\_  
**J. ALVIN LEAPHART**  
**COUNTY ATTORNEY**

**Ferguson, Inc. a Virginia corporation**



BY: \_\_\_\_\_  
DESIGNATE OFFICIAL \_\_\_\_\_ DATE \_\_\_\_\_  
DESIGNATE TITLE \_\_\_\_\_

**Exhibit A. Pricing and Listing of Equipment Schedule**

# Exhibit A. Ferguson, Inc. Pricing and Equipment

## Summary of Costs, Equipment, and Services

#	Category	Phase 1 Total	Full Deployment Total
1	AMI INFRASTRUCTURE: Controllers, Collectors, Gateways, Repeaters, base stations, etc.	\$ 28,377	\$ 61,800
2	AMI MASTER SOFTWARE AND SERVERS	\$ 109,078	
3	NEW ELECTRIC METERS	\$ 36,835	\$ 1,077,228
4	NEW ELECTRIC MODULES	\$ -	\$ -
5	GAS MODULES	\$ 28,415	\$ 735,442
6	WATER MODULES	\$ 27,785	\$ 647,093
7	INSTALLATION, TESTING, TRAINING, PROJECT MANAGEMENT - AMI NETWORK INFRASTRUCTURE (excluding meters and modules)	\$ 259,968	\$ 65,217
8	RECOMMENDED SPARE PARTS	\$ -	\$ -
9	TEST EQUIPMENT, TOOLS, SHIPPING, MISC.	\$ 15,489	\$ 5,163
10	<u>REQUIRED</u> TURNKEY METER/MODULE INSTALLATION	\$ 69,819	\$ 1,372,021
	<b>Total Phase Costs</b>	<b>\$ 575,766</b>	<b>\$ 3,963,965</b>
	<b>Total Upfront Costs</b>	<b>\$ -</b>	<b>\$ 4,539,731</b>
11	ANNUAL SYSTEM (SOFTWARE) COSTS	\$ 99,961	
<i>See Initial Deployment Detail Worksheet Section 11</i>			
12	OPTIONAL EQUIPMENT (cost per unit, depending on your product offering)	\$ -	\$ -
<i>See Initial Deployment Detail Worksheet Section 12</i>			
13	Optional Premise-Based AMI Costs (Phase I Initial Deployment Area & Full Deployment Area)	\$ 70,000	
<i>See Initial Deployment Detail Worksheet Section 13</i>			
14	Optional MDMS Costs	\$ 320,000	
<i>See Initial Deployment Detail Worksheet Section 14</i>			
15	OPTIONAL COST ADDERS FOR INCREASED COVERAGE		\$ 44,000

## Exhibit A. Ferguson, Inc. Pricing and Equipment-Initial Deployment Detail (Phase I)

## Phase I. Initial Deployment

		Quantity	Each	Extended	Notes
<b>1</b>					
PHASE 1: AMI INFRASTRUCTURE: Controllers, Collectors, Gateways, Repeaters, base stations, etc.					
1.01	Sensus M400 Base Station	1	\$ 20,600	\$ 20,600	
1.02	Sensus R100 Collector	2	\$ 3,889	\$ 7,777	
1.03			\$ -	\$ -	
<b>Total AMI Infrastructure</b>		<b>3</b>		<b>\$ 28,377</b>	
<b>2</b>					
PHASE 1: AMI Master Software and Servers					
2.01	Base master software saas -- Set up and Configuration fees	1	\$ 77,410	\$ 77,410	This includes setup and configuration of all hardware and software for the Head End System, Sensus Analytics for Water, Gas and Electric, Alarm Management Software, End of Line Voltage Monitoring applications for CVR.
2.02	Other annual costs - Additional Modules (Transformer Loading, Load Aggregation and Unbilled Energy)	1	\$ 6,000	\$ 6,000	(Year 1 Saas Fees for all 3 additional Applications)
2.03	Database license fee		\$ -	\$ -	
2.04	Load Management license fee for hosted system		\$ -	\$ -	
2.05	Interfaces from AMI for Purchaser's CIS	1	\$ 5,778	\$ 5,778	
2.06	Interfaces from AMI for Purchaser's ERP	1	\$ 5,778	\$ 5,778	
2.07	Interfaces from AMI for Purchaser's OMS	1	\$ 5,778	\$ 5,778	
2.08	Interfaces from AMI for Purchaser's Web Presentation Portal and Web App (Smart Utility Systems)	1	\$ 8,335	\$ 8,335	
2.09	Other		\$ -	\$ -	
<b>Total AMI Software &amp; Servers</b>		<b>6</b>		<b>\$ 109,078</b>	
<b>3</b>					
PHASE 1: NEW ELECTRIC METERS					
3.01	Sensus iConA	1	\$ 102	\$ 102	
3.02	Sensus Stratus	300	\$ 117	\$ 35,232	
3.03	Sensus iConA	1	\$ 122	\$ 122	
3.04	Sensus iConA	1	\$ 122	\$ 122	
3.05	Sensus iConA	1	\$ 122	\$ 122	
3.06	Sensus iConA	1	\$ 161	\$ 161	
3.07	Sensus iConA (Sensus Stratus meter for 2SRD. Available for 1S and 12S)	1	\$ -	\$ -	Included in Base Meter Price
3.08	Sensus iConA (Demand, Voltage Event, 4 Ch.LP, TOU, PQ)	1	\$ 33	\$ 33	
3.09	Elster A3 (Demand, Voltage Event, 4 Ch.LP, TOU, PQ)	1	\$ 258	\$ 258	
3.10	Sensus iConA	1	\$ 94	\$ 94	
3.11	Elster A3 (Demand, Voltage Event, 4 Ch.LP, TOU, PQ)	1	\$ 258	\$ 258	
3.12	Elster A3 (Demand, Voltage Event, 4 Ch.LP, TOU, PQ)	1	\$ 258	\$ 258	
3.13		1	\$ -	\$ -	Included in Base Meter Price
3.14	Elster A3 K2 Switch	1	\$ 39	\$ 39	
3.15	Sensus iConA Zigbee adder	1	\$ 33	\$ 33	

3.16		Cellular communications modules (as required by your design)		\$	-	\$	-	No Cellular Communications Required
Total Electric Meters			310			\$	36,835	
4	PHASE 1: NEW ELECTRIC MODULES (If your AMI meter includes the module, please state as such, quote the meter/module combo in Section 3, and leave this section blank)		Meter ANSI Form	Quantity	Each	Extended		
4.01			Single phase 1S	1	\$	-	\$	-
4.02			Single phase 2S	300	\$	-	\$	-
4.03			Single phase 3S	1	\$	-	\$	-
4.04			Single phase 4S	1	\$	-	\$	-
4.05			Single phase 5S	1	\$	-	\$	-
4.06			Single phase CI 320	1	\$	-	\$	-
4.07			Polyphase meter 9S	1	\$	-	\$	-
4.08			Polyphase meter 12S	1	\$	-	\$	-
4.09			Polyphase meter 16S	1	\$	-	\$	-
Total Electric Modules			308			\$	-	
5	PHASE 1: GAS MODULES		GAS METER	Quantity	Each Including Mounting Kit	Extended		
5.01	Sensus Model 100GM, 200GM		Residential Gas	300	\$ 94	\$ 28,203		
5.02	Sensus Model 300GM		C&I Gas	1	\$ 212	\$ 212		
5.03					\$ -	\$ -		
Total Gas Modules			301			\$ 28,415		
6	PHASE 1: WATER MODULES		WATER METER	Quantity	Each Including Mounting Kit	Extended		
6.01	Sensus Single Port 520M		Residential Water	300	\$ 92	\$ 27,693		
6.02	Sensus Single Port 520M		C&I Water	1	\$ 92	\$ 92		
6.03					\$ -	\$ -		
Total Water Modules			301			\$ 27,785		
7	PHASE 1: INSTALLATION, TESTING, TRAINING, PROJECT MANAGEMENT - AMI NETWORK INFRASTRUCTURE (excluding meters and modules)			Quantity	Each	Extended		
7.01	Installation of collectors, repeaters, base station equipment for Phase 1 (Initial Deployment Area) (As specified in the Responsibility Matrix)			1	\$ 25,807	\$ 25,807		Installation is priced according to Ferguson Standard installation. Full Scope of work required prior to final contract pricing. All permits are the responsibility of the customer.
7.02	Field Hardware Training & Computer Training	Special Report Generation (Turnkey training: including labor and travel expenses, etc.)		2	\$ 8,333	\$ 16,667		Note: SAT included in 7.05 Project Management. Estimated SAT per deliverable timeline of one (1) month.
7.03	System Acceptance Testing				\$ -	\$ -		Note: Documentation and manuals provided after the initial standard core education and training.
7.04	System Documentation Manuals, CDs, etc.			3	\$ 1,000	\$ 3,000		
7.05	Project Management			1	\$ 132,761	\$ 132,761		
7.06	One time RNI SaaS Setup Fee			1	\$ 6,867	\$ 6,867		
7.07	One Time Sensus Analytics MDMS SaaS Setup Fee			1	\$ 6,867	\$ 6,867		

7.08	Sensus Software Integration	1	\$ 68,000	\$ 68,000	Any upgrades or integration to the customer CIS Software is the responsibility of the Owner.
<b>Total Installation, Testing, Training, Project Management</b>		<b>10</b>		<b>\$ 259,968</b>	
<b>8</b>	<b>PHASE 1: RECOMMENDED SPARE PARTS - MUST BE INCLUDED</b>	<b>Quantity</b>	<b>Each</b>	<b>Extended</b>	
8.01	Spare parts		\$ -	\$ -	
8.02	Spare parts		\$ -	\$ -	
	<b>Total Spare Parts</b>	<b>0</b>		<b>\$ -</b>	
<b>9</b>	<b>PHASE 1: TEST EQUIPMENT, TOOLS, SHIPPING, MISC.</b>	<b>Quantity</b>	<b>Each</b>	<b>Extended</b>	
9.01	Sensus Command Link	3	\$ 452	\$ 1,355	
9.02	Trimble 900LE Handheld	3	\$ 4,358	\$ 13,075	
9.03	USB Microtransceiver	3	\$ 353	\$ 1,059	
9.04	AMI System Freight Costs (Assumed to be included at no charge. If Supplier intends to bid with a freight charge, please include here.)	1	\$ -	\$ -	
9.05	Licensed Spectrum one-time cost (if applicable)		\$ -	\$ -	
	<b>Total Test Equipment, Tools, and Shipping</b>			<b>\$ 15,489</b>	
<b>10</b>	<b>PHASE 1: REQUIRED TURNKEY METER/MODULE INSTALLATION</b>	<b>Quantity</b>	<b>Each</b>	<b>Extended</b>	
10.01	Installation of all AMI single-phase meters and modules	300	\$ 61.64	\$ 18,492	
10.02	Installation of all residential gas modules	300	\$ 86.99	\$ 26,097	
10.03	Installation of all commercial gas modules	1	\$ 86.99	\$ 87	
10.04	Installation of all residential water modules	300	\$ 83.53	\$ 25,059	
10.05	Installation of all commercial water modules	1	\$ 83.53	\$ 84	
	<b>Total REQUIRED Turnkey Electric Installation</b>	<b>902</b>		<b>\$ 69,819</b>	
<b>Total:</b>				<b>\$ 575,766</b>	

ANNUAL COSTS (recurring costs)				
II	ANNUAL SYSTEM(SOFTWARE) COSTS	Quantity	Each	Extended
11.01	Annual System Support Costs for Hosted AMI Hardware	1	\$ -	\$ -
11.02	Annual System Support Costs for Hosted Load Management Software	1	\$ -	\$ -
11.03	Annual System Support Costs for Hosted MDMS Software	1	\$ -	\$ -
11.04	Annual System Support Costs for Hosted Software & Licensing	1	\$ 87,086	\$ 87,086
This is the Annual SaaS Fee for the Head End System, Sensus Analytics for Water, Gas and Electric, Alarm Management Software, End of Line Voltage Monitoring applications for CVR. This fee is subject to increase at 3% annually.				
11.05	Annual Licensed Spectrum Use Fee (if applicable)	1	\$ -	\$ -
11.06	Indicate quantity of cellular communications devices and annual cost for each (not to exceed in a 10 year period) - MUST BE INCLUDED IF QUOTING CELLULAR		\$ -	\$ -
11.07	Other annual costs - Additional Modules (Transformer Loading, Load Aggregation and Unbilled Energy)	1	\$ 12,875	\$ 12,875
Total Annual Costs				\$ 99,961
TOTAL ANNUAL COSTS				\$ 99,961

OPTIONAL ITEMS AND SERVICES:

12	PHASE I: OPTIONAL EQUIPMENT (cost per unit, depending on your product offering)	Quantity	Each	Extended
12.01	Retrofit L+G AX Focus 2S Module	1	\$ -	\$ -
12.02	Single phase W+Fi Adder	1	\$ -	\$ -
12.03	Single phase Bluetooth Adder	1	\$ -	\$ -
12.04	Single phase Other HAN (Home Area Network) Communications Adder	1	\$ -	\$ -
12.05	Load Management Device 2 Relays 5A - 30A (or similar)	1	\$ -	\$ -
12.06	Adder for cell modem backhaul system (to collectors, base stations, etc) (Phase I Initial Deployment Area & Full Deployment Area)		\$ -	\$ -
12.07	Annual fee for optional cell modem backhaul system (Phase I Initial Deployment Area & Full Deployment Area)	1	\$ -	\$ -
12.08	Other costs as defined by Vendor	1	\$ -	\$ -
12.09	Other costs as defined by Vendor	1	\$ -	\$ -
12.09	Other costs as defined by Vendor	1	\$ -	\$ -
Total Optional Equipment		9		\$ -

13	Optional Premise-Based AMI Costs (Phase I Initial Deployment Area & Full Deployment Area)	Quantity	Each	Extended
13.01	Annual fee for Supplier premise based AMI headend	1	\$ 35,000	\$ 35,000
13.02	Annual premise based AMI system fee	1	\$ 35,000	\$ 35,000
13.03	Annual premise based AMI Server Hardware	1	\$ -	\$ -
Total AMI Equipment		3		\$ 70,000

14	Optional MDM Costs (Phase I Initial Deployment Area & Full Deployment Area)	Quantity	Each	Extended
14.01	MDMS software license fee - Sensus LOGIC MDMS & RNI License Fee	1	\$ 320,000	\$ 320,000
14.02	MDMS annual hosted fee		\$ -	\$ -
14.03	Interfaces from MDMS for Purchaser's CIS		\$ -	\$ -
14.04	Interfaces from MDMS for Purchaser's OMS		\$ -	\$ -
14.05	Interfaces from MDMS for Purchaser's Web Presentation Portal and Web App (Smart Utility Systems)		\$ -	\$ -

14.06	Other		\$	-	\$	-	
		Total AMI Equipment	1		\$	320,000	



Exhibit A. Ferguson, Inc. Pricing and Equipment-Final Deployment Detail (Phase II)

1	FULL DEPLOYMENT: AMI INFRASTRUCTURE: Controllers, Collectors, Gateways, Repeaters, base stations, etc.			Quantity	Each	Extended	Notes
1.01	Sensus FlexNet M400 BaseStation			3	\$ 20,600	\$ 61,800	
1.02	Sensus FlexNet M400 BaseStation						
	Total AMI Infrastructure			3		\$ 61,800	

3	FULL DEPLOYMENT: NEW ELECTRIC METERS			Meter ANSI Form	Quantity	Each	Extended	
3.01	Sensus iConA			Single phase 1S	1	\$ 102	\$ 102	
3.02	Sensus Stratus			Single phase 2S	8,777	\$ 117	\$ 1,030,771	
3.03	Sensus iConA			Single phase 3S	1	\$ 122	\$ 122	
3.04	Sensus iConA			Single phase 4S	1	\$ 122	\$ 122	
3.05	Sensus iConA			Single phase 5S	1	\$ 122	\$ 122	
3.06	Sensus iConA			Single Phase Class 320	1	\$ 161	\$ 161	
3.07	Sensus iConA			Single phase Demand and TOU adder	1	\$ -	\$ -	Included, No Adder
3.08	Sensus iConA (Sensus Stratus meter for 2SRD, Available for 1S and 12S)			Single phase under glass service disconnect adder	1	\$ 33	\$ 33	
3.09	Elster A3 (Demand, Voltage Event, 4 Ch.L.P.TOU, PQ)			Polyphase meter 9S	1	\$ 258	\$ 258	
3.10	Sensus iConA			Polyphase meter 12S Network 120/208	1	\$ 94	\$ 94	
3.11	Elster A3 (Demand, Voltage Event, 4 Ch.L.P.TOU, PQ)			Polyphase meter 12S	175	\$ 258	\$ 45,112	
3.12	Elster A3 (Demand, Voltage Event, 4 Ch.L.P.TOU, PQ)			Polyphase meter 16S	1	\$ 258	\$ 258	
3.13				Cost Adder for Demand and TOU (for polyphase meters)	1	\$ -	\$ -	Included, No Adder
3.14	Elster A3 K2 Switch			Cost Adder for Reactive Metering (for polyphase meters)	1	\$ 39	\$ 39	
3.15	Sensus iConA Zigbee adder			Cost Adder for Zigbee Module (All Meters)	1	\$ 33	\$ 33	
3.16				Cellular communications modules (as required by your design)		\$ -	\$ -	No Cellular Communications Required
	Total Electric Meters			8,961		\$ 1,077,228		

4	FULL DEPLOYMENT: NEW ELECTRIC MODULES (If your AMI meter includes the module, please state as such, quote the meter/module combo in Section 3, and leave this section blank)			Meter ANSI Form	Quantity	Each	Extended	
4.01				Single phase 1S	1	\$ -	\$ -	
4.02				Single phase 2S	8,777	\$ -	\$ -	
4.03				Single phase 3S	1	\$ -	\$ -	
4.04				Single phase 4S	1	\$ -	\$ -	
4.05				Single phase 5S	1	\$ -	\$ -	
4.06				Single phase CI 320	1	\$ -	\$ -	
4.07				Polyphase meter 9S	1	\$ -	\$ -	
4.08				Polyphase meter 12S	175	\$ -	\$ -	
4.09				Polyphase meter 16S	1	\$ -	\$ -	

Total Electric Modules					8,959	\$	-
<b>5</b>	<b>FULL DEPLOYMENT: GAS MODULES</b>	<b>GAS METER</b>	<b>Quantity</b>	<b>Each Including Mounting Kit</b>	<b>Extended</b>		
5.01	Model 100GM, 200GM Indexes	Residential Gas	7,220	\$ 94	\$ 678,752		
5.02	Model 300GM Indexes	C&I Gas	268	\$ 212	\$ 56,690		
5.03				\$ -	\$ -		
		<b>Total Gas Modules</b>	<b>7,488</b>		<b>\$ 735,442</b>		
<b>6</b>	<b>FULL DEPLOYMENT: WATER MODULES</b>	<b>WATER METER</b>	<b>Quantity</b>	<b>Each Including Mounting Kit</b>	<b>Extended</b>		
6.01	520M Single Port Radio	Residential Water	6,103	\$ 92	\$ 563,368		
6.02	520M Single Port Radio	C&I Water	907	\$ 92	\$ 83,725		
6.03				\$ -	\$ -		
		<b>Total Water Modules</b>	<b>7,010</b>		<b>\$ 647,093</b>		
<b>7</b>	<b>FULL DEPLOYMENT: INSTALLATION, PROJECT MANAGEMENT - AMI NETWORK INFRASTRUCTURE (excluding</b>		<b>Quantity</b>	<b>Each</b>	<b>Extended</b>		
7.01	Installation of collectors, repeaters, base station equipment or other AMI transport equipment for Full Deployment		3	\$ 21,739	\$ 65,217		
7.02	Project Management			\$ -	\$ -		
7.06	Business Process Workshops (optional) (5 day onsite workshop)			\$ 21,739	\$ -		
7.04	Other costs as defined by Vendor			\$ -	\$ -		
7.05	Other costs as defined by Vendor			\$ -	\$ -		
	<b>Total Installation and Project Management</b>		<b>3</b>		<b>\$ 65,217</b>		
<b>8</b>	<b>FULL DEPLOYMENT: RECOMMENDED SPARE PARTS</b>		<b>Quantity</b>	<b>Each</b>	<b>Extended</b>		
8.01	Spare parts			\$ -	\$ -		
8.02	Spare parts			\$ -	\$ -		
8.03	Spare parts			\$ -	\$ -		
	<b>Total Spare Parts</b>		<b>0</b>		<b>\$ -</b>		
<b>9</b>	<b>FULL DEPLOYMENT: TEST EQUIPMENT, TOOLS, SHIPPING, MISC.</b>	<b>Description</b>	<b>Quantity</b>	<b>Each</b>	<b>Extended</b>		
9.01	Command Link	Test equipment, tools, and software that are necessary for the deployment of the AMI system	1	\$ 452	\$ 452		
9.02	Trimble HH 900LE	Test equipment, tools, and software that are necessary for the deployment of the AMI system	1	\$ 4,358	\$ 4,358		
9.03	USB Microtransceiver	Test equipment, tools, and software that are necessary for the deployment of the AMI system	1	\$ 353	\$ 353		
9.04	AMI System Freight Costs (Assumed to be included at no charge. If Supplier intends to bid with a freight charge, please include here.)	Freight for 100% of the system components including but not limited to: Master System, software, documentation, electric meters, electric meter modules, spare parts, servers, hardware, etc.	1	\$ -	\$ -		

9.05	Licensed Spectrum one-time cost (if applicable)	Upfront cost to procure licensed frequency for the wireless AMI system (if applicable). For solutions that used licensed frequencies, if no price is entered, it is implied that all costs for licensed frequency licensing are included in the AMI package and will be paid for in full by the chosen AMI Vendor at the time of system installation.	\$ -	\$ -	
Total Test Equipment, Tools, and Shipping				\$ 5,163	

10	FULL DEPLOYMENT REQUIRED TURNKEY METER/MODULE INSTALLATION	Description (please list what is included in installation package and name subcontractor(s) as appropriate).	Quantity	Each	Extended
10.01	Installation of all AMI single-phase meters and modules	Installation package to include: as-found meter accuracy test, transfer of meter data to utility's billing system, GPS at meter location, digital photograph of meter reading, thermal imaging scan of meter socket, meter socket replacement, and storage and disposal of old meters.	8,782	\$ 49.33	\$ 433,216
10.02	Installation of all residential gas modules		7,220	\$ 80.00	\$ 577,600
10.03	Installation of all commercial gas modules		268	\$ 73.33	\$ 19,652
10.04	Installation of all residential water modules		6,103	\$ 53.33	\$ 325,473
10.05	Installation of all commercial water modules		907	\$ 60.00	\$ 16,080
Total REQUIRED Turnkey Electric Installation			16,270		\$ 1,372,021

Total: \$ 3,963,965		
---------------------	--	--

OPTIONS					
12	OPTIONAL EQUIPMENT (cost per unit, depending on your product offering)	Quantity	Each	Extended	
12.01	Retrofit L+G AX Focus 2S Module	1	\$ -	\$ -	
12.02	Single phase Wi-Fi Adder	1	\$ -	\$ -	
12.03	Single phase Bluetooth Adder	1	\$ -	\$ -	
12.04	Single phase Other HAN (Home Area Network) Communications Adder	1	\$ -	\$ -	
12.05	Load Management Device	1	\$ -	\$ -	
12.06	Other costs as defined by Vendor	1	\$ -	\$ -	
12.07	Other costs as defined by Vendor	1	\$ -	\$ -	
12.08	Other costs as defined by Vendor	1	\$ -	\$ -	
Total Optional Equipment		8		\$ -	

15	OPTIONAL COST ADDERS FOR INCREASED COVERAGE Supplier must quote as part of this bid response optional, not-to-exceed add-on costs to extend coverage as indicated on the line items below.	Quantity	Each	Extended	
15.01	Optional Not To Exceed Cost Adder for 99.9% electric meter coverage guarantee.	1	\$ 44,000.00	\$ 44,000	

	Total Optional Equipment	1		\$	44,000	
--	--------------------------	---	--	----	--------	--

**Exhibit B. Responsibility Matrix**

The Incorporated County of Los Alamos, RFP NO: 17-32, RFP Name: AMI  
Attachment VII: Responsibility Matrix

This table shows the division of responsibilities between Los Alamos County Department of Public Utilities - and the selected Supplier. For all tasks, it shall be assumed that the responsible party will lead, while the other party will assist or support. In the table, “Supplier” refers to the selected vendor. Please respond “yes” or “no” in the appropriate space below depending on whether Supplier's quoted offering is in compliance with the responsibilities as listed. Please provide any clarifications or explanations in the "Supplier Comments" column where

DO NOT EDIT THESE COLUMNS				RESPOND IN THESE COLUMNS		
#	Description	Supplier Responsibility	Los Alamos	Comply		Supplier Comments
				Yes	No	
1	Configure, install, and test the AMI hardware and software (the “Master System”) and deliver the combined hardware and software to the Purchaser’s office.	X		Yes		
2	Provide meters, modules, and metering transport equipment for deployment. Ship equipment to Purchaser’s designated locations.	X		Yes		
3	Train Purchaser’s personnel and Contractors on how to properly install the equipment and use and navigate the Master System for all defined software functionality.	X		Yes		
4	Install all Electric Residential Meters and Gas Modules.	X		Yes		
5	Install meters/modules and/or retrofit designated three-phase meters with Supplier’s provided AMI transponders in the field.		X	Yes		
6	Install meters/modules and/or retrofit designated water services with Supplier’s provided AMI transponders in the field.	X	X	Yes		
7	Provide training and education to Purchaser personnel or designated representatives, for installation of all hardware and operation of Supplier’s System.	X		Yes		
8	Provide ongoing project and technical support as mutually agreed in future discussions and as set forth in Contract documents.	X		Yes		
9	Complete System Acceptance Testing (SAT) at Purchaser’s site.	X	X	Yes		
10	Ensure that all defined AMI system functionality performs according to compliance statements provided in Supplier’s RFP response, including submitted product brochures, requirements documents, critical questions and other information presented by the Supplier RFP, and that said functionality is tested as part of the SAT.	X		Yes		
11	Install collectors, repeaters, base station equipment or other AMI transport equipment for Phase I (Initial Deployment Area) <i>(Please clarify per equipment type in "Supplier Comments" Column I.)</i>	X	X	Yes		AMI collector will be installed per location on propagation study, each Sensus M400 Basestation to collect meter data from Smartpoints installed by supplier on Gas, Water and Electric meters identified in Phase I of the RFP.
12	Complete detailed wireless collector system design and install Supplier-provided AMI transport equipment.	X		Yes		
13	Meet Coverage Commitment for five (5) years from the date that 95% of electric AMI meters are installed and have associated with the AMI master system.	X		Yes		The system is designed for 99.5% coverage for the meter locations supplied by the owner for the Propagation Study.
14	For the tower based AMI vendors, provide towers or poles and install cabling and install antennas to the tower/pole structure.		X	Yes		

This table shows the division of responsibilities between Los Alamos County Department of Public Utilities - and the selected Supplier. For all tasks, it shall be assumed that the responsible party will lead, while the other party will assist or support. In the table, “Supplier” refers to the selected vendor. Please respond “yes” or “no” in the appropriate space below depending on whether Supplier’s quoted offering is in compliance with the responsibilities as listed. Please provide any clarifications or explanations in the "Supplier Comments" column where

DO NOT EDIT THESE COLUMNS				RESPOND IN THESE COLUMNS		
#	Description	Supplier Responsibility	Los Alamos	Comply		Supplier Comments
				Yes	No	
15	Transport (and cost of transport) for any AMI collector, antenna, cabinets, or other collector/base station equipment to the field location where the installation will be completed.	X		Yes		
16	Connect Master System in Purchaser's main office to the third-party communications system.		X	Yes		
17	Provision an adequate communication circuit between each AMI take-out point containing Supplier-provided equipment to Purchaser’s data center where Supplier-provided Master System is located.		X	Yes		
18	Provide support to the Purchaser upon request as the AMI Master System is integrated to the Purchaser’s software systems as listed in the RFP (e.g. CIS, OMS, MDMS) including support for MultiSpeak Use Cases and Methods lists in the RFP and attachments as well as direct ODBC connectivity to Supplier's databases as required.	X		Yes		
19	Provide software integration services between the AMI and other systems. Please comment on assumed vendor responsibilities for integration to systems such as an OMS, CIS, etc.	X	X	Yes		
20	Support MultiSpeak methods and web service communications as defined in the RFP.	X		Yes		

## **Exhibit C. System Functionality Requirements and Specifications**



The Incorporated County of Los Alamos, RFP NO: 17-32, RFP Name: AMI

Attachment V: AMI Requirements

SUPPLIER RESPONSE INSTRUCTIONS: This document contains a list of functional and technical specifications or requirements. Please respond “yes” or “no” in the appropriate space below depending on whether your system is in compliance with the specification. In all cases, provide a brief commentary describing how your system complies or does not comply. If your system is in partial compliance, please provide an explanation and, if appropriate, offer an alternative.

**Note to bidders: Your responses to these Requirements are binding and take precedence over any and all bid and contracting documents. The selected Supplier will be in breach of contract if Supplier’s response indicates compliance but the System is determined to not be in compliance during System Acceptance Testing.**

AMI Requirements		Supplier Response Fields					
No.	Product Attributes	Comply	Partially Comply/Exception	Do Not Comply	Included in Base Bid	Option with Additional Cost	Vendor Comments
Mandatory Requirements							
1	The bidder must provide (or contract) installation of all Electric Residential Meters and Gas Modules. Water modules and Electric Commercial sites will be performed by Los Alamos.	Yes			Yes		
2	All meter and module installers must obtain and hold an EL-1 license in the state of New Mexico.	Yes					
AMI Master System and Integration							
3	The AMI master system must support all MultiSpeak 3.x/4.x AMI use cases for integrations with other enterprise applications as listed in Appendix VII. Note, if any additional costs are required to comply with all MultiSpeak 3.x/4.0 AMI use cases then they must be quoted in the Pricing section.		Yes			Yes	The FlexNet AMI master system supports MultiSpeak 3.0 and 4.1 Application Programming Interfaces (APIs). MultiSpeak web services are available for meter reading, customer billing and outage management, meter management, and meter lifecycle functions as noted in Attachment VII. Sensus has developed interfaces that meet more than 90% of our customer's API needs. Should additional API calls be needed, Sensus will prioritize development to meet integration needs. Sensus has noted all supported API calls (using MultiSpeak 3.0 or 4.1). These items have been priced as part of the integration portion in Attachment VI - Pricing schedule. All other API calls would require a scoping exercise to determine the scope of work and additional pricing.
4	The AMI master system must support a flat file upload of metering data into the CIS, MDMS, etc.	Yes			Yes		
5	The AMI master database is preferred to be an SQL relational database system.	Yes			Yes		
6	The system must have current production integrations with the Purchaser's Planned ERP System - Tyler Munis. Please list locations where your AMI system is in production with a Tyler Munis ERP. Starting July 2018, Tyler Munis will be the system of record and is the preferred up front integration. If there are no current existing integrations, one is expected to be in place and working before the July 2018 date.	Yes			Yes		Sensus recommends using standards based interfaces provided by the RNI for integrating with Los Almos's back-end systems including Tyler Munis ERP. Sensus RNI supports Multispeak v3.0 and v4.1 standard and a flat-file based VFLEX for integration with the Sensus Analytics. The latest available Sensus RNI release support an exhaustive list of MultiSpeak interfaces for Meter Life-cycle, On-Demand Read, Remote Connect/Disconnect for integration with the ERP system. The ERP system being the System of Record will get the service Add/Remove/Exchange updates and in turn propagate these updates to RNI and Sensus Analytics via the above mentioned interfaces. The Sensus Professional Services team is well versed in the integration of FlexNet with other third-party platforms and systems and they will work with Los Alamos Business stakeholders to understand the requirements for migration of CIS and implement the appropriate interfaces to get these systems working together.

AMI Requirements		Supplier Response Fields					
7	Until the full go-live date to the Tyler Munis ERP, the system must have current production integrations with the Purchaser's Customer Information and Billing System - Cayenta (V7.6). Please list locations where your AMI system is in production with a Cayenta CIS. Please list all other current CIS integrations as well.	Yes				Yes	To date, all integrations to Harris' Cayenta have been in conjunction with either Harris MeterSense MDMS, or Sensus Logic MDMS. Logic MDMS and AMI Master System pairing is fully functional. Customers who use the Logic MDMS, are provided with many additional system capabilities. The Logic solution is an additional cost beyond the AMI Master System. The following customers currently use Harris Cayenta CIS, and we have integrated the AMI Master System and MDMS platforms with this system for the following customers: * Bryan Texas Utilities * Jackson, MS * Mid-West Energy Sensus FlexNet has been integrated with many types of solutions, including but not limited to the following CIS vendors: * NISC * SEDC * SmartGrid CIS * Allete CIS * Harris Utilities * eMeter * *Oracle * Siemens
8	The AMI master system base bid shall be a hosted-based solution. Please indicate in the comments if a hosted-based option is presently available, and if so, please provide a cost for a hosted-based AMI Master. Also provide optional pricing for premised based installations. See Pricing Attachment.	Yes				Yes	
9	What is the default recording (capturing of intervals) and reporting (frequency of sending data) intervals use in the residential and commercial end points. This includes all electric, water, and gas meters. Also state the minimum recording and reporting intervals your proposed solution is capable of.	Yes				Yes	<p>For water and gas meters, the default is hourly meter readings (capturing of intervals), with transmissions to the head end system every four hours. The 20-year battery warranty is based on this default setting for water and gas SmartPoint communication modules.</p> <p>For water and gas meters, the minimum recording interval is 15 minutes, with hourly transmissions.</p> <p>There is no default setting for electric meters. The load profile data interval length and transmission frequency specified by Los Alamos for electric meters is programmed into the meter at the factory. Typically, electric meters are configured for hourly reads with transmissions of data every four hours. For electric meters, the minimum recording interval is one minute with 5 minute transmissions.</p> <p>Note: The propagation study and network design is based on the data collection and transmission intervals required by Los Alamos. This must be considered for the final network design needed to meet Los Alamos network performance requirements.</p>
10	The AMI master system must have the flexibility to provide electric/water/gas meter readings over both the proprietary AMI system and other AMI network technologies/options for remote areas. Please state all other AMI network options currently available and on the roadmap.				Do not Comply		See Appendix A-1
11	Supplier must state the locations of any meters that are assumed to be accessed with other AMI backhaul solutions (Cellular, Wi-Fi, Etc.)	Yes					The FlexNet Solution does not rely on any cellular or public-based networks for communication.





AMI Requirements		Supplier Response Fields				
17	The system should be able to interface with at least two solid state meter manufacturers for each meter form factor. Please list the meter used in the base pricing <i>as well as all other meter manufacturers supported</i> .	Yes			Yes	Ferguson/Sensus is quoting the Sensus Stratus meter for Form 2S (class 200) residential applications. For other single phase and network forms, Ferguson/Sensus is quoting the Aclara I-210+c meter. The I-210+c meter is available in forms 1S, 2S, 3S, 4S, 12S, and 25S. Sensus’ iConA meter is also available in the same Forms as the I-210+c.  For polyphase service, Ferguson/Sensus is quoting Honeywell’s A3 ALPHA meter for all meter forms. The Aclara kV2c meter is also supported. Available forms are 1S, 2S, 3S, 4S, 9S (8S, 10S), 12S (13S), 16S (14S, 15S), 16S (14S, 15S), 25S, 35S (5S, 45S), and 36S (6S, 46S)
18	When the system is set up to bring back metering data once per hour, the system must be able to capture and report the 15-minute interval for each of the four 15-minute intervals for each hourly read.	Yes			Yes	The read interval and transmission interval can be programmed independently. Interval data with one hour transmissions is a valid and common configuration.
19	The System should record Net Metering information in at least four (4) definable time periods assuming the proposed meter is used.	Yes				Net metering is supported in each TOU tier for all quoted meters.
99 20	The System should provide the capability for remote demand reset. This should be able to be done individually, in groups, or system-wide.	Yes			Yes	The FlexNet Head End System is capable of initiating demand reset actions to all FlexNet-enabled meters, including the Sensus Stratus and iConA, Aclara I-210+c, Aclara kV2c EPS, and Elster ALPHA A3 meters. Demand resets can be initiated via the head end system user interface and MultiSpeak. The MultiSpeak interface enables the MDM or CIS system to manage the schedule. The demand reset action can reset individual meters or a list of meters.
21	Meter module maintains existing firmware image until firmware updated passes Cyclical Redundancy Check or other test of successful update.	Yes			Yes	The FlexNet AMI Master System supports remote upgrades for an individual meter or groups of FlexNet-enabled meters. For firmware upgrades, Sensus uses a total replacement approach. Updates to the AMI modules are performed over a period of time when the code is transmitted to the AMI modules via packets. As each packet arrives, the Cyclic Redundancy Check (CRC) is validated before being stored in memory. Once validated, the packet is loaded into a secondary bank of memory. The FlexNet AMI Master System queries the module to determine whether all required packets have arrived. If packets are missing, they are retransmitted. Once all of the packets are transmitted, the AMI module verifies the 32-bit CRC of the entire firmware or software upgrade to ensure the integrity of the new code. After the code is verified, the AMI Master System issues a command with the Cipher Block Chaining Message Authentication Code (CBC-MAC) signature to the AMI module to execute the new firmware update

AMI Requirements		Supplier Response Fields					
22	The AMI module shall have a built-in temperature sensor that automatically reports meter/module temperatures above a user-configurable threshold.	Yes			Yes		<p>The Sensus Stratus meter contains two temperature sensors. One is located at the base of the meter on the metrology board, and the other is on the FlexNet module board at the top of the meter. Having two temperature sensors allows the Sensus meter to make smarter temperature decisions. Meters having only one sensor at the top of the meter can be affected by the sun’s rays to generate false readings. The meter offers the following features:</p> <p>➤ High Temperature Alarm: sent when the meter reaches a programmable temperature. The alarm is sent 6 times, 5 seconds apart to ensure the utility is notified.</p> <p>➤ For supporting fast events, the meter monitors the rate of change of the metrology temperature and the difference between the two sensors If the rate is high enough, and the metrology temperature is much higher than the FlexNet temperature, the thresholds are reduced. This causes the meter to react more quickly to rapid changes in temperature.</p> <p>➤ Temperature Auto Open: for meters equipped with a service switch, the meter can be set to automatically open the service switch when a temperature threshold is achieved. The meter will send alarms for this condition alerting the utility that the meter opened automatically due to high temperatures. This is an optional feature that can be enabled or disabled.</p> <p>All third-party meters (Elster A3 ALPHA, Aclara kV2c EPS, and Aclara I-210+c)</p>
Electric Disconnect & Reconnect							
23	The proposed System should be capable of operating an electric meter with an underglass disconnect. Please indicate what meters in your bid come with an underglass disconnect.	Yes			Yes		The system can operate meters with an under the-glass-disconnect switch. The Sensus iConA and GE I210+c residential meters have optional 200-amp under-glass disconnect switches.
10024	The proposed System should have a customer arming feature for use after a remote reconnect.		Yes		Yes		<p>The Stratus and iConA meters provide an optional arm for connect feature. The SmartPoint communication module receives a command from a FlexNet Base Station to arm for connect, but not close the disconnect switch. The customer must use a standard infrared remote control to close the switch.</p> <p>The Aclara I-210+c meter provides a remote disconnect option; however arm for customer reconnect is not supported.</p>
Demand Response and Home Automation							
25	The AMI master system must be able to communicate to a Wi-Fi based load management device over a broadband based connection.			Do Not Comply			The Sensus AMI Master System communicates with the Load Control Modules via the FlexNet Protocol. We have many customer today with fully deployed Load Control Solutions we are happy to discuss in more detail.
Distribution Automation							
26	The AMI system should be able to communicate with electric field equipment, such as: a. Fault indicators b. Downline IEDs	Yes				Yes	<p>Sensus’ DA solution is currently used by more than 200 electric utilities and was first implemented over 16 years ago. The Remote Telemetry Module (RTM II™ and RTM II+) mounts inside a DA device cabinet and is less than 300 cubic inches. The RTM II provides a dual RS232 serial interface and the RTM II+ has an Ethernet, an RS232, and an RS485 serial interface. Required source voltage is 12-24 VDC, 70 mA typical, and 0.6 A max (&lt; 0.5 sec.) for devices installed inside DA device cabinets. The RTM II and RTM II+ modules are also available as 120 VAC powered modules mounted in a NEMA 3R box. Sensus has other optional self-enclosed units that are NEMA 3R rated and can be installed next to DA devices. Please refer to the following Appendices to view technical specifications for these devices.</p> <p>• XX_Sensus NaviComm.pdf • XX_Sensus T866 MicroRTU.pdf • XX_Sensus TC032 MicroRTU.pdf • Sensus Distribution Automation (DA) delivers cost-effective two-way wireless FlexNet communications and control solutions for a wide range of DA, enhancing power delivery, reliability, and efficiency applications, including the following:</p> <p>• Recloser controller communications to enable better voltage optimization</p> <p>• Capacitor bank controllers to improve distribution grid efficiency</p> <p>• Automated</p>

AMI Requirements					Supplier Response Fields					
27	DA interface modules with RS-232 serial communication ports are required.				Yes				Yes	The Sensus RTM II+ smart communication gateway provides an RS-232 interface that can support concurrent asynchronous message control needed for remote configuration tool access
28	DA interface modules with Ethernet communication ports are required.				Yes				Yes	The Sensus RTM II+ smart communication gateway provides an Ethernet port for direct DNP 3.0 communications to the customer’s distribution devices
29	If a proprietary AMI communication protocol, it must be converted to DNP3 by the DA interface module.				Yes				Yes	Sensus’ Distribution Automation solution including AutomationControl software, FlexNet infrastructure, and DA endpoints all communicate using DNP 3.0 protocol
AMI System Security										
30	The proposed AMI System should fully comply with the latest version of the UCAIug UtiliSec AMI-SEC AMI System Security Specification. This specification can be found here: <a href="http://osgug.ucaiug.org/utilisec/amisec/default.aspx">http://osgug.ucaiug.org/utilisec/amisec/default.aspx</a>				Yes			Yes		Sensus has mapped each of the FlexNet components to the AMI-SEC security domains according to the AMI Security Profile version 2.0. Sensus complies with each of the document requirements
31	Any portion of the AMI system that uses wireless as a means of communication between AMI system components must use encryption. This should include all portions of the AMI system including AMI Communication Backhaul System, Home Area Network (HAN), and Neighborhood Area Network (NAN). The encryption standard should be AES-128 or greater.				Yes				Yes	Information confidentiality is a key concern for Sensus and our customers. Sensus protects information from end to end through the system through encrypted communications across the FlexNet network. This encryption provides the confidentiality of the bi-directional communications between the endpoints and AMI Master System. Communications are encrypted at the endpoint/AMI Master System using the AES algorithm with a 256 bit key. The communications remain encrypted across the network to the AMI Master System/endpoint, where it is decrypted, thus protecting information across the IP and RF networks. In addition, to protect system level communications (SNMP, Syslog) from the base station, Sensus provides an SSL VPN component to encrypt unsecured communications from the base station to the AMI Master System. This allows the transmission of unsecure protocols across the public IP backhaul network. To protect the confidentiality of communications for user and system interfaces with the AMI Master System, Sensus has implemented SSL encryption. This secures confidential interfaces for access to the AMI Master System for users and system APIs
32	During deployment of the AMI system, AMI Collectors should be programmed with non-routable IP addresses according to the Purchaser's private corporate LAN-WAN IP addressing scheme.				Yes				Yes	Sensus' AMI Collectors support both private and public IP Address routing.
33	The System must have the capability to comply with current NIST standards for information security, as delineated in NISTIR 7628.				Yes				Yes	See Appendix A-3
34	The vendor must be able to demonstrate the use of secure software development practices in compliance with NIST SP800-64.				Yes				Yes	In order to implement our strategy of threat assessment and risk mitigation, Sensus has developed a Security Development Lifecycle (SDL) program based on NIST SP800-64 to ensure that our strategy is implemented at every step of our design, development, testing, and implementation. Through this program, the Sensus security team drives the security strategy from the beginning. During the design phase of product development, security requirements are created based on the threat, risk assessment, and mitigation model described above. These security requirements are addressed through the development process using a number of security controls as dictated by the security requirement (e.g. confidentiality of communication using strong, standards-based encryption mechanisms). Once the development phase is complete, the security requirement is passed to the QA team. Sensus maintains a dedicated security test team to ensure the security requirement is met and the functionality of the system is not impacted. In addition, this team also provides a checkpoint to ensure the requirement addresses the original risk identified by the security team. Finally, through the implementation team, the product is <del>deployed in a secure manner with the security requirements being met</del>
35	The system must be able to accommodate firewall traversal to support being located on a different firewall interface from other integrated systems to support the recommended architecture of NIST SP800-82.				Yes				Yes	Sensus recommends the use of commercial firewalls and DMZ networks to segment the components of the AMI Master System to provide separation and protection of critical resources
36	The System shall automatically terminate orphaned sessions and not support session resume (for non-local network connections).				Yes				Yes	All Sensus components support the ability to time out sessions and force authentication on these sessions or other orphaned sessions

AMI Requirements		Supplier Response Fields				
37	The system must be able to support NIST's Roles Based Access Control (RBAC) model for application accounts.	Yes			Yes	Sensus provides strong authentication mechanisms in the AMI Master System through a local LDAP authentication store included in the AMI Master System software. Another option is the ability to integrate into an organization's existing LDAP/Active Directory authentication store. This provides a robust authentication solution for a broad range of deployment options. The AMI Master System also provides role-based access to ensure separation of duty and restriction of access to critical functions. This provision allows a granular level of access control for the various roles required by complex organizations. The system has a default configuration of a variety of pre-defined roles with various levels of permission (Administrator, Read-Write, Read-Only, etc.) and can be further customized by the customer.
38	The system must have an account permissions architecture to support Sarbanes-Oxley and PCI requirements.	Yes				Sensus systems do not contain any data that would apply to SOX or PCI. We provide compliance with NERC CIP, AMI-SEC, NIST 800-53, and other utility industry-specific standards compliance. These standards include best practices such as firewalls, IDS/IPS, authentication, authorization, and encryption used to protect sensitive data
39	The Supplier must describe any additional security-related functionality that is included and/or recommended with their proposed solution.	Yes			Yes	See Appendix A-4

**Exhibit D. Sensus Software as a Service/Spectrum and Technical Support Agreement**



# EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

**Software as a Service/Spectrum and Technical Support Agreement**  
**("Agreement")**  
**Between**  
**The Incorporated County of Los Alamos**  
**("Customer")**  
**And**  
**Sensus USA Inc.**  
**("Sensus")**

IN WITNESS WHEREOF, for and in consideration of the premises and the covenants contained herein, the parties have caused this Software as a Service/Spectrum and Technical Support Agreement ("Agreement") to be executed by their duly authorized representatives as of the day and year written below. The date of the last party to sign below is the "Effective Date."

This Agreement shall commence on the Effective Date and continue for/until: four (4) year ("Initial Term"). At the end of the Initial Term, this Agreement shall automatically renew for up to an additional three (3) terms of one (1) year each (each a "Renewal Term") unless terminated in writing by Customer, pursuant to Chapter 31 §111 of Los Alamos County Code of Ordinance, at least sixty (60) days before the end of the Renewal Term. It is intended that the Agreement be a multiterm contract in accordance with the provisions of Chapter 31 §111 of Los Alamos County Code of Ordinance and shall be construed to comply with that Section. The "Term" shall refer to both the Initial Term and each Renewal Term.

It is understood and agreed by the parties hereto, that Sensus is a supplier of Ferguson, Inc., a Sensus authorized distributor, in the implementation of the advanced metering infrastructure project with the Customer. All fees and costs relating to the Customer's usage rights for Sensus' Software as a Service and Technical Support services are set forth in the agreement between Sensus and Ferguson, Inc.

This Agreement contains two parts. Part (1) is the FCC Notification for Spectrum Manager Lease, to be filed with the FCC by Sensus on behalf of Customer and Part (2) is a Software as a Service /Spectrum and Technical Support Agreement between Sensus and Customer. Together, these two parts create the Agreement.

<b>Sensus USA, Inc.</b>	<b>Incorporated County of Los Alamos</b>
<hr/>	<hr/>
Name/Title	Timothy Glasco, P.E., Utilities Manager
<hr/>	<hr/>
Date	Date
	Approved as to Form:
	<hr/>
	J. Alvin Leaphart, County Attorney

**Contents of this Agreement:**

Part 1: Notification for Spectrum Manager Lease

Part 2: Software as a Service/Spectrum

Exhibit A Software

Exhibit B Technical Support

**Part 1: Notification for Spectrum Manager Lease**

In order for Sensus to apply to the FCC on the Customer's behalf for a spectrum manager lease, Customer must complete the information below in boxes one (1) through ten (10) and certify via authorized signature. Customer's signature will indicate that Customer authorizes Sensus to file the spectrum manager lease notification on FCC Form 608 with the Customer as spectrum Lessee, and if Customer does not already have one, ownership disclosure information on FCC Form 602.

**1.**

<b>Customer/Lessee Name:</b>		
<b>Attention To:</b>		<b>Name of Real Party in Interest:</b>
<b>Street Address:</b>		<b>City:</b>
<b>State:</b>	<b>Zip:</b>	<b>Phone:</b>
<b>Fax:</b>	<b>Email:</b>	

Is Customer contact information same as above? ☐ Yes ☐ No (If No, complete box 2 below)

**2.****Additional Customer/Lessee Contact Information**

<b>Company Name:</b>		
<b>Attention To:</b>		
<b>Street Address:</b>		<b>City:</b>
<b>State:</b>	<b>Zip:</b>	<b>Phone:</b>
<b>Fax:</b>	<b>Email:</b>	

**3.**

Customer/Lessee is a(n) (Select one): <input type="checkbox"/> Individual   <input type="checkbox"/> Unincorporated Association   <input type="checkbox"/> Trust <input type="checkbox"/> Government Entity   <input type="checkbox"/> Corporation   <input type="checkbox"/> Limited Liability Company   <input type="checkbox"/> General Partnership <input type="checkbox"/> Limited Partnership   <input type="checkbox"/> Limited Liability Partnership   <input type="checkbox"/> Consortium   <input type="checkbox"/> Other _____	
---	--

**4.**

<p><b>FCC Form 602:</b> FCC File Number of Customer's Form 602 Ownership Information: _____. If Customer has not filed a Form 602, Sensus will file one for Customer. Please complete questions 5, 6, and 7 below if Customer does <u>not</u> have a Form 602 on file.</p> <p>Customer must complete items 8, 9 and 10 irrespective of whether Customer has an ownership report on file.</p>
--

**5.**

<b>Customer Tax ID:</b>
-------------------------

**6.****Individual Contact For FCC Matters**

Please designate one individual (the Director of Public Works or similar person) who is responsible to the FCC for the operation of the FlexNet radio system.	
Name	
Title:	
Email:	Phone:

**7.****Ownership Disclosure Information**

# EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

If Customer/Lessee is a government entity, list the names of the Mayor and all Council Members below, as well as verify citizenship and ownership interests in any entity regulated by the FCC. Such ownership must be disclosed where a mayor/council member owns 10% or more, directly or indirectly, or has operating control of any entity subject to FCC regulation. If any answer to Ownership question is Yes, or any answer to Citizenship question is No, provide an attachment with further explanation.

	US Citizen?	Ownership Disclosure?
Mayor:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Council Member:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

8.

**Alien Ownership Questions** (if the answer is Yes, provide an attachment explaining the circumstances)

1) Is the Customer/Lessee a foreign government or the representative of any foreign government?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

9.

## Basic Qualification Information

1) Has the Customer or any party to this application had any FCC station authorization, license, or construction permit revoked or had any application for an initial, modification or renewal of FCC station authorization, license or construction permit denied by the Commission?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2) Has the Customer or any party to this filing, or any party directly or indirectly controlling the Customer or any party to this filing ever been convicted of a felony by any state or federal court?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3) Has any court finally adjudged the Customer or any party directly or indirectly controlling the Customer guilty of unlawfully monopolizing or attempting to unlawfully monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement, or any other means or unfair methods of competition?	<input type="checkbox"/> Yes <input type="checkbox"/> No

10.

## Customer/Lessee Certification Statements

1) The Customer/Lessee agrees that the Lease is not a sale or transfer of the license itself.	<input type="checkbox"/> Yes
2) The Customer/Lessee acknowledges that it is required to comply with the Commission's Rules and Regulations and other applicable law at all times, and if the Customer/Lessee fails to so comply, the Lease may be revoked, cancelled, or terminated by either the Licensee or the Commission.	<input type="checkbox"/> Yes
3) The Customer/Lessee certifies that neither it nor any other party to the Application/Notification is subject to a denial of Federal benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C § 862, because of a	<input type="checkbox"/> Yes

# EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

conviction for possession or distribution of a controlled substance ( <i>See</i> Section 1.2002(b) of the rules, 47 CFR § 1.2002(b), for the definition of “party to the application” as used in this certification.)	
4) The Customer/Lessee hereby accepts Commission oversight and enforcement consistent with the license and lease authorization. The Lessee acknowledges that it must cooperate fully with any investigation or inquiry conducted either by the Commission or the Licensee, allow the Commission or the Licensee to conduct on-site inspections of transmission facilities, and suspend operations at the direction of the Commission or the Licensee and to the extent that such suspension of operation would be consistent with applicable Commission policies.	<input type="checkbox"/> Yes
5) The Customer/Lessee acknowledges that in the event an authorization held by a Licensee that has associated with it a spectrum leasing arrangement that is the subject of this filing is revoked, cancelled, terminated, or otherwise ceases to be in effect, the Customer/Lessee will have no continuing authority to use the leased spectrum and will be required to terminate its operations no later than the date on which the Licensee ceases to have any authority to operate under the license, unless otherwise authorized by the Commission.	<input type="checkbox"/> Yes
6) The Customer/Lessee agrees the Lease shall not be assigned to any entity that is not eligible or qualified to enter into a spectrum leasing arrangement under the Commission’s Rules and Regulations.	<input type="checkbox"/> Yes
7) The Customer/Lessee waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by spectrum lease or otherwise.	<input type="checkbox"/> Yes
8) The Customer/Lessee certifies that it is not in default on any payment for Commission licenses and that it is not delinquent on any non-tax debt owed to any federal agency.	<input type="checkbox"/> Yes

**The Customer/Lessee certifies that all of its statements made in this Application/Notification and in the schedules, exhibits, attachments, or documents incorporated by reference are material, are part of this Application/Notification, and are true, complete, correct, and made in good faith. The Customer/Lessee shall notify Sensus in writing in the event any information supplied on this form changes.**

<b>Incorporated County of Los Alamos</b>			
By:		Title:	
Name:		Date:	
<b>FAILURE TO SIGN THIS APPLICATION MAY RESULT IN DISMISSAL OF THE APPLICATION AND FORFEITURE OF ANY FEES PAID.</b>			
<small>WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ANY ATTACHMENTS ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. Code, Title 18, Section 1001) AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. Code, Title 47, Section 312(a)(1)) AND/OR FORFEITURE (U.S. Code Title 47, Section 503).</small>			

## Part 2: Software as a Service/Spectrum

### 1. Equipment.

- A. **Purchase of Equipment.** Customer shall purchase all Field Devices, RF Field Equipment, and other goods (collectively, "Equipment") from Sensus' authorized distributor pursuant to the terms and conditions (including any warranties on such Equipment) agreed by Customer and Sensus' authorized distributor. This Agreement shall not affect any terms and conditions, including any warranty terms, agreed by Customer and Sensus' authorized distributor. If Customer elects to purchase any equipment or services directly from Sensus, or if Customer pays any fees or other costs to Sensus, then Sensus' Terms of Sale shall apply. The "Terms of Sale" are available at: <http://na.sensus.com/TC/TermsConditions.pdf>, or 1-800-METER-IT.
- B. **First Article Testing.** Where applicable, prior to manufacture of full order of FlexNet electric meters and/or modules, Sensus shall manufacture and deliver four (4) samples, or other Customer-designated quantity not to exceed twelve (12), (the "First Articles") of each electric meter and/or module ordered to Customer to ensure that the meter and/or module meets the Customer's Requirements Documentation. Following Customer acceptance of the First Articles in accordance with Sensus' first article policy, Sensus will commence manufacture of the applicable meters and/or modules. As used herein, Requirements Documentation shall mean the meter order packet, nameplate definition and approval, manufacturing data file, specific metrology configuration, specific FlexNet configuration, and labeling information. This provision shall apply whether the Customer orders meters directly from Sensus or Sensus' authorized distributor.
- C. **THERE ARE NO WARRANTIES IN THIS AGREEMENT, EXPRESS OR IMPLIED. SENSUS EXPRESSLY DISCLAIMS ANY AND ALL REPRESENTATIONS, WARRANTIES AND/OR CONDITIONS, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE, REGARDING ANY MATTER IN CONNECTION WITH THIS AGREEMENT, INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, NON-INFRINGEMENT AND TITLE.**

### 2. Services.

- A. **Installation of Equipment.** Installation services will be as agreed between the Customer and Sensus' authorized distributor. Sensus will not provide installation services pursuant to this Agreement.
- B. **Software Implementation.** Sensus shall install and configure the Software on the Server Hardware.
- C. **IT Systems Integration Services.** Sensus shall provide systems integration services for the AMI System and meter data management ("MDMS") software described in the Statement of Work between the Customer and Sensus' authorized distributor.
- D. **Technical Support.** Sensus shall provide Customer with Technical Support as set forth in Exhibit B.
- E. **Project Management and Training.** Sensus shall provide project management and training related to the deployment and operation of the AMI System as described in the Statement of Work between the Customer and Sensus' authorized distributor.

### 3. Software.

- A. **Software as a Service ("SaaS").** Sensus shall provide Customer with Software as a Service, as defined in Exhibit A, only so long as Customer is current in its payments for such services to Sensus' authorized distributor.
- B. **UCITA.** To the maximum extent permitted by law, the Parties agree that the Uniform Computer Information Transaction Act as enacted by any state shall not apply, in whole or in part, to this Agreement.

### 4. Spectrum.

- A. **Definitions in this Section 4.** In this Section 4 only, "Sensus" shall mean Sensus USA Inc. and its wholly owned subsidiary, Sensus Spectrum LLC.
- B. **Spectrum Lease.** Sensus hereby grants to Customer, and Customer accepts, a spectrum manager lease ("Spectrum Lease") over the frequencies of certain FCC license(s) ("FCC License") solely within Customer's Service Territory. (The frequencies of the FCC License within Customer's geographic Service Territory are called the "Leased Spectrum"). Customer shall pay the Ongoing Fees for use of the Leased Spectrum.
- C. **FCC Forms.** At the Federal Communications Commission (FCC), Sensus will; (1) obtain an FCC Registration Number (FRN) for Customer; (2) submit on behalf of Customer the FCC Form 602 Ownership Disclosure Information if Customer has not already done so; and (3) file a FCC Form 608, notification/application for long-term spectrum manager lease. This Lease becomes effective when the FCC accepts the FCC Form 608.
- D. **Lease Application.** In order to complete the FCC lease application, Customer will promptly:
  - i. Complete and sign the representations in Part 1 of this Agreement such that Customer demonstrates it qualifies for a spectrum lease under FCC rules. Customer's signature will indicate that Customer authorizes Sensus to; (1) obtain an FRN on behalf of Customer; (2) submit the FCC Form 602 Ownership Disclosure Information on behalf of Customer if Customer has not already done so; and (3) file the spectrum manager lease notification on FCC Form 608 with the Customer as spectrum lessee.
  - ii. Give Sensus the coordinates of the boundaries of Customer's Service Territory or, alternatively, approve Sensus' estimation of the same.
  - iii. If Customer has not already done so; Customer hereby authorizes Sensus to apply on Customer's behalf and obtain for Customer a Federal Registration Number (FRN, the FCC's unique identifier for each licensee) and shall supply Sensus with Customer's Taxpayer Identification Number (TIN).
  - iv. Provide any other information or other cooperation reasonably necessary for the Parties to perform as set forth herein.
- E. **Permitted Use of Spectrum Lease.** Customer may transmit or receive over the Leased Spectrum only in the Service Territory and only using FlexNet equipment manufactured by Sensus and used in accordance with Sensus' specifications. Customer may use the Leased Spectrum only to read and direct meters in support of Customer's primary utility business or any other operation approved by Sensus in writing. Without limiting the foregoing, Customer is prohibited from reselling, subleasing or sublicensing the Leased Spectrum or from transmitting voice communications over the Leased Spectrum. For each piece of RF Field Equipment used by Customer, Customer shall affix a Sensus-supplied label to the exterior of the RF Field Equipment cabinet or other appropriate visible place to indicate that RF operation is conducted under authority of FCC License(s) issued to Sensus.
- F. **Term of Spectrum Lease.** Unless terminated earlier (because, for example, Customer stops using the FlexNet equipment or because this Agreement terminates or expires for any reason), this Spectrum Lease will have the same term as the FCC license. If Customer is operating in compliance with this Agreement and is current on any payments owed to Sensus, when the FCC License renews, the Parties will apply to the FCC to renew this Spectrum Lease.
- G. **Termination of Spectrum Lease.** The Spectrum Lease will terminate: (a) two months after Customer stops transmitting with FlexNet equipment manufactured by Sensus; (b) upon termination, revocation or expiration of the FCC License; (c) upon Customer's breach of this Agreement; or (d) upon termination or expiration of this Agreement for any reason.
- H. **FCC Compliance.** The following FCC requirements apply
  - i. Pursuant to 47 CFR 1.9040(a);
    - (a) Customer must comply at all times with applicable FCC rules. This Agreement may be revoked by Sensus or the FCC if Customer fails to so comply;
    - (b) If the FCC License is terminated, Customer has no continuing right to use the Leased Spectrum unless otherwise authorized by the FCC;
    - (c) This Agreement is not an assignment, sale or other transfer of the FCC License;
    - (d) This Agreement may not be assigned except upon written consent of Sensus, which consent may be withheld only for cause; and

## EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

- (e) In any event, Sensus will not consent to an assignment that does not satisfy FCC rules.
  - ii. Referencing 47 CFR 1.9010, Sensus retains *de jure* and *de facto* control over the applicable radio facilities, including that:
    - (a) Sensus will be responsible for Customer's compliance with FCC policies and rules. Sensus represents and warrants that it has engineered the FlexNet equipment and accompanying software and other programs to comply with FCC rules. Customer will operate the FlexNet equipment subject to Sensus' supervision and control and solely in accordance with Sensus' specifications. Sensus retains the right to inspect Customer's radio operations hereunder and to terminate this Agreement or take any other necessary steps to resolve a violation of FCC rules, including to order Customer to cease transmission. Sensus will act as spectrum manager in assigning spectrum under the FCC License so as to avoid any harmful interference or other violation of FCC rules. Sensus will be responsible for resolving any interference complaints or other FCC rule violations that may arise; and
    - (b) Sensus will file any necessary FCC forms or applications and Customer agrees to reasonably assist Sensus with such filing by providing any necessary information or other cooperation. Sensus will otherwise interact with the FCC with respect to this Agreement, the FCC License or FlexNet equipment.
  - I. Interference. Customer agrees to report to Sensus promptly, and in no event later than 72 hours afterward, any incident related to the Leased Spectrum, including where Customer experiences harmful interference, receives a complaint or other notice of having caused harmful interference, or receives any type of communication from the FCC or other government agency regarding radio transmission.
- 5. General Terms and Conditions.
  - A. Intentionally Omitted.
  - B. Limitation of Liability.
    - i. Sensus' aggregate liability in any and all causes of action arising under, out of or in relation to this Agreement, its negotiation, performance, breach or termination (collectively "Causes of Action") shall not exceed the total amount paid by Customer to Sensus' authorized distributor for Sensus Services and Software as a Service under this Agreement. This is so whether the Causes of Action are in tort, including, without limitation, negligence or strict liability, in contract, under statute or otherwise. As separate and independent limitations on liability, Sensus' liability shall be limited to direct damages. Sensus shall not be liable for: (i) any indirect, incidental, special or consequential damages; nor (ii) any revenue or profits lost by Customer or its Affiliates from any End User(s), irrespective whether such lost revenue or profits is categorized as direct damages or otherwise; nor (iii) any In/Out Costs; nor (iv) manual meter read costs and expenses; nor (v) claims made by a third party; nor (vi) damages arising from main case or bottom plate breakage caused by freezing temperatures, water hammer conditions, or excessive water pressure; nor (vii) damages arising from equipment striking the meter and damaging the meter in any way, over range capacity usage, excessive gas pressure above allowable operating pressure; nor (viii) any damage of any kind, whether to the gas meter or otherwise, arising from the use of gas meters with erosive, corrosive, or potentially freezing liquids or gasses. The limitations on liability set forth in this Agreement are fundamental inducements to Sensus entering into this Agreement. They apply unconditionally and in all respects. They are to be interpreted broadly so as to give Sensus the maximum protection permitted under law.
    - ii. To the maximum extent permitted by law, no Cause of Action may be instituted by the parties more than TWELVE (12) MONTHS after the Cause of Action first arose. In the calculation of any damages in any Cause of Action, no damages incurred more than TWELVE (12) MONTHS prior to the filing of the Cause of Action shall be recoverable.
  - C. Termination. Either party may terminate this Agreement earlier if the other party commits a material breach of this Agreement and such material breach is not cured within forty-five (45) days of written notice by the other party. Upon any expiration or termination of this Agreement, Sensus' and Customer's obligations hereunder shall cease and the software as a service and Spectrum Lease shall immediately cease.
  - D. Force Majeure. If either party becomes unable, either wholly or in part, by an event of Force Majeure, to fulfill its obligations under this Agreement, the obligations affected by the event of Force Majeure will be suspended during the continuance of that inability. The party affected by the force majeure will take reasonable steps to mitigate the Force Majeure.
  - E. Intellectual Property Rights.
    - i. Software and Materials. No Intellectual Property is assigned to Customer hereunder. Excluding Customer Data, Sensus shall own or continue to own all right, title, and interest in and to the Intellectual Property associated with the Software and related documentation, including any derivations and/or derivative works (the "Sensus IP"). To the extent, if any, that any ownership interest in and to such Sensus IP does not automatically vest in Sensus by virtue of this Agreement or otherwise, and instead vests in Customer, Customer agrees to grant and assign and hereby does grant and assign to Sensus all right, title, and interest that Customer may have in and to such Sensus IP. Customer agrees not to reverse engineer any Sensus Products purchased or provided hereunder.
    - ii. Customer Data. Notwithstanding the prior paragraph, as between Customer and Sensus, Customer remains the owner of all right, title or interest in or to any Customer Data. "Customer Data" means solely usage data collected by the Field Devices. To avoid doubt, Customer Data does not include non-End User usage data collected by the Field Devices, Software, or AMI System, such as network and equipment status information or the like.
    - iii. Consent to Use of Customer Data. Customer hereby irrevocably grants to Sensus a royalty-free, non-exclusive, irrevocable right and license to access, store, and use such Customer Data and any other data or information provided to Sensus, to (1) provide the Service; (2) analyze and improve the Service; (3) analyze and improve any Sensus equipment or software; or (4) for any other internal use. As used herein, "Service" means Sensus' obligations under this Agreement.
    - iv. Access to Customer Data. Within 45 days of Customer's written request, Sensus will provide Customer a copy of the previous 24 months CMEP interval file and deliver the file to a drop location specified by Customer.
  - B. Data Privacy. Customer acknowledges that Sensus and its Affiliates (collectively, "Xylem") will collect and process personal data for the purposes outlined in this Agreement. Xylem's data privacy policy is available at <https://www.xylem.com/en-us/support/privacy/>. Customer acknowledges that it has read and understood Xylem's privacy policy and agrees to the use of personal data outlined therein. The collection and use of personal data by Customer is Customer's responsibility.
  - G. Confidentiality. Both parties shall (and shall cause their employees and contractors to) keep all Confidential Information strictly confidential and shall not disclose it to any third party, except to the extent reasonably required to perform and enforce this Agreement or as required under applicable law, court order or regulation. The Confidential Information may be transmitted orally, in writing, electronically or otherwise observed by either party. Notwithstanding the foregoing, "Confidential Information" shall not include: (i) any information that is in the public domain other than due to Recipient's breach of this Agreement; (ii) any information in the possession of the Recipient without restriction prior to disclosure by the Discloser; or (iii) any information independently developed by the Recipient without reliance on the information disclosed hereunder by the Discloser. "Discloser" means either party that discloses Confidential Information, and "Recipient" means either party that receives it. It is understood and agreed by the parties that Customer is a public body subject to disclosure requirements, requests for inspection of public records, and record retention laws and regulations. Sensus agrees to cooperate with Customer to meet applicable regulatory and statutory deadlines in providing such responses under State law related to any documents provided by Sensus to Customer that may be considered public records. Customer shall give written notice to Sensus at the address or fax number specified in the Notice section of the Agreement, of any request for the disclosure of such records, together with a copy of the request. If Sensus does not consent to such disclosure, Sensus shall have sole responsibility for providing the defense against disclosure of such documents. The parties understand and agree that any failure by Sensus to respond within ten (10) business days to the notice from the date such notice is provided by Customer to Sensus, will constructively



authorize the Customer to disclose the documents and any such requested information pursuant to applicable procedures required by the record retention laws and/or regulations.

- H. **Compliance with Laws.** Customer and Sensus shall comply with all applicable country, federal, state, and local laws and regulations, as set forth at the time of acceptance and as may be amended, changed, or supplemented. Customer shall not take any action, or permit the taking of any action by a third party, which may render Sensus liable for a violation of applicable laws.
    - i. **Export Control Laws.** Customer shall, (i) comply with all applicable U.S. and local laws and regulations governing the use, export, import, re-export, and transfer of products, technology, and services; and (ii) obtain all required authorizations, permits, and licenses. Customer shall immediately notify Sensus, and immediately cease all activities with regards to the applicable transaction, if the Customer knows or has a reasonable suspicion that the equipment, software, or services provided hereunder may be directed to countries in violation of any export control laws. By ordering equipment, software or services, Customer certifies that it is not on any U.S. government export exclusion list.
    - ii. **Anti-Corruption Laws.** Customer shall comply with the United States Foreign Corrupt Practices Act ("FCPA"), 15 U.S.C. §§ 78dd-1, et seq.; laws and regulations implementing the OECD's Convention on Combating Bribery of Foreign Public Officials in International Business Transactions; the U.N. Convention Against Corruption; the Inter-American Convention Against Corruption; and any other applicable laws and regulations relating to anticorruption in the Customer's county or any country where performance of this Agreement, or delivery or use of equipment, software or services will occur.
  - I. **Non-Waiver of Rights.** A waiver by either party of any breach of this Agreement or the failure or delay of either party to enforce any of the articles or other provisions of this Agreement will not in any way affect, limit or waive that party's right to enforce and compel strict compliance with the same or other articles or provisions.
  - J. **Assignment and Sub-contracting.** Either party may assign, transfer or delegate this Agreement without requiring the other party's consent; (i) to an Affiliate; (ii) as part of a merger; or (iii) to a purchaser of all or substantially all of its assets. Apart from the foregoing, neither party may assign, transfer or delegate this Agreement without the prior written consent of the other, which consent shall not be unreasonably withheld. Furthermore, Customer acknowledges Sensus may use subcontractors to perform RF Field Equipment installation, the systems integration work (if applicable), or project management (if applicable). Such subcontract shall require Customer's consent which shall not be unreasonably withheld.
  - K. **Amendments.** No alteration, amendment, or other modification shall be binding on the Parties unless agreed to in writing and signed by both Customer and by a vice president (or higher) of Sensus.
  - L. **Governing Law and Dispute Resolution.** This Agreement shall be governed by, construed and enforced in accordance with the laws of the State of New Mexico. Any and all disputes arising under, out of, or in relation to this Agreement, its negotiation, performance or termination ("**Disputes**") shall first be resolved by the Parties attempting mediation in New Mexico. If the Dispute is not resolved within sixty (60) days of the commencement of the mediation, it shall be litigated in the state or federal courts located in New Mexico. TO THE MAXIMUM EXTENT PERMITTED BY LAW, THE PARTIES AGREE TO A BENCH TRIAL AND THAT THERE SHALL BE NO JURY IN ANY DISPUTES.
  - M. **Restriction on Discovery.** The Parties acknowledge the abundance of documents, data, and other information stored in an electronic manner and the time and costs associated with retrieving relevant electronic data from the Parties during the Discovery portion of a claim. Accordingly, the Parties shall utilize only printed or hard-copy documents, data, and other information in Discovery and shall not use or request electronic or e-Discovery methods for any claim, demand, arbitration or litigation subject to this Agreement. All relevant and unprivileged printed or hard-copy materials shall be subject to Discovery, but neither Party has an obligation to maintain printed or hard-copy files in anticipation of a claim, demand, litigation, or arbitration proceeding.
  - N. **Survival.** The provisions of this Agreement that are applicable to circumstances arising after its termination or expiration shall survive such termination or expiration.
  - O. **Severability.** In the event any provision of this Agreement is held to be void, unlawful or otherwise unenforceable, that provision will be severed from the remainder of the Agreement and replaced automatically by a provision containing terms as nearly like the void, unlawful, or unenforceable provision as possible; and the Agreement, as so modified, will continue to be in full force and effect.
  - P. **Four Corners.** This written Agreement, including all of its exhibits, represents the entire understanding between and obligations of the parties and supersedes all prior understandings, agreements, negotiations, and proposals, whether written or oral, formal or informal between the parties. Any additional writings shall not modify any limitations or remedies provided in the Agreement. There are no other terms or conditions, oral, written, electronic or otherwise. There are no implied obligations. All obligations are specifically set forth in this Agreement. Further, there are no representations that induced this Agreement that are not included in it. The ONLY operative provisions are set forth in writing in this Agreement. Without limiting the generality of the foregoing, no purchase order placed by or on behalf of Customer shall alter any of the terms of this Agreement. The parties agree that such documents are for administrative purposes only, even if they have terms and conditions printed on them and even if and when they are accepted and/or processed by Sensus. Any goods, software or services delivered or provided in anticipation of this Agreement (e.g., as part of a pilot or because this Agreement has not yet been signed but the parties have begun the deployment) under purchase orders placed prior to the execution of this Agreement are governed by this Agreement upon its execution and it replaces and supersedes any such purchase orders.
  - Q. **Counterparts.** This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Additionally, this Agreement may be executed by facsimile or electronic copies, all of which shall be considered an original for all purposes.
6. **Definitions.** As used in this Agreement, the following terms shall have the following meanings:
- A. "**Affiliate**" of a party means any other entity controlling, controlled by, or under common control with such party, where "control" of an entity means the ownership, directly or indirectly, of 50% or more of either; (i) the shares or other equity in such entity; or (ii) the voting rights in such entity.
  - B. "**AMI System**" identifies the Sensus FlexNet Advanced Meter Infrastructure System comprised of the SmartPoint Modules, RF Field Equipment, Server Hardware, software licenses, FCC licenses, and other equipment provided to Customer hereunder. The AMI System only includes the foregoing, as provided by Sensus. The AMI System does not include goods, equipment, software, licenses or rights provided by a third party or parties to this Agreement.
  - C. "**Confidential Information**" means any and all non-public information of either party, including the terms of this agreement, all technical information about either party's products or services, pricing information, marketing and marketing plans, Customer's End Users' data, AMI System performance, AMI System architecture and design, AMI System software, other business and financial information of either party, and all trade secrets of either party.
  - D. "**Echo Transceiver**" identifies the Sensus standalone, mounted relay device that takes the radio frequency readings from the SmartPoint Modules and relays them by radio frequency to the relevant FlexNet Base Station.
  - E. "**End User**" means any end user of electricity, water, and/or gas (as applicable) that pays Customer for the consumption of electricity, water, and/or gas, as applicable.
  - F. "**Field Devices**" means the meters and SmartPoint Modules.
  - G. "**FlexNet Base Station**" identifies the Sensus manufactured device consisting of one transceiver, to be located on a tower that receives readings from the SmartPoint Modules (either directly or via an Echo Transceiver) by radio frequency and passes those readings to the RNI by TCP/IP backhaul communication. For clarity, FlexNet Base Stations include Metro Base Stations.
  - H. "**Force Majeure**" means an event beyond a party's reasonable control, including, without limitation, acts of God, hurricane, flood, volcano, tsunami, tornado, storm, tempest, mudslide, vandalism, illegal or unauthorized radio frequency interference, strikes, lockouts, or other industrial disturbances, unavailability of component parts of any goods provided hereunder, acts of public enemies, wars, blockades, insurrections, riots, epidemics, earthquakes, fires, restraints or prohibitions by any court, board, department, commission or agency of the United States or any States, any arrests and restraints, civil disturbances and explosion.

- I. "Hosted Software" means those items listed as an Application in Exhibit A.
- J. "In/Out Costs" means any costs and expenses incurred by Customer in transporting goods between its warehouse and its End User's premises and any costs and expenses incurred by Customer in installing, uninstalling and removing goods.
- K. "Intellectual Property" means patents and patent applications, inventions (whether patentable or not), trademarks, service marks, trade dress, copyrights, trade secrets, know-how, data rights, specifications, drawings, designs, maskwork rights, moral rights, author's rights, and other intellectual property rights, including any derivations and/or derivative works, as may exist now or hereafter come into existence, and all renewals and extensions thereof, regardless of whether any of such rights arise under the laws of the United States or of any other state, country or jurisdiction, any registrations or applications thereof, and all goodwill pertinent thereto.
- L. "LCM" identifies the load control modules.
- M. "Ongoing Fee" means the annual or monthly fees, as applicable, to be paid by Customer to Sensus' authorized distributor during the Term of this Agreement.
- N. "Patches" means patches or other maintenance releases of the Software that correct processing errors and other faults and defects found previous versions of the Software. For clarity, Patches are not Updates or Upgrades.
- O. "Permitted Use" means only for reading Customer's Field Devices in the Service Territory. The Permitted Use does not include reading third party meters or reading meters outside the Service Territory.
- P. "Release" means both Updates and Upgrades.
- Q. "Remote Transceiver" identifies the Sensus standalone, mounted relay device that takes the radio frequency readings from the SmartPoint Modules and relays them directly to the RNI by TCP/IP backhaul communication.
- R. "RF Field Equipment" means, collectively, FlexNet Base Stations, Echo Transceivers and Remote Transceivers.
- S. "RNI" identifies the regional network interfaces consisting of hardware and software used to gather, store, and report data collected by the FlexNet Base Stations from SmartPoint Modules. The RNI hardware specifications will be provided by Sensus upon written request from Customer.
- T. "RNI Software" identifies the Sensus proprietary software used in the RNI and any Patches, Updates, and Upgrades that are provided to Customer pursuant to the terms of this Agreement.
- U. "Service Territory" identifies the geographic area where Customer provides electricity, water, and/or gas (as applicable) services to End Users as of the Effective Date. This area will be described on the propagation study in the parties' Spectrum Lease filing with the FCC.
- V. "Server Hardware" means the RNI hardware.
- W. "SmartPoint™ Modules" identifies the Sensus transmission devices installed on devices such as meters, distribution automation equipment and demand/response devices located at Customer's End Users' premises that take the readings of the meters and transmit those readings by radio frequency to the relevant FlexNet Base Station, Remote Transceiver or Echo Transceiver.
- X. "Software" means all the Sensus proprietary software provided pursuant to this Agreement, and any Patches, Updates, and Upgrades that are provided to Customer pursuant to the terms of this Agreement. The Software does not include any third party software.
- Y. "TouchCoupler Unit" identifies an inductive coupler connection from a water register to the SmartPoint Module.
- Z. "Updates" means releases of the Software that constitute a minor improvement in functionality.
- AA. "Upgrades" means releases of the Software which constitute a significant improvement in functionality or architecture of the Software.
- BB. "WAN Backhaul" means the communication link between FlexNet Base Stations and Remote



# EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

## Exhibit A Software

### Software as a Service

#### 1. Description of Services.

This exhibit contains the details of the Software as a Service that Sensus shall provide to Customer if both; (i) pricing for the application of Software as a Service has been provided to the Customer; and (ii) the Customer is current in its payments to Sensus' authorized distributor for such application of Software as a Service.

##### A. Software as a Service Generally.

Software as a Service is a managed service in which Sensus will be responsible for the day-to-day monitoring, maintenance, management, and supporting of Customer's software applications. In a Software as a Service solution, Sensus owns all components of the solution (server hardware, storage, network equipment, Sensus software, and all third-party software) required to run and operate the application. These software applications consist of the following (each an "Application"):

- Regional Network Interface (RNI) Software
- Sensus Analytics
  - Enhanced Package

The managed application systems consist of the hardware, Sensus Software, and other third-party software that is required to operate the software applications. Each Application will have a production, and Disaster Recovery (as described below) environment. Test environments are not provided unless otherwise specifically agreed by Sensus in writing. Sensus will manage the Applications by providing 24 x 7 x 365 monitoring of the availability and performance of the Applications.

##### B. Use of Software as a Service. Subject to the terms of this Agreement, Sensus shall make Software as a Service available to Customer to access and use solely for the Permitted Use and solely for so long as Customer is current in its payments to Sensus or its authorized distributor for Software as a Service. The Software as a Service term commences on the date that Sensus first makes Software as a Service available to Customer for use, and ends upon the earlier of: (i) the expiration or termination of the Agreement; (ii) breach by Customer of this exhibit or the Agreement; or (iii) Customer's termination of Software as a Service as set forth in paragraph (C) below.

##### C. Termination of Software as a Service. Customer shall have the option at any time before the end of the Term to terminate any Application by giving Sensus one hundred twenty (120) days prior written notice. Such notice, once delivered to Sensus, is irrevocable. Should Customer elect to terminate any Application, Customer acknowledges that: (a) Customer shall pay all applicable fees, including any unpaid Software as a Service fees due in the current calendar year plus a ten percent (10%) early termination fee, where such fee is calculated based on the annual Software as a Service fee due in the current calendar year; and (b) Software as a Service for such Application shall immediately cease. If Customer elects to terminate the RNI Application in the Software as a Service environment but does not terminate the Agreement generally, then upon delivery of the notice to Sensus, Customer shall purchase the necessary (a) RNI hardware from a third party and (b) RNI software license at Sensus' then-current pricing. No portion of the Software as a Service fees shall be applied to the purchase of the RNI hardware or software license.

##### D. Software as a Service means only the following services:

- i. Sensus will provide the use of required hardware, located at Sensus' or a third-party's data center facility (as determined by Sensus), that is necessary to operate the Application.
- ii. Sensus will provide production and disaster recovery environments for Application.
- iii. Sensus will provide patches, updates, and upgrades to latest Sensus Hosted Software release.
- iv. Sensus will configure and manage the equipment (server hardware, routers, switches, firewalls, etc.) in the data centers:
  - (a) Network addresses and virtual private networks (VPN)
  - (b) Standard time source (NTP or GPS)
  - (c) Security access points
  - (d) Respond to relevant alarms and notifications
- v. Capacity and performance management. Sensus will:
  - (a) Monitor capacity and performance of the Application server and software applications 24x7x365 using KPI metrics, thresholds, and alerts to proactively identify any potential issues related to system capacity and/or performance (i.e. database, backspool, logs, message broker storage, etc.)
  - (b) If an issue is identified to have a potential impact to the system, Sensus will open an incident ticket and manage the ticket through resolution per Exhibit B, Technical Support.
  - (c) Manage and maintain the performance of the server and perform any change or configuration to the server, in accordance to standard configuration and change management policies and procedures.
  - (d) Manage and maintain the server storage capacity and performance of the Storage Area Network (SAN), in accordance to standard configuration and change management policies and procedures.
  - (e) Exceptions may occur to the system that require Sensus to take immediate action to maintain the system capacity and performance levels, and Sensus has authority to make changes without Customer approval as needed, in accordance to standard configuration and change management policies and procedures.
- vi. Database management. Sensus will:
  - (a) Define data retention plan and policy.
  - (b) Monitor space and capacity requirements.
  - (c) Respond to database alarms and notifications.
  - (d) Install database software upgrades and patches.
  - (e) Perform routine database maintenance and cleanup of database to improve capacity and performance, such as rebuilding indexes, updating indexes, consistency checks, run SQL query/agent jobs, etc.
- vii. Incident and Problem Management. Sensus will:
  - (a) Proactively monitor managed systems (24x7x365) for key events and thresholds to proactively detect and identify incidents.
  - (b) Respond to incidents and problems that may occur to the Application(s).
  - (c) Maintain policies and procedures for responding to incidents and performing root cause analysis for ongoing problems.
  - (d) Correlate incidents and problems where applicable.
  - (e) Sensus personnel will use the Salesforce Self Service Portal to document and track incidents.

## EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

- (f) In the event that Sensus personnel is unable to resolve an issue, the issue will be escalated to the appropriate Subject Matter Expert (SME).
- (g) Maintain responsibility for managing incident and problems through resolution and will coordinate with Customer's personnel and/or any required third-party vendor to resolve the issue.
- (h) Provide telephone support consistent with Exhibit B, Technical Support in the case of undetected events.
- viii. Security Management. Sensus will:
  - (a) Monitor the physical and cyber security of the server and Application(s) 24x7x365 to ensure system is highly secure in accordance with NIST Security Standards.
  - (b) Perform active intrusion prevention and detection of the data center network and firewalls, and monitor logs and alerts.
  - (c) Conduct period penetration testing of the network and data center facilities.
  - (d) Conduct monthly vulnerability scanning by both internal staff and external vendors.
  - (e) Perform Anti-Virus and Malware patch management on all systems.
  - (f) Install updates to virus protection software and related files (including Virus signature files and similar files) on all servers from the update being generally available from the anti-virus software provider.
  - (g) Respond to any potential threat found on the system and work to eliminate Virus or Malware found.
  - (h) Adhere to and submit certification to NERC/CIP Cyber Security standards.
  - (i) Monitors industry regulation/standards regarding security – NERC, FERC, NIST, OpenSG, etc. through the dedicated Sensus Security team.
  - (j) Provide secure web portal access (SSL) to the Application(s).
- ix. Backup and Disaster Recovery Management. Sensus will:
  - (a) Perform daily backups of data providing one (1) year of history for auditing and restoration purposes.
  - (b) Back-up and store data (on tapes or other storage media as appropriate) off-site to provide protection against disasters and to meet file recovery needs.
  - (c) Conduct incremental and full back-ups to capture data, and changes to data, on the Application(s).
  - (d) Replicate the Application(s) environments to a geographically separated data center location to provide a full disaster recovery environment for the Application production system.
  - (e) Provide disaster recovery environment and perform fail-over to DR environment within forty-eight (48) hours of declared event.
  - (f) Generate a report following each and any disaster measuring performance against the disaster recovery plan and identification of problem areas and plans for resolution.
  - (g) Maintain a disaster recovery plan. In the event of a disaster, Sensus shall provide the services in accordance with the disaster recovery plan.
  - (h) In the case of a disaster and loss of access to or use of the Application, Sensus would use commercially reasonable efforts per the Recovery Time Objectives and Recovery Point Objectives specified herein to restore operations at the same location or at a backup location within forty-eight (48) hours.
  - (i) The Application shall have a Recovery Time Objective (RTO) of forty-eight (48) hours.
  - (j) The Recovery Point Objective (RPO) shall be a full recovery of the Application(s), with an RPO of one (1) hours, using no more than a twenty-four (24) hour old backup. All meter-related data shall be pushed from each Base Station/TGB restoring the database to real-time minus external interfaced systems from the day prior.
  - (k) Data from external interfaced systems shall be recreated within a forty-eight (48) hour period with the assistance of Customer personnel and staff, as needed.

### E. Customer Responsibilities:

- i. Coordinate and schedule any changes submitted by Sensus to the system in accordance with standard configuration and change management procedures.
- ii. Participate in all required configuration and change management procedures.
- iii. Customer will log incidents related to the managed Application with Sensus personnel via email, web portal ticket entry, or phone call.
- iv. Responsible for periodic processing of accounts or readings (i.e., billing files) for Customer's billing system for billing or other analysis purposes.
- v. Responsible for any field labor to troubleshoot any SmartPoint modules or smart meters in the field in populations that have been previously deployed and accepted.
- vi. First response labor to troubleshoot FlexNet Base Station, R100s, Remote Transceivers or other field network equipment.
- vii. Responsible for local area network configuration, management, and support.
- viii. Identify and research problems with meter reads and meter read performance.
- ix. Create and manage user accounts.
- x. Customize application configurations.
- xi. Support application users.
- xii. Investigate application operational issues (e.g., meter reads, reports, alarms, etc.).
- xiii. Respond to alarms and notifications.
- xiv. Perform firmware upgrades over-the-air, or delegate and monitor field personnel for on-site upgrades.

### F. Software as a Service does not include any of the following services:

- i. Parts or labor required to repair damage to any field network equipment that is the result of a Force Majeure event.
- ii. Any integration between applications, such as Harris MeterSense, would require a Professional Services contract agreement to be scoped, submitted, and agreed in a signed writing between Sensus and all the applicable parties.

If an item is not listed in subparagraphs in item (D) above, such item is excluded from the Software as a Service and is subject to additional pricing.

## 2. Further Agreements

### A. System Uptime Rate.

- i. Sensus (or its contractor) shall manage and maintain the Application(s) on computers owned or controlled by Sensus (or its contractors) and shall provide Customer access to the managed Application(s) via internet or point to point connection (i.e., Managed-Access use), according to the terms below. Sensus

## EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

endeavors to maintain an average System Uptime Rate equal to ninety-nine (99.0) per Month (as defined below). The System Uptime Rate, cumulative across all Applications, shall be calculated as follows:

$$\text{System Uptime Rate} = 100 \times \frac{\text{TMO} - \text{Total Non-Scheduled Downtime minutes in the Month}}{\text{TMO}}$$

### ii. Calculations

- a. *Targeted Minutes of Operation* or *TMO* means total minutes cumulative across all Applications in the applicable month minus the Scheduled Downtime in the Month.
- b. *Scheduled Downtime* means the number of minutes during the Month, as measured by Sensus, in which access to any Application is scheduled to be unavailable for use by Customer due to planned system maintenance. Sensus shall provide Customer notice (via email or otherwise) at least seven (7) days in advance of commencement of the Scheduled Downtime.
- c. *Non-Scheduled Downtime* means the number of minutes during the Month, as measured by Sensus, in which access to any Application is unavailable for use by Customer due to reasons other than Scheduled Downtime or the Exceptions, as defined below (e.g., due to a need for unplanned maintenance or repair).

### iii. Exceptions. Exceptions mean the following events:

- Force Majeure
  - Emergency Work, as defined below; and
  - Lack of Internet Availability, as described below.
- a. **Emergency Work.** In the event that Force Majeure, emergencies, dangerous conditions or other exceptional circumstances arise or continue during TMO, Sensus shall be entitled to take any actions that Sensus, in good faith, determines is necessary or advisable to prevent, remedy, mitigate, or otherwise address actual or potential harm, interruption, loss, threat, security or like concern to any of the Application(s) ("Emergency Work"). Such Emergency Work may include, but is not limited to: analysis, testing, repair, maintenance, re-setting and other servicing of the hardware, cabling, networks, software and other devices, materials and systems through which access to and/or use of the Application(s) by the Customer is made available (the "Managed Systems"). Sensus shall endeavor to provide advance notice of such Emergency Work to Customer when practicable and possible.
  - b. **Lack of Internet Availability.** Sensus shall not be responsible for any deterioration of performance attributable to latencies in the public internet or point-to-point network connection operated by a third party. Customer expressly acknowledges and agrees that Sensus does not and cannot control the flow of data to or from Sensus' networks and other portions of the Internet, and that such flow depends in part on the performance of Internet services provided or controlled by third parties, and that at times, actions or inactions of such third parties can impair or disrupt data transmitted through, and/or Customer's connections to, the Internet or point-to-point data connection (or portions thereof). Although Sensus will use commercially reasonable efforts to take actions Sensus may deem appropriate to mitigate the effects of any such events, Sensus cannot guarantee that such events will not occur. Accordingly, Sensus disclaims any and all liability resulting from or relating to such events.

### B. Data Center Site-Security. Although Sensus may modify such security arrangements without consent or notice to Customer, Customer acknowledges the following are the current arrangements regarding physical access to and support of the primary hardware components of the Managed Systems:

- i. The computer room(s) in which the hardware is installed is accessible only to authorized individuals.
- ii. Power infrastructure includes one or more uninterruptible power supply (UPS) devices and diesel generators or other alternative power for back-up electrical power.
- iii. Air-conditioning facilities (for humidity and temperature controls) are provided in or for such computer room(s) and can be monitored and adjusted for humidity and temperature settings and control. Such air systems are supported by redundant, back-up and/or switch-over environmental units.
- iv. Such electrical and A/C systems are monitored on an ongoing basis and personnel are available to respond to system emergencies (if any) in real time.
- v. Dry pipe pre-action fire detection and suppression systems are provided.
- vi. Data circuits are available via multiple providers and diverse paths, giving access redundancy.

### C. Responsibilities of Customer.

- i. Customer shall promptly pay all Software as a Service fees.
- ii. Customer may not (i) carelessly, knowingly, intentionally or maliciously threaten, disrupt, harm, abuse or interfere with the Application(s), Managed Systems or any of their functionality, performance, security or integrity, nor attempt to do so; (ii) impersonate any person or entity, including, but not limited to, Sensus, a Sensus employee or another user; or (iii) forge, falsify, disguise or otherwise manipulate any identification information associated with Customer's access to or use of the Application(s).
- iii. The provisioning, compatibility, operation, security, support, and maintenance of Customer's hardware and software ("Customer's Systems") is exclusively the responsibility of Customer. Customer is also responsible, in particular, for correctly configuring and maintaining (i) the desktop environment used by Customer to access the Application(s) managed by Sensus; and (ii) Customer's network router and firewall, if applicable, to allow data to flow between the Customer's Systems and Sensus' Managed Systems in a secure manner via the public Internet.
- iv. Upon receiving the system administrator account from Sensus, Customer shall create username and passwords for each of Customer's authorized users and complete the applicable Sensus registration process (Authorized Users). Such usernames and passwords will allow Authorized Users to access the Application(s). Customer shall be solely responsible for maintaining the security and confidentiality of each user ID and password pair associated with Customer's account, and Sensus will not be liable for any loss, damage or liability arising from Customer's account or any user ID and password pairs associated with Customer. Customer is fully responsible for all acts and omissions that occur through the use of Customer's account and any user ID and password pairs. Customer agrees (i) not to allow anyone other than the Authorized Users to have any access to, or use of Customer's account or any user ID and password pairs at any time; (ii) to notify Sensus immediately of any actual or suspected unauthorized use of Customer's account or any of such user ID and password pairs, or any other breach or suspected breach of security, restricted use or confidentiality; and (iii) to take the Sensus-recommended steps to log out from and otherwise exit the Application(s) and Managed Systems at the end of each session. Customer agrees that Sensus shall be entitled to rely, without inquiry, on the validity of the user accessing the Application(s) application through Customer's account, account ID, usernames or passwords.
- v. Customer shall be responsible for the day-to-day operations of the Application(s) and AML System. This includes, without limitation, (i) researching problems with meter reads and system performance, (ii) creating and managing user accounts, (iii) customizing application configurations, (iv) supporting application users, (v) investigating application operational issues, (vi) responding to alarms and notifications, and (vii) performing over-the-air commands (such as firmware updates or configuration changes).

### D. Software Solution Components.

- i. **Description of Software Solutions.** Sensus software consists of a core communication module and a set of applications. Some applications are required to perform basic solution capabilities, other applications are optional and add additional capabilities and function to the overall solution. As Customer's

## EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

business process expands and/or new Sensus offerings are made available, additional applications and functionality can dynamically be added to the solution, provided Customer purchases such additional applications.

- ii. **Regional Network Interface.** The Regional Network Interface (RNI) or Sensus head-end is the centralized intelligence of the FlexNet network; the RNI's primary objective is to transfer endpoint (such as meters) data to the Customer and the advanced feature applications. The RNI is adaptable to Customer configurations by simultaneously supporting a wide range of FlexNet enabled endpoints; including but not limited to meters (electric, water, gas), street lighting, and Home Area Network devices.
  - a. **Core Package**
    - (i) **Communication**
      1. Manages all inbound and outbound traffic to and from endpoints
      2. Outbound routing optimization
      3. Route analyzer
      4. AES256 bit encryption of radio messages
      5. Reports and metric details of network performance and troubleshooting aids
      6. Management of RF equipment (base stations and endpoint radios)
    - (ii) **Data Collection**
      1. Missing read management
      2. Management of duplicate reads
      3. 60 day temporary storage
    - (iii) **Application integration**
      1. To Sensus Analytics applications
      2. Enable 3<sup>rd</sup> party application integration
      3. Batch CMEP file export
      4. Real-time access through MultiSpeak 3.0 and 4.1
    - (iv) **Endpoint Management**
      1. Gas, water, electric, lighting concurrent support
      2. Remote configuration
      3. Remote firmware updates
      4. Reports, metrics and Troubleshooting
    - (v) **User Management**
      1. Secure access
      2. Password management
      3. Definable user roles
      4. User permissions to manage access to capabilities
  - b. **Integration of RNI.** Sensus shall provide RNI integration support services to Customer only to the extent specifically provided below:
    - (i) Sensus shall meet with the representative from the Customer's system(s) targeted for integration to determine which integration method is appropriate (e.g., Multispeak, CMEP, etc.).
      1. In scope and included integration efforts: Provide the gateway URLs to the integrating system as needed, provide Customer with standard integration API documentation, validate and test that the correct Customer information is flowing into and/or out of the RNI.
      2. Out of scope and subject to additional charges: Modifications or extensions to the standard API provided by Sensus and any integration efforts not outlined above as in scope and included.
    - (ii) **Customer Responsibilities:**
      1. Provide Sensus with information about the relevant information Customer wishes to transfer and integrate with the RNI.
      2. Establish the network and security required for the two systems to reasonably communicate.
      3. Verify integration to third party system functionality is working as intended.
    - (iii) If an item is not listed in subparagraph (i) above, such item is excluded from the integration of Sensus RNI Support and is subject to additional pricing.

### 3. Sensus Analytics

Sensus Analytics is a cloud-based solution and data platform that allows storage and retrieval of raw reads and data from other sources for analysis, exportation, and inquiry or reporting. The platform provides applications and reporting capabilities.

#### A. **Essential Package.** The Essential Package of the Sensus Analytics Application shall consist of the following modules:

- i. **Device Access**
  - a. Allows search for meter details by using data imported from the billing system or the Sensus Device ID or AMI ID.
  - b. Allows a view of the meter interval or register reads.
  - c. Meter data is available to be copied, printed, or saved to certain user programs or file formats, specifically CSV, PDF, and Spreadsheet.
  - d. Allows the current and historical data to be viewed.
  - e. Allows the current usage to be compared to historical distribution averages.
  - f. Allows the user to see the meter location on a map view.
  - g. Allows notifications for an event on a single meter to be forwarded to a Customer employee.
  - h. Allows details to be viewed about a meter – (dependent on the data integrated from other systems).
- ii. **Meter Insight (provides the following)**
  - a. # of active meters.

## EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

- b. # of orphaned meters with drill down to the list of meters.
- c. # of inactive meters with usage drill down to the list of meters.
- d. # of stale meters with drill down to the list of meters.
- e. # of almost stale meters with drill down to the list of meters.
- f. # of meters where no read is available with drill down to the list of meters.
- g. # of meters with maximum threshold exceptions with drill down to the list of meters.
- h. # of meters with minimum threshold exceptions with drill down to the list of meters.
- i. # of unknown radios with drill down to the list of meters.
- iii. Report Access
  - a. Allows the user to see meter alarms and choose a report from a list of standard reports.
  - b. Master Route Register Reads: Shows the latest reads for all meters within specified time window.
  - c. Meter Route Intervals Reads: Allows users to inspect intervals of a single meter over a period of time.
  - d. Master Route No Readings: List all meters that are active in the system, but have not been sending reads within the specified time window.
  - e. Consumption Report: List meters' consumption based on meter readings within the specified time window.
  - f. Zero Consumption for Period: List meters whose readings do not change over a period of time.
  - g. Negative Consumption: Shows the number of occurrences and readings of negative consumption for the last 24hr, 48hr and 72hr from the entered roll up date.
  - h. High Low Exception Report: Displays meters whose reads exceed minimum or/and maximum threshold, within a time range.
  - i. Consumption vs Previous Reported Read: Compares latest reading (from RNI) with last known read received from CIS.
  - j. Consumption Exception 24 hour Report: This report shows meters that satisfy these two conditions: (1) The daily average consumptions exceed entered daily consumption threshold; (2) The number of days when daily thresholds are exceeded are greater than the entered exception per day threshold.
  - k. Endpoint Details: Shows the current state of meters that are created within the specified time range.
  - l. Orphaned Meters: List meters that are marked as 'orphaned', which are created as of entered Created as of parameter.
  - m. Billing Request Mismatch: Displays meters in a billing request that have different AMR id with the ones sent by RNI. It also shows AMR id in billing request that have different meter Id in the RNI. Users must enter which billing request file prior to running the report.
  - n. All Alarms Report: List all alarms occurred during a time window. Users can select which alarm to show.
- iv. Billing Access
  - a. Initiate the creation of billing export files formatted to the import needs of the billing system.
  - b. Receive billing request files from the billing system to identify what meters to include in the billing export file in the case where billing request file option is used.
  - c. Provides a repository of past billing files that were either used for billing preparation or actually sent to the billing system.
  - d. Will store created billing files for a period of three years unless otherwise denoted.
  - e. The system will allow creation of test files before export to the billing system.
- v. Billing Adaptor
  - a. The underlying configurator and tools mapping the extraction of billing data to enable integration to the utility's billing system.
- vi. Data Store
  - a. Allows storage of meter reading data including Intervals, Registers, and Alarms to be stored.
  - b. Stored data is available online for reports and analysis.
  - c. Data will be retained for 3 years. Additional duration can be purchased.
- B. Enhanced Package. The Enhanced Package shall consist of the modules listed above in the Essential Package, as well as the following additional modules:
  - i. Alarm Insight
    - a. Allows the user to summarize and filter alarms by a date range.
    - b. Allows the user to review all alarm types on a single screen.
    - c. The user can filter out the alarms not wanted on the screen.
    - d. Alarm totals can be visualized.
    - e. Adds a view of trending alarms over time.
    - f. Click to drill down on an alarm to gain more information on specific events.
    - g. Click to analyze a specific event on a particular device.
  - ii. Alert Manager
    - a. Allows creation of alert groups who will be notified when an alarm occurs.
    - b. Users can manage alert groups by adding and removing group members.
    - c. Allows selection of notification method for how end users in the group will be notified; email or SMS (text message).
    - d. Allows creation of an alert from the available system events from smart points and assign to a group.
    - e. Monitors the systems meters for events. When an event is triggered, all users in the group will be notified.
- C. Integration of Sensus Analytics. Sensus shall provide integration support services to Customer only to the extent specifically provided below:
  - i. Sensus shall provide Customer with a simple flat file specification known as VFlex for the integration of the Customer's back office system to the Sensus Analytics modules. The VFlex shall contain the following types of information: Device ids, end users in the system, end user status, end user account information, end user name, and other end user details. This flat file may be delimited or fixed width. Customer shall produce this file and transmit it to the FTP location designated by Sensus. When sent to the Sensus FTP servers, this file exchange will enable the system to become operational with the

## EXHIBIT D. SENSUS (SOFTWARE) AGREEMENT

Customer's systems. Customer shall produce this file and transmit it to the FTP location designated by Sensus. Sensus will provide reasonable support to explain to Customer the required vs. optional fields that are in the specification, testing and validation of the file format and content.

- ii. In scope and included integration efforts: kick-off meeting to engage all required parties, mapping the Customer's fields to the VFlex specification, validation of expected output, and a two (2) hour system review of Sensus Analytics application and integration with the Customer's system (conducted remotely).
- iii. Out of scope and subject to additional charges will be the transformation of data where business logic including code must be written to modify the field content or format of the data to meet the VFlex specification.
- iv. Sensus' integration services consist of four (4) hours of assistance (remote or on-site, as determined by Sensus). If additional time is needed to complete the integration efforts, Sensus shall invoice Customer for additional fees on an actual time and materials basis.
- v. If an item is not listed in subparagraphs (i) or (ii) above, such item is excluded from the integration of Sensus Analytics Support and is subject to additional pricing.
- vi. **Data Import.** The Sensus Analytics Application contains adapters for the import of data from; (a) Customer's FlexNet AML System; and/or (b) AutoRead application for handheld and drive by systems, as applicable.
- vii. **Customer Acknowledgements.**
  - a. Customer acknowledges that the Sensus Analytics Application provides up to fifty (50) user logins for Customer's use.
  - b. Customer acknowledges and agrees the Sensus Analytics Application is based upon the actual number of End Users within Customer's Service Territory. Pricing may increase if Customer's Service Territory or actual number of End Users expands.
  - c. Customer acknowledges that all data related to the Sensus Analytics Applications is geographically hosted within the United States of America. Customer accepts the geographic location of such hosting, and indemnifies Sensus for any claims resulting therefrom.
  - d. Customer acknowledges and agrees that the Intellectual Property provisions of this Agreement apply in all respects to Customer's access to and use of the Sensus Analytics Applications.
  - e. Customer is responsible for validating the data analyzed by the Sensus Analytics Applications. Sensus makes no promises of improving Customer's operations or saving Customer money, nor is Sensus liable for any damages resulting from decisions made by Customer related to Customer's use of Sensus Analytics.

#### 4. Third Party Software.

- A. **RedHat Linux.** If Sensus is providing Customer with a license to use RedHat Linux Software, Customer agrees to the following:

By entering into this Agreement, Customer agrees to abide by and to be legally bound by the terms and conditions of the Red Hat End User License Agreements identified below, each of which are incorporated into this Agreement by reference and are available at the websites identified below. Please read the Red Hat End User License Agreements and incorporated references carefully.

Subscription:	End User License Agreement:
Red Hat Enterprise Linux	<a href="http://www.redhat.com/licenses/rhel_rha_eula.html">http://www.redhat.com/licenses/rhel_rha_eula.html</a>
JBoss Enterprise Middleware	<a href="http://www.redhat.com/licenses/jboss_eula.html">http://www.redhat.com/licenses/jboss_eula.html</a>



Exhibit B  
Technical Support

1. **Introduction**

Sensus Technical Services provides utility customers with a single point of contact for Tier 1 support of technical issues as well as any coordination of additional resources required to resolve the issue. Requests that require specialized skills are to be forwarded to a senior support engineer or Technical Advisor within the team for further analysis. If Technical Services has exhausted all troubleshooting efforts for the product type, the issue will escalate to the Engineering Support Team. Occasionally, on-site troubleshooting/analysis may be required. The preferred order of on-site support is:

- a) The Customer (for assistance with the easiest and lowest time-consuming activities such as power on/power off).
- b) The local distributor.
- c) Sensus employees or contracted personnel, if required to fulfill a contract commitment.

2. **Support Categories**

- 2.1. General questions regarding functionality, use of product, how-to, and requests for assistance on Sensus AMR, AMI, RF Network Equipment, Metering Products and Sensus Lighting Control.
- 2.2. Proactive reporting and resolution of problems.
- 2.3. Reactive reporting to isolate, document, and solve reported hardware/software defects.
- 2.4. Responding to service requests and product changes.
- 2.5. Addressing customer inquiries with printed or electronic documentation, examples, or additional explanation/clarification.

3. **Support Hours**

- 3.1. Standard Support Hours: Toll-free telephone support (1-800-638-3748 option #2) is available Monday thru Friday from 8:00AM EST to 8:00PM EST. After-hours, holiday and weekend support for Severity 1 and Severity 2 issues is available by calling 1-800-638-3748, option #8.

4. **Support Procedures**

- 4.1. Customer identifies an issue or potential problem and calls Technical Services at 1-800-638-3748 Option #2. The Customer Service Associate or Technical Support Engineer will submit a Support ticket.
- 4.2. The Customer Service Associate or Technical Support Engineer will identify the caller name and utility by the assigned software serial number, city, and state in which the call originated. The nature of the problem and severity levels will be agreed upon by both parties (either at the time the issue is entered or prior to upgrading or downgrading an existing issue) using the severity definitions below as a guideline. The severity level is then captured into a support ticket for creation and resolution processing. Any time during the processing of this ticket, if the severity level is changed by Sensus, the customer will be updated.

Severity Levels Description:

Sev1 Customer's production system is down. The system is unusable resulting in total disruption of work. No workaround is available and requires immediate attention.

Example: Network mass outage, all reading collection devices inoperable, inoperable head end software (e.g., RNI Software, Sensus MDM).

Sev2 Major system feature/function failure. Operations are severely restricted; there is a major disruption of work, no acceptable work-around is available, and failure requires immediate attention.

Examples: Network equipment failure (e.g., FlexNet Echo, FlexNet Remote, Base Station transceiver, or VGB); inoperable reading devices (e.g., AR5500, VXU, VGB, or CommandLink); head end software application has important functionality not working and cannot create export file for billing system operations.

Sev3 The system is usable and the issue doesn't affect critical overall operation.

Example: Minor network equipment failure (e.g., Echo/Remote false alarms or Base Station transceiver false alarms); head end software application operable but reports are not running properly, modification of view or some non-critical function of the software is not running.

Sev4 Minor system issues, questions, new features, or enhancement requests to be corrected in future versions.

Examples: Minor system issues, general questions, and "How-To" questions.

- 4.3. The Customer Service Associate or Technical Support Engineer identifies whether or not the customer is on support. If the customer is not on support, the customer is advised of the service options as well as any applicable charges that may be billed.
- 4.4. Calls are placed in a queue from which they are accessible to Technical Support Engineers on a first-come-first-serve basis. A first level Customer Service Associate may assist the customer, depending on the difficulty of the call and the representative's technical knowledge. Technical Support Engineers (Tier 1 support) typically respond/resolve the majority of calls based on their product knowledge and experience. A call history for the particular account is researched to note any existing pattern or if the call is a new report. This research provides the representative a basis and understanding of the account as well as any associated problems and/or resolutions that have been communicated.
  - a. Technical Services confirms that there is an issue or problem that needs further analysis to determine its cause. The following information must be collected: a detailed description of the issue's symptoms, details on the software/hardware product and version, a description of the environment in which the issue arises, and a list of any corrective action already taken.

- b. Technical Services will check the internal database and product defect tracking system, to see if reports of a similar problem exist, and if any working solutions were provided. If an existing resolution is found that will address the reported issue, it shall be communicated to the customer. Once it is confirmed that the issue has been resolved, the ticket is closed.
- c. If there is no known defect or support that defines the behavior, Technical Services will work with the customer to reproduce the issue. If the issue can be reproduced, either at the customer site or within support center test lab, Technical Services will escalate the ticket for further investigation / resolution.

If the issue involves units that are considered to be defective with no known reason, the representative will open a Special Investigation RMA through the Support system. If it is determined that a sample is required for further analysis, the customer will be provided with instructions that detail where to send the product sample(s) for a root cause analysis. Once it is determined that the issue cannot be resolved by Tier 1 resources, the ticket will be escalated to Tier 2 support for confirmation/workarounds to resolve immediate issue. Technical Services will immediately contact the customer to advise of the escalation. The response and escalation times are listed in Section 5. At this time, screen shots, log files, configuration files, and database backups will be created and attached to the ticket.

## 5. Response and Resolution Targets.

Sensus Technical Support will make every reasonable effort to meet the following response and resolution targets:

Severity	Standard Target Response	Standard Target Resolution	Resolution (one or more of the following)
1	30 Minutes	Immediately assign trained and qualified Services Staff to correct the error on an expedited basis. Provide ongoing communication on the status of a correction.	<ul style="list-style-type: none"> <li>• Satisfactory workaround is provided.</li> <li>• Program patch is provided.</li> <li>• Fix incorporated into future release.</li> <li>• Fix or workaround incorporated into the Support Knowledge Base.</li> </ul>
2	4 hours	Assign trained and qualified Services Staff to correct the error. Provide communication as updates occur.	<ul style="list-style-type: none"> <li>• Satisfactory workaround is provided.</li> <li>• Program patch is provided.</li> <li>• Fix incorporated into future release.</li> <li>• Fix or workaround incorporated into the Support Knowledge Base.</li> </ul>
3	1 Business Day	90 business days	<ul style="list-style-type: none"> <li>• Answer to question is provided.</li> <li>• Satisfactory workaround is provided.</li> <li>• Fix or workaround incorporated into the Support Knowledge Base.</li> <li>• Fix incorporated into future release.</li> </ul>
4	2 Business Days	12 months	<ul style="list-style-type: none"> <li>• Answer to question is provided.</li> <li>• Fix or workaround incorporated into the Support Knowledge Base.</li> </ul>

## 6. Problem Escalation Process.

- 6.1. If the normal support process does not produce the desired results, or if the severity has changed, the issue may be escalated as follows to a higher level of authority.
  - 6.1.1. Severity 1 issues are escalated by Sales or Technical Services to a Supervisor if not resolved within 2 hours; to the Manager level if not resolved within 4 hours; to the Director level if not resolved within the same business day; and to the VP level if not resolved within 24 hours.
  - 6.1.2. A customer may escalate an issue by calling 1-800-638-3748, Option 2. Please specify the Support ticket number and the reason why the issue is being escalated.
  - 6.1.3. In the event that a customer is not satisfied with the level of support or continual problem with their products, they may escalate a given Support ticket to Manager of Technical Services (1-800-638-3748, Option 2).

## 7. General Support Provisions and Exclusions.

- 7.1. Sensus provides online documentation for Sensus products through the Sensus User Forum (<http://myflexnetsystem.com/Module/User/Login>). All Sensus customers are provided access to this online database, which includes operation, configuration and technical manuals. Sensus also hosts periodic user group teleconferences to facilitate the interchange of product ideas, product enhancements, and overall customer experiences. The customer shall provide names and email accounts to Sensus so Sensus may provide access to the Portal.
- 7.2. Specialized support from Sensus is available on a fee basis to address support issues outside the scope of this support plan or if not covered under another specific maintenance contract. For example, specialized systems integration services or out of warranty network equipment repair that is not covered under a separate maintenance contract.



**Exhibit E. Ferguson Proposed and Estimated Project Schedule and Times (Draft)**

# EXHIBIT E. Proposed Project Schedule (To be modified by the Parties)

ID	Los Alamos County AMI Deployem	Duration	Start	Finish	
1	<b>Los Alamos County AMI Project Plan</b>	<b>326 days</b>	Mon 4/3/17	<b>Mon 7/2/18</b>	B
2	<b>Intent to Award Announcement</b>	0 days	Mon 4/3/17	Mon 4/3/17	
3	<b>Contract Negotiations</b>	2 mons	Mon 4/3/17	Fri 5/26/17	
4	<b>Contract Award / PM Assigned</b>	1 mon	Tue 5/2/17	Mon 5/29/17	
5	<b>AEM and RF Engineer Assigned</b>	0 days	Tue 5/30/17	Tue 5/30/17	
6	<b>Notice To Proceed</b>	0 days	Thu 6/1/17	Thu 6/1/17	
7	<b>Gather Project Information and Documentation</b>	<b>0.25 days</b>	<b>Fri 6/2/17</b>	<b>Fri 6/2/17</b>	
8	Obtain a copy of the Contract or SOW	1 hr	Fri 6/2/17	Fri 6/2/17	
9	Obtain a copy of the Updated Purchase Order	1 hr	Fri 6/2/17	Fri 6/2/17	
10	Update Project Charter document (Overall Scope of Work)	2 hrs	Fri 6/2/17	Fri 6/2/17	
11	Obtain a copy of the Updated System Design Documentation (Network diagram, RNI Specifications)	2 hrs	Fri 6/2/17	Fri 6/2/17	
12	Update Project Contact List (Sensus contacts, Customer contacts, shipping address)	2 hrs	Fri 6/2/17	Fri 6/2/17	
13	<b>Pre-Deploying Planning Los Alamos County</b>	<b>10.13 days</b>	Wed 6/7/17	<b>Wed 6/21/17</b>	
14	<b>Sensus Internal Kick-off</b>	<b>4.5 days</b>	<b>Wed 6/7/17</b>	<b>Tue 6/13/17</b>	
15	Create project requirements list	1 day	Wed 6/7/17	Thu 6/8/17	
16	Determine Systems Acceptance Test Criteria	1 day	Thu 6/8/17	Fri 6/9/17	
17	Determine First Article Test Requirements	1 day	Fri 6/9/17	Mon 6/12/17	
18	Create equipment (hardware) deliverables list	4 hrs	Mon 6/12/17	Mon 6/12/17	
19	Create Purchase Orders	4 hrs	Mon 6/12/17	Tue 6/13/17	
20	Create Work Breakdown Structure	4 hrs	Tue 6/13/17	Tue 6/13/17	
21	<b>Perform site survey at each Basestaion site</b>	<b>4.63 days</b>	<b>Wed 6/14/17</b>	<b>Wed 6/21/17</b>	
22	Determine that towers are serviceable for installation	8 hrs	Wed 6/14/17	Thu 6/15/17	
23	<b>Determine antenna height and attachment point</b>	<b>0.38 days</b>	<b>Thu 6/15/17</b>	<b>Fri 6/16/17</b>	
24	If Omni antenna must be on top of tower or on 3 foot stand off	1 hr	Thu 6/15/17	Thu 6/15/17	
25	Determine attachment point and mounting hardware	2 hrs	Thu 6/15/17	Fri 6/16/17	
26	<b>Determine coax cable routing</b>	<b>1 day</b>	<b>Fri 6/16/17</b>	<b>Mon 6/19/17</b>	
27	Determine coax cable attachment points	2 hrs	Fri 6/16/17	Fri 6/16/17	
28	Determine coax cable attachment hardware	2 hrs	Fri 6/16/17	Fri 6/16/17	
29	Determine conduit requirements (routing, length, attachment, hardware)	4 hrs	Fri 6/16/17	Mon 6/19/17	
30	<b>Determine routing of coax between tower base and Basestation</b>	<b>0.5 days</b>	<b>Mon 6/19/17</b>	<b>Mon 6/19/17</b>	
31	Determine conduit requirement or ice bridge	4 hrs	Mon 6/19/17	Mon 6/19/17	
32	Determine trenching requirement	4 hrs	Mon 6/19/17	Mon 6/19/17	
33	<b>Determine appropriate power source available</b>	<b>0.5 days</b>	<b>Mon 6/19/17</b>	<b>Tue 6/20/17</b>	
34	Determine scope of work to get electric power to TBasestations	4 hrs	Mon 6/19/17	Tue 6/20/17	
35	Determine trenching requirement	4 hrs	Mon 6/19/17	Tue 6/20/17	
36	<b>Determine proper ground field available</b>	<b>0.25 days</b>	<b>Tue 6/20/17</b>	<b>Tue 6/20/17</b>	
37	Ground field at tower base for Basestation	2 hrs	Tue 6/20/17	Tue 6/20/17	
38	Ground connection at antenna base	2 hrs	Tue 6/20/17	Tue 6/20/17	
39	<b>Create Basestation &amp; tower equipment installation statement of work document</b>	8 hrs	Tue 6/20/17	Wed 6/21/17	
40	<b>Endpoint Deployment Planning</b>	<b>1.5 days</b>	<b>Mon 6/12/17</b>	<b>Tue 6/13/17</b>	
41	Develop preliminary deployment schedule	4 hrs	Mon 6/12/17	Mon 6/12/17	
42	Meet with Sensus Technical Service to review project requirements and their role & responsibility	0.5 days	Mon 6/12/17	Mon 6/12/17	
43	Meet with Contract Meter Installers	0.5 days	Mon 6/12/17	Mon 6/12/17	
44	Finalize deployment schedule	1 day	Mon 6/12/17	Mon 6/12/17	

# EXHIBIT E. Proposed Project Schedule (To be modified by the Parties)

ID	Los Alamos County AMI Deployem	Duration	Start	Finish	
45	Sensus Internal Kick-off	0.5 days	Mon 6/12/17	Mon 6/12/17	B
46	<b>Los Alamos County County Kick-off Meeting</b>	<b>3 days</b>	<b>Tue 6/13/17</b>	<b>Fri 6/16/17</b>	
47	Review Sensus project deployment process	4 hrs	Tue 6/13/17	Tue 6/13/17	
48	Review contract or statement of work	4 hrs	Wed 6/14/17	Wed 6/14/17	
49	Review roles and responsibilities for the project	2 hrs	Tue 6/13/17	Tue 6/13/17	
50	<b>Review prop study, network design, tower locations and backhaul requirements</b>	<b>2.75 days</b>	<b>Tue 6/13/17</b>	<b>Fri 6/16/17</b>	
51	Review network design document and get Los Alamos County IP addresses, default router, subnet mask	2 hrs	Tue 6/13/17	Tue 6/13/17	
52	Los Alamos County to provide WAN equipment	1 hr	Tue 6/13/17	Tue 6/13/17	
53	Define user accounts required	2 hrs	Wed 6/14/17	Wed 6/14/17	
54	Define customer training requirements	2 hrs	Wed 6/14/17	Wed 6/14/17	
55	Define meter testing in meter shop (First Article)	4 hrs	Wed 6/14/17	Wed 6/14/17	
56	Discuss installation process	2 hrs	Thu 6/15/17	Thu 6/15/17	
57	Discuss customer expectations for the project and execution	6 hrs	Thu 6/15/17	Thu 6/15/17	
58	Define data interface between RNI and MDMS	4 hrs	Fri 6/16/17	Fri 6/16/17	
59	<b>Review the Project System Acceptance Test Plan</b>	<b>1 day</b>	<b>Fri 6/16/17</b>	<b>Mon 6/19/17</b>	
60	Review the Project Acceptance test process	4 hrs	Fri 6/16/17	Fri 6/16/17	
61	Define the meter routes / black out windows to be included in the acceptance test plan	2 hrs	Mon 6/19/17	Mon 6/19/17	
62	Review and adjust preliminary schedule	2 hrs	Mon 6/19/17	Mon 6/19/17	
63	<b>Basestation Deployment Planning</b>	<b>5 days</b>	<b>Thu 6/22/17</b>	<b>Wed 6/28/17</b>	
64	<b>Verify with Network Engineering Group that antenna height is what was used for propagation study</b>	<b>4 hrs</b>	<b>Thu 6/22/17</b>	<b>Thu 6/22/17</b>	
65	If different adjust or re-run prop study	1 day	Thu 6/22/17	Thu 6/22/17	
66	Create Scope of Work document for Base Station install based on site survey	3 days	Thu 6/22/17	Mon 6/26/17	
67	Review attachment requirements for data backhaul	4 hrs	Thu 6/22/17	Thu 6/22/17	
68	<b>Phase 1</b>	<b>270 days</b>	<b>Mon 3/27/17</b>	<b>Fri 4/6/18</b>	
69	<b>AMI / MDMS Infrastructure Installation</b>	<b>270 days</b>	<b>Thu 6/8/17</b>	<b>Wed 6/20/18</b>	
70	<b>FlexNet Head End System Design and Installation</b>	<b>43.5 days</b>	<b>Thu 6/8/17</b>	<b>Tue 8/8/17</b>	
71	Provide planning session with Los Alamos County to define security and 3rd party software requirements	5 days	Thu 6/8/17	Wed 6/14/17	
72	Create SaaS RNI VM Instance	1 day	Thu 6/15/17	Thu 6/15/17	
73	Develop required IT hardware/ software/Integration requirements for all head end operating environments	15 days	Fri 6/16/17	Thu 7/6/17	
74	Complete AMI System Integrations	15 days	Fri 7/7/17	Thu 7/27/17	
75	Provide required Los Alamos County staff, facility and on-line access to live RNI Environment for training	4 hrs	Fri 7/28/17	Fri 7/28/17	
76	Provide local SME delivered training on FlexNet Head End System role based operation and maintenance.	2 days	Fri 7/28/17	Tue 8/1/17	
77	Complete Head End System testing	5 days	Tue 8/1/17	Tue 8/8/17	
78	<b>MDMS Installation</b>	<b>45.5 days</b>	<b>Fri 6/16/17</b>	<b>Fri 8/18/17</b>	
79	Install MDMS	4 days	Fri 6/16/17	Wed 6/21/17	
80	Test RNI to MDMS Interface via file exchange or MultiSpeak 4.1, CMEP, MV-RS	1 day	Tue 8/8/17	Wed 8/9/17	
81	Provide on site MDMS Training	2 days	Wed 8/16/17	Fri 8/18/17	
82	<b>Basestation Deployment Phase Phase 1</b>	<b>2 days</b>	<b>Mon 6/26/17</b>	<b>Tue 6/27/17</b>	
83	<b>Basestation Barranca_Tank</b>	<b>1 day</b>	<b>Mon 6/26/17</b>	<b>Mon 6/26/17</b>	
84	<b>Mechanical Work</b>	<b>1 day</b>	<b>Mon 6/26/17</b>	<b>Mon 6/26/17</b>	

EXHIBIT E. Proposed Project Schedule  
(To be modified by the Parties)

ID	Los Alamos County AMI Deployent	Duration	Start	Finish	
85	Mount antenna to tower	1 hr	Mon 6/26/17	Mon 6/26/17	B
86	Mount GPS antenna	1 hr	Mon 6/26/17	Mon 6/26/17	
87	If conduit required down side of tower - install conduit on tower	1 hr	Mon 6/26/17	Mon 6/26/17	
88	Install coax cable from antenna to Basestation	8 hrs	Mon 6/26/17	Mon 6/26/17	
89	Install poly-phase at each end of coax with appropriate ground connection	2 hrs	Mon 6/26/17	Mon 6/26/17	
90	<b>Electrical Work</b>	<b>0.06 days</b>	<b>Mon 6/26/17</b>	<b>Mon 6/26/17</b>	
91	Certify available ground field or install new ground field	0.5 hrs	Mon 6/26/17	Mon 6/26/17	
92	Install ground strap between Basestation and ground field	0.5 hrs	Mon 6/26/17	Mon 6/26/17	
93	Connect Basestation to available power	0.5 hrs	Mon 6/26/17	Mon 6/26/17	
94	Connect data cable to Basestation	0.5 hrs	Mon 6/26/17	Mon 6/26/17	
95	<b>Backhaul Communications</b>	<b>0.13 days</b>	<b>Mon 6/26/17</b>	<b>Mon 6/26/17</b>	
96	Configure IP address, Default Route, and Subnet mask	1 hr	Mon 6/26/17	Mon 6/26/17	
97	<b>Basestation Configuration</b>	<b>0.13 days</b>	<b>Mon 6/26/17</b>	<b>Mon 6/26/17</b>	
98	Program Basestation to operate on the IP network (firewall security)	0.5 hrs	Mon 6/26/17	Mon 6/26/17	
99	Test Basestation receive & transmit functionality	1 hr	Mon 6/26/17	Mon 6/26/17	
100	Test remote access to Basestation	1 hr	Mon 6/26/17	Mon 6/26/17	
101	Document Network IP addresses	0.5 hrs	Mon 6/26/17	Mon 6/26/17	
102	<b>Base Station Quemazon_Tank</b>	<b>1 day</b>	<b>Tue 6/27/17</b>	<b>Tue 6/27/17</b>	
103	<b>Mechanical Work</b>	<b>1 day</b>	<b>Tue 6/27/17</b>	<b>Tue 6/27/17</b>	
104	Mount antenna to tower	1 hr	Tue 6/27/17	Tue 6/27/17	3 of 5
105	Mount GPS antenna	1 hr	Tue 6/27/17	Tue 6/27/17	
106	If conduit required down side of tower - install conduit on tower	1 hr	Tue 6/27/17	Tue 6/27/17	
107	Install coax cable from antenna to Basestation	1 hr	Tue 6/27/17	Tue 6/27/17	
108	Install poly-phase at each end of coax with appropriate ground connection	2 hrs	Tue 6/27/17	Tue 6/27/17	
109	<b>Electrical Work</b>	<b>0.06 days</b>	<b>Tue 6/27/17</b>	<b>Tue 6/27/17</b>	
110	Certify available ground field or install new ground field	0.5 hrs	Tue 6/27/17	Tue 6/27/17	
111	Install ground strap between Basestation and ground field	0.5 hrs	Tue 6/27/17	Tue 6/27/17	
112	Connect Basestation to available power	0.5 hrs	Tue 6/27/17	Tue 6/27/17	
113	Connect data cable to Basestation	0.5 hrs	Tue 6/27/17	Tue 6/27/17	
114	<b>Backhaul Communications</b>	<b>0.13 days</b>	<b>Tue 6/27/17</b>	<b>Tue 6/27/17</b>	
115	Configure IP address, Default Route, and Subnet mask	1 hr	Tue 6/27/17	Tue 6/27/17	
116	<b>Basestation Configuration</b>	<b>0.13 days</b>	<b>Tue 6/27/17</b>	<b>Tue 6/27/17</b>	
117	Program Basestation to operate on the IP network (firewall security)	0.5 hrs	Tue 6/27/17	Tue 6/27/17	
118	Test Basestation receive & transmit functionality	1 hr	Tue 6/27/17	Tue 6/27/17	
119	Test remote access to Basestation	1 hr	Tue 6/27/17	Tue 6/27/17	
120	Document Network IP addresses	0.5 hrs	Tue 6/27/17	Tue 6/27/17	
121	<b>Base Station Water_Production_Tank</b>	<b>1 day</b>	<b>Wed 6/28/17</b>	<b>Wed 6/28/17</b>	3 of 5
122	<b>Mechanical Work</b>	<b>1 day</b>	<b>Wed 6/28/17</b>	<b>Wed 6/28/17</b>	
123	Mount antenna to tower	1 hr	Wed 6/28/17	Wed 6/28/17	
124	Mount GPS antenna	1 hr	Wed 6/28/17	Wed 6/28/17	
125	If conduit required down side of tower - install conduit on tower	1 hr	Wed 6/28/17	Wed 6/28/17	
126	Install coax cable from antenna to Basestation	1 hr	Wed 6/28/17	Wed 6/28/17	
127	Install poly-phase at each end of coax with appropriate ground connection	2 hrs	Wed 6/28/17	Wed 6/28/17	
128	<b>Electrical Work</b>	<b>0.06 days</b>	<b>Wed 6/28/17</b>	<b>Wed 6/28/17</b>	

# EXHIBIT E. Proposed Project Schedule (To be modified by the Parties)

ID	Los Alamos County AMI Deployent	Duration	Start	Finish	A	B
129	Certify available ground field or install new ground field	0.5 hrs	Wed 6/28/17	Wed 6/28/17		
130	Install ground strap between Basestation and ground field	0.5 hrs	Wed 6/28/17	Wed 6/28/17		
131	Connect Basestation to available power	0.5 hrs	Wed 6/28/17	Wed 6/28/17		
132	Connect data cable to Basestation	0.5 hrs	Wed 6/28/17	Wed 6/28/17		
133	<b>Backhaul Communications</b>	<b>0.13 days</b>	<b>Wed 6/28/17</b>	<b>Wed 6/28/17</b>		
134	Configure IP address, Default Route, and Subnet mask	1 hr	Wed 6/28/17	Wed 6/28/17		
135	<b>Basestation Configuration</b>	<b>0.13 days</b>	<b>Wed 6/28/17</b>	<b>Wed 6/28/17</b>		
136	Program Basestation to operate on the IP network (firewall security)	0.5 hrs	Wed 6/28/17	Wed 6/28/17		
137	Test Basestation receive & transmit functionality	1 hr	Wed 6/28/17	Wed 6/28/17		
138	Test remote access to Basestation	1 hr	Wed 6/28/17	Wed 6/28/17		
139	Document Network IP addresses	0.5 hrs	Wed 6/28/17	Wed 6/28/17		
140	<b>Base Station SE Sector</b>	<b>1 day</b>	<b>Thu 6/29/17</b>	<b>Thu 6/29/17</b>		
141	<b>Mechanical Work</b>	<b>1 day</b>	<b>Thu 6/29/17</b>	<b>Thu 6/29/17</b>		
142	Mount antenna to tower	1 hr	Thu 6/29/17	Thu 6/29/17		
143	Mount GPS antenna	1 hr	Thu 6/29/17	Thu 6/29/17		
144	If conduit required down side of tower - install conduit on tower	1 hr	Thu 6/29/17	Thu 6/29/17		
145	Install coax cable from antenna to Basestation	8 hrs	Thu 6/29/17	Thu 6/29/17		
146	Install poly-phase at each end of coax with appropriate ground connection	2 hrs	Thu 6/29/17	Thu 6/29/17		
147	<b>Electrical Work</b>	<b>0.06 days</b>	<b>Thu 6/29/17</b>	<b>Thu 6/29/17</b>		
148	Certify available ground field or install new ground field	0.5 hrs	Thu 6/29/17	Thu 6/29/17		
149	Install ground strap between Basestation and ground field	0.5 hrs	Thu 6/29/17	Thu 6/29/17		
150	Connect Basestation to available power	0.5 hrs	Thu 6/29/17	Thu 6/29/17		
151	Connect data cable to Basestation	0.5 hrs	Thu 6/29/17	Thu 6/29/17		
152	<b>Backhaul Communications</b>	<b>0.13 days</b>	<b>Thu 6/29/17</b>	<b>Thu 6/29/17</b>		
153	Configure IP address, Default Route, and Subnet mask	1 hr	Thu 6/29/17	Thu 6/29/17		
154	<b>Basestation Configuration</b>	<b>0.13 days</b>	<b>Thu 6/29/17</b>	<b>Thu 6/29/17</b>		
155	Program Basestation to operate on the IP network (firewall security)	0.5 hrs	Thu 6/29/17	Thu 6/29/17		
156	Test Basestation receive & transmit functionality	1 hr	Thu 6/29/17	Thu 6/29/17		
157	Test remote access to Basestation	1 hr	Thu 6/29/17	Thu 6/29/17		
158	Document Network IP addresses	0.5 hrs	Thu 6/29/17	Thu 6/29/17		
159	<b>Certify Basestaions #1 - 4</b>	<b>1 day</b>	<b>Mon 7/3/17</b>	<b>Mon 7/3/17</b>		
160	<b>Endpoint Initial Training and Phase 1 Installation</b>	<b>5 days</b>	<b>Tue 7/4/17</b>	<b>Mon 7/10/17</b>		
161	Meter Shop begins First Article Testing (all meter forms & module types)	1 wk	Tue 7/4/17	Mon 7/10/17		
162	<b>First Article Testing Complete</b>	0 days	Mon 7/10/17	Mon 7/10/17		
163	<b>Meter Installer Training</b>	<b>2 days</b>	<b>Tue 7/11/17</b>	<b>Wed 7/12/17</b>		
164	<b>Contract Meter Installer Training</b>	<b>1 day</b>	<b>Tue 7/11/17</b>	<b>Tue 7/11/17</b>		
165	Train on proper endpoint installation	2 hrs	Tue 7/11/17	Tue 7/11/17		
166	Train on CMI handheld/ FMT operation	2 hrs	Tue 7/11/17	Tue 7/11/17		
167	Train on work order requirements - we need daily reports on meter #, radio #, account, address	1 hr	Tue 7/11/17	Tue 7/11/17		
168	Train on verification of endpoint activation	1 hr	Tue 7/11/17	Tue 7/11/17		
169	Train on troubleshooting bad endpoints	2 hrs	Tue 7/11/17	Tue 7/11/17		
170	Work with installers to ensure they do quality installations	2 days	Tue 7/11/17	Thu 7/13/17		
171	Establish RMA process	4 hrs	Tue 7/11/17	Tue 7/11/17		
					4 of 5	

# EXHIBIT E. Proposed Project Schedule (To be modified by the Parties)

ID	Los Alamos County AMI Deployent	Duration	Start	Finish	B
172	Discuss process to get daily reports on units installed to load into RNI	1 hr	Tue 7/11/17	Tue 7/11/17	
173	Discuss installers responsibility for good installs	1 hr	Tue 7/11/17	Tue 7/11/17	
174	Discuss Sensus QA with installers	1 hr	Tue 7/11/17	Tue 7/11/17	
175	<b>Endpoint Installation Phase 1 Meters</b>	<b>7 days</b>	<b>Mon 7/17/17</b>	<b>Tue 7/25/17</b>	
176	Meter Installation	5 days	Wed 7/12/17	Wed 7/19/17	
177	Optimize Phase 1 Installation	7 days	Wed 7/19/17	Fri 7/28/17	
178	<b>AMI Phase 1 Infrastructure Installation Complete</b>	0 days	Fri 7/28/17	Fri 7/28/17	
179	<b>Begin Phase 1 SAT Testing</b>	5 mons	Mon 5/1/17	Fri 9/15/17	
180	<b>Phase 1 SAT Testing Complete</b>	<b>1 day</b>	<b>Fri 9/15/17</b>	<b>Fri 9/15/17</b>	
181	<b>Review Phase 1 Test Results and Refine Project as Required</b>	5 days	Mon 9/18/17	Fri 9/22/17	
182	<b>Notice to Proceed Full Deployment</b>	0 days	Fri 9/22/17	Fri 9/22/17	
183	<b>Full Deployment Deployment</b>	<b>240 days</b>	<b>Mon 9/25/17</b>	<b>Fri 8/24/18</b>	
184	<b>CMI Installation Management Systems</b>	<b>5 days</b>	<b>Mon 9/25/17</b>	<b>Fri 9/29/17</b>	
185	CMI Installs Work Order Management System	2 days	Mon 9/25/17	Tue 9/26/17	
186	CMI Loads Test Electric / Water Meter / Gas Module Test File	1 day	Wed 9/27/17	Wed 9/27/17	
187	Meter Data Management Life Cycle Transaction file loaded into RNI	1 day	Thu 9/28/17	Thu 9/28/17	
188	MDMIF Interface Testing Complete	1 day	Fri 9/29/17	Fri 9/29/17	
189	<b>Full Deployment Endpoint Installation</b>	<b>213 days</b>	<b>Tue 10/31/17</b>	<b>Thu 8/23/18</b>	
190	Route Planning / Blackout Schedule Complete	2 days	Wed 10/18/17	Thu 10/19/17	
191	<b>Contract Meter Installer Begins Installation Phase</b>	<b>210 days</b>	<b>Fri 11/3/17</b>	<b>Thu 8/23/18</b>	
192	CMI Installs all Endpoints	180 days	Mon 10/23/17	Fri 6/29/18	
193	<b>System Optimization Phase</b>	<b>180 days</b>	<b>Mon 10/23/17</b>	<b>Fri 6/29/18</b>	
194	Evaluate Network Performance	180 days	Mon 10/23/17	Fri 6/29/18	
195	Change any non-performing endpoints	180 days	Mon 10/23/17	Fri 6/29/18	
196	Re-program endpoints to more aggressive transmit modes as required	180 days	Mon 10/23/17	Fri 6/29/18	
197	Ensure all endpoints are heard under the FlexNet RF umbrella	180 days	Mon 10/23/17	Fri 6/29/18	
198	<b>Full Deployment Installation Complete</b>	<b>0 days</b>	<b>Fri 6/29/18</b>	<b>Fri 6/29/18</b>	
199	<b>Project Complete and Close -out</b>	<b>1.75 days</b>	<b>Fri 6/29/18</b>	<b>Mon 7/2/18</b>	
200	Gather all project information	6 hrs	Fri 6/29/18	Fri 6/29/18	
201	Turn over documentation	2 hrs	Fri 6/29/18	Fri 6/29/18	
202	Hold close-out meeting with customer	6 hrs	Mon 7/2/18	Mon 7/2/18	
203	Notify project team that project has completed	0 days	Mon 7/2/18	Mon 7/2/18	
204	<b>Turn Over to Operations</b>	0 days	Mon 7/2/18	Mon 7/2/18	

**Exhibit F. System Acceptance Test Requirements (D1. Electrical, D2. Water System, and D3. Gas System Acceptance Test Plans)**



**Sensus USA**

---

***LOS ALAMOS COUNTY***  
***AMI System Acceptance Test - Electric***

***Acceptance Criteria***

Version: Draft



## Revision History

Date	Version	Author(s)	Comments
12/25/16	0.1	Wayne Schmieder	Initial draft

## Table of Contents

1. Overview .....	5
2. Pre Conditions.....	5
3. Assumptions.....	5
4. Timeframe .....	6
5. Acceptance Tests .....	6
5.1 EA-1: Communication – Daily Register Read Success .....	6
5.2 EA-2: Communications – Daily Interval Read Success .....	7
5.3 EA-3: Communication – 72 Hour Interval Read Success.....	8
5.4 EA-4: Communication – 30 Day Interval Read Success.....	9
5.5 EA-5: Last Gasp Performance.....	9
5.6 EA-6: Restoration Performance .....	11
5.7 EA-7: Measurement (Time Synchronization).....	12
5.8 EA-8 Measurement (Remote Read Accuracy).....	13
5.9 EA-9: Firmware Upgradability .....	15
5.10 EA-10: Meter Configuration .....	15
5.11 EA-11: Operational Data Collection Accuracy.....	18
5.12 EA-12: Disconnect .....	19
5.13 EA-13: Reconnect .....	21
6. Appendix A.....	24
7. Mutual Acceptance Agreement .....	25

## List of Figures

Figure 1: [ EA-1 ] Logic Daily Register Read Report Success Results .....	6
Figure 2: [ EA-2 ] Logic Daily Interval Read Report Results .....	7
Figure 3: [ EA-3 ] Logic 72 hour Interval Report Results .....	8
Figure 4: [ EA-4 ] Logic 30 day Interval Read Report Results .....	9
Figure 5: [ EA-5 ] RNI Web Outage Report (Power Fail) .....	10
Figure 6: [ EA-6 ] RNI Web Outage Report (Power Restore) .....	12
Figure 7: [ EA-7 ] Official US Time via time.gov .....	13
Figure 8: [ EA-8 ] RNI Web Remote Read - Refresh from Endpoint .....	14
Figure 9: [ EA-8 ] RNI Web Remote Read - Refresh from Endpoint Results .....	14
Figure 10: [ EA-10 ] RNI Web Electric Static Configuration .....	16
Figure 11: [ EA-10 ] RNI Web Electric Static Configuration Submission .....	17
Figure 12: [ EA-11 ] RNI Web Event Log .....	18
Figure 13: [ EA-11 ] FNU Alarm Ping Voltage Readings Results .....	19
Figure 14: [ EA-12 ] RNI Web Electric Disconnect .....	20
Figure 15: [ EA-12 ] RNI Web Electric Disconnect Submission .....	20
Figure 16: [ EA-13 ] RNI Web Electric Reconnect .....	22
Figure 17: [ EA-13 ] RNI Web Electric Reconnect Submission .....	22
Figure 18: Appendix A - AMI Service Level Report Operation .....	24

## List of Tables

Table 1: [ EA- 5 ] Power Fail Success Criteria .....	11
Table 2: [ EA- 6 ] Power Restore Success Criteria .....	12
Table 3: Mutual Acceptance Agreement .....	25

## 1. Overview

Los Alamos County shall deploy the Test Equipment and shall deploy 332 Electric meters ("Electric Test Meters"), in the White Rock community service territory (collectively, the "Electric Deployment").

The Electric Acceptance Test shall consist of the following subtests:

- EA-1: Communication: Daily Register Read Success
- EA-2: Communication: Daily Interval Read Success
- EA-3: Communication: 72 Hour Interval Read Success
- EA-4: Communication: 30 Day Interval Read Success
- EA-5: Last Gasp Performance
- EA-6: Restoration Performance
- EA-7: Measurement (Time Synchronization)
- EA-8: Measurement (Remote Read Accuracy)
- EA-9: Firmware Upgradeability
- EA-10: Meter Configuration
- EA-11: Operational Data Collection Accuracy
- EA-12: Disconnect
- EA-13: Reconnect

Upon satisfactory completion of each of the above tests, the AMI System will be deemed to have passed the Electric Acceptance Test. Each test is described in detail in [section 5](#) below.

## 2. Pre Conditions

Testing can commence a minimum of fifteen (15) days after the below conditions are met.

- The entire network infrastructure is in place and Sensus certified.
- The Electric Meter Deployment is complete.
- Los Alamos County has sent written notice to Sensus after the Electric Deployment is complete.
  - Such notice shall indicate the date on which the Electric Deployment is completed.

## 3. Assumptions

- For purposes of clarity, the Acceptance Tests shall only be conducted on Electric Test Meters as defined above, and Electric Test Meters shall only include deployed and available Electric Meters.
- Los Alamos County has the right to waive any of the tests listed in the document for any reason, including previous evidence of success criteria being met.
- When non Sensus tools are utilized to confirm the achieved success criteria, Sensus has the right to validate the data used by those tools against that data that resides in the Sensus RNI database.

## 4. Timeframe

- Testing can commence as soon as the Pre Conditions listed in [section 2](#) are satisfied.
- In general, an attempt should be made to complete tests within thirty (30) days after commencement.
  - Note: Some tests require a wait period to gather the required data to accurately perform the test and will therefore, exceed 30 days.
  - See “Pre Conditions” section of each acceptance test in [section 5](#) for test specific pre conditions.

## 5. Acceptance Tests

### 5.1 EA-1: Communication – Daily Register Read Success

#### 5.1.1 Overview

This test will determine the percentage of register reads collected by the AMI System over a 24 hour period.

#### 5.1.2 Pre Conditions

- This test can commence twenty four (24) hours after the Pre Conditions listed in [section 2](#) are satisfied.
- CMEP interface between Sensus RNI and Logic MDMS must be functional.

#### 5.1.3 Duration

This test will be run daily for 30 contiguous days.

#### 5.1.4 Test Method

Logic MDMS **AMI Service Level Report** will be utilized.

- This report will be configured to show the percentage of all Electric meter register readings delivered to Logic from the RNI via the CMEP interface in the previous twenty four (24) hours
- A separate spreadsheet should be maintained in order to document the daily “Achieved Service Level” every day for 30 days.
- This report can be scheduled or run manually, see [Appendix A](#) for details.

Figure 1: [ EA-1 ] Logic Daily Register Read Report Success Results

Register Reads

 Excel
  PDF
  Schedule
  Save

Time Frame	Report Date ↓	Expected Reads	Available Reads	Required Service Level (%)	Achieved Service Level (%)	RESULT
24 Hours ago	20130522	329	328	98	99.7	 Pass

## EXHIBIT F1. Electrical SAT

### 5.1.5 Success Criteria

98% or greater based on the documented daily “Achieved Service Level (%)” averaged over 30 contiguous days. (see Figure 2)

### 5.1.6 Notes

- Only meters that have been synced between Logic and Cayenta systems are included in this test.

## 5.2 EA-2: Communications – Daily Interval Read Success

### 5.2.1 Overview

This test will determine the percentage of interval reads collected by the AMI System over a 24 hour period.

### 5.2.2 Pre Conditions

- This test can commence twenty four (24) hours after the Pre Conditions listed in [section 2](#) are satisfied.
- CMEP interface between Sensus RNI and Logic MDMS must be functional.

### 5.2.3 Duration






This test will be run daily for 30 contiguous days.

### 5.2.4 Test Method

Logic MDMS **AMI Service Level Report** will be utilized.

- This report will be configured to show the percentage of all Electric meter interval readings delivered to Logic from the RNI via the CMEP interface in the previous twenty four (24) hours
- A separate spreadsheet should be maintained in order to document the daily “Achieved Service Level” every day for 30 days.
- This report can be scheduled or run manually, see [Appendix A](#) for details.

Figure 2: [ EA-2 ] Logic Daily Interval Read Report Results

Interval Reads						
 Excel	 PDF	 Schedule	 Save			
Time Frame	Report Date ↓	Expected Reads	Available Reads	Required Service Level (%)	Achieved Service Level (%)	RESULT
24 Hours ago	20130522	31584	30816	98	98.63	 Pass

### 5.2.5 Success Criteria

99.5% or greater based on the documented daily “Achieved Service Level (%)” averaged over 30 contiguous days. (see Figure 4)

## 5.2.6 Notes

- Only meters that have been synced between Logic and Cayenta systems are included in this test.

## 5.3 EA-3: Communication – 72 Hour Interval Read Success

### 5.3.1 Overview

This test will determine the percentage of reads collected by the AMI System over a rolling 72 hours.

### 5.3.2 Pre Conditions

- This test can commence seventy two (72) hours after the Pre Conditions listed in [section 2](#) are satisfied.
- CMEP interface between Sensus RNI and Logic MDMS must be functional.

### 5.3.3 Duration

This test will be run daily for 27 contiguous days.

### 5.3.4 Test Method

Logic MDMS **AMI Service Level Report** will be utilized.

- This report will be configured to show the percentage of all Electric meter readings for a rolling 72 hours based on interval reads delivered to Logic from the RNI via the CMEP interface.
- A separate spreadsheet should be maintained in order to document the daily “Achieved Service Level” every day for 27 days.
- This report can be scheduled or run manually, see [Appendix A](#) for details.

Figure 3: [ EA-3 ] Logic 72 hour Interval Report Results

Interval Reads						
Excel            PDF            Schedule            Save						
Time Frame	Report Date ↓	Expected Reads	Available Reads	Required Service Level (%)	Achieved Service Level (%)	RESULT
72 Hours ago	20130519	126336	125280	99	99.16	Pass

### 5.3.5 Success Criteria

99.5% or greater based on the documented daily “Achieved Service Level (%)” averaged over 27 contiguous days.

### 5.3.6 Notes

- Only meters that have been synced between Logic and Cayenta systems are included in this test.

## 5.4 EA-4: Communication – 30 Day Interval Read Success

### 5.4.1 Overview

This test will determine the percentage of interval reads collected by the AMI System over a rolling 30 days.

### 5.4.2 Pre Conditions

- This test can commence thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.
- CMEP interface between Sensus RNI and Logic MDMS must be functional.

### 5.4.3 Duration






This test will be run daily for 15 contiguous days.

### 5.4.4 Test Method

Logic MDMS **AMI Service Level Report** will be utilized.

- This report will be configured to show the percentage of all Electric meter readings for a rolling 30 days based on interval reads delivered to Logic from the RNI via the CMEP interface.
- A separate spreadsheet should be maintained in order to document the daily “Achieved Service Level” every day for 15 days.
- This report can be scheduled or run manually, see [Appendix A](#) for details.

Figure 4: [ EA-4 ] Logic 30 day Interval Read Report Results

Interval Reads						
 Excel	 PDF	 Schedule	 Save			
Time Frame	Report Date ↓	Expected Reads	Available Reads	Required Service Level (%)	Achieved Service Level (%)	RESULT
30 Days ago	20130423	947520	842999	99.5	99.5	 Pass

### 5.4.5 Success Criteria

99.5% or greater based on the documented daily “Achieved Service Level (%)” averaged over 15 contiguous days.

### 5.4.6 Notes

- Only meters that have been synced between Logic and Cayenta systems are included in this test.

## 5.5 EA-5: Last Gasp Performance

### 5.5.1 Overview

This test will determine the communication success rate of last gasp messages within the network.



## EXHIBIT F1. Electrical SAT

### 5.5.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.
- The Electricity Test Meters must be configured to transmit alarm messages in the priority channel only.
  - No other devices shall be utilizing this channel or communications (including, without limitation, no boost mode communication for water or gas Smart Point modules).
- Los Alamos County must select how many meters to use in performing this test; from 1-500.

### 5.5.3 Duration

- If the test is run using more than one hundred meters, the test will be run once.
- If the test is run using ten to one hundred meters, the test will be run twice.
- If the test is run using one to nine meters, the test will be run twenty times.

### 5.5.4 Test Method

Once meters are selected to be a part of this test, perform planned outage. Verify power failure messages were sent to the RNI via the RNI Web in Reports/Outage Report.

Figure 5: [ EA-5 ] RNI Web Outage Report (Power Fail)

#### Outage Report

Showing items 1 - 20 of 1057 Last Updated: Tuesday, May 28, 2013 10:25:14 AM

FlexNet ID	Power Restore	Power Fail
<a href="#">49748814</a>	05/01/13	05/01/13
<a href="#">2942717</a>	05/01/13	05/01/13
<a href="#">49751050</a>	05/01/13	05/01/13
<a href="#">49748924</a>	05/01/13	05/01/13
<a href="#">49748110</a>	05/01/13	05/01/13
<a href="#">49748096</a>	05/01/13	05/01/13
<a href="#">49748924</a>	05/01/13	05/01/13

### 5.5.5 Success Criteria

**Table 1: [ EA- 5 ] Power Fail Success Criteria**

Success criteria is based on the number of meters selected for the test as seen below.

Number of meters affected by Power Failures ("Outage Event") Under a Single FlexNet Base Station	1-100	101-250	251-500
Expected Success Rate	90%	85%	75%

### 5.5.6 Notes

- The test can be completed in a meter shop or test/sandbox environment due to the sensitive nature of planned outages.
- Los Alamos County has the right to waive this test for any reason, including previous evidence of success criteria being met.

## 5.6 EA-6: Restoration Performance

### 5.6.1 Overview

This test will determine the communication success rate of restoration events within the network.

### 5.6.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.
- The Electricity Test Meters must be configured to transmit alarm messages in the priority channel only.
  - No other devices shall be utilizing this channel or communications (including, without limitation, no boost mode communication for water or gas SmartPoint modules).

### 5.6.3 Duration

- If the test is run using more than one hundred meters, the test will be run once.
- If the test is run using ten to one hundred meters, the test will be run twice.
- If the test is run using one to nine meters, the test will be run twenty times.

### 5.6.4 Test Method

- Once meters are selected to be a part of this test, perform planned restoral. Verify power restore messages were sent to the RNI via the RNI Web in Reports/Outage Report.
- The test can be completed in a meter shop or test/sandbox environment due to the sensitive nature of planned outages.

Figure 6: [ EA-6 ] RNI Web Outage Report (Power Restore)

### Outage Report

Showing items 1 - 20 of 1057 Last Updated: Tuesday, May 28, 2013 10:25:14 AM

FlexNet ID	Power Restore	Power Fail
<a href="#">49748814</a>	05/01/13	05/01/13
<a href="#">2942717</a>	05/01/13	05/01/13
<a href="#">49751050</a>	05/01/13	05/01/13
<a href="#">49748924</a>	05/01/13	05/01/13
<a href="#">49748110</a>	05/01/13	05/01/13
<a href="#">49748096</a>	05/01/13	05/01/13
<a href="#">49748924</a>	05/01/13	05/01/13

#### 5.6.5 Success Criteria

Success criteria is based on the number of meters selected for the test as seen below.

Table 2: [ EA- 6 ] Power Restore Success Criteria

Number of meters affected by Power Restoration ("Restoration Event") Under a Single FlexNet Base Station	1-100	101-250	251-500
Expected Success Rate	90%	85%	75%

#### 5.6.6 Notes

Los Alamos County has the right to waive this test for any reason, including previous evidence of success criteria being met.

## 5.7 EA-7: Measurement (Time Synchronization)

### 5.7.1 Overview

This test will determine if the meter is synchronized to the time standard.

### 5.7.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.
- The installation of one (1) AMI electricity meter at a residence or lab setting that has not been subject to a power failure in the last fifteen (15) minutes ("Time Test Meter").
- The Time Test Meter will be configured to display local time on the LCD.
- The local time will be compared to a mutually agreed standard time ("Standard Time").

### 5.7.3 Duration

This test should be completed within thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.

### 5.7.4 Test Method

Compare the displayed local time of the LCD on the test meter with the agreed upon tool that represents Standard Time. One option is to use: <http://www.time.gov> which will show the “official US Time.

Figure 7: [ EA-7 ] Official US Time via time.gov



### 5.7.5 Success Criteria

The time displayed on the Time Test Meter is synchronized to the agreed upon tool that represents Standard Time to a tolerance of 60 seconds or less (+/-).

### 5.7.6 Notes

N/A

## 5.8 EA-8 Measurement (Remote Read Accuracy)

### 5.8.1 Overview

This test will compare the time stamp at the meter with the time received in the RNI software to confirm accuracy of time stamps being used during validation, and therefore for billing purposes.

### 5.8.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.
- The installation and selection of one AMI Electric meter at a residence or lab setting.

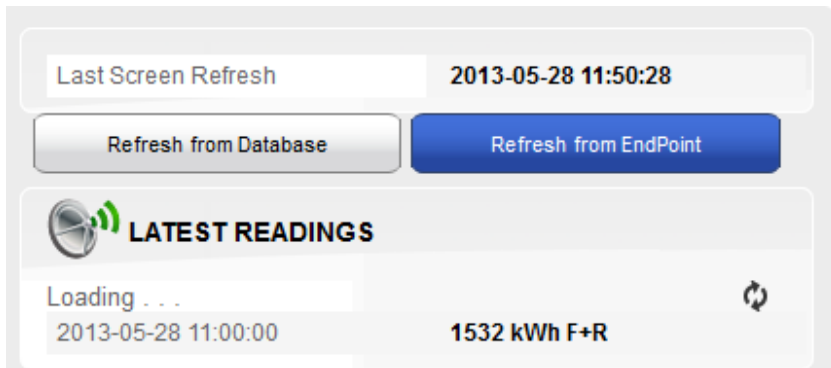
## 5.8.3 Duration

This test should be completed within thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.

## 5.8.4 Test Method

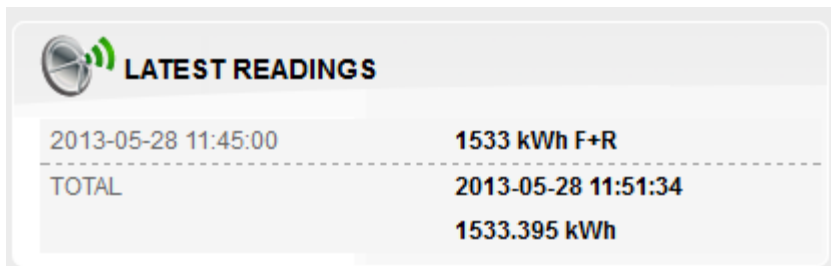
Coordinate the physical reading of the selected meter with the demand read via the RNI. To capture the demand read value and timestamp, for the selected meter, navigate to the IMIP page of the RNI and perform an on demand read via the “Refresh from Endpoint” button.

Figure 8: [ EA-8 ] RNI Web Remote Read - Refresh from Endpoint



Once complete, the RNI will provide a status message. At this point, you will see the latest read value and timestamp.

Figure 9: [ EA-8 ] RNI Web Remote Read - Refresh from Endpoint Results



## 5.8.5 Success Criteria

The data acquired through a manual read of the LCD kWh register differs from the data presented by an on-demand read taken at the same time by equal or less than +/-0.1%.

## 5.8.6 Notes

The physical read and on-demand read must be obtained simultaneously.

## 5.9 EA-9: Firmware Upgradability

### 5.9.1 Overview

This test serves to document the ability of the network to perform firmware upgrades to the SmartPoint Modules and FlexNet Base Stations in the field.

### 5.9.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.
- The installation of one (1) AMI electricity meter (“Download Meter”) at residence or in lab setting and the installation of one (1) FlexNet Base Station (“Download Base Station”), preferably in a test environment to avoid production interruption.

### 5.9.3 Duration

- This test should be completed within thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.
- Los Alamos County shall complete this test upon receipt of an update or purchased upgrade.
  - If no such update is released or upgrade is purchased, Sensus shall take commercially reasonable steps to provide Los Alamos County with software to complete this test script.

### 5.9.4 Test Method

This section left intentionally blank. Please consult with Sensus personnel.

### 5.9.5 Success Criteria

The Download Material is received by the Download Meter and the Download Base Station, as evidenced in the RNI.

### 5.9.6 Notes

- Los Alamos County has the right to waive this test as Sensus has previously demonstrated success criteria with previous firmware upgrade.
- If test is not waived, then this test should be:
  - Led by trained Sensus personnel with Los Alamos County supervision.
  - Completed on a meter installed in a lab environment and not at a customer site.

## 5.10 EA-10: Meter Configuration

### 5.10.1 Overview

This test serves to document the ability of the network to configure individual meter parameters on-air.

### 5.10.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.

## EXHIBIT F1. Electrical SAT

- The installation of ten (10) iCon A electricity meters (“Configuration Meters”) at residence or in lab setting.

### 5.10.3 Duration

This test should be completed within thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.

### 5.10.4 Test Method

Navigate to the Administration/Reprogramming page in the RNI Web. Update the static configuration to pre-determined values for this test.

Figure 10: [ EA-10 ] RNI Web Electric Static Configuration

**Electric**

**Static Configuration**

Read Interval  
1 hour ☒ No Change

Supervisory Transmit Rate  
4 hours ☒ No Change

Base Frequency Channel  
896.0 MHz ☒ No Change

Copy the ten (10) iCon A electricity meter id's into the text area seen below and click “Process Changes”

Figure 11: [ EA-10 ] RNI Web Electric Static Configuration Submission

**Meters**

Meter List:  
Include individual IDs or group names separated by commas, spaces, tabs,  
or carriage returns.

☐ FlexNet Ids    Max Run Time: 10 minutes ▼

☐ Meter Ids

☒ Group Names

-- Please Select -- ▼

Process Changes

After submission, you will be presented with a Batch ID. Navigate to Reports/Show Batches and click on the Batch ID and select “View Batch Details” for results.

### 5.10.5 Success Criteria

The AMI network should provide adequate configuration functions so that the following settings can be changed on-air:

- Static Configuration (transmit mode, read interval, transmit rate)
- Power Quality (Outage hold off time, restoral hold off time, momentary time, low voltage threshold, voltage averaging window).

The selected configuration changes made are received by nine of the configuration meters and as evidenced in the RNI.

### 5.10.6 Notes

N/A



## 5.11 EA-11: Operational Data Collection Accuracy

### 5.11.1 Overview

This test serves to document the ability of the network to collect accurate operational data from AMI Electric modules. The AMI network should collect operational data from available AMI Electric modules on a regular basis to assist Los Alamos County in managing various aspects of their distribution network.

### 5.11.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.
- The installation of one (1) AMI electricity meter (“Operational Test Meter”) configured with required alarms enabled at residence or in lab setting.

### 5.11.3 Duration




This test should be completed within thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.

### 5.11.4 Test Method

Verify Los Alamos County induced meter events in the RNI via Reports/Event Log after:

- Los Alamos County will induce an excursion event that exceeds the configured voltage alarm setting
- Los Alamos County will induce a tamper event (meter removal from socket)
- Los Alamos County will induce a theft event (uni-directional meter installed upside down in a meter socket)
- Los Alamos County will apply voltage to the meter of 110%, 100% and 90% of standard operating voltages.

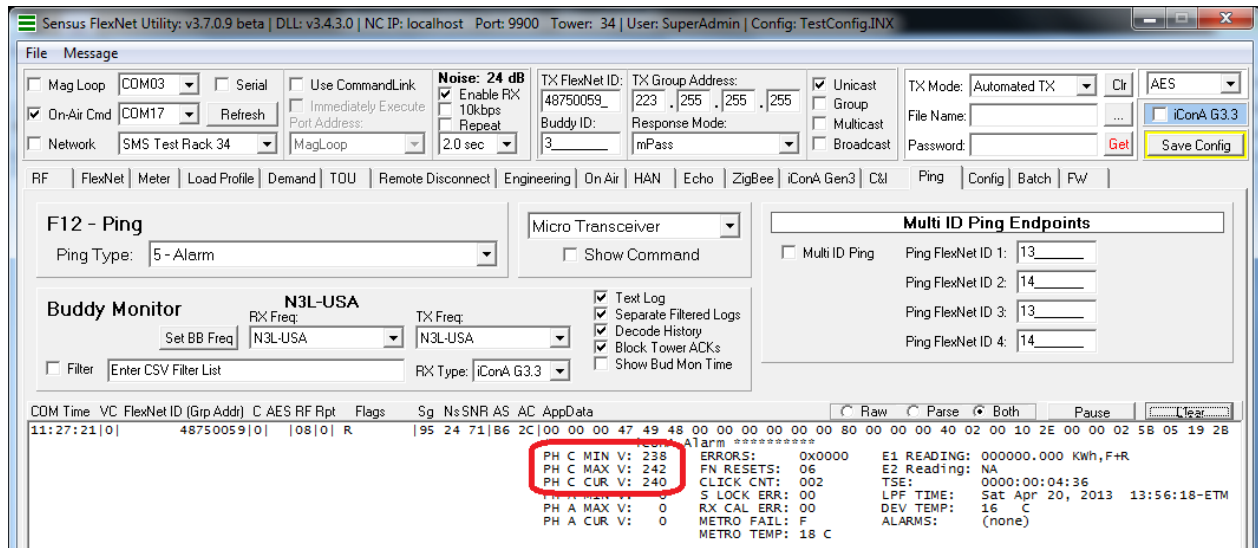
Figure 12: [ EA-11 ] RNI Web Event Log

Event Log		
Showing items 1 - 3 of 3    Last Updated: Tuesday, May 28, 2013 2:44:40 PM		
Event Description	Icons	Date/Time
Meter Tamper		05/22/2013 08:46:57
Meter Tamper		05/22/2013 22:42:11
Meter Tamper		05/28/2013 09:05:30
Records Per Page <input type="text" value="20"/> first    prev    1 >    next    last		

To verify the Instantaneous voltage readings, the meter will need to be pinged with FlexNet Utility (Alarm Ping 5) and that voltage data returned will need to be compared to calibrated test equipment.

## EXHIBIT F1. Electrical SAT

Figure 13: [ EA-11 ] FNU Alarm Ping Voltage Readings Results



### 5.11.5

### 5.11.6 Success Criteria

The AMI network will successfully detect the following alarms based on Los Alamos County induced events:

- Voltage Alarm received by the Operational Test Meter during the Voltage Test
- Tamper Alarm received by AMI system during induced tamper event
- Theft Alarm received by AMI system during induced theft event

Instantaneous voltage readings are equal or less than +/-5% of actual field measurement (using calibrated equipment)

### 5.11.7 Notes

- Los Alamos County meters are not setup to transmit a reverse energy flow error flag.
- Los Alamos County is measuring Forward + Reverse energy flow.
- The test for a theft event will be to remove a meter and install it upside down and verify through on demand pings that the meter still measures forward.

## 5.12 EA-12: Disconnect

### 5.12.1 Overview

The Disconnect test is used to determine if Sensus' disconnect meters operate as designed. This test shall be performed on twenty (20) meters that have remote disconnect capability ("Disconnect Meters").

### 5.12.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.

## EXHIBIT F1. Electrical SAT

- The installation of twenty AMI electricity meters at residence or in lab setting.

### 5.12.3 Duration

This test should be completed within thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.

### 5.12.4 Test Method

Navigate to the Administration/Reprogramming page in the RNI Web. Go to the Electric/Commands section and select “Disconnect”

Figure 14: [ EA-12 ] RNI Web Electric Disconnect

The screenshot shows a web interface with a sidebar on the left containing two expandable sections: "Electric" and "Commands". The "Commands" section is expanded, revealing a list of checkboxes. The "Disconnect" checkbox is selected, while others like "Billing Read", "iConA TOU Read", "Tier Read", "Reconnect", and "Demand Interval Read" are not. There is also a sub-option "Requires Tier Data" under "Billing Read".

Copy the twenty (20) iCon A electricity meter id's into the text area seen below and click “Process Changes”.

Figure 15: [ EA-12 ] RNI Web Electric Disconnect Submission

The screenshot shows a web form titled "Meters". Below the title is a text area for "Meter List" with instructions: "Include individual IDs or group names separated by commas, spaces, tabs, or carriage returns." Below the text area are three radio buttons: "FlexNet Ids", "Meter Ids", and "Group Names". The "Group Names" radio button is selected. To the right of the radio buttons is a "Max Run Time" dropdown menu set to "10 minutes". Below these is a dropdown menu with the text "-- Please Select --". At the bottom of the form is a "Process Changes" button.

After submission, you will be presented with a Batch ID. Navigate to Reports/Show Batches and click on the Batch ID and select “View Batch Details” for results.

### 5.12.5 Success Criteria

- The RNI/FlexWare Software shows the meter with a status of Disconnected for at least nineteen (19) Disconnect Meters.
- Los Alamos County confirms that the power is off for at least nineteen (19) Disconnect Meters (in the field or on the bench).

### 5.12.6 Notes

N/A

## 5.13 EA-13: Reconnect

### 5.13.1 Overview

The Reconnect test is used to determine if Sensus’ disconnect meters operate as designed. This test shall be performed on the same twenty (20) Disconnect Meters defined in the above Disconnect test. For purposes of this test, they shall be referred to as “Reconnect Meters”.

### 5.13.2 Pre Conditions

- Pre Conditions listed in [section 2](#) are satisfied.
- The installation of Disconnect Meters and completion of the above Disconnect test.
- Prior to commencing the test, Los Alamos County shall confirm that no load is applied on the meter while in a disconnected state.

### 5.13.3 Duration

This test should be completed within thirty (30) days after the Pre Conditions listed in [section 2](#) are satisfied.

### 5.13.4 Test Method

Navigate to the Administration/Reprogramming page in the RNI Web. Go to the Electric/Commands section and select “Reconnect”

Figure 16: [ EA-13 ] RNI Web Electric Reconnect

**Electric**

+ -Static Configuration-

**Commands**

- ☐ Billing Read:
  - ☐ Requires Tier Data
- ☐ iConA TOU Read
- ☐ Tier Read
- ☐ Disconnect
- ☒ Reconnect
- ☐ Demand Interval Read (Ping Type 10)

Copy the twenty (20) iCon A electricity meter id's into the text area seen below and click "Process Changes".

Figure 17: [ EA-13 ] RNI Web Electric Reconnect Submission

**Meters**

Meter List:  
Include individual IDs or group names separated by commas, spaces, tabs,  
or carriage returns.

☐ FlexNet Ids    Max Run Time: 10 minutes ▼

☐ Meter Ids

☒ Group Names

-- Please Select -- ▼

Process Changes

After submission, you will be presented with a Batch ID. Navigate to Reports/Show Batches and click on the Batch ID and select "View Batch Details" for results.

5.13.5 **Success Criteria**

- The RNI/FlexWare Software shows the meter with a status of Connected for at least nineteen (19) Reconnect Meters.
- Los Alamos County confirms that the power is on for at least nineteen (19) Reconnect Meters (in the field or on the bench).

5.13.6 **Notes**

N/A

## 6. Appendix A

### Running the AMI Service Level Report

The AMI Service Level Report can be scheduled or run manually.

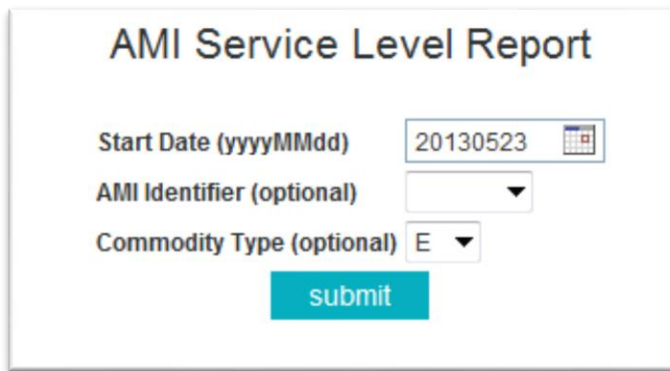
If scheduled, this job will:

- Need to run after all CMEP data has been delivered and processed by Logic
  - The “Start Date” parameter should be set to set to the current day
- Report on all data received for the (current day - 1)

If run during the day:

- The “Start Date” parameter should be set to set to (current day - 1)
- This job will report on all data received for the (current day - 2)

Figure 18: Appendix A - AMI Service Level Report Operation



The screenshot shows a web form titled "AMI Service Level Report". It contains three input fields: "Start Date (yyyyMMdd)" with the value "20130523" and a calendar icon; "AMI Identifier (optional)" with a dropdown arrow; and "Commodity Type (optional)" with the value "E" and a dropdown arrow. A blue "submit" button is located below the fields.

## 7. Mutual Acceptance Agreement

This document and test methods provided within, have been reviewed and accepted by both parties. Upon satisfactory completion of each of the tests below, the AMI System will be deemed to have passed the Electric Acceptance Test.

Table 3: Mutual Acceptance Agreement

Acceptance Tests	Los Alamos County	Sensus	Date
EA-1: Communication: Daily Register Read Success			
EA-2: Communication: Daily Interval Read Success			
EA-3: Communication: 72 Hour Interval Read Success			
EA-4: Communication: 30 Day Interval Read Success			
EA-5: Last Gasp Performance			
EA-6: Restoration Performance			
EA-7: Measurement (Time Synchronization)			
EA-8: Measurement (Remote Read Accuracy)			
EA-9: Firmware Upgradeability			
EA-10: Meter Configuration			
EA-11: Operational Data Collection Accuracy			
EA-12: Disconnect (if applicable)			
EA-13: Reconnect (if applicable)			
Final Approval			





**Sensus USA**

---

***Los Alamos County***

***AMI System Acceptance Test - Water***

***Acceptance Criteria***

Version: 0.2

**Revision History**

Date	Version	Author(s)	Comments
1/26/16	0.1	Wayne Schmieder	Initial draft

## Table of Contents

1. Overview .....	4
2. Pre Conditions.....	4
3. Assumptions.....	4
4. Timeframe.....	4
5. Acceptance Tests .....	5
5.1 WA-1: Communication.....	5
5.2 WA-2: Communications – Time Required for Readings (On Demand) .....	6
5.3 WA-3 Measurement (Remote Read Accuracy) .....	7
5.4 WA-4: Operational Data Collection Accuracy .....	8
6. Appendix A.....	10
7. Mutual Acceptance Agreement .....	11

## List of Figures

Figure 1: [ WA-1 ] AMI Service Level Report Results .....	5
Figure 2: [ WA-2 ] Demand Read (Type 2) Command .....	6
Figure 3: [ WA-2 ] Demand Read Time Comparison Results .....	7
Figure 4: [ WA-3 ] Demand Read (Type 2) Command .....	8
Figure 5: [ WA-3 ] Demand Read Results .....	8
Figure 6: [ WA-4 ] Event Log.....	9
Figure 7: Appendix A - AMI Service Level Report Operation .....	10

## 1. Overview

After the Effective Date, Los Alamos County shall deploy the Test Equipment and 332 water meters and or Water Smart Points ("Water Test Meters"), in White Rock community service territory (collectively, the "Water Deployment").

The Water Acceptance Test shall consist of the following subtests:

- WA-1: Communication: 72 Hour Interval Read Success
- WA-2: Communication: Time Required for Reading (On-Demand)
- WA-3: Measurement (Remote Read Accuracy)
- WA-4: Operational Data Collection Accuracy

Upon satisfactory completion of each of the above tests, the AMI System will be deemed to have passed the Water Acceptance Test. Each test is described in detail in [section 5](#) below.

## 2. Pre Conditions

- The entire network infrastructure is in place and Sensus certified.
- The Water Meter Deployment is complete.
- Los Alamos County shall send written notice to Sensus after the Water Deployment is complete so that communication testing can begin.
  - Such notice shall indicate the date on which the Water Deployment is completed.

## 3. Assumptions

- For purposes of clarity, the Acceptance Tests shall only be conducted on Water Test Meters as defined above, and Water Test Meters shall only include deployed and available Water Meters.
- Los Alamos County has the right to waive any of the tests listed in the document for any reason, including previous evidence of success criteria being met.
- When non Sensus tools are utilized to confirm the achieved success criteria, Sensus has the right to validate the data used by those tools against that data that resides in the Sensus RNI database.

## 4. Timeframe

- Testing can commence as soon as the Pre Conditions listed in [section 2](#) are satisfied.
- In general, an attempt should be made to complete tests within thirty (30) days after commencement.
  - Note: Some tests require a wait period to gather the required data to accurately perform the test:
    - Test WA-1 requires a minimum of 72 hours to pass after the completion of the Water deployment, in order to accurately calculate the 72 hour interval read success.
    - Tests WA-2, WA-3, and WA-4 can start any time after Water deployment has been completed.

## 5. Acceptance Tests

### 5.1 WA-1: Communication

#### 5.1.1 Overview

This test will determine the percentage of reads collected by the AMI System over a rolling 72 hours.

#### 5.1.2 Pre Conditions

- This test can commence seventy two (72) hours after the Pre Conditions listed in [section 2](#) are satisfied.
- CMEP interface between Sensus RNI and MeterSense MDMS must be functional.

#### 5.1.3 Duration

This test will be run daily for 26 contiguous days.

#### 5.1.4 Test Method

MeterSense MDMS **AMI Service Level Report** will be utilized.

- This report will be configured to show the percentage of all Water meter readings for a rolling 72 hours based on interval reads delivered to MeterSense from the RNI via the CMEP interface.
- A separate spreadsheet should be maintained in order to document the daily “Achieved Service Level” every day for 26 days.
- This report can be scheduled or run manually, see [Appendix A](#) for details.

Figure 1: [ WA-1 ] AMI Service Level Report Results

Interval Reads						
Excel	PDF	Schedule	Save			
Time Frame	Report Date ↓	Expected Reads	Available Reads	Required Service Level (%)	Achieved Service Level (%)	RESULT
96 Hours ago	20130519	126336	125280	99	99.16	Pass

#### 5.1.5 Success Criteria

99.5% or greater based on the documented daily “Achieved Service Level (%)” averaged over 26 contiguous days. (See Figure 1)

#### 5.1.6 Notes

Only meters that have been synced between MeterSense and Cayenta systems are included in this test.

## 5.2 WA-2: Communications – Time Required for Readings (On Demand)

### 5.2.1 Overview

This test will determine the amount of time required to obtain an on-demand reading from a Water meter for customer call issues. The time required to obtain readings will be important as it can affect the ability to provide customer service.

### 5.2.2 Pre Conditions

- This test can commence after the Pre Conditions listed in [section 2](#) are satisfied.
- Los Alamos County will randomly select twenty (20) Water Meters that are in MoM (Middle of the Minute) mode to perform this test against.

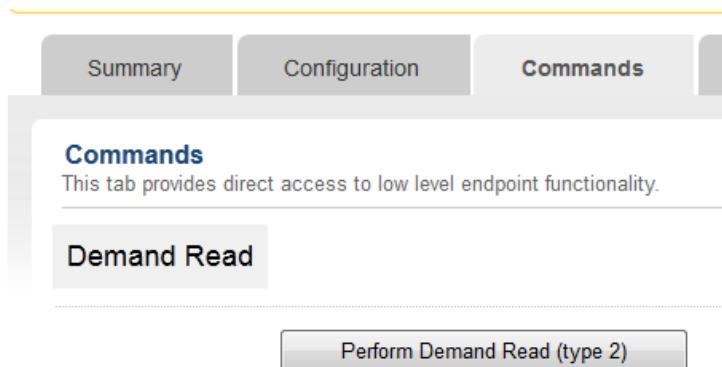
### 5.2.3 Duration

This test should be started and completed within thirty (30) days after the Water Deployment is complete.

### 5.2.4 Test Method

For each of the twenty (20) selected meters, navigate to the Commands Tab in the RNI IMIP page and perform a Demand Read (Type 2).

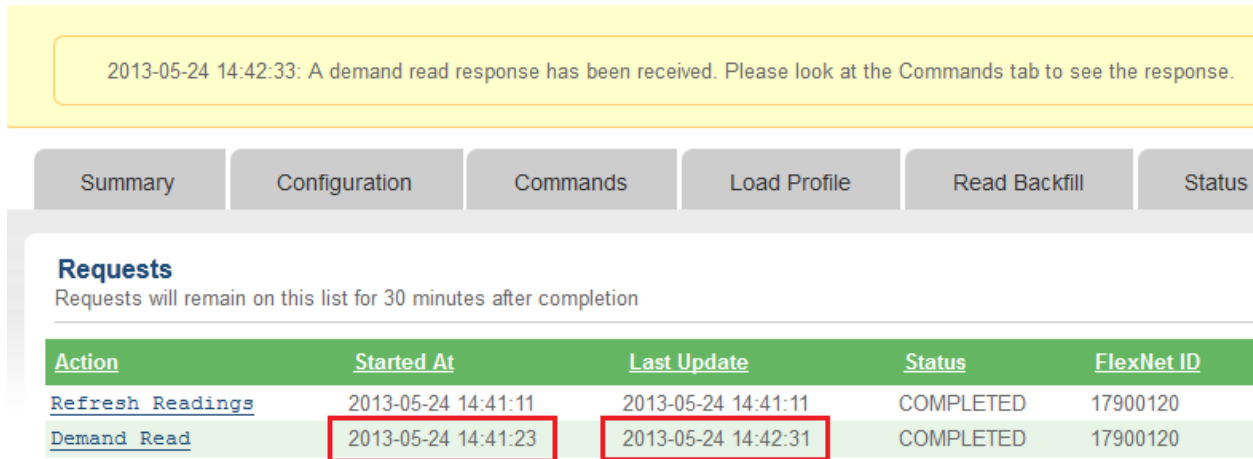
Figure 2: [ WA-2 ] Demand Read (Type 2) Command



Once the RNI will provide a status message, navigate to the Request Tab to view the Request Start (Started At) and Completion (Last Update) times. Subtract the time difference between the two and document the results in a separate spreadsheet. Repeat this process for each of the remaining meters.

## EXHIBIT F2. Water SAT

Figure 3: [ WA-2 ] Demand Read Time Comparison Results



### 5.2.5 Success Criteria

The average On Demand read time for twenty randomly selected water meters is less or equal to 300 seconds (5 minutes).

### 5.2.6 Notes

The Demand Read Type 2 should be used as this will provide the “on the glass” reading value and timestamp.

## 5.3 WA-3 Measurement (Remote Read Accuracy)

### 5.3.1 Overview

This test will compare the time stamp at the SmartPoint Module, with that determined through the RNI software to confirm accuracy of time stamps being used during validation, and therefore for billing purposes.

### 5.3.2 Pre Conditions

- This test can commence after the Pre Conditions listed in [section 2](#) are satisfied.
- The installation and selection of one AMI water meter at a residence or lab setting.

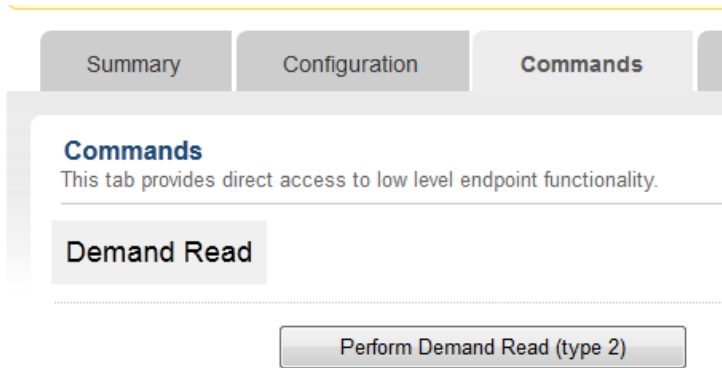
### 5.3.3 Duration

This test should be started and completed within thirty (30) days after the Water Deployment is complete.

### 5.3.4 Test Method

Coordinate the physical reading of the selected meter with the demand read via the RNI. To capture the demand read value and timestamp, for a selected meter, navigate to the Commands Tab in the IMIP page of the RNI and perform a Demand Read (Type 2).

Figure 4: [WA-3] Demand Read (Type 2) Command



Once complete, the RNI will provide a status message. At this point, navigate to Commands Tab to view the read value and timestamp.

Figure 5: [ WA-3 ] Demand Read Results

Demand Read Results	
Current Dial Reading	Timestamp
914.000	2013-05-24T14:42:31

### 5.3.5 Success Criteria

The data acquired through a manual read of the meter register differs from the data presented by an on-demand read taken at the same time by equal or less than  $\pm 0.1\%$  (resolution dependent).

### 5.3.6 Notes

- The physical read and on-demand read must be obtained simultaneously.
- The Demand Read Type 2 should be used as this will provide the “on the glass” reading value and timestamp.

## 5.4 WA-4: Operational Data Collection Accuracy

### 5.4.1 Overview

This test serves to document the ability of the network to collect accurate operational data from AMI water modules. The AMI network should collect operational data from available AMI water modules on a regular basis to assist Los Alamos County in managing various aspects of their distribution network.

### 5.4.2 Pre Conditions

- This test can commence after the Pre Conditions listed in [section 2](#) are satisfied.



## EXHIBIT F2. Water SAT

- The installation of twenty (20) AMI water meters (“Operational Test Meters”) at residence or in lab setting.




### 5.4.3 Duration

This test should be started and completed within thirty (30) days after the Water Deployment is complete.

### 5.4.4 Test Method

Verify Los Alamos County induced meter events in the RNI via Reports/Event Log.

Figure 6: [ WA-4 ] Event Log

Event Log			
Showing items 1 - 20 of 907    Last Updated: Friday, May 24, 2013 2:42:01 PM			
Event Description	Icons	Date/Time	Meter ID
Leak Detected		05/23/2013 08:26:18	71952432
Leak Detected		05/22/2013 10:00:01	71952432
Leak Detected		05/22/2013 10:00:03	71952432

### 5.4.5 Success Criteria

1. The AMI network will successfully detect the following alarms based on Los Alamos County induced events on twenty (20) AMI water meters:
  - Backflow
  - Meter read failure (cut wire, tamper will produce this alarm)
  - Broken pipe
  - Low battery
2. Meter read failure Alarm received by at least nineteen Operational Test Meters during induced cut wire event.
3. Meter read failure Alarm received by at least nineteen Operational Test Meters during induced tamper event.

### 5.4.6 Notes

Los Alamos County has the right to waive any of these tests based on previous evidence of success criteria being met.

## 6. Appendix A

### Running the AMI Service Level Report

The AMI Service Level Report can be scheduled or run manually.

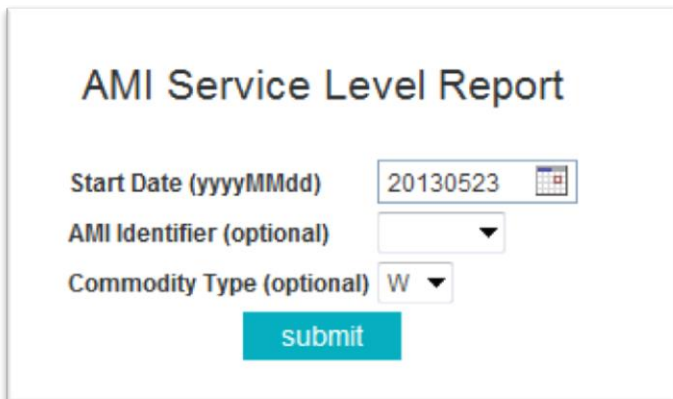
If scheduled, this job will:

- Need to run after all CMEP data has been delivered and processed by MeterSense
  - The “Start Date” parameter should be set to set to the current day
- Report on all data received for the (current day - 1)

If run during the day:

- The “Start Date” parameter should be set to set to (current day - 1)
- This job will report on all data received for the (current day - 2)

Figure 7: Appendix A - AMI Service Level Report Operation



The screenshot shows a web form titled "AMI Service Level Report". It contains three input fields: "Start Date (yyyyMMdd)" with the value "20130523" and a calendar icon; "AMI Identifier (optional)" with a dropdown arrow; and "Commodity Type (optional)" with the value "W" and a dropdown arrow. A blue "submit" button is located below the fields.

## 7. Mutual Acceptance Agreement

This document and test methods provided within, have been reviewed and accepted by both parties. Upon satisfactory completion of each of the tests below, the AMI System will be deemed to have passed the Water Acceptance Test.

Acceptance Tests	Los Alamos County	Sensus	Date
WA-1: Communication: 72 Hour Interval Read Success			
WA-2: Communication: Time Required for Reading (On-Demand)			
WA-3: Measurement (Remote Read Accuracy)			
WA-4: Operational Data Collection Accuracy			
Final Approval			



**Sensus USA**

---

***Los Alamos County  
AMI System Acceptance Test - Gas***

***Acceptance Criteria***

Version: 0.2

## EXHIBIT F3. GAS SAT

### Revision History

Date	Version	Author(s)	Comments
1/25/16	0.1	Wayne Schmieder	Initial draft

## Table of Contents

1. Overview .....	4
2. Pre Conditions.....	4
3. Assumptions.....	4
4. Timeframe.....	4
5. Acceptance Tests .....	5
5.1 GA-1: Communication.....	5
5.2 GA-2: Communications – Time Required for Readings (On Demand) .....	6
5.3 GA-3 Measurement (Remote Read Accuracy) .....	7
5.4 GA-4: Operational Data Collection Accuracy .....	8
6. Appendix A.....	10
7. Mutual Acceptance Agreement .....	11

## List of Figures

Figure 1: [ GA-1 ] AMI Service Level Report Results .....	5
Figure 2: [ GA-2 ] Demand Read (Type 2) Command .....	6
Figure 3: [ GA-2 ] Demand Read Time Comparison Results .....	7
Figure 4: [ GA-3 ] Demand Read (Type 2) Command .....	8
Figure 5: [ GA-3 ] Demand Read Results .....	8
Figure 6: [ GA-4 ] Event Log.....	9
Figure 7: Appendix A - AMI Service Level Report Operation .....	10

## 1. Overview

After the Effective Date, Los Alamos County shall deploy the Test Equipment and shall deploy 332 gas meters and or Gas Smart Points ("Gas Test Meters"), in the White Rock community service territory (collectively, the "Gas Deployment").

The Gas Acceptance Test shall consist of the following subtests:

- GA-1: Communication: 72 Hour Interval Read Success
- GA-2: Communication: Time Required for Reading (On-Demand)
- GA-3: Measurement (Remote Read Accuracy)
- GA-4: Operational Data Collection Accuracy

Upon satisfactory completion of each of the above tests, the AMI System will be deemed to have passed the Gas Acceptance Test. Each test is described in detail in [section 5](#) below.

## 2. Pre Conditions

- The entire network infrastructure is in place and Sensus certified.
- The Gas Meter Deployment is complete.
- Los Alamos County shall send written notice to Sensus after the Gas Deployment is complete so that communication testing can begin.
  - Such notice shall indicate the date on which the Gas Deployment is completed.

## 3. Assumptions

- For purposes of clarity, the Acceptance Tests shall only be conducted on Gas Test Meters as defined above, and Gas Test Meters shall only include deployed and available Gas Meters.
- Los Alamos County has the right to waive any of the tests listed in the document for any reason, including previous evidence of success criteria being met.
- When non Sensus tools are utilized to confirm the achieved success criteria, Sensus has the right to validate the data used by those tools against that data that resides in the Sensus RNI database.

## 4. Timeframe

- Testing can commence as soon as the Pre Conditions listed in [section 2](#) are satisfied.
- In general, an attempt should be made to complete tests within thirty (30) days after commencement.
  - Note: Some tests require a wait period to gather the required data to accurately perform the test:
    - Test GA-1 requires a minimum of 72 hours to pass after the completion of the Gas deployment, in order to accurately calculate the 72 hour interval read success.
    - Tests GA-2, GA-3, and GA-4 can start any time after Gas deployment has been completed.

## 5. Acceptance Tests

### 5.1 GA-1: Communication

#### 5.1.1 Overview

This test will determine the percentage of reads collected by the AMI System over a rolling 72 hours.

#### 5.1.2 Pre Conditions

- This test can commence seventy two (72) hours after the Pre Conditions listed in [section 2](#) are satisfied.
- CMEP interface between Sensus RNI and Logic MDMS must be functional.

#### 5.1.3 Duration

This test will be run daily for 26 contiguous days.

#### 5.1.4 Test Method

Logic MDMS **AMI Service Level Report** will be utilized.

- This report will be configured to show the percentage of all Gas meter readings for a rolling 72 hours based on interval reads delivered to Logic from the RNI via the CMEP interface.
- A separate spreadsheet should be maintained in order to document the daily “Achieved Service Level” every day for 26 days.
- This report can be scheduled or run manually, see [Appendix A](#) for details.

Figure 1: [ GA-1 ] AMI Service Level Report Results

Interval Reads						
Excel	PDF	Schedule	Save			
Time Frame	Report Date ↓	Expected Reads	Available Reads	Required Service Level (%)	Achieved Service Level (%)	RESULT
96 Hours ago	20130519	126336	125280	99	99.16	Pass

#### 5.1.5 Success Criteria

99.5% or greater based on the documented daily “Achieved Service Level (%)” averaged over 26 contiguous days. (See Figure 1)

#### 5.1.6 Notes

- Only meters that have been synced between Logic and Cayenta systems are included in this test.



## 5.2 GA-2: Communications – Time Required for Readings (On Demand)

### 5.2.1 Overview

This test will determine the amount of time required to obtain an on-demand reading from a Gas meter for customer call issues. The time required to obtain readings will be important as it can affect the ability to provide customer service.

### 5.2.2 Pre Conditions

- This test can commence after the Pre Conditions listed in [section 2](#) are satisfied.
- Los Alamos County will randomly select twenty (20) Gas Meters to perform this test against.

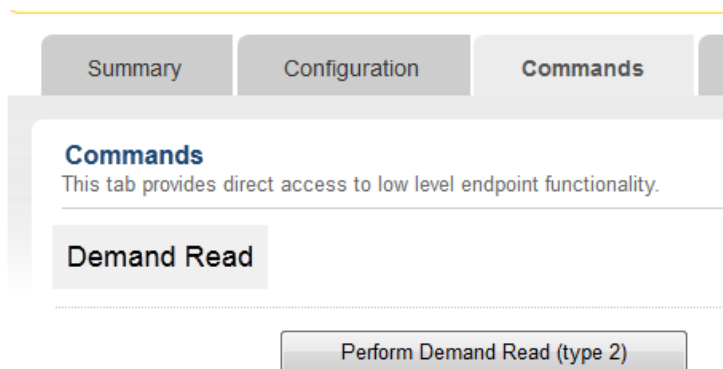
### 5.2.3 Duration

This test should be started and completed within thirty (30) days after the Gas Deployment is complete.

### 5.2.4 Test Method

For each of the twenty (20) selected meters, navigate to the Commands Tab in the RNI IMIP page and perform a Demand Read (Type 2).

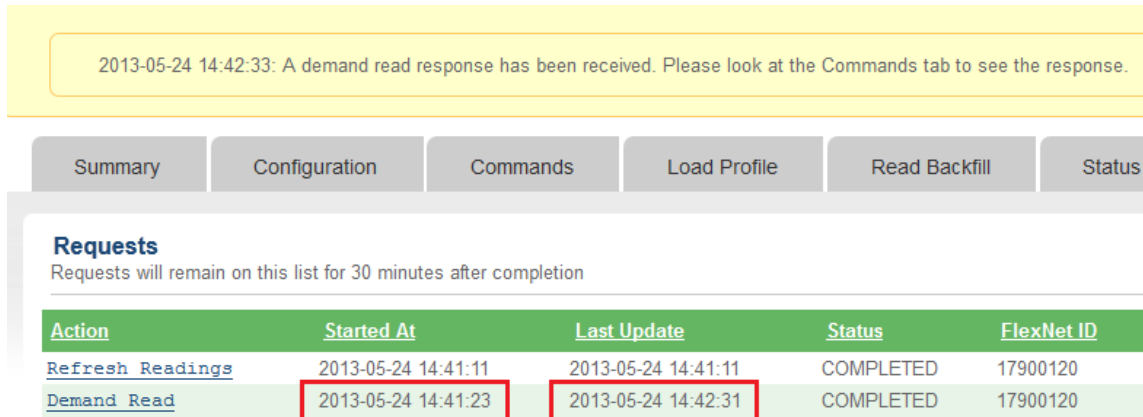
Figure 2: [ GA-2 ] Demand Read (Type 2) Command



Once the RNI will provide a status message, navigate to the Request Tab to view the Request Start (Started At) and Completion (Last Update) times. Subtract the time difference between the two and document the results in a separate spreadsheet. Repeat this process for each of the remaining meters.

## EXHIBIT F3. GAS SAT

Figure 3: [GA-2] Demand Read Time Comparison Results



### 5.2.5 Success Criteria

The average On Demand read time for twenty randomly selected Gas meters is less or equal to 300 seconds (5 minutes).

### 5.2.6 Notes

The Demand Read Type 2 should be used as this will provide the “on the glass” reading value and timestamp.

## 5.3 GA-3 Measurement (Remote Read Accuracy)

### 5.3.1 Overview

This test will compare the time stamp at the SmartPoint Module, with that determined through the RNI software to confirm accuracy of time stamps being used during validation, and therefore for billing purposes.

### 5.3.2 Pre Conditions

- This test can commence after the Pre Conditions listed in [section 2](#) are satisfied.
- The installation and selection of one AMI Gas meter at a residence or lab setting.

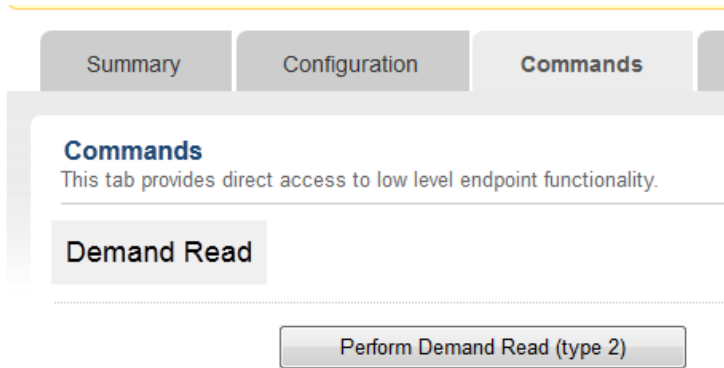
### 5.3.3 Duration

This test should be started and completed within thirty (30) days after the Gas Deployment is complete.

### 5.3.4 Test Method

Coordinate the physical reading of the selected meter with the demand read via the RNI. To capture the demand read value and timestamp, for a selected meter, navigate to the Commands Tab in the IMIP page of the RNI and perform a Demand Read (Type 2).

Figure 4: [ GA-3 ] Demand Read (Type 2) Command



Once complete, the RNI will provide a status message. At this point, navigate to Commands Tab to view the read value and timestamp.

Figure 5: [GA-3 Demand Read Results

Demand Read Results	
Current Dial Reading	Timestamp
914.000	2013-05-24T14:42:31

### 5.3.5 Success Criteria

The data acquired through a manual read of the meter register differs from the data presented by an on-demand read taken at the same time by equal or less than +/-0.1%.

### 5.3.6 Notes

- The physical read and on-demand read must be obtained simultaneously.
- The Demand Read Type 2 should be used as this will provide the “on the glass” reading value and timestamp.

## 5.4 GA-4: Operational Data Collection Accuracy

### 5.4.1 Overview

This test serves to document the ability of the network to collect accurate operational data from AMI Gas modules. The AMI network should collect operational data from available AMI Gas modules on a regular basis to assist Los Alamos County managing various aspects of their distribution network.

### 5.4.2 Pre Conditions

- This test can commence after the Pre Conditions listed in [section 2](#) are satisfied.
- The installation of twenty (20) AMI Gas meters (“Operational Test Meters”) at residence or in lab setting.

## EXHIBIT F3. GAS SAT






### 5.4.3 Duration

This test should be started and completed within thirty (30) days after the Gas Deployment is complete.

### 5.4.4 Test Method

Verify Los Alamos County induced meter events in the RNI via Reports/Event Log.

Figure 6: [GA-4] Event Log

Event Log		
Showing items 1 - 20 of 128   Last Updated: Monday, May 27, 2013 7:13:06 PM		
Event Description	Icons	Date/Time
Meter Tamper		04/09/2013 15:48:23
Meter Tamper		04/09/2013 16:08:34
Meter Tamper		04/10/2013 09:21:38
Meter Tamper		04/10/2013 09:39:46
Meter Tamper		04/10/2013 09:42:51

### 5.4.5 Success Criteria

- The AMI network will successfully detect the following alarms based on Los Alamos County induced events on twenty (20) AMI Gas meters:
  - Tamper
  - Broken pipe
  - Low battery
- Tamper Alarm received by at least nineteen Operational Test Meters during induced tamper event.

### 5.4.6 Notes

Los Alamos County has the right to waive any of these tests based on previous evidence of success criteria being met.

## 6. Appendix A

### Running the AMI Service Level Report

The AMI Service Level Report can be scheduled or run manually.

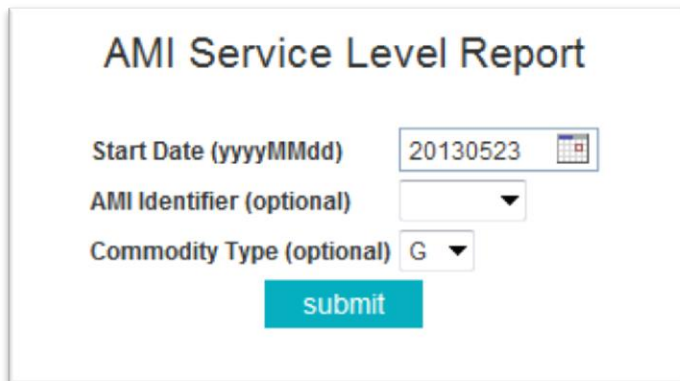
If scheduled, this job will:

- Need to run after all CMEP data has been delivered and processed by Logic
  - The “Start Date” parameter should be set to set to the current day
- Report on all data received for the (current day - 1)

If run during the day:

- The “Start Date” parameter should be set to set to (current day - 1)
- This job will report on all data received for the (current day - 2)

Figure 7: Appendix A - AMI Service Level Report Operation



The screenshot shows a web form titled "AMI Service Level Report". It contains three input fields: "Start Date (yyyyMMdd)" with the value "20130523" and a calendar icon; "AMI Identifier (optional)" with a dropdown arrow; and "Commodity Type (optional)" with the value "G" and a dropdown arrow. Below these fields is a teal "submit" button.

## 7. Mutual Acceptance Agreement

This document and test methods provided within, have been reviewed and accepted by both parties. Upon satisfactory completion of each of the tests below, the AMI System will be deemed to have passed the Gas Acceptance Test.

Acceptance Tests	Los Alamos County	Sensus	Date
GA-1: Communication: 72 Hour Interval Read Success			
GA-2: Communication: Time Required for Reading (On-Demand)			
GA-3: Measurement (Remote Read Accuracy)			
GA-4: Operational Data Collection Accuracy			
<b>Final Approval</b>			

**Exhibit G. Warranty Documents**

# Sensus Limited Warranty

**1. General Product Coverage.** Unless otherwise provided herein, Sensus USA Inc. ("Sensus") warrants its products and parts to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment and as set forth below. All products are sold to customer ("Customer") pursuant to Sensus' Terms of Sale, available at: [sensus.com/TC](http://sensus.com/TC) ("Terms of Sale").

**2. SR II® and accuSTREAM™ 5/8", 3/4" & 1" Meters** are warranted to perform to AWWA New Meter Accuracy Standards for five (5) years from the date of Sensus shipment or until the registration shown below, whichever occurs first. Sensus further warrants that the SR II and accuSTREAM meters will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	New Meter Accuracy	Repair Meter Accuracy
5/8" SR II Meter and accuSTREAM Meter	500,000 gallons	1,500,000 gallons
3/4" SR II Meter and accuSTREAM Meter	750,000 gallons	2,250,000 gallons
1" SR II Meter and accuSTREAM Meter	1,000,000 gallons	3,000,000 gallons

**3. ally® Meters** that register water flow are warranted to perform to the accuracy level set forth in the ally Data Sheet available at [sensus.com/ally/datasheet](http://sensus.com/ally/datasheet) for fifteen (15) years from the Date of Installation, but no longer than sixteen (16) years from date of manufacture, not including the meter's sensors, valve, and gear motor, which are warranted under different terms described below. As used herein, "Date of Installation" means the date after which the ally Meter has been out of empty pipe for seven (7) consecutive days, as those days are measured by the ally Meter and stored in the meter's nonvolatile memory.

**4. iPERL® Meters** that register water flow are warranted to perform to the accuracy levels set forth in the iPERL Data Sheet available at [sensus.com/iperl/datasheet](http://sensus.com/iperl/datasheet) or by request from 1-800-METER-IT, for twenty (20) years from the date of Sensus shipment. The iPERL System Component warranty does not include the external housing.

**5. Maincase** of the SR II in both standard and low lead alloy meters are warranted to be free from defects in material and workmanship for twenty-five (25) years from the date of Sensus shipment. Composite and E-coated maincases will be free from defects in material and workmanship for fifteen (15) years from the date of Sensus shipment.

**6. Sensus OMNI™ Meters and Propeller Meters** are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment.

**7. Sensus accuMAG™ Meters** are warranted to be free from defects in material and workmanship, under normal use and service, for 18 months from the date of Sensus shipment or 12 months from startup, whichever occurs first.

**8. Sensus Registers** are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the periods stated below or until the applicable registration for AWWA Repaired Meter Accuracy Standards, as set forth above, are surpassed, whichever occurs first:

5/8" thru 2" SR II, accuSTREAM Standard Registers	25 years
5/8" thru 2" SR II, accuSTREAM Encoder Registers	10 years
All HSPU, IMP Contactor, R.E.R. Elec. ROFI	1 year
Standard and Encoder Registers for Propeller Meters	1 year
OMNI Register with Battery	10 years

**9. Sensus Electric and Gas Meters** are warranted pursuant to the General Limited Warranty available at [sensus.com/TC](http://sensus.com/TC).

**10. Batteries, iPERL System Components, AMR and FlexNet® Communication Network AMI Interface Devices** are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the period stated below:

Electronic TouchPad	10 years
Act-Pak® Remote Monitoring Instruments	1 year
Gas SmartPoint® Modules and Batteries	20 years <sup>1</sup>
6500 series Hand-Held Device	2 years
Vehicle Gateway Base Station (VGB) and other AMR Equipment	1 year
FlexNet Base Station (including the R100NA and M400 products)	1 year
iPERL System Battery and iPERL System Components	20 years <sup>2</sup>
Sensus® Electronic Register+™	20 years <sup>1</sup>
Sensus® Smart Gateway Sensor Interface	1 year
SmartPoint® 510M/520M Modules and Batteries	20 years <sup>2</sup>

Footnote 1: Sensus will repair or replace non-performing:

- Gas SmartPoint Modules (configured to the factory setting of six transmissions per day under normal system operation of up to one demand read to each SmartPoint Module per month and up to five firmware downloads during the life of the product) and batteries;
- Sensus Electronic Register+ with hourly reads

for the first ten (10) years from the date of Sensus shipment, and for the remaining ten (10) years, at a prorated percentage, applied towards the published list prices in effect for the year product is accepted by Sensus under warranty conditions according to the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	16	55%
11	30%	17	60%
12	35%	18	65%
13	40%	19	70%
14	45%	20	75%
15	50%	>20	100%

Footnote 2: Sensus will repair or replace non-performing:

- iPERL System Batteries, and/or the iPERL System flowtube, the flow sensing and data processing assemblies, and the register ("iPERL System Components") with hourly reads
- SmartPoint 510M/520M Modules (configured to the factory setting of six transmissions per day under normal system operation of up to one demand read to each SmartPoint Module per month and up to five firmware downloads during the life of the product) and batteries, unless the SmartPoint 510M/520M Module is ever paired with an ally Meter, which event immediately amends the warranty terms to those described in Section 11;

at no cost for the first fifteen (15) years from the date of Sensus shipment, and for the remaining five (5) years at a prorated percentage, applied towards the published list price in effect for the year the product is accepted by Sensus under the warranty conditions according to the following schedule:

Years	Replacement Price
1 – 15	0%
16	30%
17	40%
18	50%
19	60%
20	70%
>20	100%

**11. ally® Meter Batteries and Components, including SmartPoint 510M/520M Modules** are warranted to be free from defects in material and workmanship from the Date of Installation, as defined in Section 3, for the period stated below:

Batteries	15 years <sup>3</sup>
Sensors	5 years
Valve & Gear Motor	5 years <sup>4</sup>
SmartPoint 510M/520M Modules and Batteries in service w/ally	15 years <sup>3</sup>

Footnote 3: If applicable, any SmartPoint 510M/520M Modules ever paired with an ally Meter are warranted with the following limitations:

- When configured to the default installation setting of six transmissions of metrology and pressure per day and one update of temperature per day, the SmartPoint is warranted to perform up to five (5) firmware upgrades for the SmartPoint Module and up to five (5) firmware upgrades for the ally Meter;
- 2500 Operational Commands, where "Operational Commands" include on demand reads (such as consumption, pressure, temperature), an ally valve command, or a configuration command; and
- 15 Diagnostic Commands, which includes two-way communications tests and installations

for the first ten (10) years from Date of Installation at no cost. For the remaining five (5) years, Customer will pay the reduced Replacement Price of the then-current list price in effect at the time the product is accepted for return in accordance with the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	14	65%
11	35%	15	75%
12	45%	>15	100%
13	55%		

Footnote 4: Notwithstanding the foregoing, valve and gear motor components of ally Meters are not warranted beyond two thousand (2000) Valve State Operations, even if the warranty period provided herein has not yet expired. As used herein, "Valve State Operations" means adjustments of the Meter to open, close, or reduce flow.

**12. iPERL and ally Connectors and Cables** are warranted to be free from defects in materials and workmanship, under normal use and service, for ten (10) years from the date of Sensus shipment. Nicor or Itron connectors included with a Sensus product are warranted according to the terms for Third-Party Devices in Section 13.

**13. Third-Party Devices** are warranted to be free from defects in materials and workmanship, under normal use and service, for one (1) year from the date of Sensus shipment. As used in this Sensus Limited Warranty, "Third Party Devices" means any product, device, or component part used with a Sensus product that is manufactured or sold by any party that is not Sensus. Failure of a Third Party Device which subsequently causes failure to a Sensus device shall be the responsibility of the manufacturer of the Third Party Device.



**14. Software.** Software supplied and/or licensed by Sensus is supported according to the terms of the applicable software license or usage agreement. Sensus warrants that any network and monitoring services shall be performed in a professional and workmanlike manner.

**15. Return.** Sensus' obligation, and Customer's exclusive remedy, under this Sensus Limited Warranty is, at Sensus' option, to either (i) repair or replace the product, provided the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location; or (ii) deliver replacement components to the Customer, provided the Customer installs, at its cost, such components in or on the product (as instructed by Sensus), provided, that if Sensus requests, the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location. In all cases, if Customer does not return the product within the time period designated by Sensus, Sensus will invoice, and Customer will pay within thirty days of the invoice date, for the cost of the replacement product and/or components.

The return of products for warranty claims must follow Sensus' Returned Materials Authorization (RMA) procedures. Water meter returns must include documentation of the Customer's test results. Test results must be obtained according to AWWA standards and must specify the meter serial number. The test results will not be valid if the meter is found to contain foreign materials. If Customer chooses not to test a Sensus water meter prior to returning it to Sensus, Sensus will repair or replace the meter, at Sensus' option, after the meter has been tested by Sensus. The Customer will be charged Sensus' then current testing fee. All product must be returned in accordance with the RMA process. For all returns, Sensus reserves the right to request meter reading records by serial number to validate warranty claims.

For products that have become discontinued or obsolete ("Obsolete Product"), Sensus may, at its discretion, replace such Obsolete Product with a different product model ("New Product"), provided that the New Product has substantially similar features as the Obsolete Product. The New Product shall be warranted as set forth in this Sensus Limited Warranty.

THIS SECTION 15 SETS FORTH CUSTOMER'S SOLE REMEDY FOR THE FAILURE OF THE PRODUCTS, SERVICES OR LICENSED SOFTWARE TO CONFORM TO THEIR RESPECTIVE WARRANTIES.

**16. Warranty Exceptions and No Implied Warranties.** This Sensus Limited Warranty does not include costs for removal or installation of products, or costs for replacement labor or materials, which are the responsibility of the Customer. The warranties in this Sensus Limited Warranty do not apply to goods that have been: installed improperly or in non-recommended installations; installed to a socket that is not functional, or is not in safe operating condition, or is damaged, or is in need of repair; tampered with; modified or repaired with parts or assemblies not certified in writing by Sensus, including without limitation, communication parts and assemblies; improperly modified or repaired (including as a result of modifications required by Sensus); converted; altered; damaged; read by equipment not approved by Sensus; for water meters, used with substances other than water, used with non-potable water, or used with water that contains dirt, debris, deposits, or other impurities; subjected to misuse, improper storage, improper care, improper maintenance, or improper periodic testing (collectively, "Exceptions."). If Sensus identifies any Exceptions during examination, troubleshooting or performing any type of support on behalf of Customer, then Customer shall pay for and/or reimburse Sensus for all expenses incurred by Sensus in examining, troubleshooting, performing support activities, repairing or replacing any Equipment that satisfies any of the Exceptions defined above. The above warranties do not apply in the event of Force Majeure, as defined in the Terms of Sale.

**THE WARRANTIES SET FORTH IN THIS SENSUS LIMITED WARRANTY ARE THE ONLY WARRANTIES GIVEN WITH RESPECT TO THE GOODS, SOFTWARE, SOFTWARE LICENSES AND SERVICES SOLD OR OTHERWISE PROVIDED BY SENSUS. SENSUS EXPRESSLY DISCLAIMS ANY AND ALL OTHER REPRESENTATIONS, WARRANTIES, CONDITIONS, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE, REGARDING ANY MATTER IN CONNECTION WITH THIS SENSUS LIMITED WARRANTY OR WITH THE TERMS OF SALE, INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, NON-INFRINGEMENT AND TITLE.**

**SENSUS ASSUMES NO LIABILITY FOR COSTS OR EXPENSES ASSOCIATED WITH LOST REVENUE OR WITH THE REMOVAL OR INSTALLATION OF EQUIPMENT. THE FOREGOING REMEDIES ARE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES FOR THE FAILURE OF EQUIPMENT, LICENSED SOFTWARE OR SOFTWARE SERVICES, AND OTHER SERVICES TO CONFORM TO THEIR RESPECTIVE WARRANTIES.**

**17. Limitation of Liability.** SENSUS' AGGREGATE LIABILITY IN ANY AND ALL CAUSES OF ACTION ARISING UNDER, OUT OF OR IN RELATION TO THIS AGREEMENT, ITS NEGOTIATION, PERFORMANCE, BREACH OR TERMINATION (COLLECTIVELY "CAUSES OF ACTION") SHALL NOT EXCEED THE TOTAL AMOUNT PAID BY CUSTOMER TO SENSUS UNDER THIS AGREEMENT. THIS IS SO WHETHER THE CAUSES OF ACTION ARE IN TORT, INCLUDING, WITHOUT LIMITATION, NEGLIGENCE OR STRICT LIABILITY, IN CONTRACT, UNDER STATUTE OR OTHERWISE.

AS A SEPARATE AND INDEPENDENT LIMITATION ON LIABILITY, SENSUS' LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES. SENSUS SHALL NOT BE LIABLE FOR: (I) ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES; NOR (II) ANY REVENUE OR PROFITS LOST BY CUSTOMER OR ITS AFFILIATES FROM ANY END USER(S), IRRESPECTIVE OF WHETHER SUCH LOST REVENUE OR PROFITS IS CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE; NOR (III) ANY IN/OUT COSTS; NOR (IV) MANUAL METER READ COSTS AND EXPENSES; NOR (V) DAMAGES ARISING FROM MAINCASE OR BOTTOM PLATE

BREAKAGE CAUSED BY FREEZING TEMPERATURES, WATER HAMMER CONDITIONS, OR EXCESSIVE WATER PRESSURE. "IN/OUT COSTS" MEANS ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN TRANSPORTING GOODS BETWEEN ITS WAREHOUSE AND ITS END USER'S PREMISES AND ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN INSTALLING, UNINSTALLING AND REMOVING GOODS. "END USER" MEANS ANY END USER OF ELECTRICITY/WATER/GAS THAT PAYS CUSTOMER FOR THE CONSUMPTION OF ELECTRICITY/WATER/GAS, AS APPLICABLE.

The limitations on liability set forth in this Agreement are fundamental inducements to Sensus entering into this Agreement. They apply unconditionally and in all respects. They are to be interpreted broadly so as to give Sensus the maximum protection permitted under law.

1. Terms of Sale. Sensus USA Inc. ("Sensus") warrants its products and parts as set forth below. All products are sold to the buyer ("Customer") pursuant to Sensus' Terms of Sale, available at: [sensus.com/tc](http://sensus.com/tc).
2. Electricity Meters and Electricity SmartPoint™ Modules. Sensus warrants the Sensus electricity meters and Sensus electricity SmartPoint Modules to be in compliance with their respective specifications under normal use and service, and to be free from material defects in materials and workmanship for a warranty period of twelve (12) months from the date of the installation or eighteen (18) months from the date of shipment, whichever occurs first. The warranty period for new spare parts and components sold by Sensus is twelve (12) months from the date of shipment. The warranty period for repaired or refurbished parts repaired by Sensus is ninety (90) days from the date of shipment, unless repaired pursuant to a warranty, in which case the repair is warranted for the time remaining of the original warranty period.
3. Gas Products and Gas SmartPoint Modules.
  - a. Except for the Sonix meters, Sensus warrants the Sensus gas products to be in compliance with their respective specifications under normal use and service, and to be free from material defects in materials and workmanship for a warranty period of twelve (12) months from the date of the installation or eighteen (18) months from the date of shipment, whichever occurs first. Sensus warrants the Sensus Sonix meters to be free from material defects in materials and workmanship for a warranty period of fifteen (15) years from the date of shipment. Sensus warrants the batteries in the Sensus Sonix meters to be free from material defects in materials and workmanship for a warranty period of ten (10) years from the date of shipment. The warranty period for new spare parts and components sold by Sensus is twelve (12) months from the date of shipment. The warranty period for repaired or refurbished parts repaired by Sensus is ninety (90) days from the date of shipment, unless repaired pursuant to a warranty, in which case the repair is warranted for the time remaining of the original warranty period.
  - b. Sensus warrants the Sensus gas SmartPoint Modules as set forth in the "G500" warranty, as set forth at: [sensus.com/tc](http://sensus.com/tc), or available at 1-800-METER-IT.
4. Water Meters and Water SmartPoint Modules. Sensus warrants the Sensus water meters and Sensus water SmartPoint Modules as set forth in the "G500" warranty, as set forth at: [sensus.com/tc](http://sensus.com/tc), or available at 1-800-METER-IT.
5. DA Devices and HAN Devices. Sensus warrants the Sensus DA Devices and Sensus HAN Devices to be in compliance with their respective specifications under normal use and service, and to be free from material defects in materials and workmanship for a warranty period of twelve (12) months from the date of shipment. The warranty period for new spare parts and components sold by Sensus is twelve (12) months from the date of shipment. The warranty period for repaired or refurbished parts repaired by Sensus is ninety (90) days from the date of shipment, unless repaired pursuant to a warranty, in which case the repair is warranted for the time remaining of the original warranty period.
6. RF Field Equipment. Sensus warrants the Sensus RF Field Equipment to be in compliance with their respective specifications under normal use and service, and to be free from material defects in materials and workmanship for a warranty period of twelve (12) months from the date of shipment.
7. Server Hardware. Sensus provides no warranty on the Server Hardware.
8. Third Party Goods. Notwithstanding anything to the contrary herein, Sensus does not warrant any goods manufactured or software supplied by third parties. For example, if Customer elects to buy meters from a third party, the Sensus SmartPoint Modules installed in such third party meters shall, subject to Section 11, below, be covered by the warranty above, but any warranty on the meter itself shall be a matter directly between Customer and such third party meter supplier.
9. Services. Sensus warrants that its services shall, at the time of performance, materially conform to the contract requirements, and shall be performed in a professional and workmanlike manner, free from material defects in workmanship.
10. Remedy.
  - a. If any Field Device or RF Field Equipment fails during the applicable warranty period (a "Failed Good"), Sensus' obligation, and Customer's exclusive remedy, is, at Sensus' option, to either (i) repair or replace the Failed Good, provided the Customer (a) returns the product to the location designated by Sensus within the warranty period; and (b) prepays the freight costs both to and from such location; or (ii) deliver replacement components to the Customer, provided the Customer installs, at its cost, such components in or on the Failed Good (as instructed by Sensus). In all cases, Customer shall be responsible for returning the Failed Good to Sensus, including all costs associated with the return of the Failed Good, and Sensus shall be responsible for shipping the repaired or replaced good back to Customer's warehouse. Customer shall, in all cases, be responsible for the In/Out Costs. If Sensus determines that the returned good is not defective, Customer shall pay and/or reimburse Sensus for all expenses incurred by Sensus in the examination of the returned good.
  - b. Customer's remedy under the warranty for services shall be, at Sensus' sole cost and expense, to correct or re-perform any defective or non-conforming services to assure compliance with the contract requirements.
  - c. THIS SECTION 10 SETS FORTH CUSTOMER'S SOLE REMEDY WITH RESPECT TO A FAILED GOOD OR ANY DEFECTIVE OR NON-CONFORMING SERVICE.
11. Warranty Exceptions. This General Limited Warranty does not include costs for removal or installation of products, or costs for replacement labor or materials, which are the responsibility of the Customer. The warranties in this General Limited Warranty do not apply to goods that have been: installed improperly or in non-recommended installations; installed to a socket that is not functional, or is not in safe operating condition, or is damaged, or is in need of repair; tampered with; modified or repaired with parts or assemblies not certified in writing by Sensus, including without limitation, communication parts and assemblies; improperly modified or repaired (including as a result of modifications required by Sensus); converted; altered; damaged; read by equipment not approved by Sensus; for water meters, used with substances other than water, used with non-potable water, or used with water that contains dirt, debris, deposits, or other impurities; subjected to misuse, improper storage, improper care, improper maintenance, or improper periodic testing (collectively, "Exceptions."). If Sensus identifies any Exceptions during examination, troubleshooting or performing any type of support on behalf of Customer, then Customer shall pay for and/or reimburse Sensus for all expenses incurred by Sensus in examining, troubleshooting, performing support activities, repairing or replacing any Equipment that satisfies any of the Exceptions defined above. The above warranties do not apply in the event of Force Majeure, as defined in the Terms of Sale.
12. THE WARRANTIES SET FORTH IN THIS GENERAL LIMITED WARRANTY ARE THE ONLY WARRANTIES GIVEN WITH RESPECT TO THE GOODS, SOFTWARE LICENSES AND SERVICES SOLD OR OTHERWISE PROVIDED BY SENSUS. SENSUS EXPRESSLY DISCLAIMS ANY AND ALL OTHER REPRESENTATIONS, WARRANTIES, CONDITIONS, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE, REGARDING ANY MATTER IN CONNECTION WITH THIS GENERAL LIMITED WARRANTY OR WITH THE TERMS OF SALE, INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, NON-INFRINGEMENT AND TITLE.
13. SENSUS ASSUMES NO LIABILITY FOR COSTS OR EXPENSES ASSOCIATED WITH LOST REVENUE OR WITH THE REMOVAL OR INSTALLATION OF EQUIPMENT. THE FOREGOING REMEDIES ARE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES FOR THE FAILURE OF EQUIPMENT, LICENSED SOFTWARE OR SERVICES TO CONFORM TO THEIR RESPECTIVE WARRANTIES.
14. Limitation of Liability
  - a. SENSUS' AGGREGATE LIABILITY IN ANY AND ALL CAUSES OF ACTION ARISING UNDER, OUT OF OR IN RELATION TO THIS AGREEMENT, ITS NEGOTIATION, PERFORMANCE, BREACH OR TERMINATION (COLLECTIVELY "CAUSES OF ACTION") SHALL NOT EXCEED THE TOTAL AMOUNT PAID BY CUSTOMER TO SENSUS UNDER THIS AGREEMENT. THIS IS SO WHETHER THE CAUSES OF ACTION ARE IN TORT, INCLUDING, WITHOUT LIMITATION, NEGLIGENCE OR STRICT LIABILITY, IN CONTRACT, UNDER STATUTE OR OTHERWISE.
  - b. AS A SEPARATE AND INDEPENDENT LIMITATION ON LIABILITY, SENSUS' LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES. SENSUS SHALL NOT BE LIABLE FOR: (I) ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES; NOR (II) ANY REVENUE OR PROFITS LOST BY CUSTOMER OR ITS AFFILIATES FROM ANY END USER(S), IRRESPECTIVE OF WHETHER SUCH LOST REVENUE OR PROFITS IS CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE; NOR (III) ANY IN/OUT COSTS; NOR (IV) MANUAL METER READ COSTS AND EXPENSES.
  - c. The limitations on liability set forth in this Agreement are fundamental inducements to Sensus entering into this Agreement. They apply unconditionally and in all respects. They are to be interpreted broadly so as to give Sensus the maximum protection permitted under law.
  - d. To the maximum extent permitted by law, no Cause of Action may be instituted by Customer against Sensus more than TWELVE (12) MONTHS after the Cause of Action first arose. In the calculation of any damages in any Cause of Action, no damages incurred more than TWELVE (12) MONTHS prior to the filing of the Cause of Action shall be recoverable.
15. Definitions. Any terms used in this General Limited Warranty as defined terms, and which are not defined herein, shall have the meanings given to those terms in the Terms of Sale.
  - a. "Agreement" means this General Limited Warranty, Customer's purchase order (except any Additional Terms), Sensus' Acknowledgement Form (if any), Sensus' invoice and the Terms of Sale.
  - b. "DA Devices" means RTMs and RTUs.
  - c. "Echo Transceiver" (formerly "FlexNet Network Portal" and "FNP") identifies the Sensus standalone, mounted relay device that takes the radio frequency readings from the SmartPoint Modules and relays them by radio frequency to the relevant FlexNet Base Station.
  - d. "End User" means any end user of electricity/water/gas that pays Customer for the consumption of electricity/water/gas, as applicable.
  - e. "Equipment" means the Field Devices, RF Field Equipment, Server Hardware, and any other goods sold hereunder.
  - f. "FlexNet Base Station" (formerly "Tower Gateway Base Station" and "TGB") identifies the Sensus manufactured device consisting of one transceiver, to be located on a tower that receives readings from the SmartPoint Modules (either directly or via an Echo Transceiver) by radio frequency and passes those readings to the RNI by TCP/IP backhaul communication.
  - g. "Field Devices" means the meters, SmartPoint Modules, DA Devices and HAN Devices.
  - h. "Force Majeure" shall have the meaning set forth in the Terms of Sale.
  - i. "HAN Devices" means the PCTs, IHDs and LCMs.
  - j. "IHDs" means the in-home displays.
  - k. "In/Out Costs" means any costs and expenses incurred by Customer in transporting goods between its warehouse and its End User's premises and any costs and expenses incurred by Customer in installing, uninstalling and removing goods.
  - l. "LCMs" means the load control modules.
  - m. "PCTs" means the programmable controllable thermostats.
  - n. "Remote Transceiver" (formerly "FlexNet Remote Portal" and "FRP") identifies the Sensus standalone, mounted relay device that takes the radio frequency readings from the SmartPoint Modules and relays them directly to the RNI by TCP/IP backhaul communication.
  - o. "RNI" identifies the regional network interfaces consisting of hardware and software used to gather, store, and report data collected by the FlexNet Base Stations from the SmartPoint Modules.
  - p. "RF Field Equipment" means, collectively, FlexNet Base Stations, Echo Transceivers and Remote Transceivers.
  - q. "RTMs" means the telemetric remote telemetry modules.
  - r. "RTUs" means telemetric MicroRTU (T866).
  - s. "Server Hardware" means the RNI hardware and the FlexServer hardware.
  - t. "SmartPoint™ Modules" identifies the Sensus transmission devices installed on devices such as meters, distribution automation equipment and demand/response devices located at Customer's End Users' premises that take the readings of the meters and transmit those readings by radio frequency to the relevant FlexNet Base Station, Remote Transceiver or Echo Transceiver.

1. **DEFINITIONS.** "Customer" means the party purchasing goods or services pursuant to these Terms of Sale ("Terms"). "Sensus" means Sensus USA Inc., a Delaware corporation. "Deliverables" means the Sensus goods and services sold or otherwise provided pursuant to this Agreement. Software licenses are provided solely through a separate Sensus software license.
2. **CONTRACT OF SALE.** All Sensus Deliverables are offered for sale subject to the prices and other terms specified in (a) the applicable Sensus quotation, proposal or pricelist, and (b) these Terms (together, the "Proposal"), all of which are subject to the correction of clerical errors. A Customer's purchase order or similar writing shall constitute an acceptance of the offer to sell; however, any inconsistent, additional or different terms to the Proposal contained in a Customer's request for quotation or purchase order (collectively, "Additional Terms") are hereby objected to and rejected by Sensus. Such Additional Terms will not become part of the contract of sale unless accepted by Sensus in a writing signed by a vice president (or higher) of Sensus.
3. **ENTIRE AGREEMENT.** These Terms, the General Limited Warranty, Customer's purchase order (except any Additional Terms), Sensus' Acknowledgement Form (if any), and Sensus' invoice constitutes the entire agreement ("Agreement") between the parties hereto with respect to the subject matter hereof and supersedes any and all prior agreements, understanding or other communications, whether written or oral, formal or informal, between them in respect of the order. No consent, waiver, alteration, amendment, or modification shall be binding unless in writing and signed by a vice president (or higher) of Sensus.
4. **PRICES.** All prices are subject to change based on Sensus' selling prices in effect as of date of shipment. Prices quoted for blanket orders are subject to review and retroactive adjustment, if necessary, based on actual quantities shipped.
5. **TAXES.** All prices quoted are exclusive of federal, state and municipal taxes. Customer shall be liable for all sales, use and other taxes (whether local, state or federal) imposed on this Agreement or on the Deliverables.
6. **TITLE AND RISK OF LOSS.** All Deliverables are shipped Ex Works shipping point, prepaid freight and add. Title to, and property in, the Deliverables shall pass to Customer upon shipment. Risk of loss of the Deliverables shall also pass to Customer upon shipment.
7. **PAYMENT TERMS.** Customer shall pay all invoices in USD within thirty (30) days of the invoice date. No deductions, whether by way of set-off, counterclaim, withholding, or otherwise, shall be made by the Customer. Sensus reserves the right to establish credit limits for Customer and may require full or partial payment prior to provision of any Deliverables. All payments shall be made via electronic payment according to instructions provided by Sensus. The Customer must notify Sensus, in writing, within seven days of receipt of an invoice if the Customer disputes such invoice. In the absence of such notice the Customer shall not be entitled to dispute an invoice. Save for any invoices disputed in good faith in accordance with the previous sentence, if the Customer does not pay within the time provided in this Agreement, the amount due shall bear interest at the lower of (i) one and a half percent (1.5%) per month up to a maximum of eighteen percent (18%) per year; or (ii) the highest rate permitted by applicable law. Should Customer become delinquent in payment of sums due hereunder, Sensus shall not be obligated to continue performance.
8. **PACKAGING.** Sensus reserves the right to select the manner in which Deliverables are packaged. Quoted prices include regular packaging. Special requirements for packaging will be subject to extra charges.
9. **DELIVERY.** Shipping dates and other dates quoted by Sensus are made in good faith but are not guaranteed. Dates cited for delivery are approximate only. If no dates are specified, Sensus will use its discretion to determine the shipping date. Sensus reserves the right to extend shipping dates and/or to make partial shipments as Sensus deems necessary in its sole discretion, without liability to Customer. In the absence of shipping instructions from Customer, Sensus will use its discretion as to the selection of shipping services and routings. If the Customer fails to take delivery of the Deliverables within seven (7) days of notification that the Deliverables are ready for delivery, Sensus shall be entitled, but is not required, on behalf of the Customer to put the relevant Deliverables into storage at the Customer's expense and risk. Delivery to storage shall constitute delivery to the Customer. Installation of Deliverables is the responsibility of the Customer unless otherwise agreed in writing.
10. **FORCE MAJEURE.** If Sensus becomes unable, either wholly or in part, by an event of Force Majeure, to fulfill its obligations under this Agreement, the obligations affected by the event of Force Majeure will be suspended during the continuance of that inability. "Force Majeure" means an event beyond the reasonable control of Sensus, including without limit acts of God, hurricane, flood, volcano, tsunami, tornado, storm, tempest, mudslide, vandalism, illegal or unauthorized radio frequency interference, strikes, lockouts, or other industrial disturbances, immigration, unavailability of component parts of any Deliverables provided hereunder, acts of public enemies, border disputes, border disruptions, delivery vehicle impound, wars, blockades, insurrections, riots, epidemics, earthquakes, fires, restraints or prohibitions by any court, board, department, commission or agency of the United States or any States, any arrests and restraints, civil disturbances and explosions.
11. **CANCELLATION.** Orders submitted to Sensus may not be canceled or amended, or deliveries deferred, by Customer except with Sensus' prior written consent, and then only upon such terms as shall be acceptable to Sensus.
12. **WARRANTIES.** Sensus' sole warranty and remedies associated therewith are set forth in the General Limited Warranty found at: [sensus.com/lc](https://sensus.com/lc), or available at 1-800-METER-IT, which General Limited Warranty is hereby incorporated into these Terms. **THE WARRANTIES IN THIS SECTION ARE THE ONLY WARRANTIES GIVEN WITH RESPECT TO DELIVERABLES SOLD OR OTHERWISE PROVIDED BY SENSUS. SENSUS EXPRESSLY DISCLAIMS ANY AND ALL OTHER REPRESENTATIONS, WARRANTIES, CONDITIONS, EXPRESSED, IMPLIED, STATUTORY OR OTHERWISE, REGARDING ANY MATTER IN CONNECTION WITH THESE TERMS OF SALE, INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, NON-INFRINGEMENT AND TITLE.**
13. **INTELLECTUAL PROPERTY.** No Intellectual Property is assigned to Customer hereunder. Sensus shall own or continue to own all Intellectual Property used or created in the course of performing this Agreement. To the extent, if any, that any ownership interest in and to such Intellectual Property does not automatically vest in Sensus, and instead vests in Customer, Customer agrees to grant and assign and hereby does grant and assign to Sensus all right, title, and interest that Customer may have in and to such Intellectual Property. Customer agrees not to reverse engineer any Deliverables purchased or provided hereunder. "Intellectual Property" means patents and patent applications, inventions (whether patentable or not), trademarks, service marks, trade dress, copyrights, trade secrets, know-how, data rights, database rights, specifications, drawings, designs, maskwork rights, moral rights, author's rights, and other intellectual property rights, as may exist now or hereafter come into existence, and all renewals and extensions thereof, regardless of whether any of such rights arise under the laws of the United States or of any other state, country or jurisdiction, any registrations or applications thereof, and all goodwill pertinent thereto. The Customer waives any moral rights they may have in the Intellectual Property.
14. **LIMITATION OF LIABILITY.**
  - (a) SENSUS' AGGREGATE LIABILITY IN ANY AND ALL CAUSES OF ACTION ARISING UNDER, OUT OF OR IN RELATION TO THIS AGREEMENT, ITS NEGOTIATION, PERFORMANCE, BREACH OR TERMINATION (COLLECTIVELY "CAUSES OF ACTION") SHALL NOT EXCEED THE TOTAL AMOUNT PAID BY CUSTOMER TO SENSUS UNDER THIS AGREEMENT. THIS IS SO WHETHER THE CAUSES OF ACTION ARE IN TORT, INCLUDING, WITHOUT LIMITATION, NEGLIGENCE OR STRICT LIABILITY, IN CONTRACT, UNDER STATUTE, OR OTHERWISE.
  - (b) AS A SEPARATE AND INDEPENDENT LIMITATION ON LIABILITY, SENSUS' LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES. SENSUS SHALL NOT BE LIABLE FOR: (I) ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES; NOR (II) ANY REVENUE OR PROFITS LOST BY CUSTOMER OR ITS AFFILIATES FROM ANY END USER IRRESPECTIVE OF WHETHER SUCH LOST REVENUE OR PROFITS IS CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE; NOR (III) ANY IN/OUT COSTS; NOR (IV) CLAIMS MADE BY A THIRD PARTY; NOR (V) MANUAL METER READ COSTS AND EXPENSES. "IN/OUT COSTS" MEANS ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN TRANSPORTING GOODS BETWEEN ITS WAREHOUSE AND ITS END USER'S PREMISES AND ANY COSTS AND EXPENSES INCURRED BY CUSTOMER IN INSTALLING, UNINSTALLING AND REMOVING GOODS. "END USER" MEANS ANY END USER OF ELECTRICITY/WATER/GAS THAT PAYS CUSTOMER FOR THE CONSUMPTION OF ELECTRICITY/WATER/GAS, AS APPLICABLE.
  - (c) The limitations on liability set forth in this Agreement are fundamental inducements to Sensus entering into this Agreement. They apply unconditionally and in all respects. They are to be interpreted broadly so as to give Sensus the maximum protection permitted under law.
  - (d) To the maximum extent permitted by law, no Cause of Action may be instituted by Customer against Sensus more than TWELVE (12) MONTHS after the Cause of Action first arose. In the calculation of any damages in any Cause of Action, no damages incurred more than TWELVE (12) MONTHS prior to the filing of the Cause of Action shall be recoverable.
  - (e) If Customer is not the sole end user and ultimate owner of the Deliverables, then Customer shall ensure by its contract with the end user and ultimate owner (collectively, "Owner") that Sensus is given the benefit of the exclusions and limitations set out in these Terms. Customer agrees to indemnify, defend, and hold harmless Sensus from and against all Losses (defined below) alleged by any Owner to the extent that Sensus would not be liable to Customer under these Terms if the claim had been made by Customer.
15. **INDEMNIFICATION.** Customer agrees to defend, indemnify and hold harmless Sensus from and against all claims, liabilities, demands, damages, losses, costs and expenses, in law or in equity, of every kind and nature whatsoever (collectively, "Losses"), to the extent arising out of Customer's use of the Deliverables,, except to the extent such Losses arise out of a breach of this Agreement by Sensus.
16. **CONFIDENTIALITY.** Customer shall (and shall cause its employees, contractors and any Owner to) keep all Sensus Confidential Information strictly confidential and shall not disclose it to any third party or use it, except to the extent reasonably required to perform and enforce this Agreement or as required under applicable law, court order or regulation. As used herein, "Sensus Confidential Information" means any and all non-public information disclosed by Sensus, including without limitation, all technical information about products or services, pricing information, marketing and marketing plans, provision of Deliverables, performance of the Deliverables, Deliverables architecture and design, other business and financial information, software and all trade secrets. Sensus Confidential Information may be transmitted orally, in writing, electronically or otherwise observed by Customer. Notwithstanding the foregoing, "Sensus Confidential Information" shall not include: (i) any information in the public domain other than due to Customer's breach of this Agreement; (ii) any information in the possession of the Customer without restriction prior to disclosure by Sensus; or (iii) any information independently developed by the Customer without reliance on or access to the information disclosed hereunder by Sensus.
17. **RETURNS.** No Deliverables may be returned for credit or repair without the prior written authorization of Sensus. Authorized return shipments must be returned in good condition to Sensus' designated receiving point, must be shipped in suitable packaging, must be accompanied by a packing slip, including Sensus' Return Authorization Number, and must have transportation charges prepaid. Deliverables are deemed returned upon Sensus' receipt of the relevant Deliverable (in compliance with this section) at the address designated by Sensus. Correspondence concerning all returned Deliverables must be addressed to the appropriate Sensus office. Sensus reserves the right to deduct an adequate service charge to cover all inspection, testing and handling from any credit.

18. **ASSIGNMENT.** Customer may not assign, transfer or delegate this Agreement or any part of Customer's rights or duties without prior written consent of Sensus. Any attempted assignment in violation of this section shall be null and void.
19. **GOVERNING LAW AND DISPUTE RESOLUTION.** This Agreement shall be governed by, construed and enforced in accordance with the laws of the State of Delaware, without regard to conflicts of law principles. Any and all disputes arising under, out of, or in relation to this Agreement or its performance ("Disputes") shall first be resolved by the Parties attempting mediation in Delaware. If the Dispute is not resolved within sixty (60) days of the commencement of the mediation, it shall be litigated in the state or federal courts located in the State of Delaware. TO THE MAXIMUM EXTENT PERMITTED BY LAW, THE PARTIES AGREE TO A BENCH TRIAL AND THAT THERE SHALL BE NO JURY IN ANY DISPUTES.
20. **COMPLIANCE WITH LAWS, INCLUDING ANTI-CORRUPTION LAWS.** Customer shall comply with all applicable laws and regulations, as set forth at the time of acceptance and as may be amended, changed, or supplemented. Customer shall not take any action, or permit the taking of any action by a third party, which may render Sensus liable for a violation of applicable laws. (a) *EXPORT CONTROL LAWS.* Customer shall: (i) comply with all applicable U.S., state, and local laws and regulations governing the use, export, import, re-export, and transfer of products, technology, and services; and (ii) obtain all required authorizations, permits, and licenses. Customer shall immediately notify Sensus, and immediately cease all activities with regards to the applicable transaction, if the Customer knows or has a reasonable suspicion that the Deliverables may be directed to countries in violation of any export control laws. By ordering Deliverables, Customer certifies that it is not on any U.S., or other applicable, government export exclusion list. (b) *ANTI-CORRUPTION LAWS.* Customer shall comply with the United States Foreign Corrupt Practices Act (FCPA), 15 U.S.C. §§ 78dd-1, et seq.; laws and regulations implementing the OECD's Convention on Combating Bribery of Foreign Public Officials in International Business Transactions; the U.N. Convention Against Corruption; the Inter-American Convention Against Corruption; and any other applicable laws and regulations relating to anti-corruption in the Customer's country or any country where performance of this Agreement, or delivery or use of Deliverables will occur.
21. **SEVERABILITY.** In the event any provision of this Agreement is held to be void, unlawful or otherwise unenforceable, that provision will be severed from the remainder of the Agreement and replaced automatically by a provision containing terms as nearly like the void, unlawful, or unenforceable provision as possible; and the Agreement, as so modified, will continue to be in full force and effect.
22. **NON-WAIVER.** Failure or delay of Sensus to exercise a right or power under this Agreement shall not operate as a waiver thereof, nor shall any single or partial exercise of a right or power preclude any other future exercise thereof.



## Budget Revision 2019-04 AMI (Advanced Metering Infrastructure)

Board of Public Utilities September 19, 2018

Council Meeting Date: September 25, 2018

	Fund/Dept	Munis Org	Revenue (decrease)	Expenditures (decrease)	Transfers In(Out)	Fund Balance (decrease)
1	Joint Utilities Fund - Elec Prod	51185199-8839		\$ 2,500,000		\$ (2,500,000)
2	Joint Utilities Fund - Elec Dist	51285299-8839		\$ 2,500,000		\$ (2,500,000)
3	Joint Utilities Fund - Elec Dist	51285299-8839		\$ 832,000		\$ (832,000)
4	Joint Utilities Fund - Elec Prod	51185199-8839		\$ (1,960,752)		\$ 1,960,752
5	Joint Utilities Fund - Gas	53185399-8839		\$ 1,960,752		\$ (1,960,752)
6	Joint Utilities Fund - Elec Prod	51185199-8839		\$ (539,248)		\$ 539,248
7	Joint Utilities Fund - Water Dist	54185499-8839		\$ 539,248		\$ (539,248)
8	Joint Utilities Fund - Elec Dist	51285299-8839		\$ (1,040,593)		\$ 1,040,593
9	Joint Utilities Fund - Water Dist	54185499-8839		\$ 1,040,593		\$ (1,040,593)

**Description:** The purpose of this budget revision is to carryover remaining budget authority from FY2018 to FY2019 for the Advanced Metering Infrastructure (AMI) Project, to add budget authority to the project and to move budget authority from Electric Production and Electric Distribution to the Gas and Water Distribution Funds. Work will begin after July 1, 2018 (FY2019). Line 1 is to carryover FY18 budget authority for Electric Production. Line 2 is to carryover FY18 budget authority for Electric Distribution. Line 3 increases budget authority in the Electric Distribution Fund. Lines 4 & 5 move budget authority to the Gas Fund. Lines 6 through 9, move budget authority to the Water Distribution Fund.

**Fiscal Impact:** The net fiscal impact to the Joint Utilities Fund in FY2019 is to increase expenditures and decrease Fund Balance by \$5,832,000.

## BPU STRATEGIC INITIATIVE

DATE APPROVED:	March 16, 2016
TITLE:	Strategic Policy for Distributed Energy Resources (DER) and Rate Structure

The Board of Public Utilities adopted, as part of a strategic policy, the following recommendations from the 7 July 2015 "Future Electrical Energy Resources" report:

1. Complete smart meter implementation for all customers.
2. Develop an engineering model of the distribution system that will indicate how much DER generation can safely be absorbed.
3. Complete studies to determine how much DER generation can be tolerated before causing an unacceptable number of bandwidth exceedances.
4. Establish limits, based on DER generation absorption and bandwidth exceedance considerations, on how much DER generation can be tolerated in the system. Update these limits as necessary. Make it clear that permit issuance will be suspended once those limits have been reached pending expansion of system tolerance of increased DER generation.
5. Require smart inverters (at least "Phase 1") on new DER systems as they become available. After smart inverters are available, all DER system inverter replacements should be of the smart type.
6. It clear in DER installation permits that rates and rate structures are not guaranteed to any point in the future.
7. Determine whether utility-scale, circuit, or neighborhood scale DER storage, or combination(s) of these approaches make the most sense technically and economically for firming DER generation. Take that determination into account in any rate structure.
8. large customers, require or encourage (via rates) that at least large loads be dispatchable. County government and the Department of Public Utilities can and should lead by example.
9. For large DER producers, require or encourage (via rates) dispatchable storage and generation and Phase 2 or 3 inverters as they become available. The County government and the Department of Public Utilities can and should lead by example.
10. All DPU customers (DER and non-DER) should be charged the same appropriate rate(s) for all services and energy (not just net energy) supplied by the utility.
11. Implement Time-of-Use pricing for both consumption and generation once smart meters are available to do so.
12. DER producers should be paid for the power they supply to the utility based on at least the average estimated avoided cost for the time period in which it is supplied. The rate(s) should reflect whether the power is firm and whether it is dispatchable.
13. Consider whether or not a non-economic Value-of-Solar Tariff should be a part of the reimbursement rate structure for DER generation and how it should be phased out as solar benefits relative to other non-carbon sources decline.



Power System  
Engineering, Inc.

# Los Alamos Department of Public Utilities (DPU)

## AMI Study – Update September 2018

**LOS ALAMOS**  
Department of Public Utilities

Electric, Gas, Water, and Wastewater Services

EXPERIENCED • INDEPENDENT • RESPECTED

## Meeting Agenda

1. Introduction to AMI
2. AMI Technology Considerations
3. AMI Benefits Overview
  1. Billing and Customers
  2. Outages
  3. Field Time Reduction and Safety
  4. Additional Services/Programs
4. AMI Cost, Benefits, and Break Even

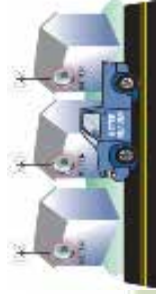


# Introduction

# Meter Reading Technology Evolution

## Manual

- Monthly kWh reading
- EM Meters



## AMR

- One-way PLC or Drive-by
- Monthly kWh
- Digital meter



## Smart Grid

- HAN
- DA
- Web portal

1970

1980

1990

2000

2010

2018



## Drive-by

- One-way wireless
- Monthly kWh reading
- EM meters



## AMI

- Two-way
- Digital meter
- Daily kWh, kW
- Interval data
- Outage mgmt.

## 2nd Gen. AMI

- Improved Outage Notification
- Transport for DA
- Growth of DSM over AMI

## 3rd Gen. AMI

- > Resiliency
- Private backhaul
- Better use of MDMs
- Interoperability and IoT support

EM = Electro-mechanical

AMR = Automated Meter Reading

DA = Distribution Automation

DSM = Demand Side Management

AMI = Advanced Metering Infrastructure

HAN = Home Area Network

IoT = Internet of Things

## AMI Benefits: Overview

## Potential Benefits of AML Overview

- Among other uses, an AML network enables the efficient and effective transport of information from the field into the office for various systems. In general, areas of improvement exist for:
  - Billing and Reporting
    - Customer Support, Services and Information
  - Outage & Restoration
  - Overall Safety Improvement
  - Additional Programs – Demand Response, Distribution Automation, Street Light Controls, Internet of Things (IoT), etc.

## Potential Benefits of AMI (Continued)

- Water Leak Detection
  - Assist with pressure management and help determine possible leaks which are of value to the customer
- Reduce water costs and wasted resources
  - Ability to monitor/manage water supply and distribution
- Further monitor the water distribution system for issues or problems; increase reliability and more effectively troubleshoot issues
- Potential remote disconnect/reconnect options
  - Alerts and events to also identify potential theft
- Eliminate bill estimating and provide more clarity

## Potential Benefits of AMI (Continued)

- Voltage Monitoring (*Min, max, average*)
- Transformer Loading Analysis
- Number of customers out of power
- Current demand savings from load control (kW)
- Outage Index Reporting (*SAIDI, SAIFI, MAIFI*) at multiple levels
- Cumulative outage hours (*MTD/YTD*)
- Demand Response (Conservation Voltage Reduction, Peak Reduction, Etc.)
- General line loss analysis
- Power quality investigation
- Number of blinks, sags, etc. (over time specified)
- Peak condition tracking
- Power factor by circuit or time of day
- Pattern detection (Algorithm to detect patterns in voltage, demand, blinks, etc.)
- System efficiency by circuit
- Remote Disconnect/Reconnect

## Potential Customer Benefits

- Accuracy – fewer read errors
- Fewer estimates
- Less intrusion
- Billing date flexibility
- Better customer bill understanding/education
- Rate stability/Flexibility/Avoided rate increases
- Increased efficiency, load management, Internet of Things (IoT)
- Improved Power quality
- Faster outage restoration
- Demand Response savings for the customer
- More detailed information available immediately
- Expanded service to attract new businesses and residents
- More options for customers in need (example: pre-paid metering)



## AMI Benefits: Billing and Customers



## Potential Benefits of AMI (Continued)

Billing and the use of complex rates:

- Time of Use (TOU)
- Critical Peak Pricing
- Net-Metering
- Pre-paid Metering
- Move-in/Move-out/Final Readings
- Alerts/Events
  - Flag suspected theft
    - Usage - when there should be zero or no-usage
    - Tilt notification – indicates meter tampering or removal from base
- Non-Pay Disconnect and Reconnect (see safety)
  - Well established for Electric, but starting to see an offering for the Water service as well

## Existing CIS/UB Support

- Many CIS/UB systems on the market today are geared towards Utilities with AMI.
  - Numerous features, reporting functions, and applications are optimized around larger data sets
  - Some of the features used in the billing system which are enabled by having AMI:
    - Complex billing rates
    - Customer efficiency programs
    - On-demand/Move-in/Move-Out/Final readings directly from the CIS (without needing access directly to the AMI system)
    - Rate optimization and comparison
    - Better use of data for reporting

## Improved Detail with Meter Intervals

- **Interval Reading**
  - Flexible interval readings can be provided (5 min., 15 min., 1 hour, etc.)
  - Flexible interval reporting times. Timing and frequency can typically be adjusted from the office
  - Measure effectiveness of load management programs (intervals from electric and direct load control switches)

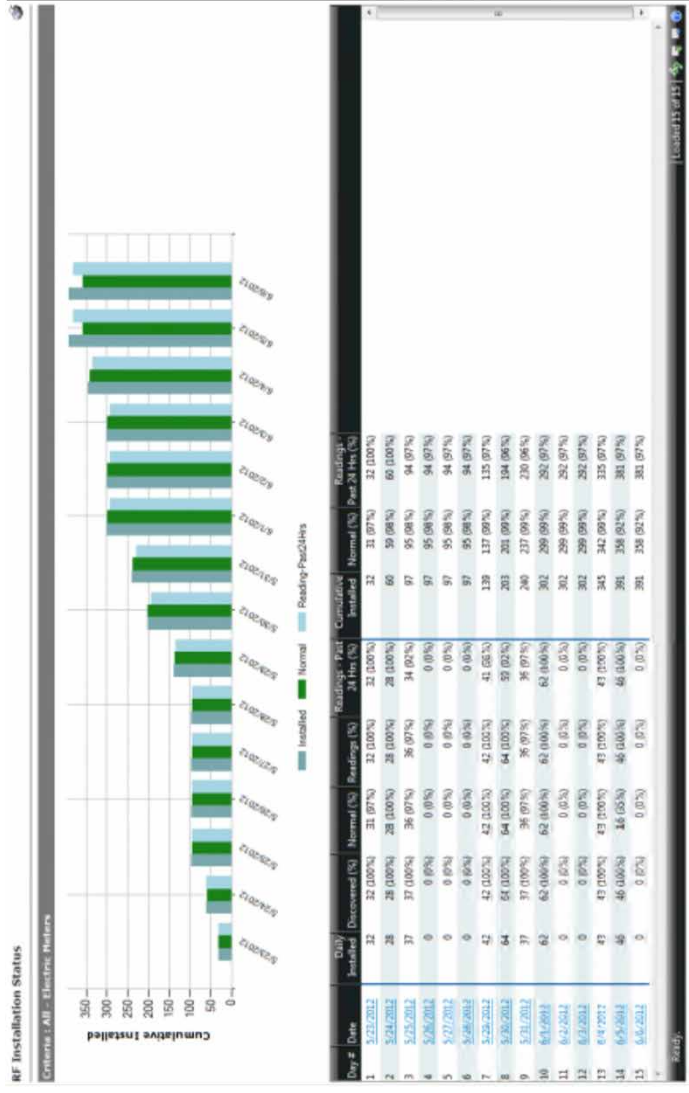
- More Data
  - kWh hourly readings
  - kW
  - Power Factor
  - Voltage min/max
  - Voltage profile
  - Load profile
  - Alarms/Events

## Market Competitiveness

- Marketing to attract new businesses and residents starts with highlighting the area's strengths:
  - Provide modernized customer data services and proactive responses to issues
    - Leak detect
    - Outage and restoration responses
    - Alerts (broken/burst pipe or hot socket)
    - Street/Security/Playground Light Controls
  - Competitive and flexible billing rates
  - Internet of Things, Commercial Energy Efficiency, Net-Metering, and other potential programs
  - Quick response and low impact to customers in resolving issues (Ex. high bill complaints)

## AMI Sample Reports and Capabilities

- **Endpoint Report:** for scheduled reads with demand resets; provides a list of all endpoints scheduled for reset and the current status of the reset. Filtered by user-defined addressing group
- **Daily Read Status Report:** tracks the readings success rates of all meters in the field each day, in addition to a breakdown by collector
- **Billing Progress Report:** shows list of meters that do not show billing data for certain X-day billing window
- **Meter Exception Reports:** monitor condition of endpoints by tracking whether endpoint is logging, has ever logged, or logs or counts intermittently



## AMI Sample Reports and Capabilities

- **Service History Reports:** customer information reports to assist with customer service inquiries. Can indicate customer usage and temperature data
- **Usage Report:** displays electric consumption (time of use) data provided by AMI devices; also can be displayed in the MDMS
- **Overall Electricity Usage Report:** shows total energy consumption data across customers
- **Outage Tracker:** augments the power restoration process by tracking status of customer outages and restorations and approximate elapsed time of outage
- **Meter Change-Out Report:** generates listing of meter change-outs
- **Meter History Viewer:** shows data collected from meter for diagnostic purposes

## AMI Sample Reports and Capabilities

- **Virtual Disconnect Report:** identifies consumption at locations where zero usage or minimal usage is expected.
- **User Activity and Management Audit:** tracks user activity including user creation, modifications, and lockouts.

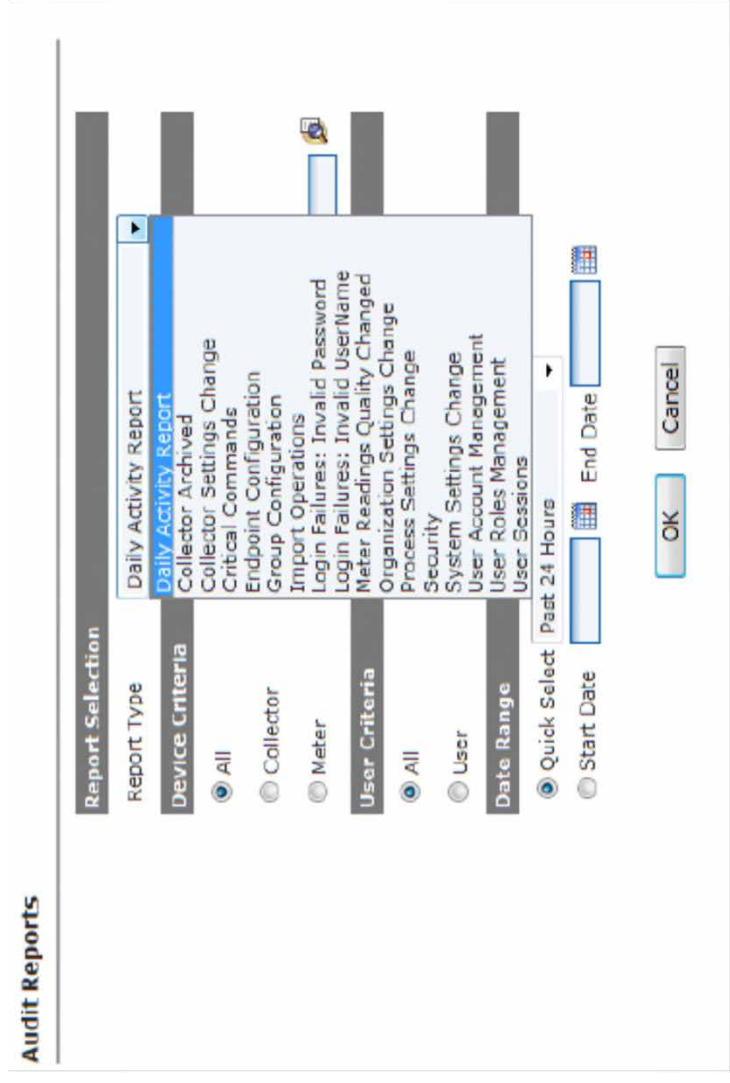
- **Endpoint Configuration**

**Audit:** tracks when endpoints are brought into the system, removed, configured and deployed.

- **Load Management/Demand**

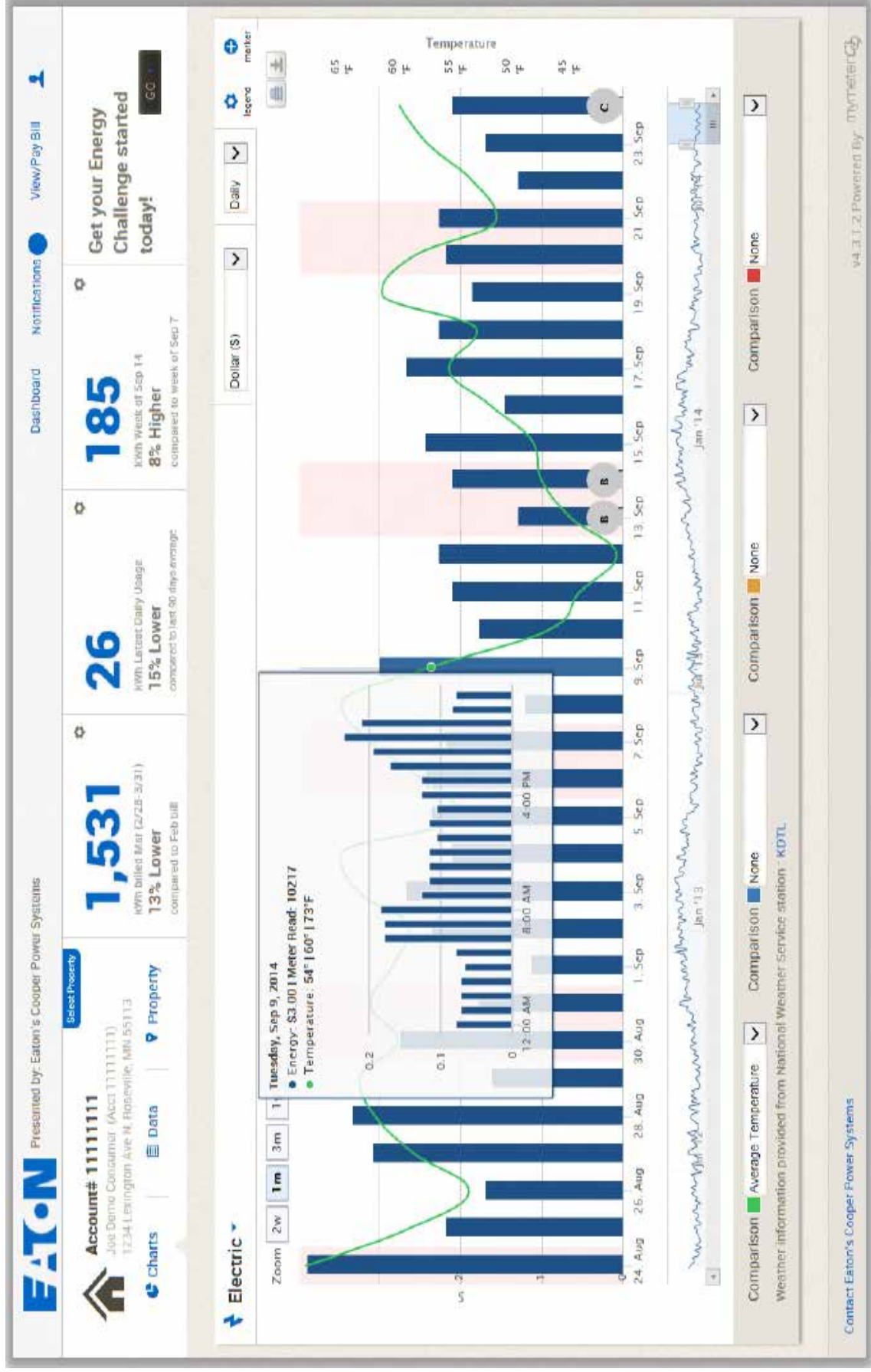
**Response:** LM control area dashboard and asset availability. LM audit reports.

- **Inventoried Devices:** lists devices that do not have an installation date assigned.





# Interval Data Screen Samples (Customer Facing)

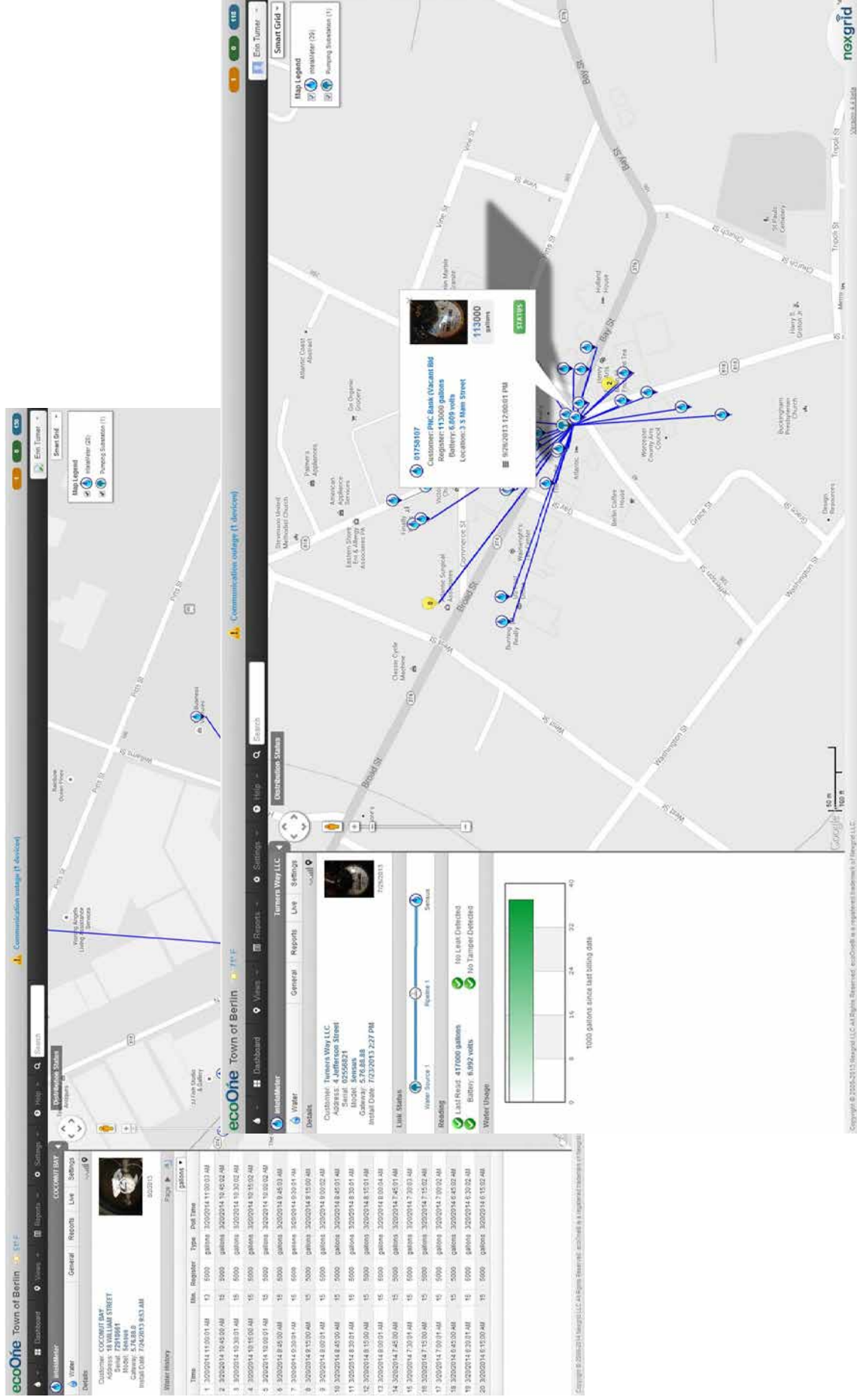




# Interval Data Screen Samples (Customer Facing)



# Meter Data and Connection View



# Metering Subscriber (Pre-Pay) Screen Samples



# Water Leak Detect Example

The screenshot displays the Eaton AMI (Advanced Metering Infrastructure) interface for a Water Leak Report. The main navigation bar includes links for Home, AMI, Demand Response, Volt/Var, Assets, Tools, and Admin. The user is logged in as 'Demo User'.

The 'Water Leaks' section shows a summary of identified leaks: 'There have been 2 water leaks identified (see below) using our leak detection algorithm and based on the current filter.' Below this, a table lists the leaks for devices in the 'System/Device Types:RFW Meter (8)' category, filtered between 04/02/2013 18:00 and 04/03/2013 18:00, with a threshold of 0.0 gal/hr.

Device Name	Meter Number	Device Type	Leak Rate	Customer Info
*100059 RF Water Commercial	100059	RFW-Meter	3,000 gal/hr	View Details
*100104 RF Water	100104	RFW-Meter	2,000 gal/hr	View Details

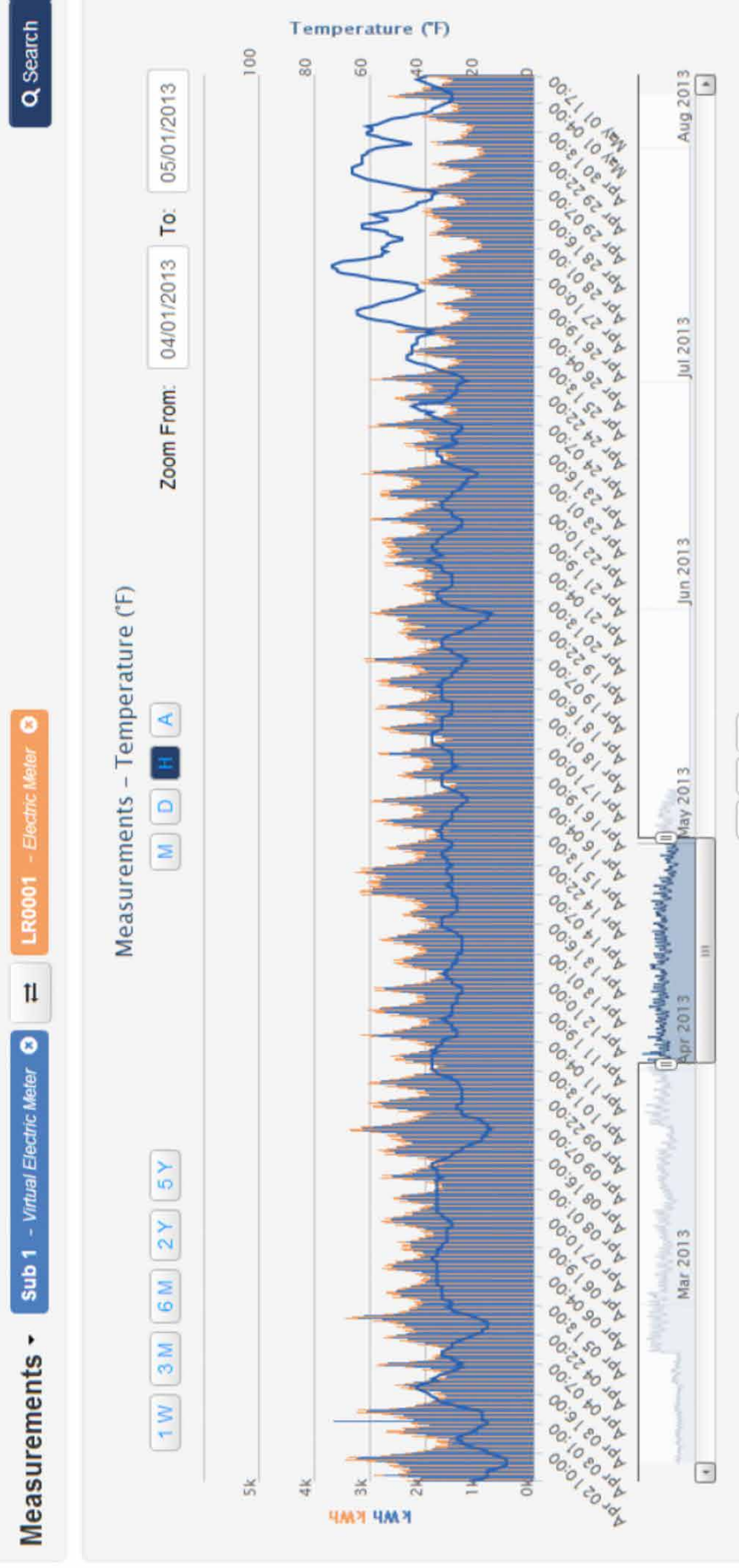
A detailed view of the selected leak (Device Name: \*100104 RF Water) is shown in a modal window. It includes the following information:

- Account Info:** Customer Information (Name: Pat L Smith, DBA Name: Wild Blue Yonder, Address, Phone, Email).
- Service Location:** Service Location: 101000002, Customer Number: 479, Account Number: 47900, Site Number: S123-56XXXG, Map Location: 090-285-002A, Address.

The background interface also shows a 'Water Leaks' section with a summary of identified leaks and a table of device details.



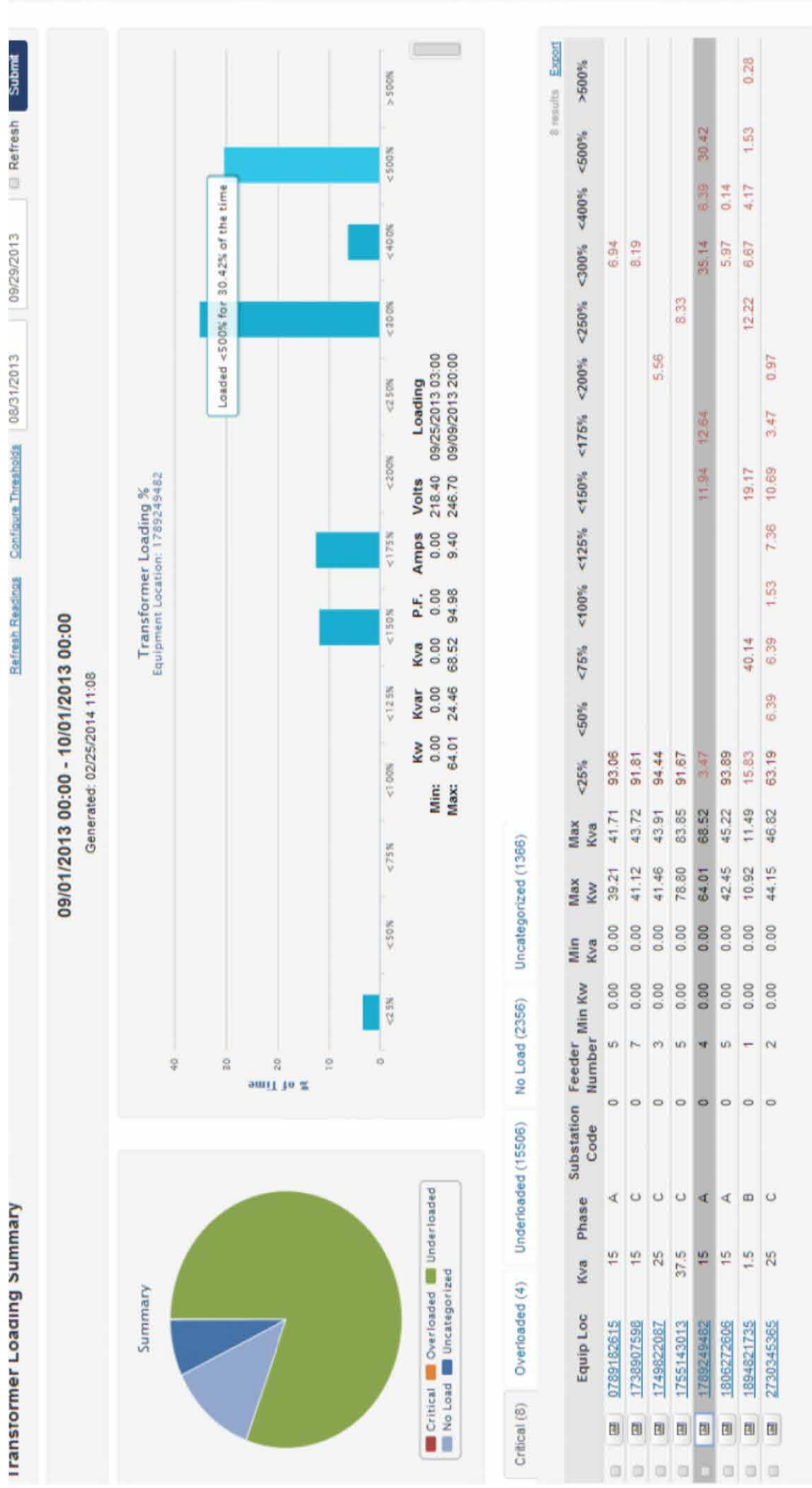
## Line Loss Reporting: Substation Revenue Meter to All Meters Served by Substation



Reducing line loss could become a huge benefit. Just making small improvements can lead to a significant gain in revenue. Being fair to all customers is also very important.

An MDMS may be needed (some analysis is included in AMI systems now)

# Transformer Sizing: Sample Graph



An MDMS may be needed (some analysis is included in AMI systems now)

## AMI Benefits: Outages

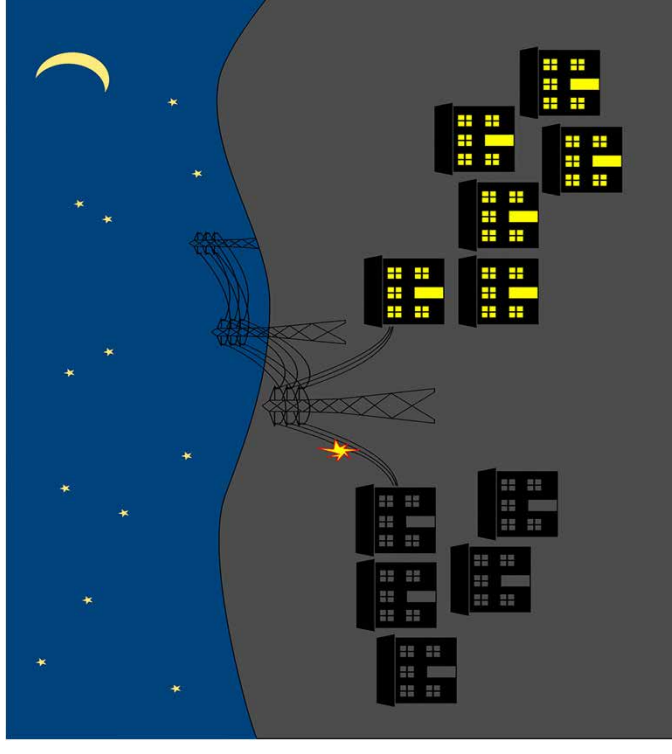
## Outage Management Over AMI

- When power is lost at a meter, the AMI system will send a message when the outage occurs to the AMI software system indicating power is out.
  - It can take about 5 to 30 seconds depending on the AMI vendor and the number of simultaneous meters that are out, to deliver the message to the system.
- The AMI system could be integrated with a GIS Mapping system and an Outage Management System.
- Views indicating the map locations where outages exist (red dots for outages and green dots for power-on locations) are available
- When power is restored, the red dot turns green.

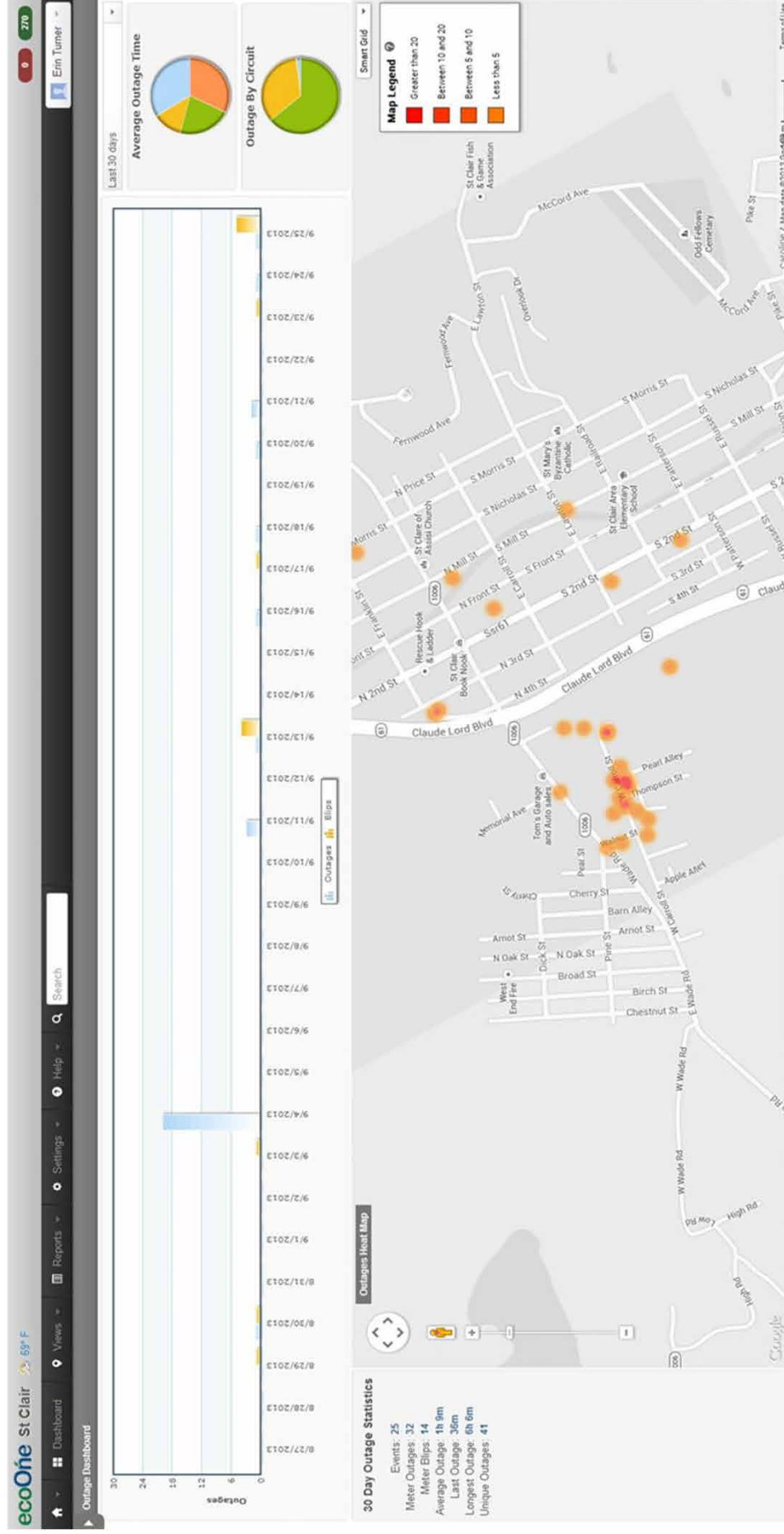


## Improve Outage Notification

- **Proactive Outage Message**
  - Accuracy of knowing which strategic and critical asset locations have a sustained outage
  - Restoration messages from those same accounts when the power is back on, in some cases, before the crew even leaves the area
  - Better customer service; in some cases providing a message with an estimated restoral time rather than a generic outage message
  - Understanding the scale of an outage (single or system wide)
  - Knowing if a customer has lost power before they even need to call in, proactive responses



# Improve Outage Notification



## Blink and Outage Correlation for Energy Theft

- **What is it used for?**
  - Reports that assess the correlation between blinks and outages can be used to identify and mitigate energy theft.
  - When meter tampering occurs by disconnecting the socket, the AMI system can report an outage. This tool can be used when theft is believed to be occurring at a given meter location.
- **Why report it?**
  - By identifying and taking subsequent measures to avoid energy theft, the utility can avoid revenue losses.



## AMI Benefits: Field Time Reduction and Safety

## Increased Safety – Reduced Field Effort

- **Remote Disconnect and Reconnect**
  - Disconnect and reconnect power from the office vs. a manual cut-off
  - Could be used as an emergency load reduction effort
- **Eliminate Meter Readers**
- **Reduced Truck Rolls**
  - Final/Move-in/Move-Outs
  - Verifies
  - High bill complaints
  - Reduced meter replacements
  - “No Light Calls”

- **Identify Bad Equipment and Code Violations**

- Identify overheating meters
- Information and details are powerful



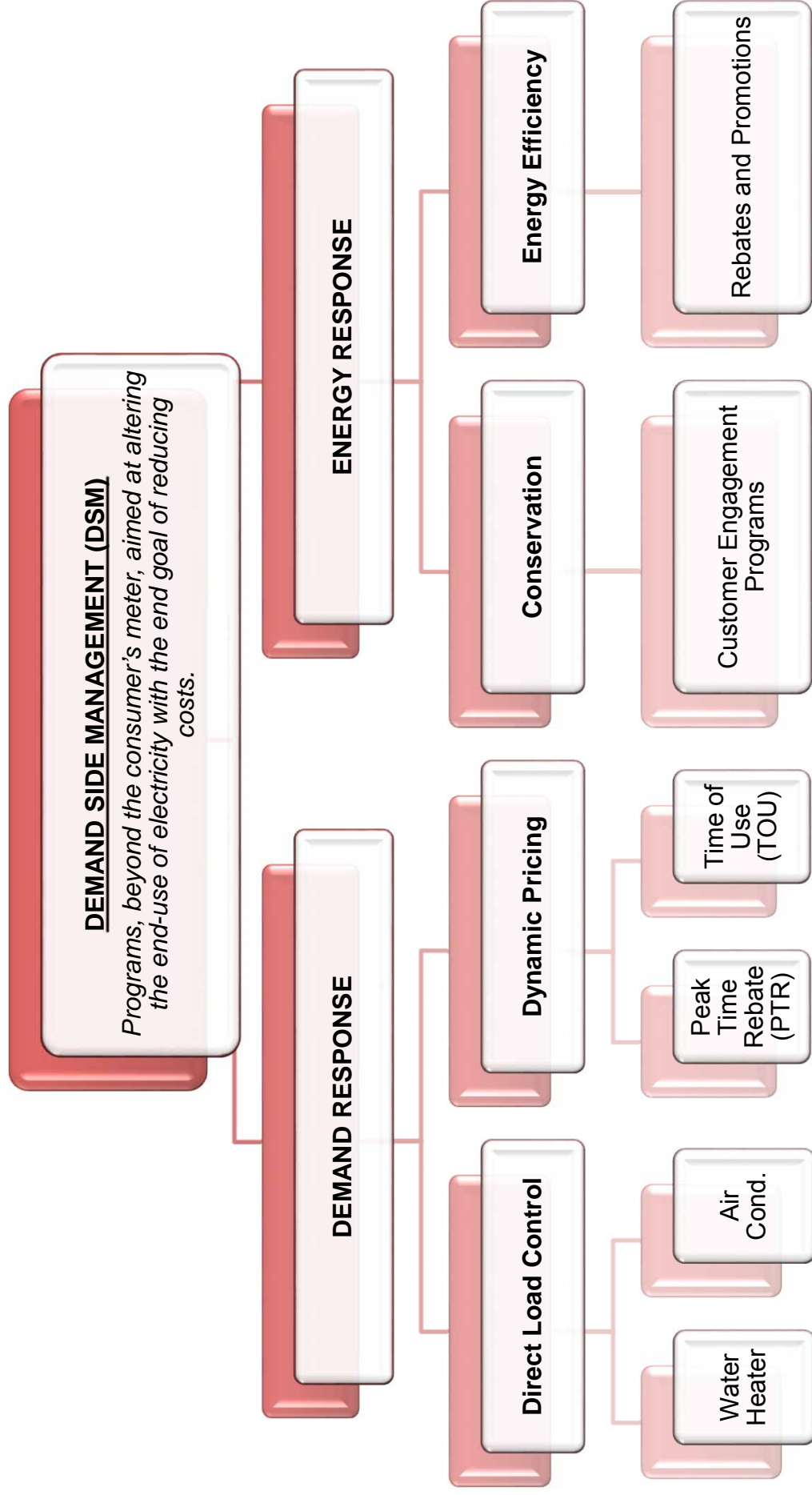


## **AMI Benefits: Additional Services/Programs**

## Demand Response

- AMI also opens up opportunities for demand response programs:
  - This can help lower the overall system peak when pricing is high and shift the load when demand charges are lower
  - Depending on peak demand charges, demand response programs can have a very large return on investment
  - AMI can also help introduce dynamic pricing programs and increase the options for members to participate in peak load reduction
  - Peak demand reduction and Conservation Voltage Reduction programs have the potential to save the Utility costly demand charges, but consideration on how to run these programs are key to success

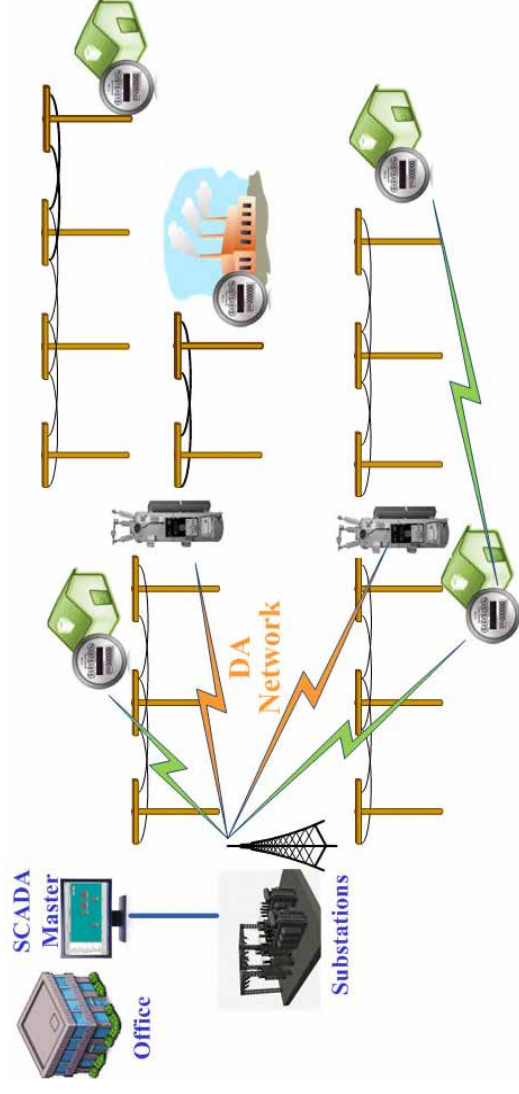
# Demand Side Management Overview





## Voltage Control Program

- Substation automation forms basis for voltage control
  - Benefits
    - Coincident peak price reduction
    - Energy reduction
  - Components of a voltage control program
    - Regulation (substation and feeder)
    - Measurement (meters and regulators)
    - Control (SCADA or integrated Volt/VAR application)
  - Considerations
    - Seasonal / daily load
    - Metering latency
    - Dynamic network
    - Existing Comms



## Distribution Automation (DA) Considerations

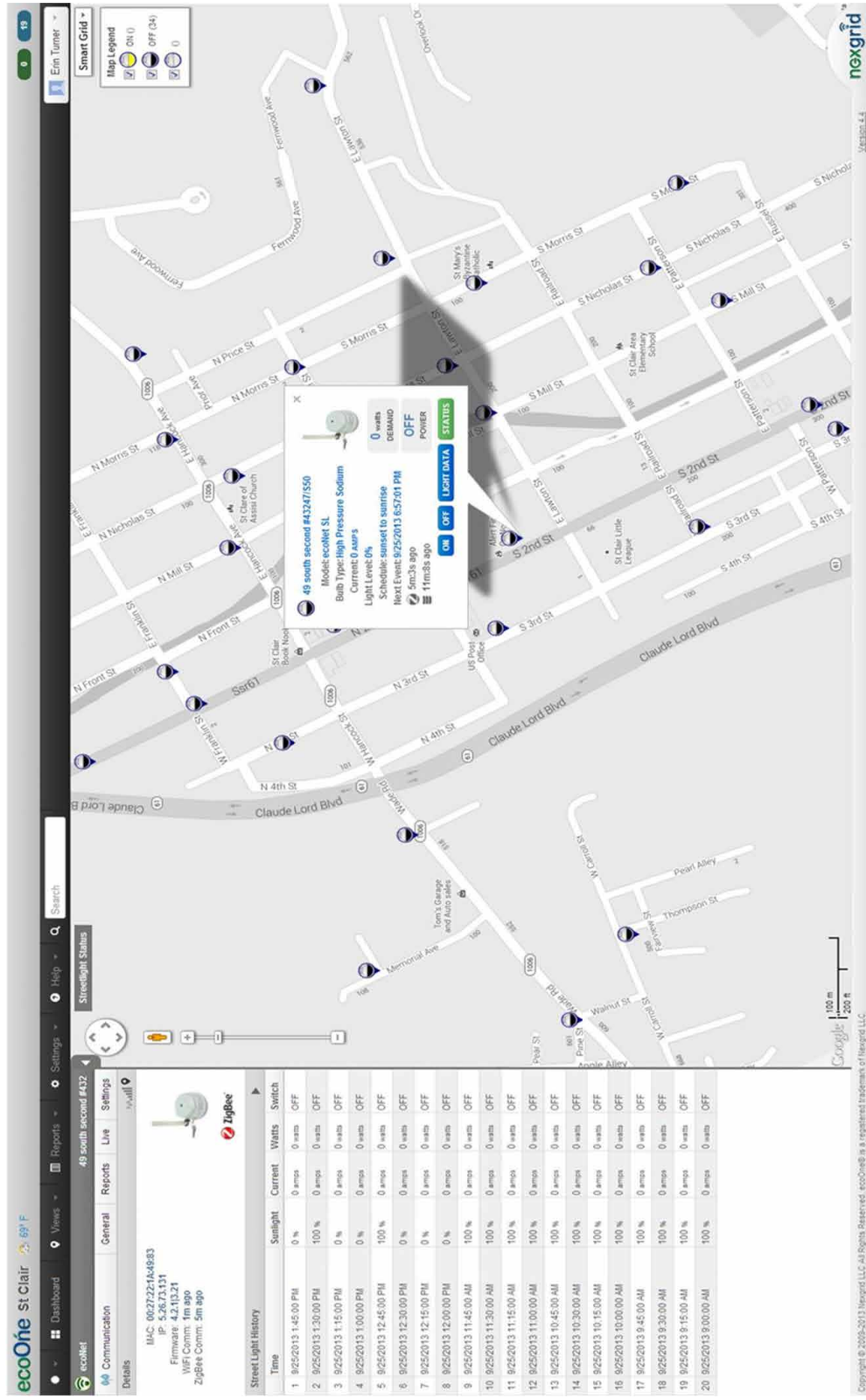
- Every utility has valuable assets
  - **IEDs:** Relays, regulator controls, meters.
  - **Communications:**
    - **Fiber (partial) deployment:** Communities with existing or pending fiber programs
    - **Wireless assets:** Including towers
  - **Other systems that can be integrated with SCADA:**
    - Automated metering (AMI/AMR)
    - Outage management system (OMS)
    - Geographic information system (GIS)

Maximize the benefit of what you have toward the programs you need. In areas where latency is tolerable, AMI is a good choice, but a direct communications path is a better option when available.

## Street Light Controls

- Many AML vendors support photo cell adaptors
  - Monitors the light itself
  - Provides remote control and configuration
    - Schedules (automatically adjust for different needs; like a holiday parade or ball game)
    - Lumen output
    - Pattern flashing
  - Send in Alerts/Events
    - Failure to turn On/Off
    - Burn time

# Street Light Control and Monitoring



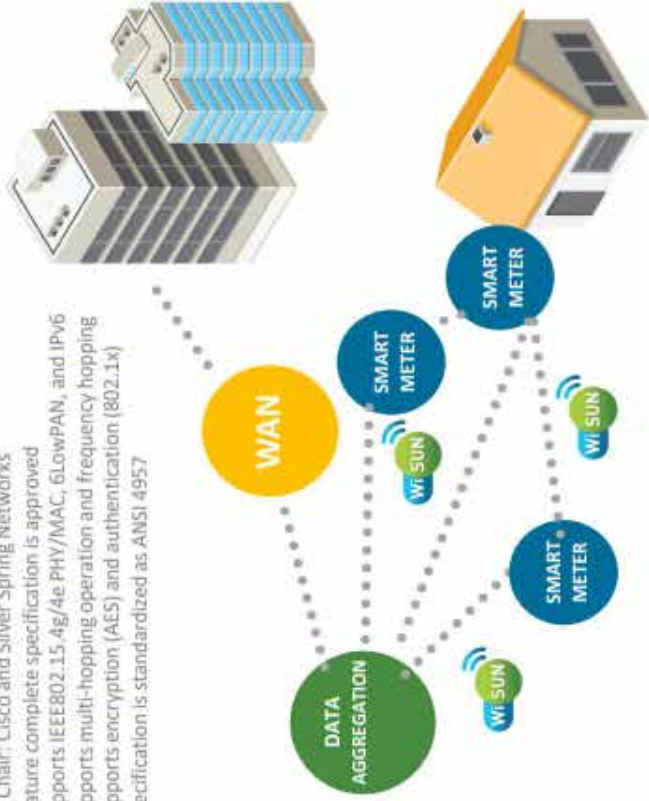
# Home Area Network Solutions

## Profile Specifications for Smart Utility Applications



### FIELD AREA NETWORK (FAN) WORKING GROUP

- Co Chair: Cisco and Silver Spring Networks
- Feature complete specification is approved
- Supports IEEE802.15.4g/4e PHY/MAC, 6LoWPAN, and IPv6
- Supports multi-hopping operation and frequency hopping
- Supports encryption (AES) and authentication (802.1x)
- Specification is standardized as ANSI 4957



**FAN:** Communication Between Smart Meters and Distribution Automation

### HOME AREA NETWORK (HAN) WORKING GROUP

- Chair: NICT, Technical Editor: Toshiba
- Specification is approved (Wi-SUN profile for ECHONET Lite)
- Support IEEE802.15.4g/4e PHY/MAC, 6LoWPAN, and IPv6
- Support encryption (AES) and authentication(PANA)
- Specification is standardized as TTC-J300.10



**TEPCO B-ROUTE:** Communication Between Smart Meters and HEMS

**HAN:** Communication between HEMS controller and HAN device

## AMI Budgetary Cost



## Potential Benefit Categories (economic and non-economic)

- Reduction in manual meter reading costs (Off-Cycle, On-Cycle, Move-in/Move-Out, and need for staff)
- Need for Overtime (reduction potential)
- Disconnect and Reconnects
- Avoided meter replacement and present meter reading costs
- Meter accuracy improvement
- Theft monitoring and alert
- Water Leak Detect
- Conservation Voltage Reduction and other demand response programs
- Overall system maintenance, power quality and reporting improvements, and more automated meter to cash process
- Safety
- Note: For the following assumptions, it was projected out over 15 years

## Benefit Assumptions

- **Meter Readings – On-Cycle**
  - This is based on the cost (\$1.12) to read each meter manually
  - Benefit average over 15 years of **\$29K** per year
- **Reduction in Connects/Disconnects/Off-Cycle Readings**
  - This is based off of the average number of connects and disconnects per year (for non-pay and for request)
  - The percent of the AMI system deployed
  - The cost per trip (\$156.00)
    - Minus the reconnect and disconnect fee (\$25)
  - The estimated percent in reduction of manual connects/disconnects (95%)
  - The cost to manually read a meter outside of the normal cycle or missed reading (Move-in/Move-Out, re-reads, etc.)
  - The estimated percent reduction in the number of off-cycle readings (99%) at \$22.77 per read
  - Benefit average over 15 years of **\$75.5K** per year
- **Manual Meter Read Force Reduction**
  - Reduced need for manual reads on the system (95% - assume small percent of meters needing a manual read)
  - The percent of the AMI system deployed
  - Assumed annual employment cost of \$75K per year
  - Benefit average over 15 years of **\$200K** per year



## Benefit Assumptions

- Avoided Meter Replacement & Current System Costs
  - The cost to currently replace a failed meter (Electric, Water, or Gas)
  - The average number of meters replaced per year (E:50, W:300, G:50)
  - Current cost for present meter reading system
  - The percentage of the new AMI system deployed
  - Benefit average over 15 years of **\$100K** per year
- Theft Protection & Water Loss Reduction
  - The current total revenue
  - The current estimated amount of theft
  - The current estimated amount of water loss
  - The percentage of the new AMI system deployed
  - Benefit average over 15 years of **\$35K** per year
- Meter Accuracy Savings
  - Current percentage of mechanical meters (75%)
  - Estimated current meter accuracy (98%) vs estimated new meter accuracy (99.9%)
  - The percentage of the AMI system deployed
  - Benefit average is **\$94K** per year

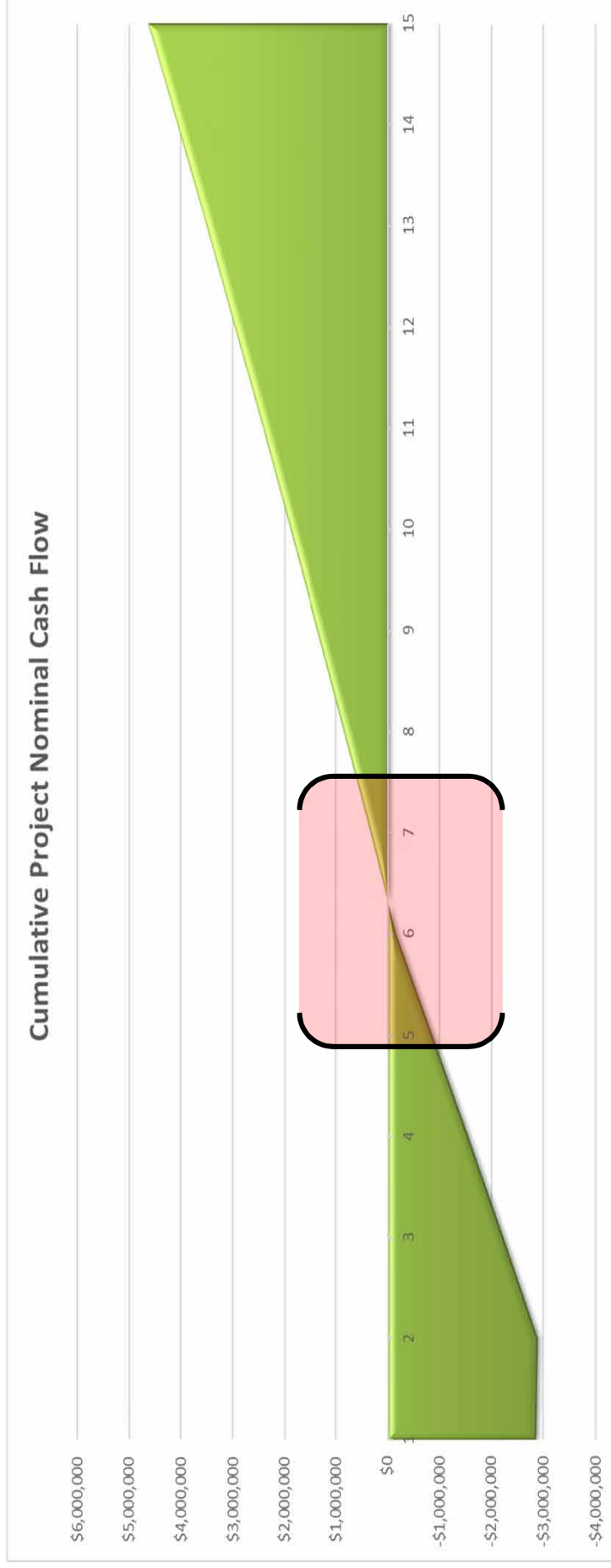
## Benefit Assumptions

- High Bill and Estimate Call Savings
  - The average number of high bill complaints and estimate calls (240)
  - The average cost for these calls (\$22.77)
  - The estimated percentage of calls reduced (95%)
  - The percentage of the AMI system deployed
  - Benefit average of **\$16.5K** per year
- Outage Management – No Light Calls
  - The average number of calls for ‘no lights’ (65)
  - The average cost to send a crew and truck (\$156.00)
  - Percentage found to be customer side issue (10%)
  - The estimated reduction percentage in sending a crew (99%)
  - The percentage of the AMI system deployed
  - Benefit average of **\$4.5K** per year

## Estimated AMI Benefits (Cost Savings)

Benefit Category	15 Yr PV	Benefit per Meter	% of Total Benefit
Avoided Meter Replacement and Present Meter Reading System Costs	\$ 1,501,000	\$ 61.05	18%
Meter Accuracy Savings	\$ 1,407,000	\$ 57.19	17%
Reduction in Connects/Disconnects/Off-cycle Read Costs	\$ 1,133,000	\$ 46.08	14%
Meter Reading Savings - On-Cycle	\$ 437,000	\$ 17.75	5%
Water Loss Reduction	\$ 337,000	\$ 13.69	4%
High Bill and Estimate Call Savings & Works Comp Reduction	\$ 248,000	\$ 10.10	3%
Theft Protection	\$ 189,000	\$ 7.68	2%
Outage Management (No lights calls, crew optimization)	\$ 62,000	\$ 2.51	1%
Manual Meter Read Force Reduction	\$ 3,001,000	\$ 122.02	36%
Cash flow - reduced short term interest	\$ 0	\$ -	0%
<b>Benefits Total</b>	<b>\$ 8,315,000</b>	<b>\$ 338.07</b>	<b>100%</b>

# Potential ROI



- Variations occur in many estimated areas:
  - Current Meter reading costs
  - # of Disconnects/reconnects per year
  - Implementation of Demand Response/CVR
  - Off-Cycle Readings, Investigations, Etc.
- The expected return or breakeven may occur after **year 5** and before **year 7**

# Total Cost Breakdown Total

#	Category	AMI
1	AMI Infrastructure	\$ 90,177
2	AMI Software, Servers, and Internal Support	\$ 109,078
3	Meters and Modules	\$ 3,994,638
4	Installation and Project Management	\$ 325,185
5	Test Equipment and AMI Tools	\$ 19,637
6	MDMS Costs	\$ 320,000
Total Initial Deployment Cost		\$ 4,858,715
7	Annual Software License Fees and Support – Year 1 – 7	\$ 699,727
Total Cost of Ownership		\$ 5,558,442

## Summary

- AMI enhances the ability of systems to better predict, report, and supply information
  - More data = better decisions
    - Field Safety and investigation (“no lights”, outage & restoration)
    - Equipment and system failures (water leaks or hot sockets)
    - Flexible rates and customer programs
    - Better billing and customer engagement practices
      - High bill complaints
      - Less intrusive
      - CIS enhancements/needs, programs, and options to better suit the customer
    - AMI is becoming the commonplace in communities and is providing the opportunity to offer services to a more data and convenience focused audience
  - AMI has the potential to open up new services and opportunity within the community



**FlexNet**

## **Network Communications System**

Redefining Intelligent Utility Communications

Technology that takes you  
from today to tomorrow.





# FlexNet™ – Technology you can trust

FlexNet is a robust, high-powered solution based on open standards. It gives electric, gas and water utilities a communications network that is designed and built specifically for smart grid applications. Working with smart meters, FlexNet provides utilities a dedicated and secure two-way communications highway over which to transmit and receive customer usage data – the hallmark of Advanced Metering Infrastructure (AMI) solutions. Utilities can more effectively monitor and manage the distribution and use of electricity, water or gas.

With automatic delivery and analysis of consumption data, utilities are able to match supply with consumer demand, resulting in much better utilization of resources with the least amount of waste. Customers can be billed based on actual usage patterns and be encouraged to use resources more wisely. They can receive early notification of water or gas leaks, tampering, equipment problems or outages.

With these advantages and more, Sensus is redefining the standard for utility AMI.

In the FlexNet environment, smart meters communicate data throughout the day – such as electric power consumed from the grid and returned to the grid by customers who generate alternative energy – or water leaks in a home or business. In-home devices inform customers of their energy or water usage patterns. Utilities gain new visibility through infrastructure monitors that can sense trouble conditions and trigger an alert to the need for corrective action.

Customers are empowered to participate in demand response programs that save them money while conserving resources.

## A Dedicated and Protected Communications Highway

### Reliable, secure and cost-effective.

Unlike other utility networks that operate on costly power line infrastructures or low-powered, shared radio frequencies, FlexNet uses primary use radio spectrum, protected by law from interference and bundled into the network solution. This strategy presents essential advantages that other systems cannot offer.

**No frequency sharing, no interference, no problems – period.** While other systems fight interference and signal noise in shared bands, FlexNet transmits with a clarity and security that is protected by federal law.

**The highest signal power and range in the industry.** FlexNet wireless devices can transmit at up to two watts, potentially 10 to 100 times more power than devices on unlicensed spectrum. High signal power and low noise combine to significantly extend network reach. Instead of a fraction of a mile between endpoints, a FlexNet network can transmit up to 40 miles from point to point.

**A simpler, more manageable infrastructure.** One tower gateway can cover 30 to 300 square miles, depending on population density and terrain. In hard-to-reach areas, smart meters can pass

along data for each other. That means less equipment to buy, deploy and operate.

### More reliable communications.

FlexNet's dedicated highway for data transmission makes communication more reliable than other systems that require channel hopping over radio frequencies.

### Cost-effective, rapid build-out.

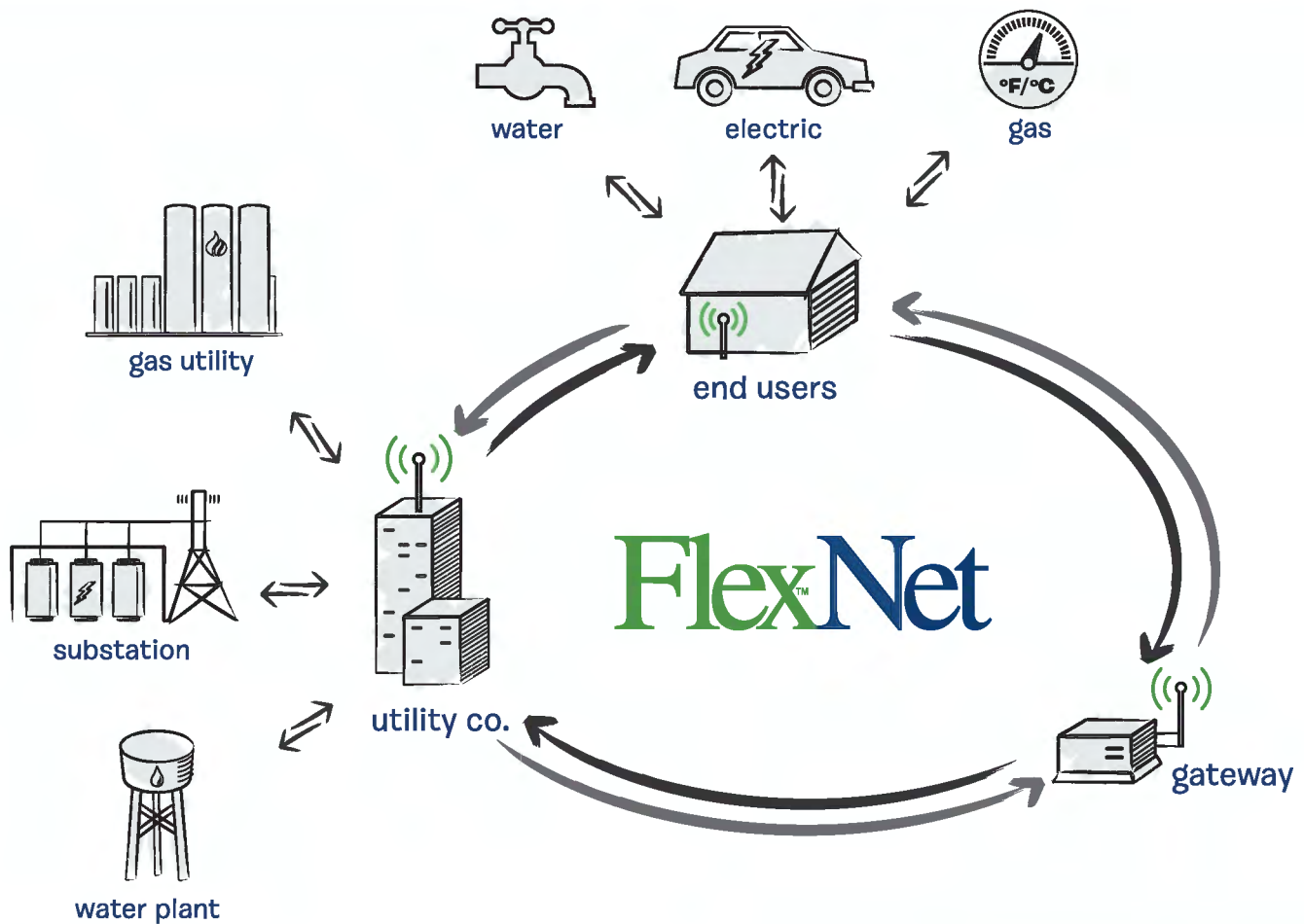
FlexNet systems have access to more than 4,000 tower sites covering more than 90 percent of the U.S. population. The tower-based architecture can be quickly deployed without concern for easement and access issues. And because FlexNet transmits stronger over a wider signal area, initial infrastructure build-out and ongoing maintenance costs are reduced.

**Multilayered security to protect data privacy and integrity.** Federal law prohibits infringement on licensed spectrum. On top of that, the FlexNet system adds multiple layers of built-in security, from strong AES-256 encryption to multilevel authentication, access controls and more for premium protection. With less traffic to interfere with communication, data is transmitted more securely.

**Meeting utility needs today and tomorrow.** FlexNet gives gas, water and electric utilities the ability to add functionality to keep up with utility growth. Demand response, distribution automation, home area network and new applications can easily be incorporated into a utility's operations over the FlexNet network, a future-proof investment.

Conserve capital while maintaining flexibility and ensuring scalability, whether you want to serve a few thousand homes or a few million.





## FlexNet™ – Technology that delivers

**Sensus Smart Meters** at customer premises communicate consumption, status and diagnostic data to the FlexNet network for monitoring and billing purposes.

Energy meters also accept control instructions and software upgrades from the utility to intelligently manage consumption and remotely upgrade features and services.

Wireless communication between meters and towers is securely carried on licensed radio spectrum for distances of up to 40 miles, depending on the environment.

**Sensus Tower Gateway Base Stations** (TGBs) installed on existing towers (50–600 feet tall) communicate with SmartPoint meters and with the Regional Network Interface (RNI).

Backhaul communication between towers and the utility data center can be wireless, wired or satellite, whichever best suits the utility's business case.

**Sensus Regional Network Interface** (RNI) servers at the utility's data center manage network communications and data storage and processing.

**Sensus FlexWare** software provides an intuitive, Web-based interface to manage the system and its data.

The **Sensus FlexServer** Web-based portal enhances utility monitoring and management, expands consumer participation and improves public outreach.

Sensus is redefining the standard for utility AMI systems.

- The highest data transmission power in the industry
- No interference from other broadcasters
- Blanket coverage of your entire area
- Maximum range, reliability and security
- Minimal infrastructure for flexible and rapid build-out
- Robust, direct, secure communications

# FlexNet™ – Technology without limits

## FlexNet Water

FlexNet gives water utilities an acoustic leak detection solution that saves not only valuable natural resources but also lost revenue due to leaks in utility lines.

FlexNet SmartPoint M2 series transceivers offer water utilities two-way, fully migratable, AMR-to-AMI solutions and unprecedented freedom to expand and modify system capabilities without having to replace or revisit meters and equipment.

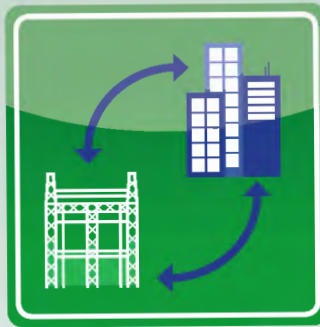


Smart utilities are using FlexNet data capabilities to inform and interact with customers and promote good conservation practices.

## FlexNet Electric

The Sensus Smart Grid solution provides electric utilities with a standards-based, secure, dedicated, two-way, long-range wireless data communications network that will future-proof their AMI investment.

Electric utilities of all sizes benefit from our FlexNet dedicated RF spectrum with the ability to assign separate communications channels for discrete applications, such as distribution automation, demand response and SCADA.



The unparalleled RF design and operational efficiencies of Sensus can blanket a utility's entire service territory to deliver ubiquitous coverage.

## FlexNet Gas

FlexNet allows gas utilities to increase meter reading accuracy, reduce overhead costs and enhance customer service – all while keeping more utility trucks off the road.

The innovative gas product line produced by Sensus combined with the FlexNet secure, reliable communications network delivers a gas AMI solution that expands easily and meets the requirements for safety and accuracy. Minimal infrastructure means lower maintenance cost and ease of installation.



FlexNet lets gas utilities excel in safety, reliability, efficiency and environmental responsibility, because no one has energy to burn.



## We're not just promising results. We're delivering the smart grid today.

With roots that go back more than a century, Sensus is redefining the way utilities think about metering. Not only are we the world's largest manufacturer of water meters, we are now a leading innovator and installer of utility communications and automation systems that put the "smart" in smart metering.

We are literally building on that foundation every day as we manage hundreds of deployments and install millions of endpoints in the United States, Canada and Europe.

Whether your utility is rural or urban – electric, gas, water or a combination – a FlexNet solution can deliver superior communications on a secure network that scales to meet your current and future needs.

Find out more about how the Sensus FlexNet system redefines the possibilities for intelligently managing costs, resources, infrastructure and customer engagement.

Visit us on the Web at [www.sensus.com](http://www.sensus.com) or call **1-800-638-3748**.





# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 7.B  
**Index (Council Goals):** BCC - N/A  
**Presenters:** James Alarid, Deputy Utilities Manager - Engineering  
**Legislative File:** 11150-18

---

### Title

Consideration of Change Order No. 5 to Services Agreement AGR17-30 and Budget Revision 2019-16 for the Otowi Well #2 Design, Drilling and Development Project

### Recommended Action

**I move the Board of Public Utilities approve Change Order No. 5 to AGR 17-30 for the Otowi Well #2 Design, Drilling and Development Project in the amount of \$446,490.16 and forward to County Council for approval. I further move the Board of Public Utilities approve Budget Revision 2019-16 as summarized on Attachment D, and forward to County Council for approval. I further move the budget revision be included in the minutes.**

### ..Utilities Manager's Recommendation

The Utilities Manager recommends that Council approve Change Order No. 5 and Budget Revision 2019-16 as requested.

### Body

The drilling of Otowi Well #2 began on January 16, 2018. The drilling operation was originally schedule to take 60 days to complete the drilling and install the screen and casing. We have provide as Attachment A, a copy of the construction schedule issued on January 9, 2018. The driller was using the reverse rotary mud drilling method and encountered a fissured basalt geological formation at about 50 feet below ground level. The fissures in the basalt caused the drilling mud to be lost into the formation and drilling was stopped since the cuttings could not be removed from the bore hole due to the loss of circulation. Through February and March the contractor and the DPU negotiated the project's first change order that modified the drilling equipment to change the drilling technique to a dual pipe rotary air drilling methodology. This was a high cost change due to the need to custom fabricate some equipment, re-tool the drilling rig and increase the number of air compressors to drive the air circulation process. Beginning on April 1, 2018 work continued using a combination of the dual pipe rotary air and reverse rotary mud methodologies. Drilling fluid and recirculated air continued to be lost to the formation. The contractor proceeded to use a number of additives to the drilling fluids to attempt to re-establish circulation, but the only effective solution was to install cement in to the bore hole to attempt to seal up the fractures in the formation, then drill through the cement. Several iterations of cementing the bore hole and re-drilling through the cement were performed between April and August. The cost for applying the cement, re-drilling through the cement and the time to perform this work through this 300 foot layer of fissured basalt were the subject of Change Orders 2 and 3. On August 9, 2018 a 28" steel surface casing was successfully installed to a depth of 700 feet

---

below ground surface. This stabilized the bore hole through this problematic basalt layer. Another fractured basalt layer was encountered from 740 feet to 880 feet below ground level. This 140 foot layer of fissured basalt caused similar difficulties but the hole was stabilized with cement. The costs associated with stabilizing this second 140 foot layer of basalt is the subject of Change Order No. 4. As of August 23, 2018 the drilling has progressed well through sand, clay and gravel geological formations. The current project schedule has the drilling operation ending on November 10, 2018, approximately 8 months later than originally scheduled. Attachment Bis the current project schedule.

The contractor has made a claim for the cost associated with the additional time it has taken to drill due to the complications from the unforeseen condition presented by the fissured basalt geological formation. The contractor has presented their actual costs of labor, fuel, per diem and equipment from April 1, 2018 to August 2, 2018 which period represents the timeframe where drilling occurred in the fractured basalt. The contractor has provided a worksheet that compares these actual cost to base contract billable amounts, and deducted any time/materials paid for by other change orders or when equipment was down for repair. DPU staff has verified the supporting information, invoices and labor costs presented by the contractor in support of their claim and they are a accurate representation of their actual costs. This claim is in the amount of \$446,490.16. Change Order #5 is presented as Attachment 3, for the payment of the claimed amount and includes the supporting information which backs up the costs. Staff is in agreement that the fissured basalt geological formations encountered in drilling of the well is an unforeseen condition and the contractor is justified additional payment. Upon review of the supporting information provided by the contractor the cost requested are appropriate. A summary of all change orders is provided below, including proposed Change Order No. 5.

Original Contract \$2,583,694.07  
Change Order #1 \$345,660.70  
Change Order #2 \$87,000.00  
Change Order #3 \$252,632.79  
Change Order #4 \$61,351.44  
Change Order #5 \$446,490.16  
**Total Project \$3,776,829.16**

DPU has continuously evaluated the viability of continuing to drill the well as each change order and associated extra work is considered. DPU staff supports the additional compensation to the contractor included in Change Order No. 5 and continuing to drill and develop the well. The following are considerations supporting staff's recommendation to continue drilling:

1. Based on nearby well drilling logs, the professional opinion of the project hydrogeologist, and DPU staff experience in drilling wells in Los Alamos, we believe have drilled through the vast majority of the basalt expected to be encountered. The drilling is now taking place below the ground water table which reduces the risk of losing fluids to the formation. The remaining 1,400 feet of drilling is expected to be in sand/gravel/clay geologic formations that do not pose the high risk associated with drilling through basalt.
2. The remaining drilling and development work is in the scope of the base contract.
3. The total project cost, if Change Order No. 5 is approved, will be approximately \$3.8 million.

---

We received three bids to drill and develop the well and the highest bid was \$4.05 million. The increased cost of this project is still within the range of competitive pricing for this project.

4. If this well is abandoned, DPU will be faced with permitting and bidding a new well at a new location. It will be a two to three year process to secure environmental clearance and get right-of-way for a new well site. Then another year to two years to drill a new well and place it in service. This creates the risk of losing one of the older well(s) in the system in the interim and possible supply shortages.

In addition to approval of Change Order No. 5, we are seeking approval for the budget revision that will fund Change Order No. 5 and approve an additional \$100,000 contingency that may or may not be needed for the remainder of the project. This contingency would be used if any other unforeseen conditions are encountered that are justified additional payment. A summary of the budget revision and specific details relating to the item are in Attachment D.

#### **Alternatives**

If the board does not approve Change Order No. 5 and Budget Revision 2019-16 the contractor will likely stop working.

#### **Fiscal and Staff Impact/Planned Item**

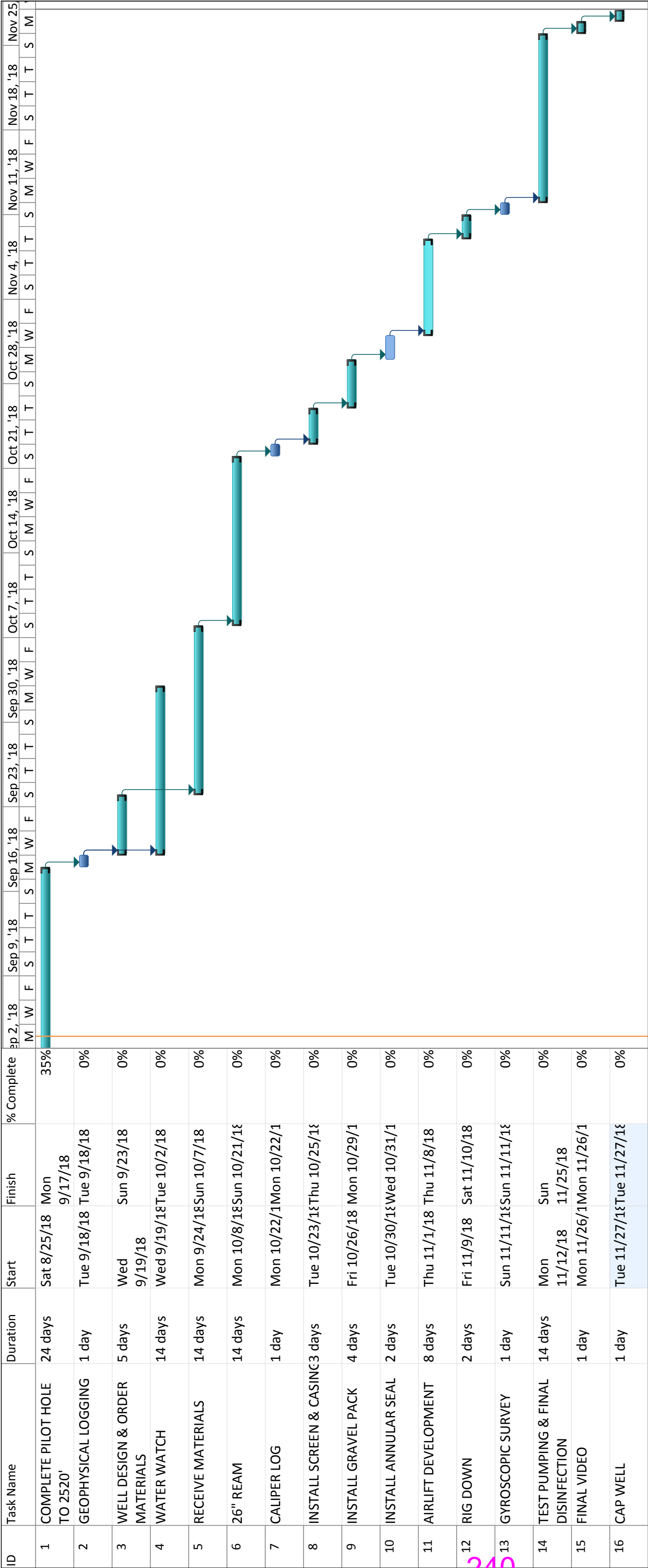
The project was awarded on May 3, 2017 to Wilson and Company, Inc. in the amount of \$2,583,694.07 and a total project budget of \$3,000,000. In May 2018 a budget adjustment for an additional \$350,000 of contingency was approved by the Utility Board and County Council, increasing the total project budget to \$3,350,000. Total costs of change orders to date is \$746,644.93. If Change Order No. 5 is approved the cost of total change orders will be \$1,193,135.09. The additional monies to fund Budget Revision 2019-16 will come from water production fund reserves.

#### **Attachments**

- A - Original Construction Schedule January 9, 2018
- B - Construction Schedule Revision September 4, 2018
- C - Change Order No. 5
- D - Budget Revision 2019-16







Project: msproj11  
Date: Tue 9/4/18

Task

Split

Milestone

Summary

Project Summary

External Tasks

External Milestone

Inactive Task

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Deadline

Progress

Page 1

**Change Order**  
**Page 1 of 3**

**Change Order No. 5**

**Agreement Date: September 25, 2018**

**Name of Project:** Otowi 2 Well Design Drilling and Development

**Contractor:** Wilson & Company, Inc., Engineers & Architects

**Revisions Hereby Made to the Contract Documents:**

The parties, through this Change Order, hereby agree to amend the contract AGR 17-30 ("contract") to increase the contract price by an amount of \$446,490.16, plus applicable NMGR.

**JUSTIFICATION:**

The contractor has made a claim for the cost associated with the additional time it has taken to drill due to the complications from the unforeseen conditions presented by the fissured basalt geological formation. The contractor has presented their actual costs of labor, fuel, per diem and equipment from April 1, 2018 to August 2, 2018, which period represents the timeframe where drilling occurred in the fractured basalt. The contractor has provided a worksheet that compares these actual cost to base contract billable amounts, and deducted any time/materials paid for by other change orders or when equipment was down for repair. The contractor's claim and supporting cost justification is provided as an attachment to this change order. DPU staff has verified the supporting information, invoices and labor costs presented by the contractor in support of their claim and they are an accurate representation of their actual costs.

Due to complications from the presence of the fissured basaltic geological formation, which has continued to cause loss of circulation of drilling fluids, the drilling operation has lasted eight months longer than originally scheduled.

Furthermore, the parties agree that:

1. The current increase and any future increases shall remain subject to the continued funding of the County Council and this Change Order does not alter, amend, or change any other contract term(s), condition(s), or provision(s).
2. The increased contract amount herein provided shall be a *not to exceed amount* and shall include any and all other supplies, costs, materials, services, and expenses necessary to complete the project within the schedule in the contract/agreement terms. Nothing herein shall relieve the contractor from the duty to deliver the project fully functional and within the time and schedule provided in the contracted agreement.

**Page 2 of 3****CHANGE TO CONTRACT PRICE:**

Original Price	<u>\$ 2,583,694.07</u>
Current Contract Price adjusted by previous Change Order	<u>\$ 3,330,339.00</u>
The Contract Price due to this Change Order will be increased by:	<u>\$ 446,490.16</u>
The new Contract Price, including this Change Order will be	<u>\$ 3,776,829.16</u>

**CHANGE TO CONTRACT TIME:****FINAL COMPLETION:**

End of Original Contract Time	<u>Dec 31, 2019</u>
Current Contract time adjusted by previous Change Order(s)	<u>NA</u>
The Contract Time will remain unchanged:	<u>0 calendar days</u>
The date for work's final completion will be	<u>Dec 31, 2019</u>

**APPROVALS REQUIRED:**

To be effective, this order must be approved by the County Utilities Manager; or the Los Alamos County Council if the contract modification, change order, or contract price adjustment exceeds the funding budgeted and specifically appropriated for this project, or as may otherwise be required by the General Conditions.

The adjustment in Contract price and/or Contract time stated in this Change Order shall constitute the total price and/or time adjustment due or owed the Contractor for the work or changes ordered by the Change Order. By executing the Change Order, the Contractor acknowledges and agrees that the stipulated price and/or time adjustments represent full compensation for all adjustments in the cost or the time required to perform the Contract as a whole arising directly or indirectly from the Change Order, including costs and delays associated with the interruption of schedules, extended overheads, delay, and cumulative impacts or ripple effect on all other non-affected work under Contract not changed by the Change Order. Signing of the Change Order constitutes full and mutual accord and satisfaction for adjustments in contract price and/or time, subject to the current scope of the entire work as set forth in the Contract Documents. Acceptance of this Change Order constitutes an agreement between Owner and Contractor that the Change Order represents an equitable adjustment to the Contract, and that the Contractor will waive all rights to file a claim on this Change Order after it is properly executed.

August 16, 2018

Mr. James Alarid  
Deputy Director of Utilities  
Los Alamos County  
1000 Central Avenue, Suite 130  
Los Alamos, NM 87544  
Sent via Email

**Re: Otowi Well #2 – Change Order #4 – Response to Los Alamos County Review**

Dear James,

Wilson & Company, Inc., Engineers & Architects (Wilson & Company) received your review letter for the above referenced change order on August 14, 2018. We have reviewed your comments and questions and have prepared the following clarifications:

**Item 1:**

- Wilson letter represents Layne's requested change order amount is \$388,252.31. Layne's spread sheet and supporting documents request \$293,359.74. Please clarify the correct requested additional payment for the period from April 1, 2018 to June 22, 2018. Additional back-up will be required if more than \$293,359.74.

**Response to Item 1:**

While the total cost of \$388,252.31 was presented in our cover letter, the spreadsheet from Layne that was attached was a previous and incomplete version of their spreadsheet. The intent of the change order is to request an amount through the completion of drilling for the intermediate casing, which occurred on August 2, 2018. An updated spreadsheet summarizing Estimated Costs, Pending CO Revenue, and Approved Billable Revenue is attached. I have reviewed your comments on the Layne spreadsheet attached to the August 14th letter, and incorporated the same review comments and/or responses into the updated spreadsheet for ease of comparison.

**Item 2:**

- Wilson letter requests 15% overhead and profit per the contract. The contract does not have this provision.

**Response to Item 2:**

Per Section W.3. Changes in the Work, Paragraph 1, an “equitable adjustment” shall be authorized by change order. Standard contracting documents as published by the Engineers Joint Construction Document Committee (EJCDC) and American Institute of Architects both include provisions to account for overhead and profit:

- EJCDC: <sup>1</sup>Standard General Conditions of the Construction Contract - Article 12 – Change of Contract Price, Change of Contract Times, Paragraph C.2.a sets the contractors fee at 15-percent.
- AIA: <sup>2</sup>General Conditions of the Contract for Construction - Article 7, Paragraph 7.3.3.3 – Costs to be determined in a manner agreed upon by the parties and a mutually acceptable fix or percentage fee or as provided in Subparagraph 7.3.6. – Subparagraph 7.3.6 includes provisions that adjustment shall be determined by the architect (engineer) on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in the case of an increase in the Contract Sum, a reasonable allowance for overhead and profit.

Our interpretation of the contract between Los Alamos County and the Wilson & Company project team is that an equitable adjustment of the contract will include overhead & profit, and per the references cited above there is precedence for that overhead & profit to be percentage based, with 15-percent being commonly used.

**Item 3:**

- The daily prices demonstrated by Layne for labor, equipment and diesel total \$6,992.76. In the Layne spread sheet the value used per day is \$7,762.76. Can you explain the difference? Per-diem is already included in the “approved billable” column and should not be included in this daily cost (see attached).

**Response to Item 3:**

The \$770.00/day difference between the \$7,762.76 and the \$6,992.76 covers the per diem the \$770.00/day is \$110/man/day which is \$30/day for meals and \$80/day for lodging. See attached email from Layne.

**Item 4:**

- The calculated cost of \$293,359.74 does not include the deduction for equipment issues in the amount of \$54,339.32 (see attached). This amount should be \$239,020.41. Revisions should reflect this deduct.

**Response to Item 4:**

The updated Layne spreadsheet as attached presents the correct costs with the \$54,399.32 deducted. A total cost of \$1,042,917.29 incurred as of August 2, 2018. Minus the deduction of

---

<sup>1</sup> Engineers Joint Construction Document Committee (EJCDC) Document C-710 Standard General Conditions of the Construction Contract, Funding Agency Edition, 2002

<sup>2</sup> American Institute of Architects (AIA) Document A201-1997; General Conditions of the Contract for Construction



\$54,399.32 equals an adjusted amount of \$988,577.97 (Cost Less Days Deducted.) The \$388,252.31 (excluding 15% markup) requested is equal to the Cost Less Days Deducted minus the Total Billable Amount of \$600,325.67.

**Item 5:**

- We have compared the “pending change order revenue” values. An additional \$16,244.98 has been approved and not accounted for in the spreadsheet (see attached). Please revise.

**Response to Item 5:**

Upon review of your hand-written comments on the Layne spreadsheet originally attached to Change Order #4, we believe that all but \$1,800.00 of the \$16,244.98 is accounted for in the updated Layne spreadsheet attached. Please see my attached comments on your review notes for further clarification. The \$1,800.00 that is unaccounted for is from Change Order #2 cement Job #4. Change order #2 was authorized before completion of cement job #4 so actual cementing costs were not included in Change Order #2. This \$1,800.00 was accounted for in my supplemental email sent to you on August 13, 2018 that summarized project deductive costs for Change Orders #1 and #2. As such we have not included it in the spreadsheet for Change Order #4.

Should you have any additional questions on the revised spreadsheet or our responses above, please feel free to contact me directly, (505) 948-5212, [bjambrogi@wilsonco.com](mailto:bjambrogi@wilsonco.com).

Respectfully,

WILSON & COMPANY

A handwritten signature in blue ink, reading "Brian J. Ambrogi".

Brian J. Ambrogi, P.E.  
Water and Wastewater Manager

Cc: Patricio Guerrerortiz, P.E. – Los Alamos County  
Steve Costello – Layne  
Dan Aguirre, P.E. – WILSON & COMPANY



June 22, 2018

Brian J. Ambrogi, PE  
Water and Wastewater Manager  
Wilson & Company, Inc. Engineers & Architects  
4900 Lang Ave. NE  
Albuquerque, NM 87109  
Via Email: Brian.Ambrogi@wislonco.com

CC: Roger Peery, CPG, PG  
CEO/Principle Hydrogeologist  
John Shomaker & Associates  
2611 Broadbent Parkway NE  
Albuquerque, NM 87107  
Via Email: rpeery@shomaker.com

CC: James Alarid  
Los Alamos County  
101 Camino Entrada, Building 3  
Los Alamos, NM 87544  
Via Email: james.alarid@lacnm.us

Re: Request for Compensation & Equitable Path Forward – Otowi 2 Well

Sent via email

Dear Mr. Ambrogi,

The intent of this letter is to provide a summary of work and cost to date and justification for Layne to request compensation for services provided and also an equitable pricing structure for the remaining effort required to complete the project.

### **Summary of work to date**

Layne commenced drilling operations on the Otowi No. 2 water well on January 16, 2018 after rigging up over a 44' surface casing installed by our subcontractor using the solid stem auger drilling method. As with any water well program specified to be drilled with the flooded reverse circulation drilling method, Layne mixed our drilling fluids in a steel reserve pit at the surface and flooded the surface casing and commenced drilling. Layne first encountered lost circulation just 9 feet below the bottom of the surface casing at 53 feet. Layne contacted the local Halliburton drilling fluid engineer and had him come to the site to help remedy the issue to no avail. The entire premise of flooded reverse circulation drilling is the borehole walls become stabilized with the addition of special drilling additives which not only stabilize the bore hole but also help carry the drill cuttings up to the surface as the boring is advanced. As the drilling fluid circulates up to the surface through the drill pipe and then back down



the annular space between the drill pipe and the borehole walls, the cuttings are removed by a shaker system on top of the steel drilling fluid reserve pit above the ground surface. Only clean drilling fluid which is checked routinely by the crew is allowed to flow back down into the boring. Because Layne's drilling fluid was continuously being lost to voids in the fractured basalt formation, it became evident that we could not advance the boring using the flooded reverse drilling method. After numerous attempts to seal the fractures the discussion of alternative drilling methods ensued.

In the interest of keeping the project moving forward Layne and Shomaker and Associates discussed the possibility of using alternative drilling methods to advance the boring beyond the fractured basalt zone which was estimated to terminate near 250 feet where the beginning of the Puye formation was expected to be encountered. The proposed solution to the loss of circulation issue was to convert the drill over to dual tube reverse circulation (DTRC) using air rather than drilling fluids. The theory behind this was that we could drill into the fractured rock and the drill cuttings would be lifted to surface with air. Dual tube reverse circulation is a proven drilling method however it is more common in exploratory drilling where smaller borings are drilled in order to obtain information about unknown geology. The smaller borings are more conducive to this method because the compressed air volume and pressure demand is less than large diameter borings. Layne informed the team that with some modifications to the drill onsite, we could pull the tooling together to attempt to drill through the upper portion of the Otowi No. 2 well using this method. Due to the uncertainty of how the drilling would progress, Layne proposed to move forward with the work on a time and material basis. Due to the open ended pricing structure of said proposal Layne was asked to provide footage rate pricing to better define the project budget. The assumptions made on the DTRC with air proposal were that the entire upper portion of the well, from the surface casing at 44' below grade to the target depth bottom of the basalt layer at 250 feet below grade, could be drilled with one single 17.5" pilot hole pass, followed by one single 34" ream pass. Layne's proposal to convert the rig to DTRC was accepted and the tooling was mobilized to the site. After two days of DTRC drilling we had made more footage than the two weeks where we attempted to drill using the flooded reverse method. At 168 feet some large vertical fractures later viewed by a Los Alamos County video camera kept us from being able to remove cuttings from the hole. Multiple fixes to the issue were attempted however we could not advance the boring any further due to lack of cuttings being lifted the surface. Either the cuttings were going out into the formation or they were being suspended in air up the borehole. Due to the risk of the cuttings falling in on the down hole tooling when the air was turned off to make a drill rod connection, it was decided to ream down to the problem area and cement. As mentioned above a down hole video documented fractures that would prevent us from keeping circulation in any particular zone for more than 10 or 20 feet at a time. Cement jobs followed by reaming became the procedure for April and half of May.

In mid-May after reaming through a previously cemented zone down to ≈158 feet Layne went back to pilot hole drilling and advanced the boring to 243 feet to where the rock seemed to be less fractured and more competent. At this point Layne ran in a down-the-hole hammer with a 19" bit to drill through the hard rock. In a matter of three days we had advanced the pilot hole more than 100 feet and had drilled out of the basalt and into the Puye formation. We hammer drilled into the softer Puye formation successfully to a depth of 387 feet when the boring started to collapse. This confirmed what we had



already been told, that the Puye formation would need to be drilled using the flooded reverse drilling method so that the hydrostatic head would keep the boring from collapsing. However, in order to drill the Puye formation with a flooded boring, using the flooded reverse circulation drilling method, we would have to seal off all of the fractured zones above.

On May 18<sup>th</sup> we went back in with a 34" reamer to ream the cement we had drilled a pilot hole through. We call the process "dry reaming" because the borehole is dry and the cuttings just fall down into the pilot hole below, allowing the pilot hole to be reamed without having to bring the cuttings to the surface. The cuttings or "fill" is later removed fairly easily when circulation is restored above. On May 22<sup>nd</sup> we had dry reamed the 34" hole down through all of the cement and were back to native formation. Because of the good results of the 19" hammer drilling we ran in our 30" down-the-hole hammer with 33.75" bit. Despite being machined to fit in the 34" boring, the hammer was getting hung up on the cemented borehole walls as the crew attempted to get it down to the bottom of the boring at 206' feet. As is our typical protocol when it comes to risky operations, we chose to err on the side of caution and run in two rotary reamers in order to clean up the borehole walls rather than getting the large bodied hammer stuck at a later date. When the large hammer was installed we were unable to successfully drill with it. We had already started discussions about using an alternate lost circulation material (LCM) that one of Layne's internal engineers had recommended after monitoring our struggles since January.

On May 29<sup>th</sup> the use of the Diseal LCM product was officially rejected by the County after checking in with local environmental agencies. Due to lack of NSF certification the product could not be used during the construction of a water well despite it being proposed for use above the anticipated production zone. With this news Layne proposed cementing back the upper portions which had been stabilized but not completely sealed enough to prevent losses of air or fluids.

Thus far in June of 2018 the crews have been cementing and re-drilling their way down the hole while ensuring each zone is water tight as they advance it order to ultimately drill the Puye formation using the flooded reverse method. The last lost circulation episode occurred in the early morning hours of June 21 as the crew approached the depth of 320 feet with the 34" reamer. After discussing with Wilson and Shomaker, it was agreed once again that cementing and re-drilling was the only course of action.

## **Justification**

Layne continues to maintain the assertion that the subsurface conditions encountered at Otowi Well No. 2 were not reasonably anticipated and therefore meet the criteria of differing site conditions. In the interest of moving the project forward Layne offered a potential solution to get past a particularly difficult zone below the surface casing and through the fractured basalt layer. Observations made at a later date, such as audible air flows the drillers could hear when the wind blows, as well as video footage, support the case that the geology is not conducive to conventional water well drilling methodologies and techniques. Layne has extensive experience drilling under lost circulation

conditions and very rarely do we find ourselves in a situation where cementing back a previously drilled interval is required. Let alone having to take these measures seven times in a boring as shallow 300 feet.

At this stage Layne has spent more time than we anticipated drilling the entire well on the upper  $\approx 300$  feet of the Otowi Well No. 2. This is documented by looking at our original project schedule where the estimated days to complete the entire 2500 foot well was ninety days. The DTRC efforts were also estimated assuming the change in methodology would overcome the difficulties caused by fractures anticipated to be much smaller than what was encountered and later observed. Layne has made every reasonable effort to allocate the necessary resources to make progress on this project. At this time our financial forecasts show a trend of an increasingly large gap between our estimated cost to completion and what the contract will allow us to invoice for. We have compiled a table that shows the comparison between cost and billable work along with a brief description of the crew's efforts on a daily basis beginning on April 1 when DTRC drilling commenced, through today. We are requesting relief for the additional cost that is above what we'll be able to invoice for. We have included some concessions as admittedly there were days when progress was less than desired. Had our big hammer worked as well as the 19" hammer one could argue we would be weeks ahead of where we stand today. Despite this, the efforts did not provide results and therefore we have omitted these dates from our request for compensation along with a couple of other days where equipment issues hindered progress.

### Summary of Cost

The summary of cost attached is specific to the period from April 1, 2018 to date. We understand there is not a milestone in clear site and therefore costs to complete the project remain dynamic. What we do know is the cost to get this far have far exceeded realistic expectations and have shown only slight signs of improving. If the gap between Layne's cost and revenue can't be resolved at this date, it isn't reasonable to expect it be resolved later and therefore other options must be considered. We appreciate your willingness to review our claim and look forward to sitting down face to face and coming up with a path forward on this project.

Sincerely,



Steve Costello

**LAYNE** | water + mineral + energy

General Manager, Water Resources  
Chandler, AZ

Date	Estimated Cost	Pending CO Revenue	Approved Billable Revenue	Description of work	PILOT DEPTH	REAM DEPTH	RE-DRILL
1/16/2018				Drilled 9' from 44' surface casing to 53'. Fought lost circulation right out the conductor - charged hourly			
1/17/2018				Drilled 7' from 53' to 60'. Fought lost circulation right out the conductor - charged hourly			
1/18/2018				Fought losses with bentonite per mud engineer recommendation. No hole			
1/19/2018				Down to 77' drilling and fighting losses			
1/20/2018				Down to 93' hit void from 90 - 93 continued trying to fight			
1/21/2018				Mixing LCM and bentonite - fighting LC			
1/22/2018				Mixing LCM and bentonite - fighting LC trying to drill			
1/23/2018				Crew tried mixing cement to plug with no luck. We called Time Out at progress meeting			
1/24/2018				Water Watch and equipment maintenance			
1/25/2018				Water Watch			
1/26/2018				Water Watch			
1/27/2018				Water Watch			
1/28/2018				Drained pit and tanks before crew went home for indefinite break			
1/29/2018				Crews traveled home			
1/30/2018				Cost for crews to return			
1/31/2018							
2/1/2018				Coffer's update said all personal is off site			
STOPPED				<b>Discussed plan to move forward Feb - March</b>			
3/28/2018				Rig up to drill dual tube reverse air			
3/29/2018				Rig up to drill dual tube reverse air			
3/30/2018				Rig up to drill dual tube reverse air			
3/31/2018				Broke tours to start drilling dual tube			
4/1/2018	\$7,762.76		\$1,160.00	Started drilling 17.5 pilot with air - 4 compressors. <b>Start 97 feet</b>			x
4/2/2018	\$7,762.76		\$1,160.00	Drilled 17.5 pilot with air to 151 stopped getting returns. <b>54' drill dual tube</b>			x
4/3/2018	\$7,762.76		\$2,414.00	After pulling tools to check for plugging drilled to 159 - 3 compressors. <b>(6' of dual tube drilling Starting at 153 per CO)</b>	159	53	
4/4/2018	\$7,762.76		\$3,849.00	Drilled 17.5 with air to 168 and cuttings were going to void. <b>9' of DT drilling</b> Suggested cementing. WC reamed 34" from 42 - 46 feet. <b>4' DT Ream</b>	168	53	
4/5/2018	\$7,762.76		\$4,796.00	Started reaming 34" so we could cement and stabilize cutting .5'/hr. Drilled 46 to 64' = <b>18' of 34" DT reaming</b>	168	64	
4/6/2018	\$7,762.76		\$3,988.00	Reaming native formation 34" with air. Drill 64' to 78 feet. .75'/hr 1 compressor. <b>14' DT Ream</b>	168	78	
4/7/2018	\$7,762.76		\$2,978.00	Reaming native 34" with air. Drill 78 to 87 feet. .4'/hr 1 compressor. <b>9' DT Ream</b>	168	87	
4/8/2018	\$7,762.76		\$7,018.00	Reaming native 34" with air. Drill 87 to 116 feet. .6'/hr 1 compressor <b>29' DT ream</b>	168	116	
4/9/2018	\$7,762.76		\$1,968.00	Reaming native 34" with air. Drilled 116 to 120 feet .5'/hr 1 compressor <b>4' DT ream</b>	168	120	
4/10/2018	\$7,762.76	\$16,515.00	\$1,160.00	Pulled tools and cemented from 120 to 64 with 18 yards. County offered camera via email after we decided to cement. Allow cement to set. Drill 17.5" hole through cement from 64' to 81'. <b>Work on swivel then trip out.</b>	168	120	
4/11/2018	\$7,762.76		\$1,160.00	Crew mixed cement and brought it up into conductor. Cemented 120 to 38' on this first legit cement stabilization effort.	168	120	
4/12/2018	\$7,762.76		\$1,160.00	Tagged cement at 38' and drilled 17.5" flooded RC 8' per hour to 124' (just below cement) and lost circulation	168	120	
4/13/2018	\$7,762.76	\$4,554.00	\$1,160.00	Pulled 17.5" pilot tools and made up reamer. Start drilling 34" at 38'. Reamed 34" flooded reverse to 75'. <b>33' Cement 34" redrill (\$138/ft)</b>	168	120	
4/14/2018	\$7,762.76	\$3,174.00	\$1,160.00	Reaming 34" flooded reverse. Drill cuttings (cement) were knocked down hole allowing crew to flood hole and drill flooded RC. Drilled 34" Flooded RC to 98' and then lost fluids. <b>23' Cement 34" redrill (\$138/ft)</b> Tripped out to go back to 17.5" dual tube air	168	120	
4/15/2018	\$7,762.76		\$1,160.00	Got set up to drill 17.5" dual tube. Started drilling pilot from 98 to 147. Back drilling below cement at 120 but pilot had been drilled to 168 previously.	168	120	

4/16/2018	\$7,762.76		\$2,623.00	Drilled 17.5" dual tube to 175' stopped getting cuttings back to surface and arranged to run County's camera. 147 to 175' = <b>28' 17.5" dual tube. 7' of billable new hole at DT rate.</b> Ran camera in open hole to 150 (didn't want to enter dirty water at 150 to see down to 175' current TD.	175	120
4/17/2018	\$7,762.76	\$1,794.00	\$1,160.00	Everyone watched video and discussed on progress call. Decided to ream again and cement fractured/possibly unstable ledges observed. Crew prepared to ream 34" dual tube. Target depth of 150 or as far as we can go and then cement. Reamed 98 to 111 over night. 1.8"/hr drilling concrete with 1 compressor.	175	120
4/18/2018	\$7,762.76	\$1,242.00	\$3,786.00	1st Shift - Reamed 34" DT from 99'-118' , 2nd Shift - reamed 34" 118-133. <b>2' at cement redrill and 13' @DT rate.</b>	175	133
4/19/2018	\$7,762.76		\$3,786.00	1st Shift - Reamed 34" DT from 133'-146'. <b>13' @ DT rate.</b> 2nd Shift - video log and make up 17.5	175	146
4/20/2018	\$7,762.76	\$15,748.13	\$1,160.00	1st Shift - Move table, hang 17.5" bit on conductor, install table, pull bit through table, and trip in to 159'. Clean out fill, Kelly down, check to see if hole is clear but keep loosening 5', drill down and repeat. Trip out 17.5" bit. Check equipment hours. Run 3 loads of cement trucks. 2nd Shift - Finish cement pour- organize jobsite for pipeline crew- change oil in rig, 3 compressor's, 2 generator's- weld up access hole to well- sound cement at 79' GL	175	146
4/21/2018	\$7,762.76	\$3,600.00	\$1,160.00	1st Shift - Break 17.5" bit, makeup 17.5" roller bit to bit assembly, lay down. Move table; pickup and lower bit assembly; install table; lift bit assembly through table; and trip in to 78'. 2nd shift - Drilling with dual tube air, drill 17.5" hole from 78'- 106'- flush out drill string with fresh water at KELLY down- weld patch on leaking discharge pipe- weld 2" collar on conductor to introduce water to hole while making connection.	175	146
4/22/2018	\$7,762.76		\$1,160.00	1st Shift - Drill out cement, 17.5" borehole from 106' to 126'. 2nd Shift - Drilling with dual tube air, drill out cement from 126'- 146'. <u>repair leak on kelly gooseneck</u>	175	146
4/23/2018	\$7,762.76		\$1,787.00	1st Shift - Drill out cement, 17.5" borehole from 146' to 152'. Table keeps locking up and not drilling off. Trip out 17.5" bit, check bit and trip back in. Drill out cement 17.5" from 152'-153'. 2nd Shift - Drilling with dual wall pipe and big air, 17.5" hole drilling out cement from 142'- 144'/clean out fill from 144'- 177'/ drill new hole from 177'-178'. check all oil replace broken driveline bolts on rig drivetrain <b>3' @ DT rate</b>	178	146
4/24/2018	\$7,762.76		\$1,160.00	1st Shift - Drill 17.5" borehole from 178'. Table keeps locking up and not drilling off. Kelly stuck, work free. Trip out 17.5" bit- bit plugged,Breakdown bit, roller bit, interchange to pressure wash and clean bits. Setup and run video log. Cut rings for interchange sub to replace rubbers. 2nd shift - Repack Kelly swivel- <u>identify faulty DC with bad inner tube-</u> assemble DHA of 17.5" button bit with swab rubber's above interchange-run tool's break circulation and advance bit to bottom of hole while shipping off foam from circulation pit	178	146
4/25/2018	\$7,762.76		\$4,086.00	1st Shift - Clean out fill. Drill 17.5" hole from 178' to 186'. Run deviation survey @ 160' : 0.3°. Service equipment @ 9:30 AM. Haul water. Drill 17.5" hole from 186' to 188'. Vac truck one load of drill fluids. 2nd shift - Run 17.5" button bit from 188'-192' <b>14' @ DT rate</b>	192	146
4/26/2018	\$7,762.76		\$1,787.00	1st Shift - Dual wall drilling flooding backside. Drill 17.5" hole from 192' to 195'. Trip out bit. 2nd Shift - Break down 17.5" DHA- pick up 19" hammer, plumb it to air and test fire(no fire at bit)- lay down hammer- assemble 34 x22" reamer assembly, cut down conductor and run in tool's, <b>3' @ DT rate</b>	195	145
4/27/2018	\$7,762.76		\$1,160.00	1st shift - Dual wall drilling dry. Ream 34" hole from 78' to 86'. 2nd Shift - Dry ream (no circulation) 34" hole from 88'-98'.	195	145
4/28/2018	\$7,762.76		\$1,160.00	1st Shift - Dual wall drilling dry. Ream 34" hole from 96' to 107'. Trip out 34" reamer, 2nd Shift Clean cellar of excessive mud from bit being stuck-break down 34" DHA and add 17.5" milltooth- weld rotating head back in an run tool's to 102'- drill by flooding backside( hole taking excessive water, unable to slow down water usage with mud product's)- switch to direct air and advance tool's to 127'.	195	145

4/29/2018	\$7,762.76	\$0.00	\$1,160.00	1st shift - Dual wall drilling. Drill 17.5" hole from 127' to 155'. Trip out 17.5" bit and start working on tripping in hammer bit. 2nd shift - Using 19" hammer and dual wall pipe, ream 19" hole from 102'-170'.	195	145
4/30/2018	\$7,762.76		\$1,369.00	Drilling with air hammer from 195'-196'. Not enough air to fire hammer and lift cutting's/ pull hammer, assemble 17.5" button assembly and run in hole. <b>1' @ DT rate</b>	196	145
5/1/2018	\$7,762.76		\$6,594.00	1st shift - drill 17.5" DT 196-209, 2nd - drill 17.5" 209'-222'. <b>26' @DT rate/</b>	222	145
5/2/2018	\$7,762.76		\$1,996.00	1st Shift 17.5" DT 222-226. 2nd- 19" 196-215. <b>4' @ DT rate</b>	226	145
5/3/2018	\$7,762.76		\$1,160.00	1st: 19" 214-224. 2nd: maint.	226	145
5/4/2018	\$7,762.76		\$1,160.00	1st: maint. 2nd: re-ream to 226	226	145
5/5/2018	\$7,762.76		\$4,713.00	1st" 19" 226-243. 2nd: Make up 34". <b>17' @DT rate.</b>	243	145
5/6/2018	\$7,762.76		\$1,160.00	1st" 34" 102-108. 2nd - 34" 108-124.	243	145 x
5/7/2018	\$7,762.76	\$3,588.00	\$1,968.00	1st: 34"125-135. 2nd: 34" 134-150. <b>4' @DT rate</b>	243	145 x
5/8/2018	\$7,762.76	\$21,030.00	\$1,160.00	1st: maint. 2nd: cement 148'-130'	243	145 x
5/9/2018	\$7,762.76	\$276.00	\$1,160.00	1st: Wait for cement for set, monitor and tag @ 129'; 2nd: clean out cement from 129' to 149'	243	145 x
5/10/2018	\$7,762.76		\$1,160.00	1st: housekeeping, maint; 2nd:maint, trip in tooling	243	145 x
5/11/2018	\$7,762.76		\$1,160.00	1st: Drill out cement with dual wall air. Drill 17.5" hole from 117' to 173'. Clean out hole turn off air to ensure hole is clear for connection' 2nd: Drill 17.5" hole with air from 173'-235' (drilling out fill)	243	145 x
5/12/2018	\$7,762.76		\$1,160.00	1st: Drill out cement with dual wall air. Drill 17.5" hole from 224' to 243'. Ream 34" hole from 119' to 122'. 2nd: Dry Ream 34" bit from 122'-140',	243	145 x
5/13/2018	\$7,762.76		\$3,382.00	1st: Ream 34" hole from 140' to 151' 2nd: Dry Ream 34" hole from 151'-156' ; <b>11' @ DT rate</b>	243	156
5/14/2018	\$7,762.76	\$9,978.75	\$1,968.00	1st: Ream 34" hole from 156' to 160'. 2nd:Cement 34" hole from 158' to 144. <b>4' @DT rate</b>	243	160
5/15/2018	\$7,762.76	\$1,380.00	\$1,160.00	1st & 2nd : redrill to 160', clean out fill	243	160 x
5/16/2018	\$7,762.76		\$14,118.00	1st: Drill out cement 17.5" hole from 200' to 243'. 2nd: Hammer drill (19.25") from 243-305. <b>62' @DT rate</b>	305	160
5/17/2018	\$7,762.76		\$13,700.00	1st: Pilot 305-365, 2nd: change out tooling. <b>60' @DT Rate</b>	365	160
5/18/2018	\$7,762.76		\$3,668.00	1st: Drill 17.5" pilot hole from 365' to 377', 2nd: change tooling. <b>12' @DT rate</b>	377	160
5/19/2018	\$7,762.76		\$1,362.00	1st: Dry ream 34" hole with dual wall pipe from 144' to 150'. 2nd: Dry ream 34" hole from 150'- 161/ <b>1' @ DT rate</b>	377	161
5/20/2018	\$7,762.76		\$2,574.00	1st: Dry ream 34" hole from 160' to 162', 2nd: Dry ream 34" hole from 162'-168'/. <b>7' @ DT rate</b>	377	168
5/21/2018	\$7,762.76		\$6,008.00	1st: Dry ream 34" hole from 168' to 183'. 2nd: Dry ream 34" hole from 183'- 192'. <b>24' @ DT Rate</b>	377	192
5/22/2018	\$7,762.76		\$3,786.00	1st: Dry Ream from 192-200, 2nd:Dry ream 34" hole from 198'-205'. <b>13' @ DT rate.</b>	377	205
5/23/2018	\$7,762.76		\$1,362.00	1st: dry ream 34" to 206', 2nd: Make-up and strap 33.75" center return hammer <b>1'@DT Rate</b>	377	206
5/24/2018	\$7,762.76		\$1,160.00	1st: DTH ream 34.75 to 150', 2nd: Dry ream hole from 140'-150'/ Pull tool's assemble DHA of 34" reamer, Drill collar, 34" reamer. Strap all DC's and sub's. find a sub that won't shoulder down on second reamer assembly	377	206
5/25/2018	\$7,762.76		\$1,160.00	1st: break collar off, break subs, lay down, secure collars in hole, clean site, grind bevel on DTH bit. 2nd:	377	206
5/26/2018	\$7,762.76		\$1,160.00	1st: Dry Ream from 150-190, change lights on Backhoe, dirt work to get trailer of LCM onsite, test 2nd: Dry ream 34" double reamer to 187' (hit fill) pull tool's to 105' and reream to 168'	377	206
5/27/2018	\$7,762.76		\$1,160.00	1st: Dry ream, pull collars and bit stack, run 34" hammer and 6 collars, weld rotating assembly, install ring in clam shell, 2nd :Run 33 3/4" hammer to 156' hammer laying off weight, Kelly up and work hammer to 194', cleaning out fill from 185'. at 194' hammer not working correctly, pull tool's to inspect	377	206

5/28/2018	\$7,762.76		\$1,160.00	1st: Pull collars, pull hammer, pull rotating head, test fire hammer (hammers fine), break down 2 reamers, lead bit and 4 subs, set up welder to fix innerchange. 2nd: while welder is repairing inter-change, weld-on conductor for rotating head, break down sub's on drill collar's and install new inner tubes- make up 17.5" milltooth and run in tool's to 194'- attempt to break circulation by flooding backside with water and 4 compressor's, no circulation and out of water	377	206	
5/29/2018	\$7,762.76		\$1,160.00	1st: attempt circ video, 2nd: prep for LCM	377	206	
5/30/2018	\$7,762.76		\$1,160.00	1st: prep for reverse circ, 2nd: prep mud system	377	206	
5/31/2018	\$7,762.76		\$1,160.00	1st: prep wait on approval for LCM, 2nd: work on mud system	377	206	
6/1/2018	\$7,762.76		\$1,160.00	2nd: gravel pack to 170'- poor boy cement mix(13 to 14 lb.cement) to 115'- hook up compressor air to well head and pressure conductor, conductor holding air	377	206	
6/2/2018	\$7,762.76		\$1,160.00	1st: Monitor well head pressure. Tag cement at 2am at 115' add water of 3 minutes came up to 109' and monitor it stayed at 109' . Add water for 15 minutes came up to 100' and monitor it drop 4' to 104' stayed right there. Add gravel up to 106' cement up from 106' to 100' .Hook up head pressure. Wait let cement dry. Check hour a half cement harder up. Add water for 5 minutes came up to 81' and monitor it. Slow drop to 95'. Add cement from 100' 90' hook up to pressure up hole. 1st batch cement 14 weight 106'- 100' 2nd batch cement 14 weight 100' - 90' 2nd: Apply air to well head for 2 hour's, sound cement at 99' (dropped 9') flood hole with water and monitor water drop- cement from 99' to 60'- hook up pressure head and load hole with compressor air for 2 hour's	377	206	x
6/3/2018	\$7,762.76	\$64,333.29	\$1,160.00	1st: Tag cement at 65. Add water for 8 minutes came up to 50' and monitor it. Water drop to 56'. Gravel pack from 65'-58'. Add 10 bags of fine sand. Cement 58'-48' 1st batch weight 14. 2nd batch cement weight 14 48'-41'. Hook up head pressure. Turn on air at 75 psi slowly bleed of. 8am shut off air tag cement at 54'. 1st batch cement weight 15 54'-48' 2nd batch cement weight 15 48'-43' Hook air pressure up hole start with 75 psi and drop down to 55psi in 50 minutes. Keep monitor air pressure. 2nd: keep pressure on well head until cement arrival- sound cement at 44'- poor boy cement mix from 44'-37'- pressure well head, well holding 150 psi- maintain pressure for 8 hours- clean jobsite, haul water, bring empty trailer for matrix pipe	377	206	x
6/4/2018	\$7,762.76		\$1,160.00	change to flooded reverse	377	206	x
6/5/2018	\$7,762.76		\$1,160.00	1st: Drilling out cement w/17.5 44'-63'. 2nd: Drill 17.5" pilot hole thru cement from 63'-115'	377	206	x
6/6/2018	\$7,762.76		\$1,160.00	1st: 17.5 115-165, 2nd: 166-237'	377	206	x
6/7/2018	\$7,762.76		\$1,160.00	Flooded reverse drill 17.5" hole from 238' to 268'.	377	206	x
6/8/2018	\$7,762.76		\$1,160.00	1st: Cement from 245' to 180'. 2nd: Poor boy cement pour thru trim pipe from 180'- 148'	377	206	x
6/9/2018	\$7,762.76		\$1,160.00	1st: Gravel pack 156'-126', Cement hole 122'-95, 2nd: Drill 17 1/2" hole through cement from 95' to 119'	377	206	x
6/10/2018	\$7,762.76		\$1,160.00	1st: Drill out cement with 17.5" bit from 119' to 195'. 2nd: Drill 17 1/2" hole from 195' to 255' Once through cement (at 245') hole held water pretty well.	377	206	x
6/11/2018	\$7,762.76	\$20,786.32	\$1,160.00	1st: Drill out cement/fill with 17.5" bit from 255' to 300'. 2nd: Ream 34" hole from 38' to 49'	377	206	x
6/12/2018	\$7,762.76		\$1,160.00	1st: Ream out cement with 34" reamer from 49' to 89'. 2nd Reamed 89 to 124'	377	206	x
6/13/2018	\$7,762.76		\$2,978.00	1st: Ream out cement with 34" reamer from 124' to 190'. 2nd: 34" ream from 190' to 215' (9' @ DT rate)	377	215	
6/14/2018	\$7,762.76		\$2,372.00	1st: Ream 34" hole from 215' to 221'. (6' @ DT rate) 2nd: Drill 17 1/2" hole from 224' to 285'	377	221	
6/15/2018	\$7,762.76		\$3,988.00	1st: Drill 17.5" hole through cement from 285' to 290'. Cement seal at 300' Ream 34" hole from 221' to 224'. 2nd: 34" ream from 224'- 235'. (14' @ DT ream rate)	377	235	
6/16/2018	\$7,762.76		\$3,180.00	1st: Ream 34" hole from 235' to 239'. 2nd: 34" 239'-245' (10' @ DT ream rate)	377	245	
6/17/2018	\$7,762.76		\$4,392.00	1st: Ream 34" hole from 245' to 251'. 2nd: 34" from 251' to 261' (16' @ DT ream rate)	377	261	



6/18/2018	\$7,762.76		\$7,018.00	1st: 34" 261'-278', 2nd: 34" 278'-290' <b>(29' @ DT ream rate)</b>	377	290
6/19/2018	\$7,762.76		\$4,796.00	1st: Ream 34" hole from 290' to 301', 2nd: 34" hole from 301' to 308' <b>(18' @ DT ream rate)</b>	377	308
6/20/2018	\$7,762.76		\$3,382.00	1st: Ream 34" hole from 308' to 313 feet. 2nd: Con't 34" hole from 313' to 319' <b>(11' @ DT ream rate)</b>	377	319
6/21/2018	\$7,762.76		\$1,160.00	1st: 34" 319-320, Trip out 34" reamer. Pulling weight so have to work up and down to get tools out of hole. Tag bottom of hole @ 296'. Tag water @ 184'. Refill Adler and Mud Tank. Clean off reamer assembly. Attempt to fill hole with water, not filling up so monitor water levels. Work on new mixing and flocculant tank. 2nd: Tally/run trimmie to 280' set up pumps and hoses for cementing. Mix and pump 26 yards of cement. <b>(17 pallets)</b> Pull trimmie and clean tools, pumps and hoses of cement While waiting for cement to cure, make modifications to mud cleaning system and organize site. Tagged cement @ 168' 9PM Introduce approximately 15' of water down hole Tagged cement @ 168' 11PM water at 98'	377	319
6/22/2018	\$7,762.76		\$1,160.00	Centerpunched cement and ran in 17.5" to drill pilot hole through cement. Drilled 17.5" to 209'	377	319 x
6/23/2018	\$7,762.76		\$1,160.00	1st: Drilled 17.5" thru cement from 209 to 253 ft. 2nd: 17.5" to 280' (didn't want to poke out of cement - drilling flooded) and tripped out and ran in 34" reamer. Reamed from 169 to 186 feet.	377	319 x
6/24/2018	\$7,762.76		\$1,160.00	1st: Reamed 34" from 186 to 213 feet. 2nd: Reamed 34" 213 to 244 feet.	377	319 x
6/25/2018	\$7,762.76		\$1,160.00	1st: Reamed from 244 to 259. 2nd Reamed 34" 259 to 274 feet.	377	319 x
6/26/2018	\$7,762.76		\$1,160.00	1st: Reamed 34" from 274 to 286 feet. (still flooded drilling cement)	377	319 x
6/27/2018	\$7,762.76		\$1,160.00	1st: Reamed 34" out of cement and lost circulation at 298 feet. (should this be 289 feet?) Tripped in tooling to cement hole 2nd: Cemented hole from 312 to 265 feet. Wait for cement to cure	377	319 x
6/28/2018	\$7,762.76		\$1,160.00	1st: 34" Ream cement from 265 to 282. 2nd: 34" ream cement 282 to 293 feet.	377	319 x
6/29/2018	\$7,762.76		\$1,160.00	1st: Ream 34" 293 to 301 feet and lost circulation. Tripped out and started to convert to DUAL TUBE REVERSE w/ AIR. 2nd: Continued conversion and started tripping in 17.5" DTRC	377	319 x
6/30/2018	\$7,762.76		\$1,160.00	1st: Drill 17.5" DTRC from 268 to 315' flooding back side to help circulate. 2nd: Drill 17.5" DTRC 315 to 339 feet. Continue to flood backside & drill, lose circulation, flood back side & drill, and repeat to advance hole.	377	319 x
7/1/2018	\$7,762.76		\$1,160.00	1st: Drill 17.5" DTRC from 339 to 374 feet. Trip out to go in with 34" to "dry ream" 2nd: Continued to torch off rotating head from conductor and tripped in 34" reamer	377	319 x
7/2/2018	\$7,762.76	\$45,024.98	\$4,796.00	1st: Dry ream 34" from 330 to 337' Is this 303feet? <b>(36' @ DT ream 301 to 337 feet)</b> Hit fill and couldn't advance. Tripped out to go back in with 17.5" to advance pilot hole deeper to allow us to dry ream deeper. 2nd: Weld rotating head back on and trip in 17.5" to clean out hole DTRC.	377	337
7/3/2018	\$7,762.76		\$2,414.00	1st: drill out fill with 17.5" bit from 337 to 379 feet. 2nd: clean fill 379 to 383' <b>(6' @ DT pilot rate)</b> and circulate multiple time ensure hole is clean. Trip out, cut off rotating head, and trip in 34" reamer to dry ream some more.	383	337
7/4/2018	\$7,762.76		\$4,713.00	1st: finish tripping in 34" reamer and dry ream from 337' to 354' and hit fill. <b>(17' @ DT ream)</b> Trip out for cement 2nd: Continued to trip out 34" reamer and set up to cement to top of fill at 348' Cemented	383	354
7/5/2018	\$7,762.76		\$1,160.00	1st: Let cement set. Tagged cement at 300' added water for 45 minutes and it did not come up. Set up to cement 2nd: Get ready to drill flooded reverse as cement set up. Tagged cement at 293 feet.	383	354

7/6/2018	\$7,762.76		\$1,160.00	1st: Adding water and monitoring for losses. Water came up to 94 feet. Started tripping in reamer but hole was taking water to tripped out and ran in tubing for more cement and cemented. 2nd: Tagged cement at 273 feet. Hole still not filling with water	383	354	
7/7/2018	\$7,762.76		\$1,160.00	1st: Waited for orders on how to proceed. 7:30 am set up to cement and pumped 275 more bags of cement. 2nd: Monitor cement, ran to town to get <b>4 pallets</b> of cement. Tagged cement at 207' and attempted to fill hole with no luck.	383	354	
7/8/2018	\$7,762.76		\$1,160.00	1st: Tag cement at 207' and pumped 240 bags of cement. 2nd: <b>Drive to Santa Fe to get 6 more pallets of cement</b>	383	354	
7/9/2018	\$7,762.76		\$1,160.00	1st: Tag cement at 156' and water level at 151. Added water and still not holding. Set tubing on bottom and pumped 270 bags cement. 2nd: Drove to Santa Fe to get more 6 more pallets of cement. Tag water at 94' and cement at 99 feet.	383	354	
7/10/2018	\$7,762.76		\$1,160.00	1st: tag water at 94 feet. Flood hole and hole is holding with some losses. Pump 60 more bags 2nd: Monitoring cement tag ever 30 to 60 minutes.	383	354	
7/11/2018	\$7,762.76	\$122,488.20	\$1,160.00	1st: Tag cement at 86' and water at 84'. Flood hole and hole is sealed. Center punch with 34" reamer and trip it out and go in with 17.5" flooded reverse. Drill 17.5" from 88 to 102 feet. 2nd: <b>Drill 102 to 140.</b>	383	354	
7/12/2018	\$7,762.76		\$1,160.00	1st: Drill 17.5" from 140 to 189 feet. 2nd: Drill 17.5" from 189' to 233'	383	354	
7/13/2018	\$7,762.76		\$1,160.00	1st: Drill 17.5" from 233' to 277 feet 2nd: Drill 17.5" from 178 to 321 feet (lost circulation in the process of drilling at 306')	383	354	
7/14/2018	\$7,762.76		\$2,420.00	1st: Drill 17.5" hole through cement from 322 to 340 feet. Conditioning LCM work on unplugging desanders. Drill 17.5" from 340 to 342 feet. 2nd: Drill 343 to 401 feet <b>(18' at Flooded Reverse Pilot Rate \$70/ft) Previous pilot depth 383' to 401'</b>	401	354	
7/15/2018	\$7,762.76		\$6,690.00	1st: Drill 17.5" pilot hole 401' to 433' 2nd: Drill 17.5" from 433 to 480 feet <b>(79' at Flooded Reverse Pilot Rate \$70/ft)</b>	480	354	
7/16/2018	\$7,762.76		\$7,670.00	1st: Drill 17.5" from 480 to 510 feet. 2nd: Drill 17.5" from 510' to 573 feet. <b>(93' at FRP Rate)</b>	573	354	
7/17/2018	\$7,762.76		\$5,780.00	1st: Drill 17.5" from 573 to 603 2nd: Drill 17.5" from 603 to 639 feet <b>(66' at FRP Rate)</b>	639	354	
7/18/2018	\$7,762.76		\$5,430.00	1st: Drill 17.5" from 639 to 669 feet 2nd: 669 to 700 feet <b>(61' at FRP rate)</b>	700	354	
7/19/2018	\$7,762.76		\$3,960.00	1st: Drill 17.5" from 692 to 725 feet 2nd: Drill 17.5" from 725 - 741 feet. Hole using fluid at 740 feet. Stabilize with LCM. <b>(40' at FRP rate - 700 to 742)</b>	741	354	
7/20/2018	\$7,762.76		\$1,160.00	1st: Trip out bit and roller stabilizer to check bit due to slower penetration. Trip back in and circulate. Start drilling at 741 feet. 2nd: Drill 17.5" from 741 to 749 feet. Hole using fluids. Stop fluid loss twice with LCM. Pull tools and run logs.	749	354	
7/21/2018	\$7,762.76		\$1,160.00	1st: Logger's onsite to run logs. Trip in 34" reamer to ream cement. Ream from 86' to 102 feet. 2nd: Ream from 102 to 121'	749	354	x
7/22/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 121 to 140. 2nd: Ream 34" from 140 to 161 feet	749	354	x
7/23/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 161 to 175 2nd: 175 to 190'	749	354	x
7/24/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 190 to 196 2nd: Service Clutch	749	354	
7/25/2018	\$7,762.76		\$1,160.00	1st Waiting on clutch 2nd: Waiting on clutch	749	354	
7/26/2018	\$7,762.76		\$1,160.00	1st: waiting on cluth 2nd: Ream 34" from 196 to 205 feet.	749	354	
7/27/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 205' to 220' 2nd: Ream from 220' to 248 feet.	749	354	
7/28/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 248 to 273 feet. 2nd: Ream 273 to 302 feet	749	354	
7/29/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 302 to 325' 2nd: Ream from 325 to 346 feet	749	354	
7/30/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 346 to 362 feet 2nd: Ream from 362 to 379 feet.	749	379	



7/31/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 379 to 398 feet. 2nd: Ream from 398 to 419 feet	749	419
8/1/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 419 to 445 feet. 2nd: Ream from 445' to 473 feet	749	473
8/2/2018	\$7,762.76		\$1,160.00	1st: Ream 34" from 473 to 502 feet 2nd: Ream from 502 to 535 feet	749	535
8/3/2018			\$0.00	1st: Ream 34" from 535 to 571 feet 2nd: Ream from 571 to 604 feet	749	604
8/4/2018			\$0.00	1st: Ream 34" from 604 to 639 feet. 2nd: Ream from 639 to 689 feet	749	689
8/5/2018			\$0.00	1st Ream 34" from 689 to 711 feet ( <b>TOTAL DEPTH for running 28" casing</b> ) 2nd: Circulate fluids and wait on loggers for caliper log	749	711
8/6/2018			\$0.00	1st: Run in 34" bit to clean out clobbered mud 2nd: Continued cleaning hole and fluids	749	711
8/7/2018			\$0.00	1st: Run in 34" bit to clean out clobbered mud 2nd: Continued cleaning hole and fluids	749	711
8/8/2018			\$0.00	1st: finished condition fluids and hole cleaning. Successfully ran caliper log and set up to run casing 2nd: Welded in 28" casing to 640 feet	749	711
8/9/2018			\$0.00	1st: Finished running 28" casing to 700 feet. Welded on cementing head and pressure grouted casing (Basic Energy - cementers) from bottom of casing up to surface. 2nd: Remove cementing head, make up 26" reamer, cut down surface casing and weld in flow line to 28" casing	749	711
	\$80,335.05			See back up documentation attached.	Pilot	Ream
Drilling Additives	\$1,042,917.29	\$335,512.67	\$264,813.00			
<b>TOTALS</b>	<b>Cost</b>	<b>Change Order Rev</b>	<b>Approved Rev</b>			

**Drilling Additive Tally - (Invoices attached)**

April 1 through June 23	2M Invoice 1/15/18 \$6731.68
Total Cost	2M Invoice 1/18/18 \$1565.92
\$1,042,917.29	2M Invoice 1/18/18 \$767.04
	2M Invoice 4/03/18 \$1287.44
	2M Invoice 4/18/18 \$3066.52
Deduct for April 24 & May 22, 23, 24, 25, 26, 27	2M Invoice 4/27/18 \$4449.50
\$54,339.32	2M Invoice 5/21/18 \$3264.00
	Hole Products Invoice 6/7/18 \$9592.66
Cost Less Days Deducted	2M Invoice 6/21/18 \$34,014.36
\$988,577.97	2M Invoice 6/25/18 \$2040.00
	2M Invoice 7/10/18 \$2731.25
Layne Billings Less Cost (profit)	Hole Products Invoice 7/19/18 \$14,923.44
-\$388,252.31	
	<b>Total: \$84,433.81</b>

**Page 3 of 3**

Requested by Project Manager: \_\_\_\_\_  
James Alarid PE Date

Approved by County/Owner: \_\_\_\_\_  
Timothy A Glasco PE, Utilities Manager Date

Approved by the County Council on the 25th day of September, 2018.

**COUNCIL OF THE INCORPORATED  
COUNTY OF LOS ALAMOS**

\_\_\_\_\_  
**David Izraelevitz, Council Chair**

**ACCEPTANCE OF CHANGE ORDER**

(Contractor name)

By: \_\_\_\_\_

Print Name \_\_\_\_\_

Title \_\_\_\_\_

(Corporate Seal)

Attest:

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

## Budget Revision 2019-16 Otowi Well

Board of Public Utilities Meeting Date: Sep 19, 2018

Council Meeting Date: Sep 25, 2018

	Fund/Dept	Brass Org	Revenue (decrease)	Expenditures (decrease)	Transfers In(Out)	Fund Balance (decrease)
1	Water Production Fund	54285699 8369		\$ 546,491		\$ (546,491)
<p><b>Description:</b> The purpose of this budget revision is to increase the expenditure budget by \$546,491 for change order #5 in the amount of \$446,491 and \$100,000 contingency to the construction contract for Otowi Well No 2 (Contract: AGR17-30). No amendment necessary because the agreement allows for change orders (for unforeseen conditions in drilling the well) to increase funding up to the total amount budgeted. The unforeseen condition is encountering a fissured basalt geological formation.</p> <p><b>Fiscal Impact:</b> The net fiscal impact to the Water Production Fund is an increase to expenditures and a decrease to fund balance in the amount of \$546,491.</p>						



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

<b>Agenda No.:</b>	7.C
<b>Index (Council Goals):</b>	BCC - N/A
<b>Presenters:</b>	Bob Westervelt, Deputy Utilities Manager - Finance/Admin
<b>Legislative File:</b>	OR0816-18

---

### Title

Incorporated County of Los Alamos Code Ordinance No. 687, An Ordinance Authorizing the Incorporated County of Los Alamos to Enter Into a Loan Agreement and Promissory Note With the New Mexico Environment Department for the Purpose of Obtaining Loan Funds for the Construction of a New Wastewater Treatment Facility, Declaring the Necessity for the Loan, Restricting the Use of the Loan Funds Solely for the Project, and Pledging Loan Will be Payable from the Revenues of the Wastewater System; and Incorporated County of Los Alamos Resolution No. 18-18, a Resolution Authorizing the Utilities Manager to Execute Documents With the New Mexico Environment Department on Behalf of Los Alamos County Relating to the White Rock Waste Water Treatment Plant, Project Number CEWRF083 and Authorizes the Designation of Official Representatives and Signatory Authorities

### Recommended Action

**I move that the Board of Public Utilities approve Incorporated County of Los Alamos Code Ordinance No. 687 as presented and forward to Council for adoption. I further move that the Board of Public Utilities approve the related Resolution No. 18-18 authorizing the assignment of authorized officer(s) and Agent(s) and forward to Council for approval.**

### Staff Recommendation

Staff recommends the motion be passed as presented.

### Body

For the past two or more years the DPU and BPU have been discussing and planning for the necessary replacement of the White Rock Treatment Facility, which, built in 1965, is already operating beyond its design life expectancy. Several actions have been taken to ensure the utility is financially capable of proceeding with this badly needed project.

In January/February 2018 the BPU and Council enacted an ordinance and resolution authorizing transfer of excess cash reserves from the Gas fund to the Wastewater fund. \$2.5 million was transferred and in February those funds were used to pay down the balance of the outstanding loan that was used for construction of the Los Alamos Wastewater Treatment Plant. In August 2018 an ordinance was adopted for approval of refinancing that loan for a slightly longer term,

---

and at a lower rate, further improving the financial position of the utility. That refinancing is expected to be completed in September or October.

NMED is offering long term financing for projects such as this at a 2-3/8 percent annual financing cost, and will finance the project for up to thirty-five years. In May the Board considered financing options for the new plant. While total cost of a longer term is slightly higher, annual cash flow is significantly improved by extending. After considering the various alternatives, the Board elected to pursue the thirty-year repayment schedule for the loan. This ordinance authorizes and effects that refinancing option.

Per the most recent engineering estimate, the project was budgeted for \$1M engineering in FY19 and \$13.5M construction in FY20. Recent industry projections indicate final costs may be somewhat higher. Please refer to the attached memorandum by Jack Richardson for discussion and analysis of these indications.

While we are still hopeful that final construction bids will come in at or near the budgeted amount, staff feels it would be prudent to ensure funding availability for a higher cost project. Our original approval from NMED was for a loan amount of \$17M, and current financial projections indicate debt service on that amount is possible, due in large part to cost savings through refinancing of the LA Plant loan, and reasonable extension of the terms of both loans. Staff is recommending authorization to proceed with a loan amount *not to exceed* that \$17M, with term length *not to exceed* the projected life of the project. The final loan amount, of course, would only be the amount required to complete the project, and any project cost over the existing budget authority would need to be reviewed and approved by both Board and Council, but as proposed the financing would already be in place upon such approvals.

Also included in this action is approval of a Resolution authorizing specific designated individuals to take such actions as are specified to complete the loan process and servicing.

### **Alternatives**

Several alternative financial scenarios were presented and discussed by the Board at the May, 2018 regular meeting. Any of those scenarios could be reconsidered as an alternative to the proposal presented here.

### **Fiscal and Staff Impact**

With the current interest rates and the planned thirty-year term, the financial impact of this loan would be debt service payments of \$798,743.40 if the entire \$17M was drawn. Debt service on the planned loan amount of \$14.4M would be 681,281.14.

### **Attachments**

- A - Incorporated County of Los Alamos Ordinance No. 687, NMED Project number CWSRF 083
- B - CWSRF Project Description
- C - Resolution 18-18, Resolution of Signatory Authority
- D - Engineer's Memorandum Regarding Potential Cost Escalation Due to Tariffs



**INCORPORATED COUNTY OF LOS ALAMOS ORDINANCE NO. 687**

**AN ORDINANCE AUTHORIZING THE INCORPORATED COUNTY OF LOS ALAMOS TO ENTER INTO A LOAN AGREEMENT AND PROMISSORY NOTE WITH THE NEW MEXICO ENVIRONMENT DEPARTMENT FOR THE PURPOSE OF OBTAINING LOAN FUNDS FOR THE CONSTRUCTION OF A NEW WASTEWATER TREATMENT FACILITY, DECLARING THE NECESSITY FOR THE LOAN, RESTRICTING THE USE OF THE LOAN FUNDS SOLELY FOR THE PROJECT, AND PLEDGING LOAN WILL BE PAYABLE FROM THE REVENUES OF THE WASTEWATER SYSTEM**

**WHEREAS**, the Incorporated County of Los Alamos ("County" or "Borrower") is an incorporated home-rule county created pursuant the New Mexico Constitution and statutes of the State of New Mexico ("State"); and

**WHEREAS**, the County, through its Department of Public Utilities ("DPU") owns, operates, and maintains a public utility system including a Wastewater Collection and Treatment System ("System"), which includes a system for disposing of wastes by surface and underground methods; and

**WHEREAS**, the County's White Rock ("WR") Wastewater Treatment Plant ("WWTP") has been determined to be insufficient and inadequate to meet the current and future regulatory, environmental, and permitted discharge requirements; and

**WHEREAS**, the County has determined using current engineering review standards, that the WR WWTP must be replaced (hereafter "Project") to meet current state and federal discharge requirements; and

**WHEREAS**, the County and DPU has reviewed its available financial resources and funds and has determined that it is necessary to seek financial assistance to help plan, develop, and construct the Project; and

**WHEREAS**, the County has entered into discussions with the State of New Mexico Environment Department ("NMED"), Construction Programs Bureau ("CPB") for possible financial assistance for construction of the Project; and

**WHEREAS**, the NMED, CPB has reviewed the application, documentation, and financial capabilities of the County and DPU to construct the required WR WWTP and determined that the County and DPU is an eligible candidate for a receiving federally authorized and funded Clean Water State Revolving Fund ("CWSRF") loan monies ("CWSRF Loan"); and

**WHEREAS**, in exchange for the CWSRF Loan, the County, DPU, and Project will be subject to specific loan requirements of the CWSRF Loan; and

**WHEREAS**, one essential term of the CWSRF Loan agreement ("Agreement") and promissory note ("Note") will be that the Loan shall be payable solely from the Pledged Revenues of the County's and DPU's Sewer Fund; and

**WHEREAS**, pursuant to an Agreement with Respect to Subordination dated August 13, 2014 (the "Subordination Agreement"), NMED and the County agreed that existing NMED Loans (CWSRF 1438143 and ARRA CWSRF 09 Loan) were "Subordinate Obligations" under the debt issued under both the First Lien Indenture and the Second Lien Indenture; and

**WHEREAS**, NMED and the County agree that the CWSRF Loan refunding CWSRF Loan 1438143 and financing the Project shall also constitute "Subordinate Obligations" as defined in both the First Lien Indenture and the Second Lien Indenture (as such terms are defined in the Subordination Agreement; and

**WHEREAS**, the Governing Body of the Borrower has determined that it is in the best interest of the Borrower to accept and enter into the Loan Agreement and to execute and to deliver the Note to the NMED.

**BE IT ORDAINED BY THE GOVERNING BODY OF THE INCORPORATED COUNTY OF LOS ALAMOS** as follows:

**Section 1. Definitions.** As used in the Ordinance, the following terms shall have the meanings specified below, unless the context clearly requires otherwise (*such meanings to be equally applicable to both the singular and the plural forms of the terms defined unless the plural form is separately defined*):

*Act.* The general laws of the State, including the Wastewater Facility Construction Loan Act at sections 74-6A-1 to 74-6A-15 NMSA 1978, as amended; enactments of the governing Body of the Borrower relating to the Note and the Loan Agreement made by resolution or ordinance, including this Ordinance; and the powers of the Borrower as a public body under authority given by the Constitution and Statutes of the State.

*Annual Audit or Single Audit.* Financial statements of the Borrower as of the end of each Fiscal Year, audited by an Auditor, consistent with the federal Single Audit Act and the State Auditor's rules.

*Authorized Officer.* The Chair of the County Council, the County Manager, the Utilities Manager, the Deputy Utilities Manager of Finance and Administration, or other officer or employee of the County when designated by a certificate authorized by the County Council and signed by the Chairman of the County Council of the County from time to time. The certificate may designate one or more alternates. The Borrower agrees to provide a signatory Resolution and signature page designating all signatory duties required.

*Borrower.* The entity requesting funds pursuant to the Act, here the Incorporated County of Los Alamos, through its Department of Public Utilities.

*Fiscal Year.* The twelve-month period commencing on the first day of July of each year and ending on the last day of June of the succeeding year, or any other twelve-month period which the Borrower hereafter may establish as the fiscal year or the System.

*Governing Body of the Borrower.* The Incorporated County of Los Alamos County Council.

*Loan.* The loan of public funds from NMED pursuant to the Loan Agreement.

*Loan Agreement.* The loan agreement including attachments and or exhibits, and any amendments thereto, between the Borrower and the NMED, pursuant to which funds will be



loaned to the Borrower to construct the Project and pay eligible costs relating thereto; and the final loan agreement which shall state the final amount the NMED loaned to the Borrower, which shall be executed upon completion of the Project and dated on the date of execution.

*NMED.* The State of New Mexico Environment Department.

*NMSA.* New Mexico Statutes Annotated, 1978 Compilation, as amended and supplemented.

*Note.* The interim and final promissory notes issued by the Borrower to the NMED evidencing the obligation of the Borrower to the NMED incurred pursuant to the Ordinance and Loan Agreement.

*Operation and Maintenance.* All reasonable and necessary expenses of the System, paid or accrued, relating to operating, maintaining and repairing the System.

*Ordinance.* This Ordinance including any amendments, attachments, or exhibits.

*Parity Bonds or Parity Obligations.* Revenue Bonds and other bonds or other obligations payable from the Pledged Revenues issued with a lien on the Pledged Revenues on parity with the bonds or obligations as listed in this Ordinance.

*Pledged Revenues.* Wastewater System Revenues.

*Project.* The most current NMED approved Project Description described on the Project Description Form on file with NMED and attached hereto.

*Project Completion Date.* The date that operations of the completed works are initiated or capable of being initiated, whichever is earlier. This also applies to individual phases or segments.

*Regulations.* Regulations promulgated by the New Mexico Water Quality Control Commission at 20.7.5 NMAC and New Mexico Environment Department at 20.7.6 – 20.7.7 NMAC.

*Subordinate Obligations.* Other obligations payable from the Pledged Revenues issued with a lien on the Pledged Revenues subordinate to the lien of the Loan Agreement and Note as may be listed in this Ordinance.

**Section 2. Ratification.** All action before now (not inconsistent with the provisions of the Ordinance) by the Council, the officers and employees of the Borrower, directed toward the Loan Agreement and the Note, is ratified, approved and confirmed as a result of this document.

**Section 3. Findings.** The Governing Body of the Borrower declares that it has considered all relevant information and data and makes the following findings:

a. The execution and delivery of the Loan Agreement and the Note pursuant to the Act to provide funds to finance the Project, is necessary and in the interest of the public health, safety, and welfare of the residents of the Borrower.

b. The money available for the Project from all sources other than the Loan Agreement is not sufficient to pay when due the cost of the Project.

c. The Pledged Revenues may lawfully be pledged to secure the payment of amounts due under the Loan Agreement and Note.

**Section 4. System.** The System and Project shall constitute a wastewater treatment system and shall be operated and maintained as such.

**Section 5. Authorization of Project.** The construction of the Project and payment of eligible items as set forth in the Regulations from proceeds of the Loan Agreement and Note is hereby authorized at a cost not to exceed the principal Loan amount of \$17,000,000.00 excluding any cost of the Project to be paid from any source other than the proceeds of the Loan Agreement and Note.

**Section 6. Authorization of Loan Agreement.**

a. The Council hereby authorizes the County Utilities Manager to execute and deliver the Interim and Final Loan Agreement and Note to NMED. Such Loan and Note are to be payable and collectible solely from the Pledged Revenues of the System. NMED will disburse the proceeds according to the terms of the Loan Agreement to the Borrower over the construction period of the Project. The principal Loan amount of the Note shall not exceed \$17,000,000.00 plus accrued interest and the annual interest rate on that principal amount shall not exceed 2.375% percent per annum. Such amounts and interest shall not change without the approval and adoption of another Ordinance amending this Ordinance as required by County Code and Charter. The term of the Loan and Note and final maturity date on the Note shall not extend beyond the agreed upon useful life of the project. The Loan shall be repaid in substantially equal annual installments in the amount and on the dates provided in the Loan Agreement with the first annual installment due no later than one year after completion of the project. The County will maintain a debt service coverage ratio of no less than 1.2 and must obtain the written consent of the NMED before issuing additional obligations secured by the Pledged Revenues.

b. If the Borrower fails to satisfy any federal grant requirements or conditions as required by the Loan and Note, the Borrower may be required to refund any federal grant funds disbursed to the Borrower from NMED.

c. The form of the Loan Agreement and the Note are approved. The Authorized Officer (Utilities Manager) is hereby directed to execute and deliver the Loan Agreement and the Note and any amendments to the Loan Agreement or Note to be executed after completion of the Project with such changes consistent with the Ordinance. The approval by an Authorized Officer of these documents in their final forms shall constitute conclusive evidence of the County's approval and compliance with this section.

d. From the date of the initial execution and delivery of the Loan Agreement and the Note, Authorized Officers, agents and employees of the Borrower are authorized, empowered and directed to carry out such acts and to execute all such documents as may be necessary to comply with the provisions of this Ordinance, the Loan Agreement and the Note.

**Section 7. Special Limited Obligations.** All Funds disbursed pursuant to the Loan Agreement and the Note shall be special limited obligations of the Borrower and shall be payable and collectible solely from the Pledged Revenues which are irrevocably pledged as set forth in this Ordinance. The NMED may not look to any general or other fund for the payment on the Loan Agreement and the Note except the designated special funds pledged. The Loan Agreement and the Note shall not constitute indebtedness or debts within the meaning of any

constitutional, charter or statutory provision or limitation, nor shall they be considered or be held to be general obligations of the Borrower and shall recite that they are payable and collectible solely from the Pledged Revenues.

**Section 8. Operation of Project.** The Borrower shall operate and maintain the Project so that it will function properly over its structural and material design life.

**Section 9. Use of Proceeds.** The NMED shall disburse Funds pursuant to the Loan Agreement for NMED approved costs incurred by the Borrower for the Project or to pay contractors or suppliers of materials for work performed on the Project as set forth in the Loan Agreement.

**Section 10. Application of Revenues.**

a. OPERATION AND MAINTENANCE. Defined as all costs and expenses to safely and reliably operate, repair, and maintain systems and equipment according to design specifications and within manufactured operating parameters and to maintain qualified staff to do so.

b. PARITY OBLIGATIONS AND OTHER APPROVED DEBT(S). The Borrower shall pay the principal, interest and administrative fees (if applicable) of parity obligations and other approved debts which are secured from the Pledged Revenues as scheduled.

c. EQUITABLE AND RATABLE DISTRIBUTION. Obligations of the Borrower secured by the Pledged Revenues on parity with the Loan Agreement and the Note, from time to time outstanding, shall not be entitled to any priority one over the other in the application of the Pledged Revenues, regardless of the time or times of their issuance or creation.

d. SUBORDINATE OBLIGATIONS. The Pledged Revenues used for the payment of Subordinate Obligations shall be applied first to the payment of the amounts due the Loan Agreement and the Note, including payments to be made to other obligations payable from the Pledged Revenues which have a lien on the Pledged Revenues on parity with the Loan Agreement and the Note.

**Section 11. Lien of Loan Agreement and Note.** The Loan Agreement and the Note shall constitute irrevocable liens upon the Pledged Revenues with priorities on the Pledged Revenues as set forth in this Ordinance. The Borrower hereby pledges and grants a security interest in the Pledged Revenues for the payment of the Note and any other amounts owed by the Borrower to the NMED pursuant to the Loan Agreement.

**Section 12. Other Obligations.** Nothing in the Ordinance shall be construed to prevent the Borrower from issuing bonds or other obligations payable from the Pledged Revenues and having a lien thereon subordinate to the liens of the Loan Agreement and the Note. The Borrower must obtain the written consent of the NMED before issuing additional obligations secured by the Pledged Revenues.

**Section 13. Default.** The following shall constitute an event of default under the Loan Agreement:

a. The failure by the Borrower to pay the annual payment due on the repayment of the Loan set forth in the Loan Agreement and Note when due and payable either at maturity or otherwise; or

b. Default by the Borrower in any of its covenants or conditions set forth under the Loan Agreement (*other than a default described in the previous clause of this section*) for 60 days after the NMED has given written notice to the Borrower specifying such default and requiring the same to be remedied.

#### **Section 14. Upon Occurrence of Default:**

a. The entire unpaid principal amount of the Interim and Final Promissory Note plus accrued interest and any fees thereon may be declared by the NMED to be immediately due and payable and the Borrower shall pay the amounts due under Note from the Pledged Revenues, either immediately or in the manner required by the NMED in its declaration, but only to the extent funds are available for payment of the Note. However, if insufficient funds are available for payment of the Note(s), the NMED may require the Borrower to adjust the rates charged by the System to ensure repayment of the Note.

b. If default by the Borrower is of covenants or conditions required under the federal grant, the Borrower may be required to refund the amount of the Loan disbursed to the Borrower from NMED.

c. The NMED shall have no further obligation to make payments to the Borrower under the Loan Agreement.

**Section 14. Enforcement; Venue.** The NMED retains the right to seek enforcement of the terms of the Loan Agreement. If the NMED and the Borrower cannot reach agreement regarding disputes as to the terms and conditions of this Loan Agreement, such disputes are to be resolved promptly and expeditiously in the First Judicial District Court for Santa Fe County. The Borrower agrees that the District Court for Santa Fe County shall have exclusive jurisdiction over the Borrower and the subject matter of this Loan Agreement and the Borrower waives the right to challenge such jurisdiction and venue.

**Section 15. Remedies Upon Default.** Upon the occurrence of any of the events of default as provided in the Loan Agreement or in this Ordinance, the NMED may proceed against the Borrower to protect and enforce its rights under the Ordinance by mandamus or other suit, action or special proceedings in equity or at law, in any court of competent jurisdiction, either for the appointment of a receiver or for the specific performance of any covenant or agreement contained in the Ordinance for the enforcement of any proper legal or equitable remedy as the NMED may deem most effective to protect and enforce the rights provided above, or to enjoin any act or thing which may be unlawful or in violation of any right of the NMED, or to require the Borrower to act as if it were the trustee of an express trust, or any combination of such remedies. Each right or privilege of the NMED is in addition and cumulative to any other right or privilege under the Ordinance or the Loan Agreement and Note and the exercise of any right or privilege by the NMED shall not be deemed a waiver of any other right or privilege.

**Section 16. Duties Upon Default.** Upon the occurrence of any of the events of default as provided in this Ordinance, the Borrower, in addition, will do and perform all proper acts on behalf of and for the NMED to protect and preserve the security created for the payment of the Note to ensure the payment on the Note promptly as the same become due. All proceeds derived from the System, so long as the Note is outstanding, shall be treated as revenues. If the Borrower fails or refuses to proceed as required by this Section, the NMED, after demand in writing, may proceed to protect and enforce the rights of the State and NMED as provided in this Ordinance and the Loan Agreement.

**Section 17. Termination.** When all obligations under the Loan Agreement and Note have been paid, the Loan Agreement and Note shall terminate and the pledge, lien, and all other obligations of the Borrower under the Ordinance shall be discharged. The principal amount of the Note, or any part thereof, may be prepaid at any time without penalty at the discretion of the Borrower and the prepayments of principal shall be applied as set forth in the Loan Agreement.

**Section 18. Amendment of Ordinance.** This Ordinance may be amended with the prior written consent of the NMED.

**Section 19. Ordinance Irrepealable.** After the Loan Agreement and Note have been executed and delivered, the Ordinance shall be and remain irrepealable until the Note has been fully paid, terminated and discharged, as provided in the Ordinance.

**Section 20. Severability.** If any section, paragraph, clause or provision of the Ordinance shall for any reason be held to be invalid or unenforceable, the invalidity or unenforceability of such section, paragraph, clause or provision shall not affect any of the remaining provisions of the Ordinance.

**Section 21. Repealer.** All bylaws, orders, Ordinances and Ordinances, or parts thereof, inconsistent herewith are hereby repealed to the extent only of such inconsistency. This repealer shall not be construed to revive any bylaw, order, Ordinance, or part thereof, heretofore repealed.

**ADOPTED** this \_\_\_\_\_ day of \_\_\_\_\_ 2018.

**COUNCIL OF THE INCORPORATED  
COUNTY OF LOS ALAMOS**

\_\_\_\_\_  
**David Izraelevitz, Council Chair**

**ATTEST: (Seal)**

\_\_\_\_\_  
**Naomi D. Maestas,  
Los Alamos County Clerk**

**Exhibits:**

**Exhibit 1.** Draft NMED CWSRF Loan Agreement

**Exhibit 2.** Draft NMED CWSRF Promissory Note

**Exhibit 3.** Project Description

Amendment No: \_\_\_\_\_

Date: \_\_\_\_\_

**NEW MEXICO ENVIRONMENT DEPARTMENT  
CONSTRUCTION PROGRAMS BUREAU  
CLEAN WATER STATE REVOLVING FUND (CWSRF)**

**PROJECT DESCRIPTION**

**NAME OF BORROWER:** Los Alamos County

**PROJECT NUMBER:** CWSRF 083

**FUNDING AMOUNT:** \$17,000,000

**The BORROWER agrees to accomplish the project as described below:**

The project will include the design and construction of a replacement wastewater treatment plant in White Rock, NM. The existing plant is an antiquated trickling filter plant that was constructed in 1966 and is at the end of its useful life.

The loan will fund a contract for a consultant engineer to design the new plant and provide inspection and engineering support during construction. The estimated cost of the engineering is \$1,520,000.

The loan will also fund the construction of a new wastewater treatment plant. The new plant process will be an oxidation ditch, new entrance works, new sludge handling facilities, two secondary clarifiers and ultra-violet disinfection. The new plant will be constructed on the same site as the existing plant. The estimated cost of the new plant is \$13,000,000.

While the total anticipated cost of the project is currently \$14,520,000, due to fluctuating materials costs and pending final design, we are allowing for a contingency to bring the total project budget to be an amount not to exceed \$17,000,000.

\_\_\_\_\_  
Signatory Authority

\_\_\_\_\_  
NMED Project Manager Approval

\_\_\_\_\_  
Date

**INCORPORATED COUNTY OF LOS ALAMOS RESOLUTION NO. 18-18**

**A RESOLUTION AUTHORIZING THE UTILITIES MANAGER TO EXECUTE DOCUMENTS WITH THE NEW MEXICO ENVIRONMENT DEPARTMENT ON BEHALF OF LOS ALAMOS COUNTY RELATING TO THE WHITE ROCK WASTE WATER TREATMENT PLANT, PROJECT NUMBER CWSRF 083 AND AUTHORIZES THE DESIGNATION OF OFFICIAL REPRESENTATIVES AND SIGNATORY AUTHORITIES**

**Whereas**, pursuant to Ordinance No. 687, the Incorporated County of Los Alamos ("County") of the State of New Mexico will enter into an interim and final Loan Agreement and Promissory Note with the New Mexico Environment Department for the construction of a new Wastewater Treatment Facility identified as Project Number CWSRF 083 ("Project").

**NOW, THEREFORE BE IT RESOLVED that:**

**Section 1.** David Izraelevitz, Chairperson of the County Council, or successor is authorized to execute on behalf of the County the Loan Agreement ("Loan") and the Promissory Note ("Note") for the Project; and

**Section 2.** Tim Glasco, the County Utilities Manager, or successors, or Robert Westervelt, Deputy Utilities Manager of Finance and Administration, or successors is hereby designated as the Project's "AUTHORIZED OFFICER" who is herein authorized to sign all other Project Loan and Note documents necessary to fulfill the Loan and Note requirements (i.e., Borrower's Intention, Project Description, Project Budget, Reimbursement Requests, etc.) and to act as the Project primary contact; and

**Section 3.** Robert Westervelt, Deputy Utilities Manager of Finance and Administration, or successors, Catherine D'Anna, Department of Public Utilities, Business Operations Manager, or successors, or Margo Liberty, Department of Finance, Senior Management Analyst, or successors are hereby designated the "SIGNATORY AUTHORITY" who are authorized to sign Project reimbursement requests only for this Project.

**PASSED AND ADOPTED** this \_\_\_\_\_ day of August 2018.

**COUNCIL OF THE INCORPORATED  
COUNTY OF LOS ALAMOS**

\_\_\_\_\_  
**David Izraelevitz, Council Chair**

**ATTEST:**

\_\_\_\_\_  
**Naomi D. Maestas**





Project Name White Rock Wastewater  
Treatment Plant

Project No. CWSRF 083

Authorized Officer(s) to Sign Loan Agreement and Promissory Note	
Name & Title	David Izraelevitz, Council Chair
Signature	
Address	1000 Central Ave., Suite 350 Los Alamos, NM 87544
E-mail	david.izraelevitz@lacnm.us
Phone	(505) 663-1750
Authorized Officer(s) for all other documents including Disbursement Requests	
Name & Title	Tim Glasco, Utilities Manager
Signature	
Address	1000 Central Ave., Suite 130 Los Alamos, NM 87544
E-mail	ta.glasco@lacnm.us
Phone	(505) 662-8148
Name & Title	Robert Westervelt, Deputy Utilities Manager of Finance and Administration
Signature	
Address	1000 Central Ave., Suite 130 Los Alamos, NM 87544
E-mail	robert.westervelt@lacnm.us
Phone	(505) 662-8001

Authorized Agent(s) or Employee(s) for reimbursement requests only	
Name & Title	Robert Westervelt, Deputy Utilities Manager of Finance and Administration
Signature	
Address	1000 Central Ave., Suite 130 Los Alamos, NM 87544
E-mail	robert.westervelt@lacnm.us
Phone	(505) 662-8001
Name & Title	Catherine D'Anna, Business Operations Manager
Signature	
Address	1000 Central Ave., Suite 130 Los Alamos, NM 87544
E-mail	catherine.danna@lacnm.us
Phone	(505) 662-8198
Name & Title	Margot Liberty, Senior Management Analyst
Signature	
Address	1000 Central Ave, Suite 300 Los Alamos, NM 87544
E-mail	margot.liberty@lacnm.us
Phone	(505) 662-8168

# MEMORANDUM



Department of Public Utilities

Electric, Gas, Water, and Wastewater Services

Administrative Offices

1000 Central Avenue, Suite 130

Los Alamos, NM 87544

P 505.662.8333 F 505.662.8005

dpu@lacnm.us

losalamosnm.us/utilities

**DATE:** 6 July 2018

**TO:** T. Glasco, B. Westervelt, J. Alarid

**FROM:** J. Richardson

**CC:** D. Segura

**RE:** WR WWTP Cost Estimate Escalation Due to Tariffs

Dennis Segura did some excellent detailed work on background for this memo. His work has been incorporated into the analysis and recommendations contained within this memo.

## Engineering News Record (ENR) Cost Index Report Information

The data and quotes included in this memo are from the March 19/26, 2018 ENR 1<sup>st</sup> Quarter Cost Report. ENR has a database of construction cost indexing going back to 1929 and is a widely used standard for estimating construction costs in the utilities infrastructure industry. Various sections of the above referenced report indicate varying impacts of the tariffs (and other economic conditions) that are currently affecting construction costs. Current steel and cement price indices are listed in the following table.

Calendar Year	2017	2018	2019	2020	2021
Cement Increase	4.4%	4.0%	3.9%	2.7%	1.2%
Structural Steel Increase	4.6%	11.6%	5.0%	-0.7%	0.4%

In addition to the data published in the table, there are other variable estimates of price fluctuations from various sources stated throughout the report.

“... prices are already on the rise ... predicting that domestic structural steel prices will increase 13% in the first quarter of this year ... to be followed by a 10% hike in the second quarter ... These are significant price increases that could threaten budgets for steel-intensive projects...”.  
“Already, costs for many materials are spiking ... 38.7% for diesel fuel ... 17.1% for plywood ... 10.1% for aluminum ... copper products...8.9% ... rebar prices up 9% in the first quarter and another 20% in the next ...”  
“... aluminum ... annual price hikes are set to average 9.2% ...”  
“... wages would rise 2.7% overall in 2018, following a 2.6% increase in 2017.”

#### Anecdotal Information

A wwtp improvement project in Hobbs, New Mexico was bid 31 May 2018. The engineer's estimate was \$ 7,648,410. The low bid was \$ 8,982,000. The engineering consultant analyzed why there was a significant discrepancy between their estimate and the actual low bid; including detailed conversations with the project low bidder. The result of that investigation was that the 17.4% increase was due to a variety of factors.

- a) Metals quote was double what (the low bidder) estimated.
- b) Rebar cost has increased 25% in the last 4 months.
- c) Valves & pipe materials increased significantly. DIP fittings doubled in price.
- d) Equipment suppliers have been affected by the tariff issues.
- e) Suppliers are sometimes stating their quotes are only good for one day.
- f) AIS & Steel tariffs added a 5% total project cost increase to an (earlier) project in Gallup.
- g) Impact of Limited Subcontractors. 4 no bid and 5 single bid subcontractors for various portions of the project.

#### Analysis on the White Rock WWTP Project

The estimated price increases in the ENR data table above were incorporated into the original engineer's estimate for the White Rock wwtp completed in 2016. The wwtp cost estimates increased an average of 6% per year (2017 thru 2019) when these cost increase factors were incorporated into the original estimate. The original estimate had been inflated at an annual rate of approximately 4.5%, based on the ENR at the time, to be \$14.5 million when bidding was anticipated in 2020. Adding an additional annual inflation factor of 5% (anecdotal) or 6% (ENR) to the original WR wwtp estimate would bring the revised estimate to \$17.5 to \$18.2 million.

An additional 5% to 6% increase every year would be an extreme worst case scenario. The County is currently approved for a Clean Water State Revolving Loan Fund (CWSRF) loan package of up to \$17.774 million. To avoid a possible loan limit problem in any of the required authorizing documentation, the County could approve a loan limit for up to and not to exceed \$17.774 million in all loan documents. The current 20-year forecast model used in the development of the FY19 & FY20 budgets, and the projected sewer rates associated with that model, provide sufficient revenue for necessary O&M plus debt service repayment up to a potential \$17.774 million loan package plus improvement in the cash balance reserves of the system. With the FY19 & FY20 budget deferral and subsequent reduction in scope of the proposed LA wwtp project loan funding, it is anticipated that the final loan package for the WR wwtp will be within the recommended \$17.00 million not to exceed value even with the current volatile economic conditions.

It must be understood that the actual amount of the loan will only match what the actual construction cost of the WR wwtp will be based on the competitive bidding process. If the bids come in at something over the original \$14.5 million estimate, but the County decides that the additional costs are still competitive and completion of the project is still in the best interests of the citizens, then the project could move forward without any delays for loan documentation revisions. In a situation like this, similar to the situations that occurred in the mid 1990's and in the mid 2000's when utility infrastructure economic conditions were also very volatile, time is money is a very real consideration. Any lengthy delay, whether it be to redesign the project or to revise loan documentation, adds significant costs to the project. Therefore, our recommendation is to execute the loan documentation for a not to exceed value of \$17.00 million knowing that the County will have the flexibility to approve (or not) the project construction contract and loan package at the future time after bids have been received.



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

<b>Agenda No.:</b>	7.D
<b>Index (Council Goals):</b>	BCC - N/A
<b>Presenters:</b>	Steve Cummins, Deputy Utilities Manager - Power Supply
<b>Legislative File:</b>	10947-18

---

### Title

Update on Using Low Flow Hydro on Some of the In-town Systems

### Recommended Action

### Discussion only

### Staff Recommendation

Discussion only

### Body

At the recommendation of a citizen *ad hoc* committee and the direction of the Board of Public Utilities, the Department of Public Utilities (DPU) was tasked to explore the feasibility and estimate the costs of pumped hydro storage within LA County. There are several sites within the county that have the necessary changes in elevation to accommodate a low flow high head turbine generator.

In 2010 staff took a close look at pumped hydro using the existing LA Reservoir and the snow making pond at the top of Pajarito Mountain. This assumed the County and the Los Alamos Ski Club would permit the use of these reservoirs for power generation. There were several disadvantages with these two reservoirs. The snow making ponds primary purpose limits the use of the water for the period between June and November. The primary purpose of the LA Reservoir is a recreation site for the community. Cycling the reservoir on a daily basis would not make a sustainable fish habitat nor make it safe as a community recreation area. For these reasons staff did not pursue this as an option any further.

This current effort looked at small scale possibilities, specifically looking at using the existing potable water infrastructure. Using existing potable water tanks and pipelines provides a lower limit on the capital costs for a small-scale pumped storage system. It thus serves as a best-case scenario for the economic analysis of such a system and at first glance it does not interfere with the primary purpose of the infrastructure, which is a domestic water supply and for fighting fires.

Staff recommends that small-scale pumped storage is financially infeasible for LA County and does not merit further consideration as an energy storage approach.

### Alternatives

DPU will continue to look at other energy storage alternatives to meet the County's goal of being a carbon neutral electrical energy provider by 2040 in a financially sound manner and will present their findings to the Board at a later date.

---

**Fiscal and Staff Impact**

None

**Attachments**

A - Small Pumped Hydroelectric Storage

# Small Pumped Hydroelectric Storage

September 19, 2018  
Board of Public Utilities  
Informational Meeting

# Pumped Storage Concepts

- Use water for gravitational potential energy storage, pumped from a lower elevation reservoir to a higher elevation.
- Pump water up using excess or off-peak energy
- Flow water down through turbine to generate energy
- Pumping and generation losses makes the plant a net consumer of energy



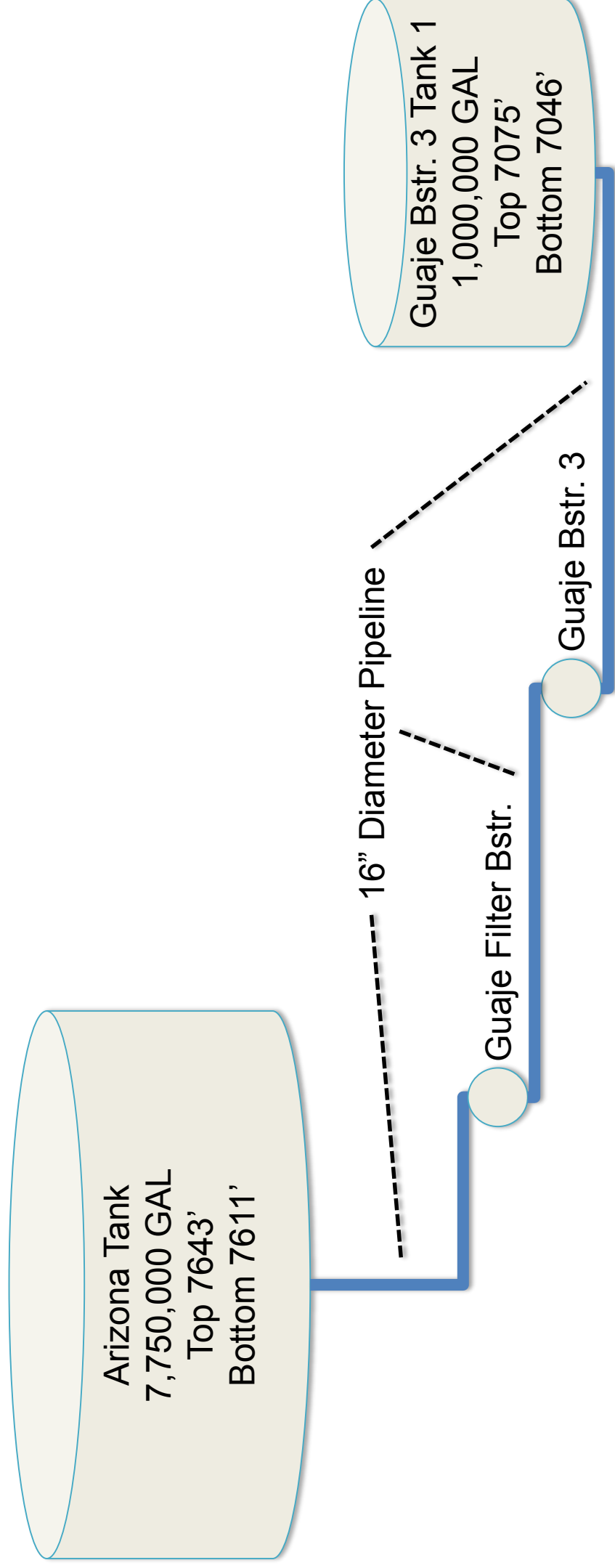
# Potential Benefits

- Storing excess local wind and solar energy
- Peak shaving and energy arbitrage
- Load balancing
- Ancillary services – frequency regulation and reserves

# Costs

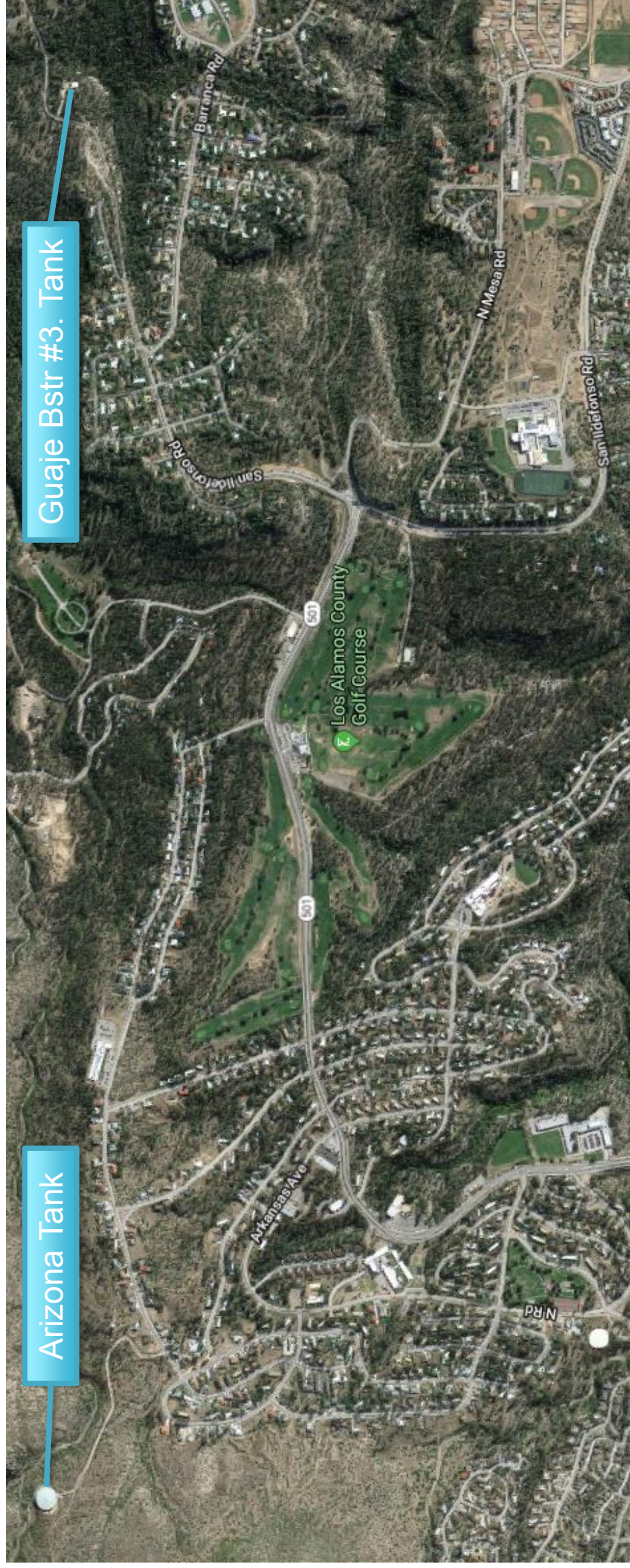
- Justifying investments in new pumped storage plants remains very challenging with current electricity market economics
- Small pumped storage plants being the most challenging due to capital and O&M cost for little benefit.

# Notional Design



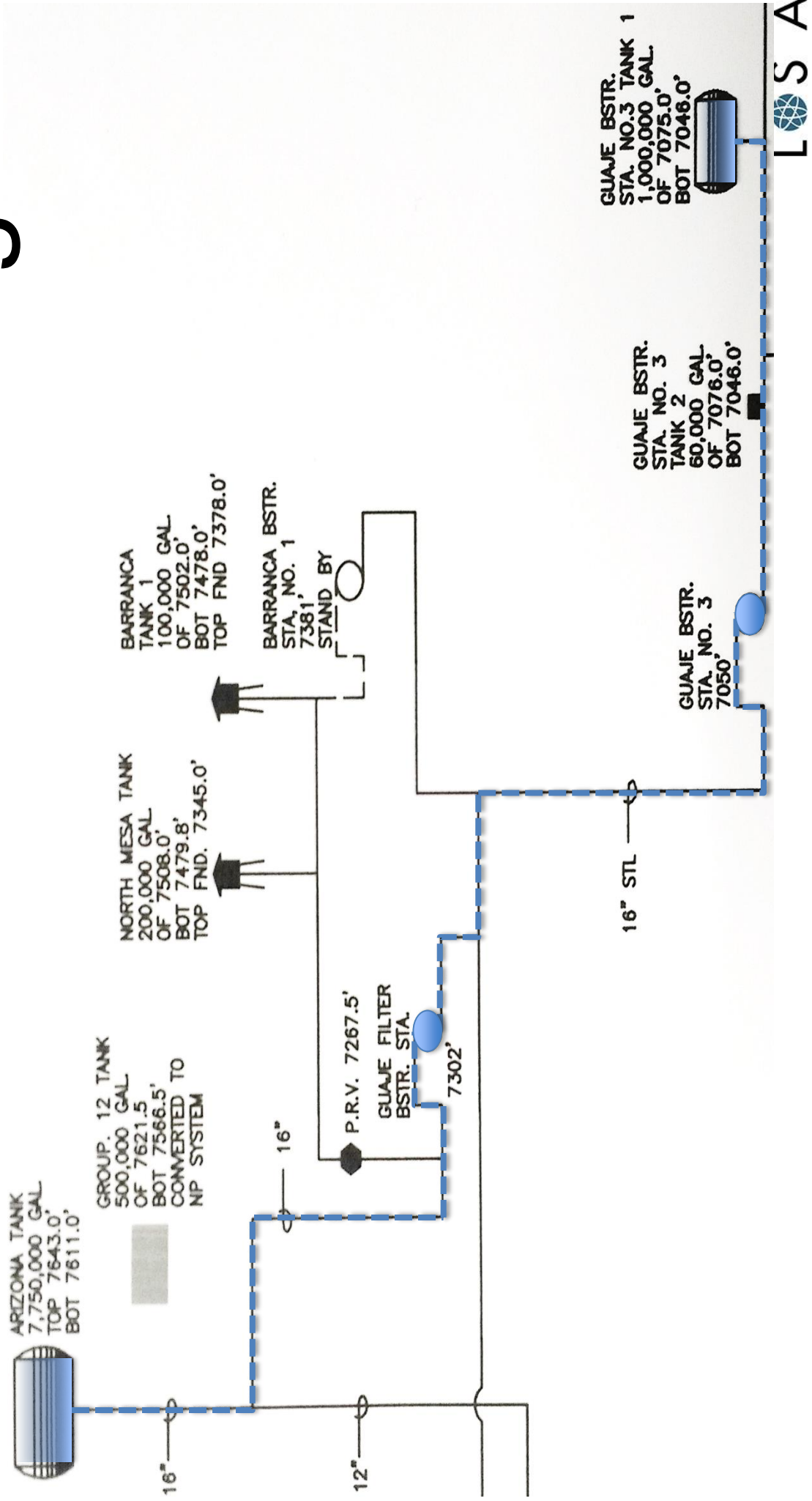


# Aerial View



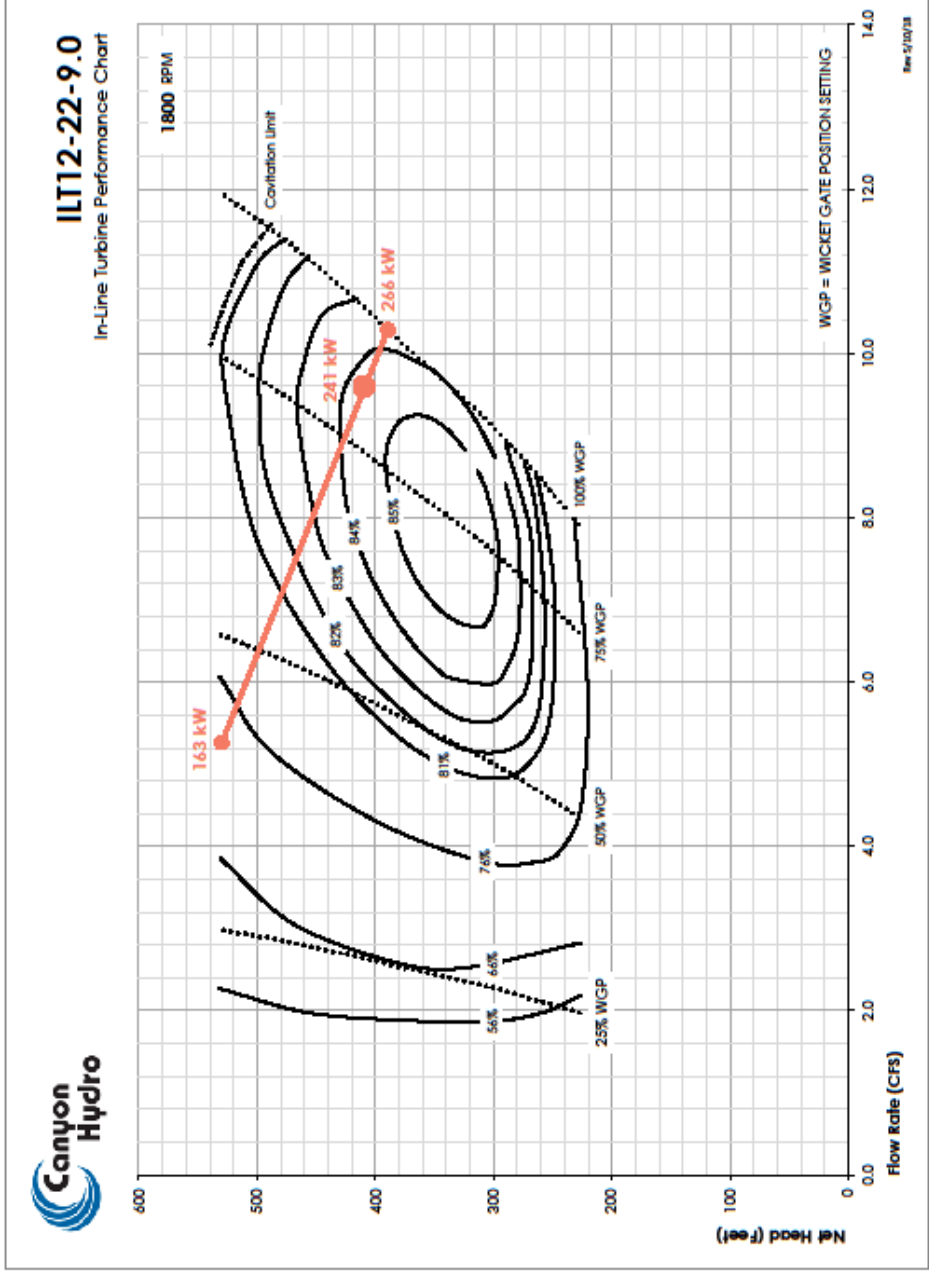


# Schematic Drawing



# Canyon Hydro Turbine Generator

## In Line Turbine Performance Chart



286



# Analysis of Benefits

- Storing excess local wind and solar energy
  - Currently no excess renewable energy
- Peak shaving and energy arbitrage
  - Small cost difference in peak and off-peak energy
  - Low efficiency, ~30%, from long, small-diameter pipeline
- Load balancing
- Ancillary services – frequency regulation and reserves
  - Power generation too low to serve this purpose



# Does it make sense?

Pumping energy required to move 1 million gallons of water (3640 kWh)

LAC Incremental Cost of Power      \$0.0224 kWh

LAC 2017 Average Purchase Power Cost      \$0.0334 kWh

Pumping the water up the hill to terminal storage (Arizona Tank)

Valued at LAC Incremental Cost of Power

\$81.53 / Day

\$2,446/month

Running the Water back down through Generator (Guaje Booster Tank #3)

Power Generated      Valued at Average Purchase Power Cost

\$33.40/Day

\$1,002/month

ATRR Savings (241 kW delta)

\$680/month

Monthly **(Cost)** / Savings      (Capital and O&M not included)

**(\$764)/month**

Capital estimated at \$500,000

O&M ?

# Energy Budget

$$E_{generator} = E_{max} - LOSS_{head} - LOSS_{turbine} - LOSS_{generator}$$

$$E_{max} = mGh = 1791 \text{ kWH}$$

$$LOSS_{head} = \frac{570 - 410}{570} \times E_{max} = 503 \text{ kWH}$$

$$LOSS_{turbine} = (1 - 0.84) \times (E_{max} - LOSS_{head}) = 206 \text{ kWH}$$

$$LOSS_{generator} = (0.065) \times (E_{max} - LOSS_{head} - LOSS_{turbine}) = 70 \text{ kWH}$$

$$E_{generator} = 1791 - 503 - 206 - 70 = 1012 \text{ kWH}$$

# Questions



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 7.E  
**Index (Council Goals):** BCC - N/A  
**Presenters:** Steve Cummins, Deputy Utilities Manager - Power Supply  
**Legislative File:** 11039-18

---

### **Title**

Present Indicative Pricing for Distributed Generation Photovoltaic Solar

### **Recommended Action**

None

### **Staff Recommendation**

None

### **Body**

At the recommendation of a citizen *ad hoc* committee and the direction of the Board of Public Utilities, the Department of Public Utilities (DPU) was tasked to evaluate the feasibility of a community solar garden. The first step in the process was to gauge the communities' interest. DPU surveyed the public which established interest in at least 300 kilowatts of subscription depending on the cost. Since the survey staff has been researching potential sites to accommodate a community solar garden. Staff will present indicative pricing for these solar PV sites being considered.

### **Alternatives**

None

### **Fiscal and Staff Impact/Planned Item**

No fiscal or staff impact.

### **Attachments**

A - PV Indicative Pricing

# Indicative Pricing for Distributed Generation Photovoltaic Solar

September 19, 2018  
Board of Public Utilities  
Informational Meeting

# Objectives

- Identify opportunities for local PV development
- Compare budgetary pricing estimates for several conceptual PV projects
- Evaluate feasibility

# Conceptual Projects

- Large-scale, PPA option
  - Landfill
  - White Rock south of ball fields
- Small-scale, buy outright
  - Municipal Building Carport
  - Pajarito Cliffs Site rooftops

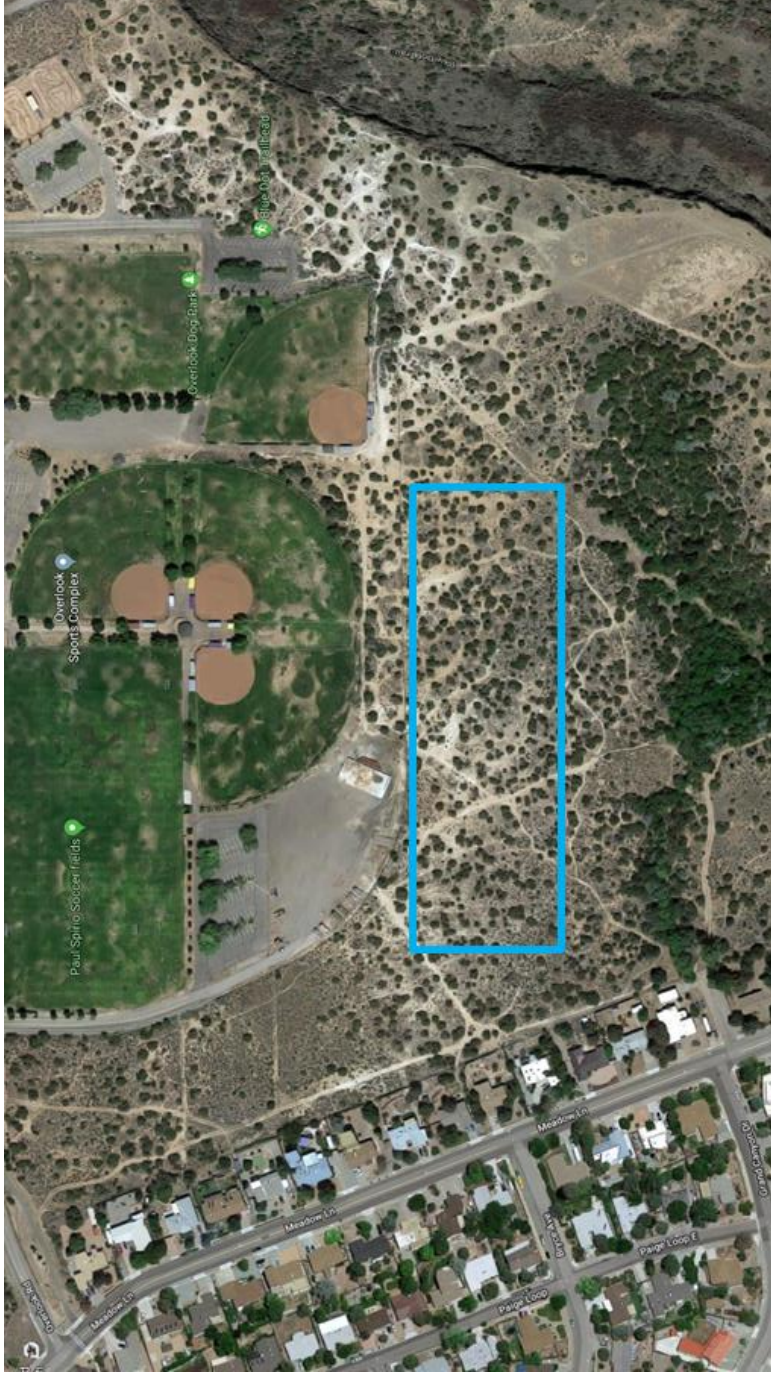


# Conceptual Projects





# Large-Scale Sites





# Small-Scale Sites



297



# Indicative Pricing

# Other Considerations

- Risk
  - Compromise roof integrity
  - Landfill cap
  - Shallow rock encountered at White Rock site
- Non-financial benefits
  - Visibility, public awareness to clean energy
  - Step toward carbon neutral goal
- Carport, rooftop: high cost, no tax credits unless bundled into a larger PPA



# County of Los Alamos

## Staff Report

September 19, 2018

Los Alamos, NM 87544  
www.losalamosnm.us

---

**Agenda No.:** 8.A  
**Index (Council Goals):** BCC - N/A  
**Presenters:** Board of Public Utilities  
**Legislative File:** 11189-18

---

### **Title**

Status Reports

### **Body**

Each month the Board receives in the agenda packet informational reports on various items. No presentation is given, but the Board may discuss any of the reports provided.

### **Attachments**

- A - Electric Reliability Report
- B - Accounts Receivables Report
- C - Safety Report

# **STATUS REPORTS**

## **ELECTRIC RELIABILITY**

# Los Alamos County Utilities



## Electric Distribution Reliability

September 19, 2018

Stephen Marez  
Senior Engineer



Electric Distribution Reliability Study  
Twelve Month Outage History

Prepared by Stephen Marez  
Senior Engineer L.A.C.U.

Date	Call Rcd.	Circuit	Cause	Start Time	End Time	Duration	Customers Affected (Meters)	Combined Customer Outage Durations	Total Outage H:M:S	Running SAIDI
9/10/2017	Utilities	16	URD Failure	17:00	18:50	1:50	40	73:20:00	73:20:00	0:00:29
9/19/2017	Utilities	14	URD Failure	2:45	3:35	0:50	18	15:00:00	88:20:00	0:00:35
9/19/2017	Utilities	14	URD Failure	7:45	9:00	1:15	80	100:00:00	188:20:00	0:01:15
9/19/2017	Utilities	14	URD Failure	7:45	14:15	6:30	45	292:30:00	480:50:00	0:03:11
10/5/2017	Utilities	15	Tree	16:00	16:15	0:15	10	2:30:00	483:20:00	0:03:12
10/27/2017	Utilities	18	Planned	8:30	9:30	1:00	1	1:00:00	484:20:00	0:03:13
11/24/2017	Dispatch	TC2	Supply line Failure	2:54	6:03	3:09	2264	7131:36:00	7615:56:00	0:50:31
11/24/2017	Dispatch	TC1	System Failure	3:53	5:59	2:06	4069	8844:54:00	16160:50:00	1:47:12
11/30/2017	Utilities	WR1	Planned	19:00	23:00	4:00	1	4:00:00	16164:50:00	1:47:14
11/30/2017	Utilities	WR1	Planned	19:00	0:30	5:30	5	27:30:00	16192:20:00	1:47:25
12/22/2017	Utilities	13	URD Failure	12:30	15:50	3:20	15	50:00:00	16242:20:00	1:47:45
12/27/2017	Utilities	13	URD Failure	18:30	21:07	2:37	1	2:37:00	16244:57:00	1:47:46
1/16/2018	Utilities	18	HUMAN	8:30	8:34	0:04	213	14:12:00	16259:09:00	1:47:51
2/3/2018	Utilities	13	Animal	1:30	2:30	1:00	8	8:00:00	16267:09:00	1:47:54
2/14/2018	Utilities	14	Planned	9:00	10:30	1:30	7	10:30:00	16277:39:00	1:47:59
3/8/2018	Utilities	WR2	Planned	9:30	11:00	1:30	7	10:30:00	16288:09:00	1:48:03
3/9/2018	Utilities	15	Unknown	13:00	14:00	1:00	6	6:00:00	16220:49:00	1:47:36
3/9/2018	Utilities	15	Animal	9:30	10:30	1:00	1	1:00:00	16295:09:00	1:48:06
3/10/2018	Utilities	WR2	Unknown	14:11	15:11	1:00	1	1:00:00	16296:09:00	1:48:06
3/16/2017	Utilities	WR1	Weather	16:30	17:30	1:00	5	5:00:00	16301:09:00	1:48:08
3/18/2017	Utilities	WR1	Weather	14:00	16:00	2:00	1	2:00:00	16303:09:00	1:48:09
3/12/2018	Utilities	13	OH Failure	12:30	15:07	2:37	22	57:34:00	16360:43:00	1:48:32
4/17/2018	Utilities	16	URD Failure	17:00	20:00	3:00	2	6:00:00	16366:43:00	1:48:34
4/26/2018	Utilities	WR1	Planned	9:50	12:20	2:30	7	17:30:00	16384:13:00	1:48:41
5/27/2018	Utilities	16	URD Failure	12:00	13:30	1:30	30	45:00:00	16429:13:00	1:48:59
5/30/2018	Utilities	WR2	Planned	9:05	11:05	2:00	8	16:00:00	16445:13:00	1:49:05
6/3/2018	Utilities	WR2	URD Failure	15:00	16:00	1:00	50	50:00:00	16495:13:00	1:49:25
6/3/2018	Utilities	WR2	URD Failure	15:00	16:45	1:45	27	47:15:00	16542:28:00	1:49:44
6/3/2018	Utilities	WR2	URD Failure	15:00	17:45	2:45	21	57:45:00	16600:13:00	1:50:07
6/12/2018	Utilities	13	URD Failure	20:45	9:30	12:45	15	191:15:00	16791:28:00	1:51:23
6/17/2018	Utilities	16	URD Failure	18:30	20:00	1:30	2	3:00:00	16794:28:00	1:51:24
7/15/2018	Utilities	14	URD Failure	23:30	5:30	6:00	30	180:00:00	16974:28:00	1:52:36
7/20/2018	Utilities	WR2	URD Failure	10:10	11:30	1:20	12	16:00:00	16990:28:00	1:52:42
8/7/2018	Utilities	13	URD Failure	20:00	1:00	5:00	50	250:00:00	17240:28:00	1:54:22
8/19/2018	Utilities	WR2	URD Failure	19:00	23:00	4:00	24	96:00:00	17336:28:00	1:55:00



CIRCUIT SAIDI IS CALCULATED ACCORDING TO THE NUMBER OF CUSTOMERS IN EACH CIRCUIT RESPECTIVELY											
Running SAIDI Circuit 13	Running SAIDI Circuit 14	Running SAIDI Circuit 15	Running SAIDI Circuit 16	Running SAIDI Circuit 17	Running SAIDI Circuit 18	SAIDI Circuit EA4 & Royal Crest	Running SAIDI Circuit WR1	Running SAIDI Circuit WR2	Monthly SAIDI	Monthly Customer Minutes out of service	WEATHER SAIDI
			0:02:23								
	0:01:40										
	0:12:48										
	0:45:22								SEPTEMBER	480:50:00	
		0:00:05							OCTOBER	396:00:00	
4:18:33	13:59:14	3:48:47									
			4:38:20	40:53:05	0:00:17						
					40:07:18		0:00:09				
							0:01:12		NOVEMBER	15708:00:00	
4:20:22											
4:20:27					0:04:00				DECEMBER	84:07:00	
4:20:45									JANUARY	94:19:00	
									FEBRUARY	35:19:00	
	14:00:24							0:00:39			
		3:48:58									
		3:49:00									
								0:00:43			
							0:01:23				
4:22:50							0:01:27		MARCH	25:30:00	0:00:03
			4:38:32								
			4:40:00				0:02:07		APRIL	81:04:00	
									MAY	61:00:00	
								0:01:43			
								0:04:50			
								0:07:47			
								0:11:24			
4:29:46											
	0:20:02		4:40:06						JUNE	349:15:00	
								0:01:00	JULY	183:00:00	
4:38:50											
								0:07:00	AUGUST	346:00:00	
Circ 13 1655	Circ 14 539	Circ 15 1875	Circ 16 1842	Circ 17 209	Circ 18 213	Circ EA4 165	Circ WR1 1586	Circ WR2 961	Total 9045	1:55:00	0:00:03

Twelve Month History	August 2018	
Total # Accounts	9045	
Total # Interruptions	35	
Sum Customer Interruption Durations	17336:28:00	hours:min:sec
# Customers Interrupted	7098	
SAIFI( APPA AVG. = 1.0)	.78	int./cust.
SAIDI ( APPA AVG. = 1:00)	1:55	hours:min
CAIDI	2:26	hours:min/INT
ASAI	99.9991%	% available

- **SAIFI - System Average Interruption Frequency Index**

A measure of interruptions per customer (Per Year)

$$\text{SAIFI} = \frac{(\text{Total number of customer interruptions})}{(\text{Total number of customers served})}$$

- **SAIDI – System Average Interruption Duration Index**

A measure of outage time per customer if all customers were out at the same time (hours per year)

$$\text{SAIDI} = \frac{(\text{Sum of all customer outage durations})}{(\text{Total number of customers served})}$$

- **CAIDI – Customer Average Interruption Duration Index**

A measure of the average outage duration per customer (hours per interruption)

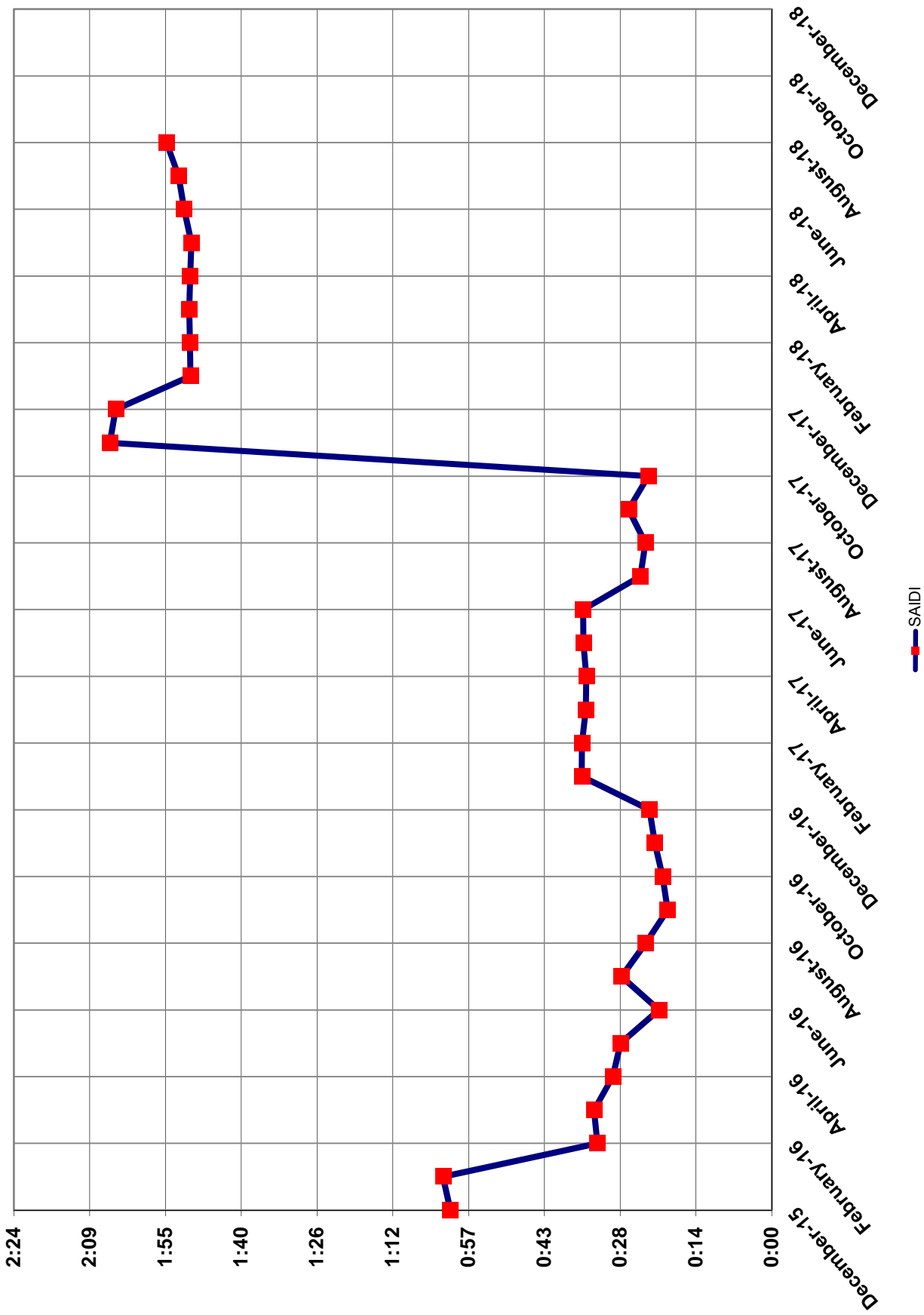
$$\text{CAIDI} = \frac{(\text{Sum of all customer outage durations})}{(\text{Total number of customer interruptions})} = \frac{\text{SAIDI}}{\text{SAIFI}}$$

- **ASAI – Average System Availability Index**

A measure of the average service availability (Per unit)

$$\text{ASAI} = \frac{(\text{Service hours available})}{(\text{Customer demand hours})} = \frac{8760 - \text{SAIDI}}{8760}$$

EACH POINT IS A 12 MONTH SAIDI HISTORY  
1:00:00 = APPA BENCHMARK SAIDI



# STATUS REPORTS

## ACCOUNTS RECEIVABLES

The Accounts Receivables report will not be submitted to the Board for the month of August. This delay is related to the Cayenta to Munis system conversion. The status report usually includes the active accounts receivables that are 90 days past due and those outstanding inactive accounts over 60 days. That data is not currently reflected in the reports pulled from the new Munis system and will not be available until after the system has been in use for at least 90 days. Staff should be able to provide those status reports to the Board again in the next few months.

# STATUS REPORTS

## SAFETY

The County Risk Department provides all the Safety Status Reports included in the agenda packet. The following information was received from the Risk Department:

**Workers' Compensation:**

1. A meter reader experienced low back strain from a motor vehicle accident. He missed one week and returned successfully.

**Tort Claims:**

1. Claimant experienced electrical fire at his meter and alleges negligence by County. County investigation suggests negligence in improper installation on part of claimant's electrician.

**County Property Damage:**

There were no County property damage incidents related to Utilities.

At the time of agenda publication the OSHA Incident Rate report was not yet available from Risk.