LICKING VALLEY
RURAL ELECTRIC COOPERATIVE CORPORATION
P. O. Box 605 • 271 Main Street
West Liberty, KY 41472-0605
(606) 743-3179

May 04, 2016

Executive Director
Kentucky Public Service Commission
PO Box 615
Frankfort KY 40602-0615

RE: Case No. 2016-00077

To Whom It May Concern:

Enclosed are an original and ten (10) copies of Licking Valley Rural Electric Cooperative Corporation's response to the above referenced case number in the Commission Staff's Second Data Request for Information dated April 21, 2016 in the above referenced case.

East Kentucky Power Cooperative (EKPC) is integrated into the PJM organization (which coordinates the movement of electricity across 13 states). A new requirement of PJM is for its G&T's to migrate to provide hourly data when a direct load control event is initiated. With the current metering system in place at LVRECC, our data is 27 hours delayed and we can only see daily usage, not hourly. Switching to the RF metering system, will enable LVRECC to assist EKPC in becoming compliant to the new PJM requirement. Licking Valley RECC felt this was relevant to our CPCN application.

Sincerely,

Kerry K. Howard
General Manager/CEO
kkhoward@lvrecc.com
Fax – 606-743-7775

AFFIDAVIT

The Affiant, Kerry K. Howard, General Manager/CEO for Licking Valley Rural Electric Cooperative Corporation, Post Office Box 605, West Liberty, Kentucky 41472-0605, states that the answers given by him to the foregoing questions are true and correct to the best of his knowledge and belief.

Kerry K. Howard
General Manager/CEO

Subscribed and sworn before me by the Affiant, Kerry K. Howard, this 04t day of May 03 2016.

Notary Public
State of Kentucky at Large

My Commission Expires: 05/29/2016

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

SECOND REQUEST FOR INFORMATION

CASE NUMBER 2016-00077

May 04, 2016

INDEX

Witness: Kerry K. Howard

LICKING VALLEY RURAL ELECTRIC
COOPERATIVE CORPORATION

PSC CASE NO. 2016-00077
RESPONSE TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

1. Refer to Licking Valley's response to Commission Staff's First Request for Information ("Staff's First Request"), Item 1.a. In response to the inquiry asking why Licking Valley has requested expedited review, Licking Valley states, "With the metering system currently in place, LVRECC can only do certain DSM programs, Pre-paid metering and remote disconnects on approx.. 20% of the membership."
   a. Reference also Licking Valley's response to the Attorney General's Initial Data Requests ("AG's First Request"), Item 1, which states, "With metering system currently in place, LVRECC can only do certain DSM programs, Pre-paid metering and remote disconnects on ½ of the membership." Reconcile the difference regarding the percentage of Licking Valley's members who can be disconnected remotely with the existing meters.

Answer 1a. As stated previously, Licking Valley RECC has upgraded ½ (5 of 10) of our sub-stations to be TS2 compatible. Approximately 20% of the members who have service on these 5 substations have TS2 meters. The other approximate 80% still have TS1 meters installed.

   b. Provide in detail the types of DSM programs that Licking Valley would consider evaluating and potentially offering to its members if Licking Valley is authorized to implement the proposed AMI meters.

Answer 1b. Licking Valley would be able to offer Air Conditioning & Water Heater load control to all members. Although Pre-paid metering is not specifically a DSM program, studies show a 10%-15% reduction in usage for those who are on pre-paid metering.

   c. Explain in detail why the Prepay Program is cited as a basis for the proposed AMI meters, given that Licking Valley estimates that only 300 residential customers will participate in the Prepay Program and in light of the fact that a Prepay Program participant will be given an AMI meter with an embedded disconnect device, the incremental cost of which is being recovered under the Prepay Program.

Answer 1c. Pre-pay metering is just one element of why AMI metering is being requested. Members who are on a pre-pay metering program are not required to pay a deposit which is based on a credit score and usage, will typically use less Kwh's and Licking Valley will not limit our exposure to bad debt and unrecoverable accounts. LVRECC plans to install remote disconnects on all AMI meters, not just those on the pre-pay program.

East Kentucky Power Cooperative (EKPC) is integrated into the PJM organization (which coordinates the movement of electricity across 13 states). A new requirement of PJM is for its G&T's to migrate to provide hourly data when a direct load control event is initiated. With the current metering system in place at LVRECC, our data is 27 hours delayed and we can only see daily usage, not hourly. Switching to the RF metering system, will enable LVRECC to assist EKPC in becoming compliant to the new PJM requirement.

LICKING VALLEY RURAL ELECTRIC
COOPERATIVE CORPORATION

PSC CASE NO. 2016-00077
RESPONSE TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

d. Explain how the proposed AMI meters will affect the calculation of the costs that are currently recovered by the Prepay Program, including the $90.37 incremental cost for an AMI meter with an embedded disconnect device.

Answer 1d. Licking Valley's pre-paid metering tariff does not include any recovery of metering cost to participate in the pre-paid program.

2. Refer to Licking Valley's response to Staff's First Request, Item 1.c. Provide a date by which Licking Valley would have to purchase additional TS1 and TS2 meters if a final decision has not been rendered by the Commission on this matter.

Answer 2. LVRECC is out of meters now and will be forced to purchase TS2 meters (which now have a 20 week lead time per Landis + Gyr) immediately. This is one of the most important reasons as to why we have requested an expedited CPCN. We do not wish to purchase additional TS2 meters which would add to our stranded assets. (see Exhibit 1) Landis + Gyr has informed Licking Valley RECC that they have not sold a AMR Metering System in the last six (6) years. See Exhibit 1 p 3.

3. Refer to Licking Valley's response to Staff's First Request, Items 2.b. and 2.e. The response to Item 2.b. states that Licking Valley has 236 TS2meters in inventory as of March 28, 2016. However, the response to Item 2.e. states that all TS2 meters have been deployed by Licking Valley. Provide a detailed explanation reconciling the difference in the two responses concerning the number of TS2 meters that are currently in inventory.

Answer 3. The inventory in our metering department changes from day to day either being deployed or being made ready to be (tested etc.) re-deployed. The 236 meters was a snapshot of what was currently setting in the metering department on that particular day. Today we have 103 meters TS2, tested, cleaned and ready to go back out into service. A meter department employee conducting annual meter readings and/or changing meters normally uses 20 meters per day. This does not take into consideration other meters needed for connects and/or reconnects. We currently have used all new meters in stock.

4. Refer to Licking Valley's response to Staff's First Request, Item 2.e., in which Licking Valley states that all 3,563 meters are deployed. Rectify this number with the 7,000 to 8,000 TS2 meters Licking Valley stated were currently in service in its distribution system during a May 13, 2015 telephonic conference with Commission staff in Case No. 2012-0013.

Answer 4. At the time of this call in 2015, ½ of our substations (5 of 10) had been converted to TS2 compatible. We stated 7K-8K were currently in service as this would have been approximately ½ of our membership. We later had a more defined count as to how many TS2 type meters had actually been deployed on these 5 substations which was the 3563 meters.

LICKING VALLEY RURAL ELECTRIC
COOPERATIVE CORPORATION

PSC CASE NO. 2016-00077
RESPONSE TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

5. Refer to Licking Valley's response to Staff's First Request, Item 2.f. Provide specific details and timeline for the roll out of the proposed AMI meters.

5a. Will Licking Valley first deploy in the areas solely served by TS1 meters, i.e. the areas where substations have not been upgraded to TS2 compatibility?

Answer 5a. LVRECC plans to install the infrastructure in house and have the meters installed system wide within three years of approval. The RF metering is a Mesh type communication. The RF meters communicate from point to point therefore the entire system has to be built out, but the areas with TS1 meters will be deployed first when possible.

5b. Will meter deployment and substation upgrades be done totally in-house?

Answer 5b. Yes

6. Refer to Licking Valley's response to Staff's First Request, Item 4.a.

a. Provide the specific details as to why GE's system is incompatible with Licking Valley's service area.

Answer 6a. See Exhibit 2 – Based on communication with GE and the type and quantity of supporting equipment, LVRECC felt this would not be feasible and would be more costly to maintain.

6b. Provide a copy of any and all correspondence between Licking Valley and GE in connection with the AMI RFP.

Answer 6b. See Exhibit 2

6c. Provide the specific details of the "issues of quality and malfunctioning devices" that Sensus was having with its mesh-style system and explain how Licking Valley became aware of these issues.

Answer 6c. These issues came to our attention from conversations with other cooperative's meter department employees during the time Licking Valley was researching various meter systems. We became aware of some potential quality/safety concerns with the Sensus meters. Subsequent on-line research confirmed these issues (see Exhibit 3). Thousands of meters were being recalled in Canada as a result of an un-usually high number of house fires that were thought to be related to a meter problem.

6d. Provide a copy of any and all correspondence between Licking Valley and Sensus in connection with the AMI RFP.

Answer 6d. See Exhibit 4

7. Refer to Licking Valley's response to Staff's First Request, item 6.a. Explain in detail the conditions under which Licking Valley would return an existing meter back into service in its system.

LICKING VALLEY RURAL ELECTRIC
COOPERATIVE CORPORATION

PSC CASE NO. 2016-00077
RESPONSE TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

Answer 7. When a meter is changed out or removed from service it is brought into the Meter Shop and the "as found" test is performed on the meter. If the meter tests within 2 % accuracy, the cover is removed and the meter is examined for any mechanical problems.

If the meter is deemed to be able to reuse, the meter cover is washed, the meter is adjusted to as close as 100% accuracy as possible, the register is zeroed and the meter is put back into service.

As we move forward with our RF system, we will regulate this process to adapt to our need of the older meters. The TS1 and TS2 meters will be phased out as we implement the RF meter system.

8. Refer to the response to Staff's First Request, Item 6.b., regarding the accumulated depreciation on the TS1 and TS2 meters. Also refer to the response to the AG's First Request, Item 3.a., regarding the date for Licking Valley's next base rate case. Assuming the Commission approves Licking Valley's request in this proceeding and assuming Licking Valley's next rate case will be concluded before the proposed project is complete, how does Licking Valley intend to recover the undepreciated cost of the meters and all other equipment retired due to the AMI system:

Answer 8. To minimize the level of any stranded assets, LVRECC plans to keep the existing TS2 meters currently installed in operation as long as possible. The focus will be to upgrade the TS1 meters first. As noted in our first response, Only approx. 20% of our system has TS2 meters installed and of that 20%, the meters have been 50% depreciated.

9. Refer to Licking Valley's response to Staff's First Request, Item 7.c.

9a. Explain how the data provided, which consists of one customer's usage reading over an approximately four-week period, justifies Licking Valley's conclusion that the results of the 100-meter Pilot Project were satisfactory.

Answer 9a. This data was provided as an example of the data LVRECC evaluated for the pilot. Our pilot program was conducted over two billing periods and the data for each of the meters was being evaluated on a daily basis. If the commission would like to review all of the data collected for the 96 meter pilot, it will be provided upon request.

b. Provide a detailed explanation of the 100-meter Pilot Project "results" and explain how Licking Valley evaluated those results to arrive at the conclusion that the pilot project was satisfactory

Answer 9b. The original "100-meter Pilot Project" was to include 1 collector, 3 routers and 33 meters. This equipment would not cover enough area for adequate results. After discussion with Landis +Gyr Licking Valley agreed that the pilot project needed to include more equipment so that more area could be included for test purposes. The pilot project used 33 routers and 96 meters. (Meters were shipped on a pallet of 96.)

LICKING VALLEY RURAL ELECTRIC
COOPERATIVE CORPORATION

PSC CASE NO. 2016-00077
RESPONSE TO COMMISSION STAFF'S
SECOND REQUEST FOR INFORMATION

By extending the project in the area that was chosen terrain and obstacles would be experienced in a fully deployed system. Landis + Gyr assured Licking Valley that the system would work and that we would not have to accept the equipment if it failed to do what they presented.

After the Pilot Project equipment/infrastructure was installed the meters began to call in immediately. Communication with the meters was successful. The system functioned as expected. The monthly meter reading was uploaded and the member was successfully billed for Kwh's used.

c. Identify any issues that Licking Valley encountered during the implementation of the 100-meter Pilot Project and explain how Licking Valley resolved, or intends to resolve, those issues.

Answer 9c .Two of the test meters were reporting only voltage and temperature to command center due to a programming issue. These meters were programed over the system remotely and the problem was fixed without a trip being made. When the programmable feature worked another aspect of the RF metering was tested and that also performed as expected.

d. Confirm that the total number of RF meters utilized during the pilot project was 100 meters.

Answer 9d. The pilot was to be 100 meters but as a pallet of meters is 96, that is what our vendor sent and we used 96 meters for the actual pilot.

e. Provide a narrative to accompany the data submitted in Exhibit 6 and explain why the data for Friday, November 27, 2015, was not captured.

Answer 9e. See Exhibit 5

10. Refer to Licking Valley's respond to to Staff's First Data Request, Item 12.d. Also refer to the application, Exhibit 5, page 2 of 2, where Licking Valley states that the AMI system will eliminate the need for manual meter reads. Explain in detail why Licking Valley believes that meter reading expenses will not be reduced in connection with the proposed AMI meters.

Answer 10. With LVRECC's current system, one employee spends approximately one day reading meters (primarily 3 phase accounts) that are not communicating with Command Center. Even with the new system, we would anticipate meters having communication issues that would need to be read manually. LVRECC is not eliminating any positions with the new RF meter.

11. Refer to the AG's First Request, Item 22. If the instant application is approved, when does Licking Valley anticipate conducting a study on alternative rate structures?

Answer 11. With RF metering system, Licking Valley will have the capability for alternative rate structures but at this time, we do not have a time line for conducting this study.

John May

From: Deslatte, Gerald
Sent: Tuesday, April 26, 2016 10:26 AM
To:
Cc: Greg Chaney (E-mail); Rhea, Chip; Farnam, Michael
Subject: FW: Public Service Commission in KY

John,
Please see note from the factory below.

If you need anything additional, please let me know.

Thanks
Gerald

Gerald Deslatte
Technical Products Specialist
Smart Grid AMI Solutions, Metering

Irby Utilities
1284 Heil Quaker Blvd
Lavergne, Tn 37086

www.irby.com

From: Hanson, Lisa
Sent: Tuesday, April 26, 2016 9:15 AM
To: Deslatte, Gerald
Cc: Timm, Stevven
Subject: Public Service Commission in KY

Hi Gerald,
This will confirm that Landis+Gyr's lead-time is currently 20 weeks for part# 26-1239 (TS2 Focus AX/SD Endpoint 240V w/o Zigbee).

Thanks.

Lisa Hanson
Customer Account Representative
Order Fulfillment Team

John May

From: Deslatte, Gerald
Sent: Tuesday, April 26, 2016 11:25 AM
To:
Cc: Greg Chaney (E-mail); Rhea, Chip; Farnam, Michael
Subject: FW: Public Service Commission in KY

John,
Please see additional note below

If you need anything additional, please let me know.

Thanks
Gerald

Gerald Deslatte
Technical Products Specialist
Smart Grid AMI Solutions, Metering

www.irby.com

From: Timm, Stevven
Sent: Tuesday, April 26, 2016 10:16 AM
To: Deslatte, Gerald
Subject: RE: Public Service Commission in KY

The current market space seems to be going in the direction of our RF technology. We have not sold a PLC system in the last 6 years in the Southeastern United States. All of our research and development money is being spent on the RF technology and the solutions that go a long with it (DA, Demand Response, Battery Storage and Analytics)

Stevven Timm
Account Executive
Landis+Gyr
Energy Management Solutions

manage energy better

From: Deslatte, Gerald
Sent: Tuesday, April 26, 2016 10:55 AM
To: Timm, Stevven
Subject: FW: Public Service Commission in KY

If you need anything additional, please let me know.

Thanks
Gerald

Gerald Deslatte
Technical Products Specialist
Smart Grid AMI Solutions, Metering

www.irby.com

From: Deslatte, Gerald
Sent: Tuesday, April 26, 2016 9:25 AM
To:
Cc: 'Greg Chaney (E-mail)'; Rhea, Chip; Michael Farnam
Subject: FW: Public Service Commission in KY

John,
Please see note from the factory below.

If you need anything additional, please let me know.

Thanks
Gerald

Greg Chaney

From: Dougherty, Damon (GE Energy Management)
Sent: Monday, August 04, 2014 9:55 AM
To: Greg Chaney
Subject: RE: ConsumerLatLon.xlsx

Good morning Greg. A few things that would help us design the right plan for you...

1. **Substation mounting heights**. We prefer to install communication equipment at the substations, but need some help in understanding if you prefer us to install an 80'-100' pole or construct a steel mini-tower when no existing structure is co-located there. I think one of our competitors always puts in a new steel tower. We need the height.
2. **Outside the substation**. Typical distribution poles are 40', with about 34' above ground. We've seen some improvement on our designs when we raise the equipment by setting new taller poles. What pole height would be acceptable? Can we set 60' or 80' poles in the distribution network? The cost of the poles is minimal compared to installing more equipment. Again, the higher the better.
3. **Leased tower space**. We can work with tower companies to lease space on their structure. This results in a monthly fee that is passed onto the utility. Are you interested in us looking at this option for mounting?
4. What is the **minimum acceptable coverage** you're looking for? Will you accept 96% coverage, 98%, 99%, or does it have to be 100%. Just wanted to make sure we're designing to the same standards everyone else is.

We're looking forward to keeping this discussion going. Since our last propagation study, the P2MP team has revised the analysis software, which has shown a 20% reduction in Access Points and Repeaters. Using the answers from above, I think we'll be able to provide a better plan this time around. BTW, the OnRamp P2MP network is the strongest signal out there. If we mount our equipment just like the others, we'll have much less equipment. Keep that in mind.

I look forward to hearing back from you. We'll get started as soon as we get the feedback from you regarding the above questions.

Damon Dougherty
Sales Manager, Grid IQ™ Solutions as a Service
Digital Energy
GE Energy

GE imagination at work

From: Greg Chaney
Sent: Monday, August 04, 2014 7:37 AM
To: Dougherty, Damon (GE Energy Management)
Subject: FW: ConsumerLatLon.xlsx

Damon,

I don't know if Danny has mentioned this, but we now have the coordinates for our accounts. We found this after most of the vendors had presented their prop study. I felt that it would be appropriate to give this to all the vendors and allow you the opportunity to resubmit your prop study with this updated information.

Attached is the list with the lat/long coordinates. I would like for you to resubmit your study with both the mesh and point to point system. Some vendors are redesigning their routers or boosters to be more easily installed and maintained. This seems to reduce the cost somewhat if it works. Has your system any plans along this line.

We are also getting coordinates an existing tower sites that might be available. I will pass this information along when I get it together.

Let me know what you think.

Thanks
Greg Chaney
Licking Valley RECC

Greg Chaney

From: Dougherty, Damon (GE Energy Management)
Sent: Wednesday, July 23, 2014 12:05 PM
To: Greg Chaney
Cc:
Subject: GE AMI Solution

Greg,
Hope you are doing well. I wanted to reach back out to you and see what direction you're leaning (with respect to the AMI project).

What is unique about the GE solution is that we can offer either RF Mesh or Point-to-Point. When it comes to pricing of the equipment in your territory, the numbers are very similar. The primary difference is the quantity of equipment needed to provide the coverage you're looking for. The RF Mesh system is going to be 2x or 3x the number of equipment compared with Point-to-Point. From a maintenance and management perspective, this might seem like a huge negative.

I'm happy to go back to the Point-to-Point system and re-evaluate the network design if you have additional mounting locations (towers, tall poles, or structures) or better meter location data. I don't want you to make a mistake by selecting a technology that is not right for Licking Valley. Unlike our competitors, we will do the accurate network design up-front to give you a clear picture of what you're getting. We see our competitors discussing a network design that looks great up front, but expands to 2x the equipment quantities in the network build phase. While they may guarantee 100% coverage and a fixed price, they'll always come back with more equipment that you anticipated.

I'm going to stay involved as long as you need me to. Danny Stockdale and I are looking forward to keeping this alive!

Damon Dougherty
Sales Manager, Grid IQ™ Solutions as a Service
Digital Energy
GE Energy

GE imagination at work

GE
Digital Energy

Licking Valley Rural Electric Cooperative

GE Grid IQ™ Connect

Budgetary Pricing Estimate

June 9, 2014

imagination at work

GE
Digital Energy

1. Introduction

This budgetary quotation is to provide Grid IQ™ Connect AMI Solution pricing to Licking Valley Rural Electric Cooperative.

GE Digital Energy, herein referred to as GE, is pleased to submit a budgetary estimate and solution overview for the Grid IQ™ Connect AMI at Licking Valley Rural Electric Cooperative (Licking Valley). Our AMI solution described herein is being offered to Licking Valley as the very best technology offered by GE and our industry partners and domain experts. GE is dedicated to delivering top quality results and cost-effective performance on a global scale.

Our AMI solution aligns with key requirements as expressed by Licking Valley. It provides the utility with a two-way AMI system that can be implemented in phases or a full-scale rapid deployment, and offers Licking Valley the flexibility to expand the system in a way in which aligns with Licking Valley's business requirements. Our proposed solution allows Licking Valley to immediately utilize our preconfigured package of goods and services offered by Grid IQ™ CONNECT including:

Licking Valley Rural Electric
A Touchstone Energy Cooperative

- **Grid IQ™ RF Mesh AMI Network**
- **A fully hosted AMI Head End System**
- **Hosted and managed Outage Detection and Notification System**
- **Hosted and managed Customer/Member web portal**
- **Integration with Licking Valley's NiSC Billing and Meter Data Management System**
- **GE I-210+ residential smart meters**
- **GE kV2c commercial meters**
- **Training, Maintenance, and support for software**

GE includes enhanced meter functionality in all Grid IQ™ CONNECT installations. Every meter provides the capability for net metering, demand measurement, interval data recording, service voltage recording, power quality measures, tamper detection, and Time of Use (TOU). Residential meters include remote connect/disconnect functionality using an under-the-glass service switch. The commercial/industrial meters include voltage auto-ranging, reactive energy measurement, support for KYZ pulse where needed, and transformer line loss compensation. These functions are provided in all program meters and allow support for the more advanced rate structures and configurability needed now and in the future.

GE's proposed RF solution, is based on Trilliant's SecureMesh RF Network, and is designed to provide secure and redundant coverage using two way communications between the utility consumer meter and the AMI head end system. The smart meters will meet the requirements of basic revenue metering as well as support additional functionality including TOU, Peak Pricing, Demand Optimization and other advance smart grid functions.

2. GE Grid IQ™ Connect Scope

It is GE's intent to provide a comprehensive service program that will deliver all of the functionality and benefits of an Advance Metering Infrastructure solution.

GE
Digital Energy

GE's Scope:

Electric Meter Data Services – GE commits to Service Level Agreements for delivery of data and system availability for the full agreed upon Period of Performance of Ten (10) years. GE also offers implementation of future utility options such as TOU, Peak Pricing, and Demand Optimization with no requirement to upgrade meter hardware.

Outage Detection Services (ODNS) - Grid IQ™ CONNECT detects an outage or power loss on monitored meters and send notification to the utility. Outage information will be updated on a GIS map and the consumer web portal.

Asset Monitoring– Provides the utility the ability to register and monitor all meters connected to the distribution system using the required Head-end Software (HES). Meter read problems are logged and classified. This function facilitates detailed meter inquiry and system monitoring.

Consumer Web Portal – Allows residential member/consumers the ability to view utility consumption on a near real time and historical basis.

Electric Meters, AMI Network and Installation Services* – GE will select, acquire, test and deploy* meters and network equipment into the service territory and integrate with existing backhaul communications. Meter and AMI network element installation will be coordinated with the utility billing integration plan to minimize disruptions and ensure customer satisfaction. This installation component is *optional* and can be included in GE's solution offering at the request of Licking Valley.

3. Grid IQ™ Connect Estimated Pricing & Terms

The pricing GE is offering Licking Valley is for budgetary purposes and will require additional information from Licking Valley in the event a firm, fixed price is required. GE has included budgetary pricing for a Hosted/Managed deployment. The following assumptions are made to support this budgetary estimate:

- GE provides Hosted AMI Network Head-end System Software (HES)
- GE provides the Grid IQ Connect RF Mesh AMI Network Equipment
- GE provides all 18,800 residential and commercial electric meters
- Licking Valley to install the meters and communications equipment
- GE provides HES integration with the NiSC Billing and MDMS using MultiSpeak standards
- GE provides a Hosted ODNS and Customer Portal
- GE provides training and installation support for software, meters and network hardware
- GE provides version upgrades, routine software maintenance, program management, operations support and network engineering
- System will be delivered to support approximately 18,800 meters (10% C&I + 90% Res)
- Travel Not Included – Actuals + 5% administrative fee

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Hosted and Managed Service

The proposed budgetary estimate assumes a Hosted and Managed deployment environment. Under this deployment model, GE hosts the software in a GE data hosting center for the utility to access and utilize. Hard assets (meters, communications equipment, etc.) are owned by the utility.

Ideal For: Utilities who want control of software without having to maintain the IT infrastructure and/or purchase software licenses.

	Unit Price	Quantity	Total
Hosting and Management of SaaS Applications (HES, ODNS, and Web Portals)	$ 0.60 per meter per month	18,800	$ 11,280
Meters (res)	$ 104.00	16,920	$ 1,759,680
Meters (C&I)	$ 270.00	1,880	$ 507,600
Gateways	$ 7,395.00	3	$ 22,185
Repeaters	$ 325.00	700	$ 227,500
Extender Bridges	$ 4,300.00	90	$ 387,000
	Initial Costs	**$**	**2,903,965**
	Annual Recurring Cost	**$**	**135,360**
	Ten Year Costs	**$**	**3,870,565**

4. Budgetary Quotation

This is a Budgetary Quotation, as such it is not an offer or acceptance by GE Digital Energy and it does not create any obligation on the part of GE, to enter into any agreement or to provide any particular goods or services at any particular price. Such obligations will only arise upon completion of a final, agreed contract between the parties.

The pricing is estimated only and may not be based upon complete information about the scope, facility, schedule, proposed operations or other factors that may affect the ultimate final price. Any installation services in this budgetary estimate are based on GE historical experience with similar projects or standard industry estimating guidelines. Before a firm price proposal that includes installation services can be made, a full inventory and locations of metering must be provided, a site walkthrough must be conducted to identify network installation sites, and integration details must be reviewed with Licking Valley personnel. Accordingly, the budgetary pricing is subject to change, and no warranty or representation is given, either express or implied, concerning the information in this Budgetary Quotation.

This Budgetary Quotation, including the pricing estimate, is based on GE Digital Energy's standard service level agreements. Deviations from such terms may result in an adjustment of the quotation. GE is prepared to promptly work with you to finalize pricing and complete a mutually-acceptable contract.

GE
Digital Energy

5. Partnership and Alliance Relationships

GE has been manufacturing meters for more than 100 years, as well as distribution automation products, wireless communication products, software, integration teams and industry experts. GE has thousands of products and services that serve the energy market without the need of third party suppliers.

GE also has numerous alliances and strategic relationships in the energy industry. In order to meet a customer specification or if GE determines the best solution for a customer is not a GE product, GE leverages alliances and supplier agreements to fill any product gaps and provide complete solutions for our customers. Some of these relationships are governed by strict non-disclosure agreements.

In regards to the Grid IQ™ Connect offering, GE has developed relationships with a host of suppliers that can assist in the project depending on requirements to deliver a world class solution. Based on detailed site evaluation and surveys, GE will employ the right technology to deliver the service levels and performance levels required for the service area. If the optimal technology is not GE owned, GE will solicit one of our many suppliers for assistance. Depending on the project timing and complexity, GE may employ these firms for software integration work, business process mapping, operational transition and change management documentation and training.

GE has non-closure agreements (NDA's) in place with all our subcontractors and suppliers.

GE is a publically traded company and litigation with both clients and customers is public knowledge and regularly disclosed.

Thank you,

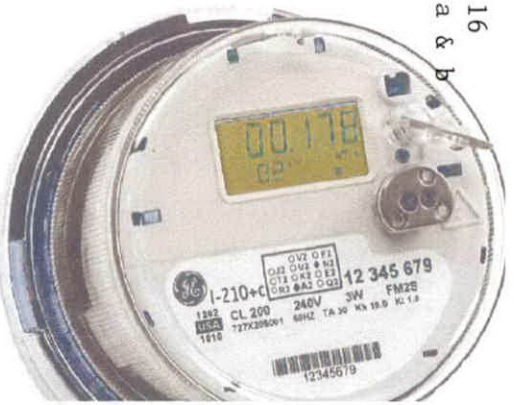
DAMON DOUGHERTY
SALES MANAGER, GRID IQ™ SOLUTIONS AS A SERVICE
DIGITAL ENERGY
GE ENERGY

GE Grid IQ Connect P2MP AMI

Propagation Study Results
5/21/2014

Presented by:
Damon Dougherty
GE Digital Energy

imagination at work



Deployment Statistics

- Service area of 1,200 sq miles
  - 16,028 addresses given
- 12,631 correctly geocoded into service area
  - Average density of 10.5 ep / sq.mi.
- 25 possible communication towers
- 9 substation locations
- 0 distribution poles
  - Meter locations used as proxy for distribution poles
  - Assumed 80 foot pole

Licking Valley Rural Electric
A Touchstone Energy Cooperative

imagination at work

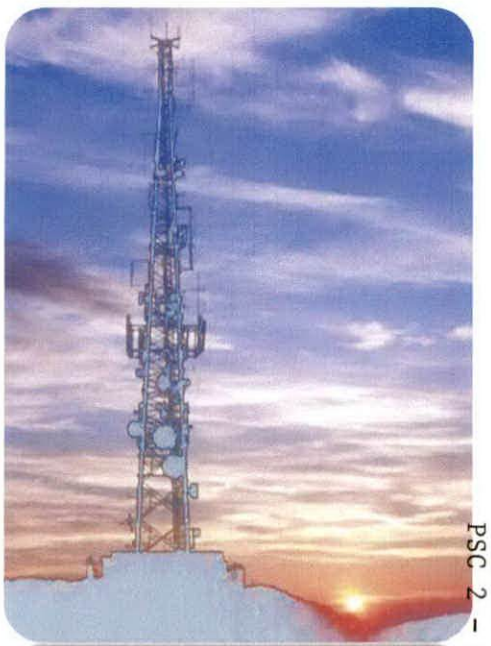
Modeling Assumptions

Potential Base Station Locations

- Used provided locations and heights
- Antennas above nearby structures and foliage

Propagation Assumptions

- 29, 32, 35 dB clutter
- 3 dB rise over thermal interference
- Ergodic Channel
- Endpoints at 1 m above ground level
- With antenna diversity
- 3 dB additional loss to endpoint from meter enclosure



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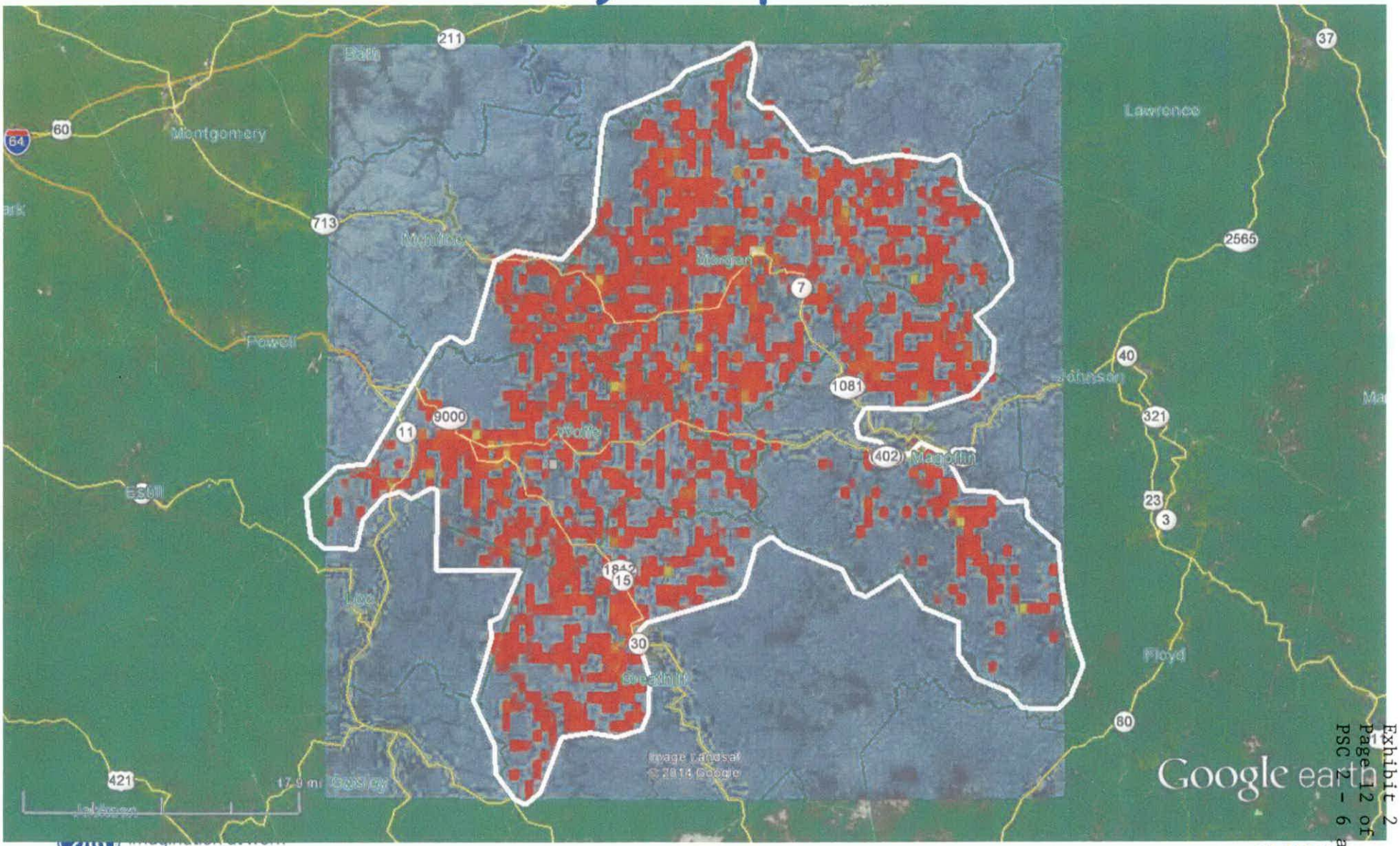
End Point Density Map



5/27/2014

Access Point and Repeater Options

Number of sites	Real Time Coverage	Billing Coverage	APs	Repeaters	Endpoints per Site
34	31.21%	54.04%	-	-	371
100	74.31%	85.61%	-	-	126
200	86.70%	94.38%	-	-	63

All Towers & Substations

imagination at work

General Electric – Point to Multi-Point AMI Seminar

Purpose: GE, along with strategic partner OnRamp Wireless and BESCo, will be hosting an informational seminar to provide Kentucky-area Cooperative utilities with technology details associated with GE's Grid IQ P2MP AMI solution.

Location: Nolin RECC Offices – 411 Ring Road, Elizabethtown, KY

Date/Time: April 16, 2014 from 9am-4pm EST

Cost: Free to all KY Cooperatives. RSVP with Damon Dougherty for Lunch

Agenda

Welcome (Greg Harrington – Nolin RECC)	9:00am
Introductions and Kickoff (Danny Stockdale - BESCo)	9:10am
SaaS Offering Overview (Damon Dougherty - GE)	9:20am
Communications Technology Deep Dive Overview of system, advantages, bandwidth, speed, interval data collection, residential load control integration, support for other 'smart grid' devices, and customer examples.	10:00am
Lunch Break – *Provided by GE*	11:30am
Metering (Erik Larabee - GE) Metering overview, programming, soft switches, RCRD features, and safety features.	12:15pm
Software Overview (Jeff Magee - GE) Hosted environment (security, testing, cert, etc), MultiSpeak integration, and demonstration of software	1:30pm
Deployment Strategy (Damon Dougherty - GE)	2:45pm
Questions and Answers (GE, ORW, BESCo)	3:00pm

BROWNSTOWN Electric Supply Co.

ONRAMP WIRELESS

GE imagination at work

Please contact Damon Dougherty via email at damon.dougherty@ge.com for more information or to RSVP.

Meeting attended my Licking Valley RECC Meter Department employees: Greg Chaney & Tommy Walter

Greg Chaney

4-10-14

Hi Greg.
We are working through the data you sent for the towers and substations. Can you give us some guidance on the tower heights for the App Wireless sites and the E KY Power sites? We're looking for a rough guess on the heights. Out of the 35 tower locations, only 2 have a height listed. Thank you!

Damon Dougherty
GE Digital Energy

Ok. We plan to be there at Nolin.

Dougherty, Damon (GE Energy Management) mailto:Damon.Dougherty@ge.com

Greg,
I just wanted to let you know that I submitted the location data to our RF engineers. We have a backlog of Prop Studies but we'll try to have it ready by next week at the seminar.

Thank you for your interest!
Damon Dougherty
GE Digital Energy

Greg Chaney mailto:chaneyg@mrtc.com

Greg Chaney

Greg,
I just wanted to let you know that I submitted the location data to our RF engineers. We have a backlog of Prop Studies but we'll try to have it ready by next week at the seminar.

Thank you for your interest!
Damon Dougherty
GE Digital Energy

Fire guts Mission home after BC Hydro smart meter installed

BC Hydro claims a Mission homeowner is ultimately liable for a fire that originated at the base of a smart meter one day after it was installed.

Photograph by: Keri Sculland , Port Alberni Times

BC Hydro claims a Mission homeowner is ultimately liable for a fire that originated at the base of a smart meter one day after it was installed.

A report by the Mission fire department said the blaze, which destroyed Trish Regan's house in the 7900-block of Burdock Street and leaped to the roof of a neighbouring home on June 15, originated at an insulating "lug" in the lower left corner of the meter base. The report says the terminal, which attached the meter base to the home, appeared cracked and "radiated heat to combust the wall at or near the meter base."

The base is the mounting plate for the meter, which measures how much electricity a home consumes during each utility-service billing period. Electricity must pass from the meter through the lugs to connect with the house wiring.

BC Hydro maintains the meter base is part of the house and thus any damage or faulty wiring is the customer's responsibility.

Spokeswoman Cindy Verschoor said the Crown corporation has fixed about 1,000 homes with faulty or damaged wiring before it installed the smart meters, but residents should be ensuring they have electricians check the wiring regularly.

"We are fixing that for the customer free of charge as long as they give us permission," she said. "Those are cases of a fire risk. They are potential accidents waiting to happen.

"We're always [doing work] on good faith that the customer has working, functional equipment to support our infrastructure."

The meter bases function like household electrical sockets and are built to withstand meters being plugged in and pulled out multiple times, Verschoor said.

If a resident is concerned about their meter base, they can call Hydro to come unlock the meter and remove it for about $100, she added.

Verschoor acknowledged the technician in Regan's case did not see the crack when installing the smart meter at her home, but wouldn't speculate as to what caused the damage, saying the issue is still under investigation.

"It's possible there was a pre-existing condition that wasn't evident," Verschoor said.

But Regan argued she had no idea she was responsible for the fire, noting smart meters are locked in place on the base and she has no access to them. Furthermore, Regan said the crack could have been caused by the installer, noting that she wasn't home when he arrived, but her daughter witnessed him trying three or four times to jam the meter onto the base.

"If there's an existing crack they're not supposed to put a meter on it," she said. "I've lived in my house for 20 years and the day after they put in a smart meter, it burns down."

Regan is also increasingly frustrated by the Mission fire department, who initially told her the fire was caused by a crack on the base of the smart meter; it later revised its verdict to "electrical in nature." Her insurance company filed a freedom of information request, which indicated the fire did originate at the base of the smart meter.

The blaze destroyed Regan's home, three vehicles in her driveway, and damaged her neighbour's house.

The smart meter itself was eliminated as the cause of the fire, and BC Hydro maintains it did not see any cracks when the meter was being installed. The utility said out of the 1.5 million smart meters it has installed to date, only 250 residents have complained of faulty meter bases.

ksinoski@vancouversun.com

Fires spark during smart meter installations

ARLINGTON - Smart meter installations are being blamed for two house fires in Arlington this week.The problem isn't the meters themselves, but instead what's happening to electrical wiring.

The first fire happened Monday on Brook Hill Lane and the second happened Tuesday on Grants Parkway. Arlington fire investigator Morkita Anthony found that when the old meters were pulled out, the main electric feeds to the houses were accidentally pulled as well.

"What it's doing is making contact somehow with the electric box or the wiring inside and causing a short, which is causing a fire," Anthony said.

There was nothing wrong with the old meters. They were replaced as part of Oncor's plan to install smart meters. Smart meters are digital meters that monitor electricity usage in near real time. But, while the homeowners had no control over whether the installation would happen, it's not clear yet who will pay for the fires and the damage.

"We're working with the homeowners," said Jeamy Molina, an Oncor spokeswoman. "The insurance companies to do whatever we can do to try to help them resolve these issues."

It's not the first time installation of the smart meters has caused a problem. Molina said about one million smart meters have been installed in Texas by Oncor so far and thousands have revealed wiring problems with the bases. Oncor paid electricians to correct the problems. Molina said that to her knowledge, this week's fires in Arlington are the only fires to happen as a result of the wiring issues.

Anthony contends the fires are no one's fault, and are simply the result of time. Both houses were a little older, built in the 1960s and '70s.

"It's just, again, the age of the houses, settling of the houses, settling of the land around it and those wires being pulled tight slightly by that taking place," Anthony said.

NETWORKING/AMI

More Fires, More Smart Meter Recalls for Sensus

Utilities pull 105,000 meters in Canada, 70,000 in Oregon; Sensus says it's not at fault

by Jeff St. John
August 04, 2014

Smart meter maker Sensus is back in the news for a problem it would rather believe is not its fault: smart meters that overheat and catch fire.

Late last month, utility Portland General Electric announced it was replacing 70,000 Sensus meters (http://www.oregonlive.com/business/index.ssf/2014/07/pge_replacing_some_electricity.html) -- specifically, its 2S Gen3 RD models -- after three reports of fires caused by overheating of the meter-home interconnection.

That blow was followed by the Saskatchewan government's Wednesday decision to remove 105,000 Sensus smart meters (http://www.cbc.ca/news/canada/saskatchewan/saskpower-to-remove-105-000-smart-meters-following-fires-1.2723046) deployed by utility SaskPower, after finding eight reports of overheating, some resulting in fires on the outside of the home. SaskPower is expecting the replacement to take six to nine months and cost about $15 million, compared to the $37 million it has spent so far on its entire smart meter rollout.

Sensus announced Monday (http://sensus.com/web/usca/news/display/results-of-smart-meter-investigation-point-to-external-factors-press-release) that it had tested the eight meters in question, out of an installed base of 175,000 meters for the utility. The results indicated "long-standing industry issues: one was caused by an issue with a meter base attached to a home, three were caused by utility over-voltage, two were caused by water intrusion through the meter base, and one remains under investigation," it wrote.

In other words, it appears there's no link between reports of fires and problems with Sensus' meters themselves. Unfortunately, that didn't help the Raleigh, N.C.-based smart meter and grid communications vendor back in 2012.

That's when Pennsylvania-based utility PECO halted installation of Sensus meters after reports of about two dozen fires (http://www.greentechmedia.com/articles/read/peco-halts-smart-meter-installation-after-meter-overheating2). PECO's investigation did not find that Sensus' technology was at fault. Still, PECO replaced Sensus with Landis+Gyr (http://www.greentechmedia.com/articles/read/peco-resumes-deployment-without-sensus-meters) meters for rest of its rollout.

Fires are far from unknown in other smart meter deployments, and can usually be traced back to improper installation, water leakage or other mundane causes. They're also part of a broader set of fire risks and dangers associated with connecting buildings to the grid, as the *Vancouver Sun* *(http://www.vancouversun.com/news/Editorial+Fire+concerns+over+smart+meters+appear+overblown/7067839/stc* reported in 2012 (http://www.vancouversun.com/news/Editorial+Fire+concerns+over+smart+meters+appear+overblown/706783 after utility BC Hydro saw backlash for two reported smart-meter-caused house fires.

That report notes that there are about 480 fires related to electrical malfunctions in homes over any given five-year period in British Columbia, and about twenty-two of those are related to the meter and distribution panel. It also noted that smart meter installers had actually discovered more than 1,000 instances of old meters being improperly installed, potentially preventing fires rather than causing them.

BC Hydro is using Itron meters, and we haven't seen that smart meter maker's name connected to fire concerns. Sensus, on the other hand, has been linked to several fires in a row. That could be giving it a serious public relations problem with anti-smart-meter customers and risk-averse utility executives alike.

Jeff St. John

Reporter
Greentech Media

Reporter covering the green technology space, with a particular focus on smart grid, demand response, energy storage, renewable energy and technology to integrate distributed, intermittent green energy into the grid.

Smart meter fires: Sensus design at fault, says Canadian review

Investigators in Canada have pointed to "shortcomings" in the design of Sensus Generation 3.3 Meters as the cause of eight smart meter units catching fire following utility SaskPower's widespread rollout across the province of Saskatchewan.

A review by the Crown Investments Corporation (CIC), the holding company that manages the Government of Saskatchewan's assets including utilities, released on Monday found that "there is evidence that this particular model does not seal properly to keep out moisture and contaminants, both of which could affect meter function".

The review counters public concern that the fires were caused by installation staff, that were insufficiently trained for the job. It states: "there is no evidence to suggest a problem with either the sockets or the competency of the installation crews.

"Conditions such as high electricity loads, which can lead to hot sockets, were not present at the time of the fires.... [ ] it is unlikely that hot sockets caused the fires."

The review did point the finger at SaskPower for not "adequately consider [ing] the potential for significant meter failures resulting in damage to homes", leading to the resignation of CEO Robert Watson earlier this week.

Sensus developing new meter

SaskPower has confirmed however that will it press on with its smart

meter rollout and is working with US meter manufacturer Sensus to develop a new meter tailored to its needs, local media report.

As part of Sensus' settlement agreement with SaskPower following the product recall in July 2014, the manufacturer will develop a meter to suit Saskatchewan's conditions.

It is already working on a new, more waterproof generation of meters.

The report confirms that "at that time, SaskPower and the Government will determine if they are satisfied that a new generation meter is safe and reliable, and only then will resume the smart meter installation program".

Bill Boyd, the minister responsible for SaskPower, said the utility is sticking with Sensus for the time being because the technology the meters use is "very, very good for a widespread province like ours". Plus, Mr Boyd said he believes the problems associated with the smart meters "can be corrected".

The meters will have to meet new requirements set out by Underwriters Laboratories, which weren't in existence when SaskPower first began the smart meter program.

The new meters must be developed within three years. Robertson Stromberg, the legal consultant involved in the CIC review, suggested SaskPower consider product liability insurance - which senior litigation partner Gary Young said is uncommon for utilities - in the future.

Slower AMI deployment

The review also suggests that any future rollout adopts "a more measured approach".

Electrical engineer Jack Ritenburg, who contributed to the review, said he recommends that the entire system - advanced metering infrastructure

network, billing interface and meter temperature alarms - is fully functional before SaskPower embarks on a province wide installation plan.

Product recall

Meanwhile, interim CEO Mike Marsh, promoted from his position as vice president and chief operations officer, confirmed that the energy company had already replaced 33,000 meters and "were on track" to recall all 105,000 by the March 15, 2015 deadline set in the CIC review.

Mr Ritenburg gave assurances at a news conference on Monday that the meters should hold up over the winter: "We don't think snow is going to be as difficult for things as just heavy, heavy rainfall.

"You'd need a lot of snow to be equivalent to four inches of rain."

The CIC review was based on reports prepared by PricewaterhouseCoopers (PwC) and Ritenburg & Associates (Ritenburg) and CIC's independent legal experts, Robertson Stromberg LLP.

NRTC

Sensus

Quote

Date 7/1/2014
Quote # 406

Line #	Part #	Item Description	Qty	Unit Price	Ext. Price
24	UTI-SEN-5396353704402 LAPTOP	TRANSCEIVER AY USB MICRO (THUMB BUDDY) PENA#910-0010740	2	360.00	720.00
25	Subtotal	Subtotal Deployment Tools			13,875.00
26					
27		System Services			
28	UTI-SEN-5396064700001	PROPAGATION STUDY <25,000 (INCLUDED)	0	600.00	0.00
29	UTI-NRTC-ENGINEERING	ENGINEERING SERVICES (Site Survey)	16	995.00	15,920.00
30	UTI-NRTC-TGB-TURNUP	TGB TURN UP Engineer checks out collector/day	16	1,940.00	31,040.00
31	UTI-SEN-5396383700130C	IMPLEMNT LICNS RNI SFTWR 10-20 SaaS RNI SFTWR 10,001-20K One-Time RNI Setup Fee Billed on Completion of Hosted RNI Setup on site educatun + on line	1	14,120.00	14,120.00
32	UTI-SEN-5396383700133C	STANDARD EDUCATION RNI SOFTWAR ENDPOINTS: 10,001-20K	1	6,700.00	6,700.00
33	UTI-SEN-5396383700023	FLEXNET SYSTEM SUPPORT SERVICE (REQUIRES CUSTOM DESCRIPTION IN ADDITIONAL INFORMATION) (IT INTEGRATION SUPPORT)	1	12,500.00	12,500.00
34	UTI-NRTC-PRJMGT-SENSUS-AMI	PROJECT MANAGEMENT - SENSUS AMI	1	35,000.00	35,000.00
35	UTI-SEN-5396383700081	INTERFACE RNI TO Standard CIS	0	5,900.00 →	0.00
36	TBD	Interface to OMS	0	11,800.00 →	0.00
37	Subtotal	Subtotal System Services			115,280.00
38					
39					
40		ANNUAL MAINTENANCE COSTS			
41	UTI-SEN-5396383700033	FLEXWARE SOFTWARE MAINTENANCE - Included in SaaS Fee above	1	0.00	0.00
42	TBD	Part #UTI-SEN-5396390900011, LICENSED SPECTRUM FCC (Begins at Basestation Commissioning) From Sensus	16	940.00	15,040.00 Yearly 1.5% Fee
43	TBD	OPTIONAL EXTENDED WARRANTY - S50/S100 BASESTATION - INCLUDES NETWORK OPERATIONS TECHNICAL SUPPORT, SPARE AND REPLACEMENT PARTS (Begins at first anniversary of Basestation Commissioning)	0	2,940.00	0.00
44	TBD	OPTIONAL EXTENDED WARRANTY - D50/D100 BASESTATION - INCLUDES NETWORK OPERATIONS TECHNICAL SUPPORT, SPARE AND REPLACEMENT PARTS (Begins at first anniversary of Basestation Commissioning)	0	5,880.00	0.00
45	Subtotal	Total Annual Maintenance			15,040.00
46					
47					
48					
49					
50		ESTIMATED ANTENNAS/ASSOCIATED COMPONENTS AND INSTALLATION			
51	TBD	Antennas and Associated Components for 1 Basestation Sites (Estimated Pending Site Surveys)	16	3,500.00	56,000.00
52	TBD	Antenna Installation (Estimated Pending Site Surveys)	16	2,950.00	47,200.00
53	Subtotal	Total Antennas/Installation			103,200.00

2121 Cooperative Way
Herndon, VA 20171
(703) 787-0874

Quote

Date 7/1/2014
Quote # 406

NRTC AMI Solutions Quotation

Member #: 021056
Quote prepared by: Martin, Dick
Quote valid until: 7/31/2014

Bill To

Licking Valley Rural Electric Cooperative Corpor...
271 MAIN STREET
PO DRAWER 605
WEST LIBERTY KY 41472

Ship To

Licking Valley Rural Electric Cooperative Corpora...
271 MAIN STREET
PO DRAWER 605
WEST LIBERTY KY 41472

Please circle if Tax Exempt: Yes No
If yes, please furnish Sales Exemption Form

Shipping Contact: Kerry Howard
Shipping Contact #: (606) 743-3179

Line #	Part #	Item Description	Qty	Unit Price	Ext. Price
1		AMI SYSTEM HARDWARE/SOFTWARE			
2		Infrastructure			
3	TBD	Part #UTI-SEN-SSX4XX3XXXXXXXX, SaaS W/RNI 3.X only (Annual Fee Based on Five Year Contract) Hosted cost	1	32,000.00	32,000.00
4		SaaS Note: Please see SaaS descriptive document attached below. Member will be responsible for Licensed Spectrum Fees and Optional Extended Basestation Warranty Fees.			
5	TBD	UTI-SEN-5396353704091 FLXNT BS STATN D50 OUTDOOR PCS collector SCADA Ready w/o SCADA +- 20,000	16	61,180.00	978,880.00
6	UTI-SEN-5396353704301	FLXNT BS M400B 200KHZ PCS WALL W/WALL MNT BRACKET SNGL SECTOR (to be used if needed) Inside	0	21,176.00	0.00
7	Subtotal	Subtotal Infrastructure			1,010,880.00
8					
9		Meters			
10	UTI-SEN-A02GES009000000	ICONA 2S FLEXNET W/DEMAND AND LOAD PROFILE	16,000	77.00	1,232,000.00
11	UTI-SEN-A02GES509000000	ICONA 2S FLEXNET WITH 200 AMP SERVICE DISCONNECT – Voltage + Hot Log IN Gen 4 Auto 4:3C (over Air Programable)	0	126.00	0.00
12	UTI-SEN-A02HES009000000	ICON-A FORM 2S 320A KWH DMD/LP CVR/PLA INTEGRATED FLEXNET 240V NON-PHAN-LOAD	0	98.00	0.00
13	UTI-SEN-A03EES009000000	ICON-A FORM 3S 20A KWH DMD/LP CVR/PLA INTEGRATED FLEXNET 240V NON-PHAN-LOAD	0	93.00	0.00
14	UTI-SEN-A04EES009000000	ICONA 4S CL20 240V DEM LP	0	92.00	0.00
15	TBD	Zigbee adder for iConA meters	0	29.00	0.00
16	TBD	ELSTR S-BS SINGLE-PHASE FORMS A3TL DEMAND/TOU/128KLP AMR-FLXNT W/O-LINK W-HANGR	0	254.00	0.00
17	TBD	ELSTR S-BS POLYPHASE FORMS A3TL 120V-480V DEMAND/TOU/128KLP AMR-FLXNT W/O-LINK W-HANGR	0	287.00	0.00
18	TBD	ELSTER A3 2 QUADRANT REACTIVE METERING ADDER	0	49.00	0.00
19	Subtotal	Subtotal Meters			1,232,000.00
20					
21		Deployment Tools			
22	TBD	Trimble NOMAD model 900le	3	3,985.00	11,955.00
23	UTI-SEN-5396353704404 can be combined	SMPCL AY - COMMAND LINK SMART POINT COMMAND LINK HANDHELD PROGRAMMER TOOL	3	400.00	1,200.00

Quote

Date 7/1/2014
Quote # 406

Line #	Part #	Item Description	Qty	Unit Price	Ext. Price
54					
55					
56		Pricing Notes:			
57		1. Sensus prices are FOB Destination, Freight Prepaid. Prices do not include installation, applicable taxes, or freight charges for non-Sensus equipment.			
58		2. Actual travel and living expenses will be added to Project Management, Setup, Configuration, Support, and Training activities that cannot be accomplished remotely.			
59		3. Annual Software Maintenance and Basestation Extended Warranty Fees begin at the first anniversary of commissioning and are subject to annual automatic 3% price increase. Licensed Spectrum Fees begin at basestation commissioning and are likewise subject to annual automatic 3% price increase.			
60		4. Annual SaaS Fee is subject to annual automatic 3% price increase. Member can continue SaaS following initial 5 year term at then current prices.			
61		5. The above pricing is offered subject to the Terms and Conditions contained in the attached NRTC SENSUS AMI AGREEMENT			
				Total	$2,490,275.00

Tower or Pole
100' Height +-
Can be pole mounted But Not Recomended 2 mile Radius
Radius 8-9 miles
Ex. Greasy water tower Didn't look Good?

Please make PO Payable to: NRTC - PO Box 1506 - Merrifield, VA 22116-1506

Member Signature _____

Print Name & Title: _____

PO#: _____ Date: _____

NRTC TERMS AND CONDITIONS OF SALE
(LARGE PRINT VERSION AVAILABLE UPON REQUEST)

1. General. The terms and conditions contained herein constitute the complete agreement between NRTC and Purchaser regarding this sales transaction (the "Agreement") and supersede any and all prior communications concerning this specific transaction. No course of prior dealings and no usage of the trade shall be relevant to supplement or explain any terms used in this Agreement. This Agreement is in addition to any relevant NRTC/Member Agreement, and in the event of conflicting provisions, the more restrictive provision shall govern, as determined by NRTC.

Acceptance by NRTC of Purchaser's order is expressly limited to and conditioned upon Purchaser's acceptance of the terms and conditions contained herein, which may not be changed or waived unless signed in writing by a duly authorized representative of NRTC at its home office in Herndon, Virginia. Any additional, inconsistent or different terms and conditions stated by Purchaser or contained in Purchaser's purchase order or other documents supplied by Purchaser are hereby expressly objected to and rejected

2. Orders. All orders are received subject to acceptance by a duly authorized representative of NRTC at its home office in Herndon, Virginia. Typographical and clerical errors in quotations, orders, and acknowledgments are subject to correction by either party if made within fifteen (15) days from the date of the making thereof.

3. Payment Terms. Unless specified to the contrary in writing by NRTC's CFO or CEO, payment terms are net thirty (30) days from the date of the invoice. If payments are not made when due, Purchaser shall pay, in addition to the overdue payment, a late charge equal to the lesser of one and one-half percent (1½%) per month or the highest applicable rate allowed by law on all such overdue amounts. Purchaser shall bear all costs of collection incurred by NRTC for overdue amounts, including attorneys fees.

Unless otherwise specified, all payments of invoices shall be in United States dollars and should be remitted to NRTC by mail at the address indicated on the invoice or by electronic funds transfer to the account and according to the routing on the invoice. Receipt of payment will be determined by the date the payment is received at NRTC's remittance address or when electronic funds have been received in our designated account. If Purchaser delays delivery, date of readiness for delivery shall be the date of delivery for payment purposes.

4. Prices. Prices are subject to adjustment to NRTC's prices in effect at the time of shipment. All prices shall be in United States dollars, unless otherwise specified. Unless otherwise specified, prices do not include sales, use, services excise or other taxes of any kind, and Purchaser agrees to pay such taxes upon NRTC's request or to provide NRTC with tax exemption certificate(s) applicable to the taxable transaction(s). Unless specified to the contrary in Section 5, prepaid freight and installation costs (where applicable) will be in addition to the purchase price. Where price expressly includes transportation or other shipping charges, any increase in transportation rates or other shipping charges from date of quotation or purchase order shall be paid by Purchaser.

5. Shipment. Unless otherwise specified herein, all orders are delivered F.O.B. point of shipment, with the method of transport and route to be selected by NRTC. Where scheduled delivery is delayed due to causes specified in Section 6 below, NRTC may deliver such product(s) by moving it to storage for the account of and at the risk of Purchaser. NRTC reserves the right to deliver in installments. Any special handling costs and costs of insurance shall be paid by Purchaser. Notwithstanding any agreement with respect to delivery terms or payment of transportation charges, risk of loss or damage shall pass to Purchaser and delivery shall be deemed to be complete upon delivery of the product(s) by NRTC to a private or common carrier or upon moving into storage, whichever occurs first, at the point of shipment.

6. Delivery Dates. NRTC endeavors to make shipments of orders as scheduled; however all shipment dates are approximate, and NRTC reserves the right to readjust shipment schedules. If NRTC suffers delay in performance or delivery due to any cause beyond its control, including acts of nature, acts or omissions of Purchaser, acts of government, fires, floods, strikes or other labor disturbances, war, riot, sabotage or delays in obtaining from others suitable services, materials, components, equipment or transportation, the time of performance or delivery shall be extended for a period of time equal to the period of the delay and its consequences. NRTC will give to Purchaser notice in writing within a reasonable time after NRTC becomes aware of any such delay.

7. Order Cancellation. All orders subject to this Agreement are mutually understood by NRTC and Purchaser to be firm, non-cancelable purchase orders. Notwithstanding the foregoing, NRTC may, in its sole discretion allow Purchaser to cancel an order upon Purchaser's prior written notice and upon Purchaser's payment of reasonable and proper termination charges, including, but not limited to all direct and indirect costs associated with the order incurred prior to the effective date of notice of termination and all charges incurred by NRTC in respect to the termination. In addition, a fixed sum of fifteen percent (15%) of the final total selling price for cancellation of the order will be due from Purchaser to compensate NRTC for disruption in scheduling, restocking and other indirect costs.

8. Order Modifications/Changes. Purchaser-requested order changes, including those affecting the identity, scope and delivery of the product(s) must be documented in writing and approved by an officer of NRTC of the senior vice president level (or higher), and NRTC reserves the right to reject any change it deems inadvisable, inconsistent with its policies or incompatible with its capabilities. If any such change causes an increase or decrease in the cost of or the time required for performance of this order, an equitable adjustment shall be made in the order price or delivery schedule or both, and the order shall be modified in writing accordingly.

9. Claims. Purchaser's claims for lot shortages, correction of erroneous order charges or other errors must be made in writing and delivered to NRTC at its home office in Herndon, Virginia within fifteen (15) days of Purchaser's receipt of the product(s). Claims outside of this time period will be disallowed.

10. Returned Goods. If, upon formal inspection and/or testing of the product(s), Purchaser is of the opinion that the product(s) is defective or otherwise unacceptable, Purchaser shall notify NRTC in writing. Prior to making any return to NRTC, Purchaser must obtain a Return Authorization ("RA") from a duly authorized representative of NRTC. The following conditions also apply to returns: (1) all products returned to NRTC must include the RA and must be properly packed and shipped; delivery of returns without the RA or returns not properly packed and/or shipped will not be accepted; (2) all returns are subject to inspection and/or testing by NRTC as it deems appropriate. If NRTC determines that the returned product(s) appears to be in compliance with order specifications, it shall notify Purchaser; (3) all product(s) must be returned by delivery F.O.B. destination to NRTC-specified locations. Title and risk of loss on all product(s) shall remain with Purchaser until such returned product(s) is received by NRTC; (4) NRTC will allow a credit on all defective product(s) returned in accordance with this paragraph, calculated on a last invoice basis; (5) all product(s) under the warranty of Section 11 will be repaired or replaced at the original invoice price. Purchaser shall not be charged for parts and labor associated with replacement or repair. All returns are subject to the provisions of this Section and Section 9 governing claims. Any product(s), which has been modified, altered, damaged or used by Purchaser, may not be returned.

11. Limited Warranty. Unless otherwise provided in a third party warranty or licensing agreement, NRTC warrants that at the time of shipment, the product(s) shall be of marketable quality and free from defects in material and workmanship and shall be of the kind and quality designated or specified by NRTC in writing. This warranty shall only apply to product defects reported in writing to NRTC within ninety (90) days from the latter of the date of shipment or the date of the NRTC invoice. This warranty is strictly limited and does not apply or extend to altered products(s) or damage caused by accident, the elements, abuse, misuse, temporary heat, overloading or by erosive or corrosive substances or the alien presence of contaminants in the product(s).

EXCLUSIONS FROM WARRANTY: THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, ORAL OR EXPRESSED OR IMPLIED, INCLUDING ALL WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION OF THE PRODUCT (S). THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE CONTAINED IN THIS SECTION 11 AND TO THE EXTENT PERMITTED BY LAW THERE ARE NO IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. THE PROVISIONS OF THIS SECTION 11 AS TO DURATION AND LIMITATION OF LIABILITY SHALL BE THE SAME FOR BOTH IMPLIED WARRANTIES (IF ANY) AND EXPRESSED WARRANTIES.

Satisfaction of this warranty is limited to: (a) the replacement of the product(s) by NRTC; (b) repair or modification of the product(s) by NRTC; or (c) issuance of a credit for the non-conforming product(s). The foregoing are the Purchaser's exclusive remedies and the extent of NRTC's liability for breach of implied (if any) and express warranties, representations, instructions or defects from any cause in connection with the sale or use of the product(s). **IN NO EVENT WILL NRTC BE LIABLE FOR INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND. NRTC'S MAXIMUM CUMULATIVE LIABILITY RELATIVE TO ALL OTHER CLAIMS AND LIABILITIES, INCLUDING THAT WITH RESPECT TO DIRECT DAMAGES AND OBLIGATIONS UNDER ANY INDEMNITY, WHETHER OR NOT INSURED, WILL NOT EXCEED THE COST OF THE PRODUCTS GIVING RISE TO THE CLAIM OR LIABILITY, REGARDLESS OF ANY ADVICE OR RECOMMENDATION THAT MAY HAVE BEEN RENDERED CONCERNING THE PURCHASE OR USE OF THE PRODUCT (S). ANY ACTION AGAINST NRTC MUST BE BROUGHT WITHIN EIGHTEEN MONTHS AFTER THE CAUSE OF ACTION ACCRUES. THESE DISCLAIMERS AND LIMITATIONS OF LIABILITY WILL APPLY REGARDLESS OF ANY OTHER CONTRARY PROVISION OF THE AGREEMENT AND REGARDLESS OF THE FORM OF ACTION WHETHER IN CONTRACT, TORT OR OTHERWISE, AND FURTHER WILL EXTEND TO THE BENEFIT OF NRTC'S VENDORS AND OTHER AUTHORIZED RESELLERS AS THIRD-PARTY BENEFICIARIES. EACH PROVISION IN THE AGREEMENT WHICH PROVIDES FOR A LIMITATION OF LIABILITY, DISCLAIMER OF WARRANTY OR CONDITION OR EXCLUSION OF DAMAGES IS SEVERABLE AND INDEPENDENT OF ANY OTHER PROVISION AND IS TO BE ENFORCED AS SUCH.**

12. Resolution of Disputes. In the event of a dispute between NRTC and Purchaser arising out of this Agreement, the parties shall meet and negotiate in good faith to attempt to resolve the dispute. In the event the dispute is not resolved within thirty (30) days of the date one party notified the other party in writing of the dispute, and if any party wishes to pursue the dispute, it shall be submitted to binding arbitration in accordance with the rules of the American Arbitration Association. In no event may arbitration be initiated more than one (1) year following the sending of written notice of the dispute. Any arbitration proceeding under this Agreement shall be conducted in the Commonwealth of Virginia in the county designated by NRTC. The arbiters shall have no authority to award any punitive or exemplary damages, or to vary or ignore the terms of this Agreement, and shall be bound by controlling law.

13. Licensed Equipment and Software. Products comprised of licensed equipment or software may be subject to additional terms and conditions set forth in separate agreements that will control to the extent necessary to resolve any conflicts with the warranty terms and conditions stated herein.

14. Intellectual Property. NRTC will defend any suit or proceeding brought against Purchaser based on a claim that the design or construction of the product(s) sold or licensed hereunder by NRTC infringe any U.S. Patent, Copyright or Mask Work Registration, provided that Purchaser promptly notifies NRTC of any such claim and resulting suit or proceeding in writing and further provided that, at NRTC's expense: (a) Purchaser gives NRTC the sole right to defend or control the defense of the suit or proceeding, including settlement, and (b) Purchaser provides all necessary information and assistance for that defense. Except for any consequential damages, NRTC will pay all costs and damages finally awarded or agreed upon by NRTC that are directly related to any such claim. In the event of a charge of infringement Seller's obligation under the Agreement will be fulfilled if Seller, at its option and expense, either: (i) procures for Purchaser the right to continue using such products; (ii) replaces the same with noninfringing products; (iii) modifies the same so as to make them noninfringing; or (iv) accepts the return of any infringing products and refunds their purchase price. Notwithstanding the foregoing, NRTC will have no liability with respect to any claim of infringement to the extent based on a configuration or modification incorporated in the products at the request of Purchaser, on any process application into which the products are integrated by Purchaser, or on use of the products in combination with other equipment or products not supplied by Seller. **THIS PARAGRAPH SETS FORTH NRTC'S ENTIRE LIABILITY WITH RESPECT TO INTELLECTUAL PROPERTY AND INFRINGEMENT OF PATENTS BY ANY PRODUCTS RELATING TO INFRINGEMENT OR INTELLECTUAL PROPERTY, EITHER EXPRESS OR IMPLIED. (INCLUDING SOFTWARE PROGRAMS, EQUIPMENT OR PRODUCTS THEREOF) OR BY THEIR OPERATION, AND IS IN LIEU OF ALL WARRANTIES OR CONDITIONS**

15. Export. Product(s) purchased for export outside of the United States or its possessions are covered by the respective trade laws or other legal conditions specific to the country or possession in question so understood and agreed to by both parties. Purchaser shall be solely responsible for any permits, licenses, waivers or other requirements necessary to permit movement of any product outside of the United States.

16. Governing Law. NRTC does not assume any responsibility for compliance with any foreign or federal, state or local laws and regulations, except as expressly set forth herein, and compliance with any laws and regulations relating to the product(s) is the sole responsibility of the Purchaser. All laws and regulations expressly incorporated herein shall be those in effect as of the date hereof. In the event of any subsequent revisions or changes thereto, NRTC assumes no responsibility for compliance therewith. Nothing contained herein shall be construed as imposing responsibility or liability upon NRTC for the obtaining of any permits, licenses or approvals from any agency or governmental entity, foreign or domestic, which may be required in connection with the supply of the product(s).

All sales and purchases of product(s) from NRTC, including terms and conditions thereof, shall be governed by the laws now prevailing in the Commonwealth of Virginia, without regard to its conflict of laws provisions.

17. Partial Invalidity. If any provision herein or portion thereof shall for any reason be held invalid or unenforceable in accordance with prevailing law, such invalidity or unenforceability shall not affect any other provisions or portions thereof, but the terms and conditions herein shall be construed as if such invalid or unenforceable provision or portion thereof had never been contained herein.

SENSUS

McDonnell Group Findings
Coverage of Other Companies

AEP: (GE*)

AEP Presentation at EEI Spring Conference
April 2, 2012
Temperature Monitoring Results for AMI Meters

- AEP presentation indicates 25 GE meter failures over a two-year test phase in Columbus, OH due to high temperature or thermal overload. Failures were attributed to existing meter sockets. AEP's alarm trigger is 95° centigrade.

BC Hydro: (Itron*)

Coquitlam Now
August 24, 2012
Don't Blame Smart Meters

- Authored by a retired fire investigator for the provincial fire commissioner, the article examines electrical maintenance and discusses possible causation of fires near or associated with smart meters.

Renew Grid
August 23, 2012
Family Blames Two Separate Fires on Smart Meter

- BC Hydro smart meter chief Gary Murphy is quoted in an article about recent smart meter fires.

Global BC
August 21, 2012
Home Owner Blames Smart Meter Installation for Destructive Fire

- An East Vancouver family discusses the fire outbreak in its home shortly after a smart meter was installed. The family claims that the electrical fire shorted more than 20 of its appliances.

*** These vendors are the chosen meter manufacturers for these utilities' smart meter programs, though no coverage can make 100% sure that the meters involved were from this vendor.**

The Vancouver Sun
August 10, 2012
Fire Concerns Over Smart Meters Appear Overblown

- Surrey Fire Chief Len Garis examines the statistics of smart meters installed as compared with instances of overheating and fire. The article's author examines risk factors before and after smart meter installation.

CTV British Columbia
August 9, 2012
Two Home Fires Probed Where New Smart Meters Were Set Up

- BC Hydro examines possible causes of fire at a home where a smart meter had been installed one month earlier.

Coquitlam Now
August 8, 2012
Smart Meter at Centre of Investigation

- Fire chief points to base plate, not meter, as cause of residential fire.

CBC News
August 7, 2012
Smart Meter Fires Spark Concerns in B.C.

- Surrey electrical contractor Bill Strain discusses the risk of old or damaged base plates.

Abbotsford Mission Times
August 7, 2012
Fire Guts Home After Smart Meter Installed

- BC Hydro claims that a homeowner is ultimately liable for a fire that originated at the base of a smart meter one day after it was installed.

The Vancouver Sun
August 7, 2012
'Unusual' Number of Fires, Smart Meters Linked

- Ontario fire marshal says faulty base plates could be the cause of residential electrical fires.

*** These vendors are the chosen meter manufacturers for these utilities' smart meter programs, though no coverage can make 100% sure that the meters involved were from this vendor.**

SENSUS

Florida Power & Light: (GE*)

TCPalm
March 13, 2012
State Fire Marshal Working With St. Lucie Fire District to Review Smart Meter Safety on Treasure Coast

- Prompted by state representative Gayle Harrell, the state fire marshal's office is working with the St. Lucie Fire District to determine whether there is reason to suspect that installation of a new type of electric meter might start electrical fires.

Oncor: (Landis +Gyr*)

CBS Dallas-Fort Worth
August 24, 2012
Oncor Changing Smart Meter Installation After Fires

- Oncor's CEO says the company has a new procedure for installation of smart meters after two house fires in Arlington, Texas.

WFAA.com
August 19, 2010
Fires Spark During Smart Meter Installations

- Smart meter installations are blamed for two house fires in Arlington.

Centerpoint: (Itron*)

KENS5
August 24, 2012
Houston Woman Blames Smart Meter for House Fire (Video)

- A southwest Houston woman is blaming a smart meter for a fire that left her home in shambles in July.

*** These vendors are the chosen meter manufacturers for these utilities' smart meter programs, though no coverage can make 100% sure that the meters involved were from this vendor.**

My Fox Houston
August 23, 2012
71-year-old Woman Says Smart Meter Torched House, Killed Puppies (Video)

- CenterPoint Energy claims that it has installed more than two million smart meters without knowledge of fires, while a 71-year-old woman claims that her recently-installed meter caused her house to burn down.

KSFA 860 AM
August 24, 2012
Did "Smart Meter" Cause House Fire?

- Houston TV station KHOU reports on smart meter fire at the house of Jaclynn Harwood.

* These vendors are the chosen meter manufacturers for these utilities' smart meter programs, though no coverage can make 100% sure that the meters involved were from this vendor.

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October 9, 2012

Meter Installation Update

Sensus' experience with 10 million installed smart meters over a period of more than five years indicates that meter overheating is rare and caused by factors external to the meter, particularly damaged meter box connections or wiring problems that are undetected during meter installation. Careful installation procedures, installer training and close observation of meter boxes and wiring can minimize the potential for overheating issues. Patent-pending technology from Sensus inherent in smart electric meters equipped with a remote shut-off switch can detect overheating and cut off electric power to the meter reducing the risks to consumers and property.

10 million Sensus smart electric meters have been installed and are operating safely in North America at over 290 electric and combination utilities, representing one-fourth of the smart electric meters installed by the entire industry.

- All of these ten million electric meters use the same basic design, and approximately 2 million use design and materials identical to that which was selected and installed by PECO.

Sensus' experience with 10 million installed smart meters over a period of more than five years indicates that overheating is infrequent and caused by factors external to the meter.

- The causes include damaged meter box connections and wiring problems that are undetected during meter installation.
- Careful installation procedures, installer training and close observation of meter boxes and wiring can minimize the potential for overheating issues.
- The use of technology inherent in smart electric meters can detect overheating and cut off electric power to the meter reducing the risks to consumers and property.

A small number of overheating issues have been reported, always involving issues external to the meter with a home's meter box and wiring issues.

- Events similar to what happened at PECO have been recently reported in Texas, Florida, Illinois and British Columbia – incidents that involved different suppliers of meters and communication systems. In every case, investigations showed that the meter was not the cause. The events recently reported at PECO support the industry experience that meter box and wiring issues are the causes of overheating.
- Sensus was allowed to examine 11 of the meters associated with the 15 events under investigation. Sensus experts observed clear evidence of overheating due to faulty meter socket jaws or other related issues for the eleven meters examined to date.

- External issues identified by overheating investigations include problems with customer electrical equipment; meter installation related problems including meter boxes with loose, corroded or failed connections; meter tampering and power surges.

Sensus' direct experience supports the fact that meter overheating is an infrequent problem and in every instance has been attributed to issues external to the meter.

- From 2007-2011, approximately 40 meters were returned through the Sensus Return Material Authorization (RMA) system which were evaluated as having failed due to overheating resulting from external causes.
- In addition, Sensus has data from numerous utility customers indicating that less than 0.004% of the approximately 6 million meters installed from 2007 to 2011 were associated with overheating incidents resulting from external causes for which the meters were not returned.

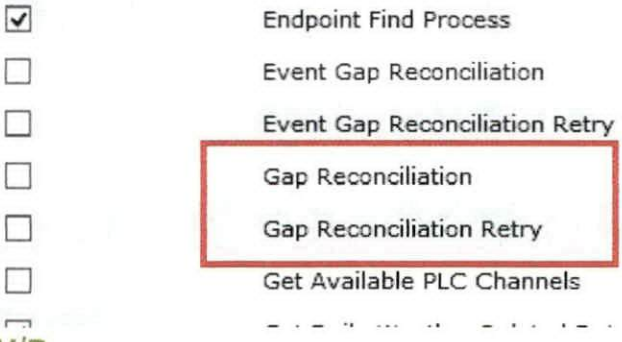
Electric meters are designed to meet rigorous, nationally recognized standards that have been established to ensure safety, reliability and accuracy

- Electric meter manufacturers in the United States are required to meet specific design and performance standards that have been established for electric meters by the American National Standards Institute (ANSI). All Sensus electric meters meet or exceed ANSI standards.
- In addition to the tests specified by the ANSI standards, Sensus meters are subject to additional rigorous tests during development and manufacturing including accelerated life testing, which ensures the meter meets Sensus standards for field reliability, lifetime performance and safety.

Greg Chaney

From: Hanson, Jeremiah
Sent: Thursday, April 21, 2016 4:50 PM
To:
Cc: Nacey, Bob
Subject: Case - 281843

Greg I just spoke to Bob from the service desk. He wanted me to confirm why you were missing reads for 27Nov2015. It appears the collector was down that day. The RFucommands are indicating communication issues. Unfortunately the process that will check for missing reads and fill in the gaps is not enabled. I would suggest enabling the Gap reconciliation Process and the Gap reconciliation retry Process. This will fill the gaps and eliminate this issue in the future. Please let me know if you have any other questions. Thank you.



V/R
.::Jeremiah **Hanson**
RF Service Desk Technician II
Customer Operations
Landis+Gyr

manageenergybetter
Please note my current work schedule is Monday thru Friday – 9:30am to 6:00pm(CST)