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

April 6, 2016

Andy Beshear
Attorney General
1024 Capital Center Drive
Suite 200
Frankfort KY 40601-8204

RE: Case No. 2016-00077

To Whom It May Concern:

Licking Valley Rural Electric Cooperative Corporation's response requested in the Attorney General's Initial First Data Request for Information dated March 24, 2016 in the above referenced case. The response will be submitted to the following email address's Rebecca.Goodman@ky.gov & Larry.Cook@ky.gov.

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 06th day of April 2016.

Notary Public # 466856
State of Kentucky at Large

My Commission Expires: 05/29/2016

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

ATTORNEY GENERAL'S INITIAL DATA REQUEST

CASE NUMBER 2016-00077

APRIL 05, 2016

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The Application of Licking Valley Rural Electric Cooperative
Corporation for an Order Issuing a Certificate of Public
Convenience and Necessity
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Question 1 Reference the application cover letter dated February 11, 2016. Explain why Licking Valley is seeking an "expedited review" of its application for a CPCN to install Advanced Metering Infrastructure System (AMI) meters.

Answer Question 1 With the metering system currently in place, LVRECC can only do certain DSM programs, Pre-paid metering and remote disconnects on ½ of the membership. The industry trend is moving away from power line carrier for metering data thus LVRECC did not want to invest additional money in a technology this is outdated.

Question 2 Why does Licking Valley believe it requires a new CPCN to complete the roll-out of AMI infrastructure?

Answer Question 2 LVRECC was not certain a CPCN was required but we wanted to make sure the commission was fully aware of our intent to switch from TS1/TS2 meters to RF meters.

Question 3 Confirm that if the Commission approves all or a portion of Licking Valley's request in the instant case, the company will have to pass all costs associated with the CPCN through its base rate.

Answer Question 3 Yes

Question 3 a Provide an approximate date for the filing of Licking Valley's next base rate case.

Answer Question 3a LVRECC anticipates a rate case in 2016.

Question 4 State how many (i) electro-mechanical meters; and (ii) AMR (also known as "TS-1") meters remain in service on the company's system.

Answer Question 4 TS1 – 13,764; TS2 – 3,563

Question 4 a For both types of meters, provide the expected life span and remaining expected life span, and state whether they are fully depreciated.

Answer Question 4a Both TS1 & TS2 had a 15 year expected life span. The total cost of the TS1 meters currently in service is $1,193,771. These meters are over 95% depreciated. The total cost for the TS2 meters currently in service is $273,212. These meters are over 50% depreciated. Over 90% of all meters currently in service are depreciated.

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Question 5 State how many of Licking Valley's substations have been converted to TS2 AMI capability.

Answer Question 5 Five of the ten substations have been converted for TS2 capability

Question 5a Are costs of converting the substations to AMI-TS-2 capability included in the present filing? If not, please provide the total of these costs and state how Licking Valley intends to recover those costs.

Answer Question 5a There will be no further conversion of substations to TS2 Technology assuming the commission approves the CPCN.

Question 5b Provide the total costs for early retirements of substation infrastructure resulting from replacement of that infrastructure with TS-2 capable technology.

Answer Question 5 b If LVRECC understands this question correctly, you are asking for the cost of the five substations to TS2 capability. This cost per substation is approximately $32,000 plus installation cost. This infrastructure will still be in use until all RF meters are deployed. LVRECC is unable to determine the actual cost of early retirement. A proposed time line of being finished with this would be 2020.

Question 6. Provide the PSC docket number in which Licking Valley sought and obtained PSC permission to begin its 2001 system-wide conversion from electromechanical meters to AMR meters.

Answer Question 6 LVRECC has not been able to locate a document from 2001 related to the conversion from electromechanical meters to AMR

Question 6 a In that case, did Licking Valley report any stranded costs, or projections thereof, incurred for the conversion from electromechanical meters to AMR meters? If not, please identify any and all such stranded costs or other related costs.

Answer Question 6a LVRECC did not have any stranded cost in this conversion

Question 6b Provide the total costs Licking Valley incurred in its conversion from electromechanical meters to AMR meters.

Answer Question 6b $1,828,634.

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Question 6c Provide a complete description of all benefits that both Licking Valley and its ratepayers received in the conversion from electromechanical meters to AMR meters. Please include in this description any cost savings for Licking Valley ratepayers and a quantification of such savings, contrasted with the total costs of this conversion.

Answer Question 6c Members were no longer required to read their electromechanical meters. We had better data to assist members in resolving high bill complaints; outage monitoring and power quality was improved.

Question 7 Provide the PSC docket number in which Licking Valley sought and obtained PSC permission to begin its conversion from AMR meters to AMI meters.

Answer Question 7 LVRECC did not have a case with the commission for this conversion.

Question 7a In that case, did Licking Valley report any stranded costs incurred for : (i) the 2001 conversion from electromechanical meters to AMR meters; and/or (ii) the conversion from AMRs to AMIs? If not, please identify any and all such stranded costs or other related costs.

Answer Question 7a N/A

Question 7b Please provide the total costs Licking Valley has incurred to date in its conversion from AMR to AMI TS-2 meters.

Answer Question 7b $705,057.

Question 7c Provide a complete description of all benefits that both Licking Valley and its ratepayers have received to date in the conversion from AMR meters to AMI meters. Please include in your description any cost savings for Licking Valley ratepayers and a quantification of such savings, contrasted with the total costs of this conversion.

Answer Question 7c It is hard to measure exact savings because members choose what DSM programs to participate in. We do offer incentives for load control switches on Air conditioners and water heaters. Switches can only be installed to members currently supplied by the 5 substations that are currently AMI/TS2 equipped. With RF metering infrastructure all members could participate.

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Question 8 Provide a projection of any and all stranded costs Licking Valley will incur if the Commission approves the instant application. These costs would include, at a minimum, costs incurred from retiring AMR meters and associated infrastructure prior to the end of their expected life span.

Answer Question 8 Both TS1 & TS2 had a 15 year expected life span. The total cost of the TS1 meters currently in service is $1,193,771. These meters are over 95% depreciated. The total cost for the TS2 meters currently in service is $273,212. These meters are over 50% depreciated. Over 90% of all meters currently in service are depreciated. The TS1 & TS2 meters will continue to be utilized over the next 2-3 years during the conversion to RF which will add additional depreciation to this amount. The cost for the five substations upgrade was $126,092 (this amount was minus the $33,908 that EKP contributed) that started in 2010. We would anticipate the depreciation on the substation upgrades to be at approx. 60% by the time the RF conversion is completed.

Question 8a Confirm that Licking Valley's ratepayers will bear any and all such stranded costs in the form of higher base rates.

Answer Question 8a No

Question 9 Does Licking Valley acknowledge that in Case No. 2012-00013, the company stated in response to Item 4(g) of the Commission Staff's Second Data Requests that there is a financial and maintenance benefit in continuing to maintain and use the electromechanical meters for as long as possible? Explain why the company is now changing its position.

Answer Question 9 At the time of the case (2012-00013), the technology was still being supported and LVRECC felt like that was the most financially viable option. Since that time, the vendor has discontinued electromechanical conversions and the industry trend is moving away from power line communications, thus the existing infrastructure we currently have is becoming obsolete technology.

Question 10 Provide copies of any and all formal feasibility studies Licking Valley performed regarding the decision to upgrade meters to the AMI TS-2 system.

Answer Question 10 No feasibility study was conducted but for LVRECC to be able to offer two way communication (DSM, Pre-paid metering, remote disconnects, etc.) this change was required to offer these options.

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Question 11 Provide the following:

Question 11a A per-meter breakdown of the total cost for the CPCN application, by ratepayer class;

Answer Question 11a LVRECC has the following rate payer classes: Schedule A (Residential, Farm, Small Community Hall & Church Service), Schedule SL (Security Light only – no meter required), and Schedule B (Commercial and Small Power Service) would all take the same style meter. Schedule LP (Large Power) and Schedule LPR (Large Power Rate) would have a separate style meter. Schedule A & B group, LVRECC has a total of 17,105 meters at a cost of $254.51 each for the CPCN application. Of the Schedule LP & LPR group, LVRECC has a total of 222 meters at a cost of $349.38 each for the CPCN application.

Question 11b A per-meter breakdown of costs benefits the company expects each ratepayer to receive.

Answer Question 11b No cost benefit to the member. The member can participate in DSM programs, such as water heater and air conditioner switch control, and prepaid metering.

Question 11c With regard to projected cost benefits, identify whether the savings are based on operational expenses, and provide the type of operational expense savings.

Answer Question 11c No projected cost benefits.

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Question 12 Describe the process by which Licking Valley made the decision to utilize Landis+Gyr as the vendor for this project. If this process included an RFP, please provide a copy of RFP publication(s) together with copies of all responses to the RFP.

Answer Question 12 We looked at the leading vendors in the industry and requested a RFP by phone. In summary GE advised LVRECC that their system would not be compatible with our service area (point to point). Sensus was a mesh style system and was having issues with quality and malfunctioning devices at the time the RFP was requested. In addition to the quality issues, they were not price competitive as other vendors. Landis & Gyr along with Tantalus were the two leading vendors. Of these two, Tantalus would have required 100' towers distributed throughout our service area to provide LVRECC with the required RF coverage. Landis & Gyr did not require these towers and all of their collectors, routers and other equipment could be mounted on LVRECC's existing infrastructure. LVRECC has also used Landis & Gyr for the past 15+ years and felt comfortable with their software and support. Their price was also competitive. (see attached copies of RFP from each Exhibit 1 NRTC; Exhibit 2 Tantalus; Exhibit 3 GE; & Exhibit 4 Landis+Gyr).

Question 13 Reference Application Exhibit 1, p.1 of 3. In the first paragraph, Licking Valley states that in 2009, it began a system-wide conversion to AMI meters, and that, "As of January 1, 2015 this system was only 50% implemented." However, on the third page of Exhibit 1, the company states that certain types of equipment were utilized in the '100-meter pilot project."

Question 13a How many AMI TS-2 meters has Licking Valley installed to date?

Answer Question 13a LVRECC has installed approximately 3563 TS2 meters

Question 13b How has Licking Valley paid for the AMI TS-2 meters installed to date, or if not already paid, how does it intend to pay for them.

Answer Quest 13b RUS loan funds.

Question 14 Reference the Application paragraphs (e) and (f). Please provide the terms of the RUS loan, the funds from which the company plans to finance costs associated with the proposed AMI program.

Answer Question 14 The terms of the RUS loan are 35 year, 90 day variable interest with the current rate of .203%. The interest rate can be locked in if LV request.

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Question 15 Identify the DSM programs that Licking Valley either currently has in place, or that it plans on having in place, that can utilize the AMI TS-2 technology.

Answer Question 15 LVRECC currently has Hot Water Heaters and AC units on DSM programs utilizing the TS2 meters.

Question 15a For each such existing DSM program, identify the total number of participants.

Answer Question 15a LVRECC has 245 Water Heaters with load control switches and 259 Air Conditioning units with load control switches.

Question 15c For each proposed DSM program, how many participants does Licking Valley hope to enroll?

Answer Question 15c LVRECC has only been able to offer DSM programs to ½ of our membership as a result of ½ our substations being upgraded to allow for the TS2 meters. As this program is voluntary to our membership, an accurate projection is difficult. We would assume that doubling current enrollments should be achievable with the new RF infrastructure system wide.

Question 15d Is Licking Valley aware of a report from the American Council for an Energy-Efficient Economy (ACEEE) which indicates that investments in more traditional energy efficiency programs that do not require smart meters are likely to have the most significant result in lowering consumption?

Answer Question 15 d Yes, we have reviewed the report from the ACEEE. LVRECC agrees that smart metering is just one element or tool that our members can use to help them better understand and ultimately lower their energy usage. We offer many programs that will also assist our members in lowering their usage such as: How Smart Ky, Heat pump rebates, Button-up Rebates, Energy Star Appliance Rebates, Energy Star Manufactured Home rebates and Energy audits conducted upon request by members at no cost. As this report states "These new devices offer an important means of overcoming the historical invisibility of household energy consumption (and production) and of dramatically improving the ability of households to manage their energy consumption practices".

Question 16 State how many customers currently participate in the company's pre-pay metering system.

Answer Question 16 As of 3/29/2016, LVRECC has 57 accounts active on prepaid metering.

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Question 16a Provide an estimate of how many additional customers the company anticipates will enroll in the pre-pay metering system once the AMI project is completed.

Answer Question 16a We have been adding an average of 7 new prepaid accounts each month. As we noted previously, we can only offer this program to five of ten substations that are TS2 compatible. Once converted to RF, we could anticipate this number doubling to 14 new accounts each month.

Question 17 Reference Exhibit 5, p.1 of 2. Identify and discuss the procedures and/or policies the company will have in place to determine which customers receive the remote connect/disconnect features in their AMI meters.

Answer Question 17 LVRECC's plan is to deploy meters with remote disconnect capability to every member with the RF infrastructure.

Question 17a Will customers who receive the remote connect/disconnect features in their AMI meters have the right to opt-in and/or opt-out? If not, why not?

Answer Question 17a No, customers will not receive the right to opt-in or opt-out of the connect/disconnect feature due to having to stock more than one type of meter, all meters that will be deployed have the remote connect/disconnect capability.

Question 17 b Does the company anticipate that those meters with the remote connect/disconnect functionality will experience a higher rate of disconnects than those meters without this functionality?

Answer Question 17b No, the connect/disconnect functionality will not affect the rate of disconnects.

Question 18 Reference Exhibit 5, p.1 of2. State the number of motor vehicle accidents in which Licking Valley vehicles have been involved in the past five (5) years.

Answer Question 18 Following is the number of Licking Valley's vehicle accidents:

2011 = 2 2012 = 3 2013 = 4 2014 = 0 2015 = 0

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Question 19 Identify the number of energy theft incidents which Licking Valley has documented in the past five (5) years.

Answer Question 19 Following is the number of Licking Valley's documented energy theft incidents:

2011= 9 2012 = 40 2013 = 39 2014 = 25 2015 = 29

Question 20 Provide a projection of the number of customers who will participate in any potential demand response (DR) program.

Answer Question 20 At this time LVRECC does not have any plans to offer a (DR) program.

Question 20a Identify all means other than smart meters by which DR programs can be instituted, and identify those alternative means which Licking Valley has considered.

Answer Question 20a N/A

Question 20b With regard to those alternative measures identified in subpart (a), above, please state which is the least-cost means.

Answer Question 20b N/A

Question 20c When does Licking Valley intend to file an application to implement its DR program?

Answer Question 20c No specific plans are currently in place

Question 21 Identify any and all alternative measures Licking Valley's management may have examined to reach any load management goals.

Answer Question 21 With the implementation of the RF metering infrastructure, LVRECC will have the capability to utilize a SCADA system.

Question 22 Reference Exhibit 5, p. 1 of 2. Identify the type(s) of "alternative rate structure(s)" the company envisions implementing through the use of AMI. For each such structure, provide a detailed explanation of how the company's customers will benefit.

Answer Question 22 No formal study has been conducted on alternative rate structures at this time but we will have the capability going forward.

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Question 23 Does the estimated cost of the project set forth in Application paragraph (f) include any and all interest and other costs associated with the applicable RUS loan? If not, please provide those estimated sums.

Answer Question 23 No, the RUS loan funds are 35 year term, 90 day variable interest with the current interest rate at .203%. These funds will be drawn as needed; therefore estimating sums would be difficult.

Question 24 Identify the reasons why the current TS-2 infrastructure, and the current level of deployment of that infrastructure, will not or cannot continue to serve the membership's needs.

Answer Question 24 Currently, less than 20% of LVRECC's installed meters are TS2. The industry trend is moving away from power line data transmission and LVRECC is concerned about the future support and feasibility for this type of system. We have concluded that continuing the implementation of AMI/TS 2's metering would not be an advantageous use of our members' money with the rapid change in metering technology. AMR/TS-1 metering technology is obsolete and AMI/TS 2's metering technology is becoming obsolete. In addition, the TS2's limit our data analysis to 27 hours. This limits our ability to help our members evaluate their usage in an effort to lower their energy bills by becoming more energy efficient.

Question 25 Reference the testimony of Kerry Howard, p.1. Does Licking Valley's system currently support SCADA technology? If not, how does it make reports to the Commission regarding reliability and outages?

Answer Question 25 No, we do not currently have a SCADA system. Currently LVRECC totals our outage reports manually for each month for each cause and amount of time/length of the outage then all those monthly reports are compiled manually for the annual reports. SAIDI and CAIDI are also calculated manually.

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Question 26 State Whether the company will require any of the following additional infrastructure items in order for its AMI program to operate properly in its service territory, and if so, please provide a cost estimate for each item, and for any other item of infrastructure not listed below:

a. Software servers;
b. Network load balancers;
c. Middleware;
d. Computer networking infrastructure;
e. Network backhaul;
f. Cellular towers;
g. Collectors and/or routers;

Answer Question 26 **a. No**

b. No

c. No

d. No

e. No

f. No

Question 27 As a result of deploying additional AMIs and associated infrastructure, has the company developed any policy(ies) governing the ability of third parties to gain access to the data generated by the AMI meters? If so, provide copies of same.

Answer Question 27 No policies governing the ability of third parties to gain access to the data generated by the AMI meters.

Question 27a What does the company intend to do with data it collects from its customers?

Answer Question 27 a Billing, Customer information system and helping members better understand their usage to assist in lowering their consumption.

Question 27 b Does the company look upon customer data as a revenue enhancement measure?

Answer Question 27 b No, the company does not look upon customer data as a revenue enhancement measure.

Question 27 c Will there be additional costs associated with any plans the company may have regarding customer data? If so, were they included within the cost projections for the instant application? If not, why not?

Answer Question 27c No

Question 28 Describe the technology components, whether software, firmware or hardware, which the company either has deployed or will deploy to insure cybersecurity.

Answer Question 28 LVRECC uses both hardware and software to manage cybersecurity threats. Within the last year, facility security upgrades have been implemented. Some of these upgrades are: Key fob entrance to all doors at main office, non-employee movement within the facility has been highly restricted, upgraded alarm system and video surveillance. Our warehouse facility has an upgraded chain link fence around the perimeter, key fob entry on the main gate with video monitoring, upgraded alarm and video surveillance system. We use an NISC Sonic Wall to restrict access to our computer network, password protect all wireless access points and mandatory cyber security training through SANS Secure the Human on line training sessions.

Question 29 Describe the consumer education and bill protection programs the company intends to implement if the Commission should approve all or any portion of Licking Valley's CPCN application.

Answer Question 29 LV will follow all existing and future tariffs. No other programs are planned to be implemented at this time.

Question 29a Does Licking Valley agree that since it is asking its ratepayers to fund the AMI TS-2 program, its ratepayers should have the ability to provide feedback and provide input about the extent of the program and its costs?

Answer Question 29 a yes

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Question 30 If the Commission should approve all or any portion of Licking Valley's CPCN application, including remote connect/disconnects and pre-paid metering, will the company agree to adhere to all existing consumer protection requirements pertaining to disconnects as well as all customer rights pertaining to billing disputes? If not, why not?

Answer Question 30 Yes

Question 31 If the Commission should approve all or any portion of Licking Valley's CPCN application, has the company decided what measurable and enforceable performance metrics it would like to come about as a result of the AMI TS-2 program? If so, please identify them.

Answer Question 31 With the new RF technology LVRECC does not currently know what the measureable and enforceable performances will be. Assuming the members will utilize DSM programs there could be a demand savings and also a kWh savings or decreased member usage due to smarter practices or the possibility of better member involvement. Theft detection would also be enhanced along with demand reduction and better reliability measures with future SCADA applications.

Question 32 In what manner does Licking Valley believe it should allocate between the company and its ratepayers the risk that the proposed benefits of the program do not materialize as predicted?

Answer Question 32 LV anticipates a greater risk to the member if no action is taken and as the current metering infrastructure becomes obsolete.

Question 33 Describe the measures Licking Valley is proposing to take to insure that the AMI TS-2 technology it has chosen does not become obsolete.

Answer Question 33 The RF metering technology is the newest technology available and no way of knowing when that same technology could become obsolete.

Question 33a Has the company factored into its cost projections the costs for software, firmware and/or hardware upgrades necessary to satisfy any potential standards from the National Institute for Standards and Technology (NIST)? If not, provide a cost projection that includes these estimates.

Answer Question 33a Yes, LV has factored into its cost projections the costs for software, firmware and/or hardware upgrades necessary to satisfy and potential standards from NIST.

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Question 33b Is Licking Valley aware that customers of utilities in other states have had to pay hundreds of millions of dollars in stranded costs for obsolete smart meters, some of which were never even installed?

Answer Question 33 b No we are not aware of such stranded costs from obsolete smart meters. LV has chosen the RF metering technology to attempt to avoid stranded cost and the product becoming obsolete.

Question 33c In what manner will the meters Licking Valley has chosen to install be capable of accepting upgrades to software, firmware, and/or hardware?

Answer Question 33c The AMI side of the meter is programmable remotely if or when upgrades are needed.

Question 33 d Please state who will pay for any upgrades to the AMI TS-2 meters, and whether those costs have been calculated into the company's cost projections.

Answer Question 33 d LV has no plans to upgrade AMI TS-2 meters.

Question 34 To what extent will the proposed AMI TS-2 system be interoperable with Licking Valley's other systems, including but not limited to: IT office systems, metering systems, SCADA and DSM systems, outage management systems, analytic systems, external partners and services. For purposes of this question, the term "interoperable" means the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged.

Answer Question 34 The AMI TS-2 that LV currently uses works with all current LV systems. The RF metering system that we have proposed from the current vendor Landis+Gyr is the same vendor as currently being used with the AMR (TS1) and AMI (TS2) systems. No additional changes in any existing system are expected.

Question 35 How does Licking Valley propose to reflect operational benefits of the AMI TS-2 program in its accounting? Would the company agree to provide a sur-credit of all such benefits on a per-meter basis? If not, why not?

Answer Question 35 No expected benefits to the AMI TS-2 program. If RF metering is implemented system wide than each member that participates in a DSM program could have added savings.

NRTC
(Sensus)

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)	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	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)	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	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	SMPCL AY - COMMAND LINK SMART POINT COMMAND LINK HANDHELD PROGRAMMER TOOL	3	400.00	1,200.00

Annual Hosting
2,480,000.00
2016,000

NRTC
(Sensus)

Quote

Date 7/1/2014
Quote # 406

Line #	Part #	Item Description	Qty	Unit Price	Ext. Price
24	UTI-SEN-5396353704402	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	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	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)	16	940.00	15,040.00
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 11 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

NRTC
(Sensus)

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

3,738,275.0

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.

Tantalus Systems Inc. 1121 Situs Court, Suite 190, Raleigh NC 27606 USA
P: 919.900.8970 | F: 919.900.8978 | www.tantalus.com

Tantalus
Tomorrow's Smart Grid. Today.

overhaul of operations gives good Backup
we will have a project manager.
Add + A System Engineer.
FCC Personal Cell #'s
Licensed 220 system Annual Fees

Prepared for: Licking Valley RECC 05/29/2014

Deployment Costs

	Tantalus Material	Quantity	Unit Price	Extended Price
Network Server Software				
NSL-210	NS-2010 TUNet Software License, First 1,000 endpoints	1	$ 15,000.00	$ 15,000.00
NSE-201	TUNet Software Endpoint	14,980	$ 3.50	$ 52,430.00
NSI-303	TUNet TCC Interface - MultiSpeak Remote Disconnect	1	$ 5,000.00	$ 5,000.00
Network Servers				
NS-2010	TCC -TUNet Control Center (HW & OS)	1	$ 50,000.00	$ 50,000.00
Network Controllers				
NC-2200	Network Controller - One Channel Antennas	4	$ 45,000.00	$ 180,000.00
Advanced Metering Collectors & Transceivers				
RT-3205	220 MHz Transceiver – Form 2S Cat House w/meter Shark Fin	165	$ 375.00	$ 61,875.00
TR-1901	900 Mhz LAN Repeater-Router (XR-100 Mounting Brackets Included) Repeaters	25	$ 289.00	$ 7,225.00
XR-3100	Crossband Repeater/Transceiver (DT-160 programming cable MAY be required, but is NOT included in price; XR-100 Mounting Brackets Included) Like a Shark Fin	105	$ 599.00	$ 62,895.00
Residential AMI Modules				
ITRON				
TC-1216	TPM Controller - Itron CENTRON (240 V)	15,790	$ 65.00	$ 1,026,350.00
TC-1220-RD	TPM Controller - Itron CENTRON C2SXD - 240V	0	$ 65.00	$ -
ANSI Polyphase Modules				
PP-1316	C&I Meter Reader (900 MHz) - Itron Sentinel	190	$ 175.00	$ 33,250.00
PPA-100	Bundle PPS,D,N, & C Options (100 PP Licenses)	2	$ 1,040.00	$ 2,080.00
Ancillary Products				
CA-2070	NC Antenna, Low PIM, 7.0 dBd Elliptical (half-wave)	4	$ 2,859.00	$ 11,436.00
Deployment Tools				
DT-103	Meter Module Programmer - Form 1S & 2S, includes serial cable, serial-USB adapter, and DT-150 software	1	$ 1,000.00	$ 1,000.00
DT-116	CENTRON Register Reset Key (used to set the Tantalus Centron module register to zero)	2	$ 32.85	$ 65.70
DT-160	WAN Collector Programming Cable (for XR-3100 only)	2	$ 165.00	$ 330.00
DT-400-BUN	IPC Programmer Starter Kit Bundle (includes DT-001, DT-400 and DT-003)	1	$ 1,530.00	$ 1,530.00
Services				
SV-1000	Deployment Services, daily rate (Project Management, Project Engineering, Field Services, Deployment, Training, does NOT include travel expenses or meter / RT / collector installation)	60.0	$ 1,200.00	$ 72,000.00
	Price for Tantalus Material without Endpoint Cost: 556,116.70			**$ 1,582,466.70**
			Add 30,000 NISC Setup	
Total Annual Costs				$ 49,790.00

1300/mo NISC

Meter data does not get lost when Meter "3" goes bad.
Can tell meters to reassociate Now.

Tantalus
Tomorrow's Smart Grid. Today.

Tantalus Systems Inc. 1121 Situs Court, Suite 190, Raleigh NC 27606 USA
P: 919.900.8970 | F: 919.900.8978 | www.tantalus.com

Itron Meter Pricing per HD Supply

Meter price includes module installation at the factory

Single Phase Meter Pricing			
Quantity	Form	Price per Unit	Extended Pricing
15,790	FM 2S Cl200	$27.95	$441,330.50
100	FM 2S Cl200 Disconnect	~~$100.00~~ 70	---
10	FM 1S	$78.75	$787.50
3	FM 3S	$78.75	$236.25
40	FM 4S	$78.75	$3,150.00

meter & Disc →

Polyphase Meter Pricing			
Quantity	Form		
~~190~~ 250	Sentinel 3Φ Socket Level 1	$187.50	~~$35,625.00~~ 46875.00
Total Price for Itron Electric Meters			**~~$481,129.25~~** + 11,250 = 58125.00

For comparison - Meter w/Disc + Endpoint
162.95 @ 16000 = 2,607,200.00

Total Adjusted est. BY

3,163,316.70

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.

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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 16000	$ 11,280 $9600
Meters (res)	~~$ 104.00~~ 150,87	~~16,920~~ 16000	~~$ 1,759,680~~ 2,400,000.00
Meters (C&I)	$ 270.00	1,880	$ 507,600
Gateways	$ 7,395.00	3 - **4**	$ 22,185 - **$ 29,580**
Repeaters	$ 325.00	700 - **873**	$ 227,500 - **$ 283,725**
Extender Bridges	$ 4,300.00	90 - **113**	$ 387,000 - **$ 485,900**

Initial Costs	$	2,903,965 - **$3,066,485**
Annual Recurring Cost	$	135,360
Ten Year Costs	$	3,870,565 - **$ 4,033,085**

*Note: **BOLD** text indicates updated network costs due to the use of LVEC-provided GIS meter location data.*

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.

GE
Digital Energy

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.

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

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E DAMON.DOUGHERTY@GE.COM

Landis+Gyr
manage energy better

September 16, 2014

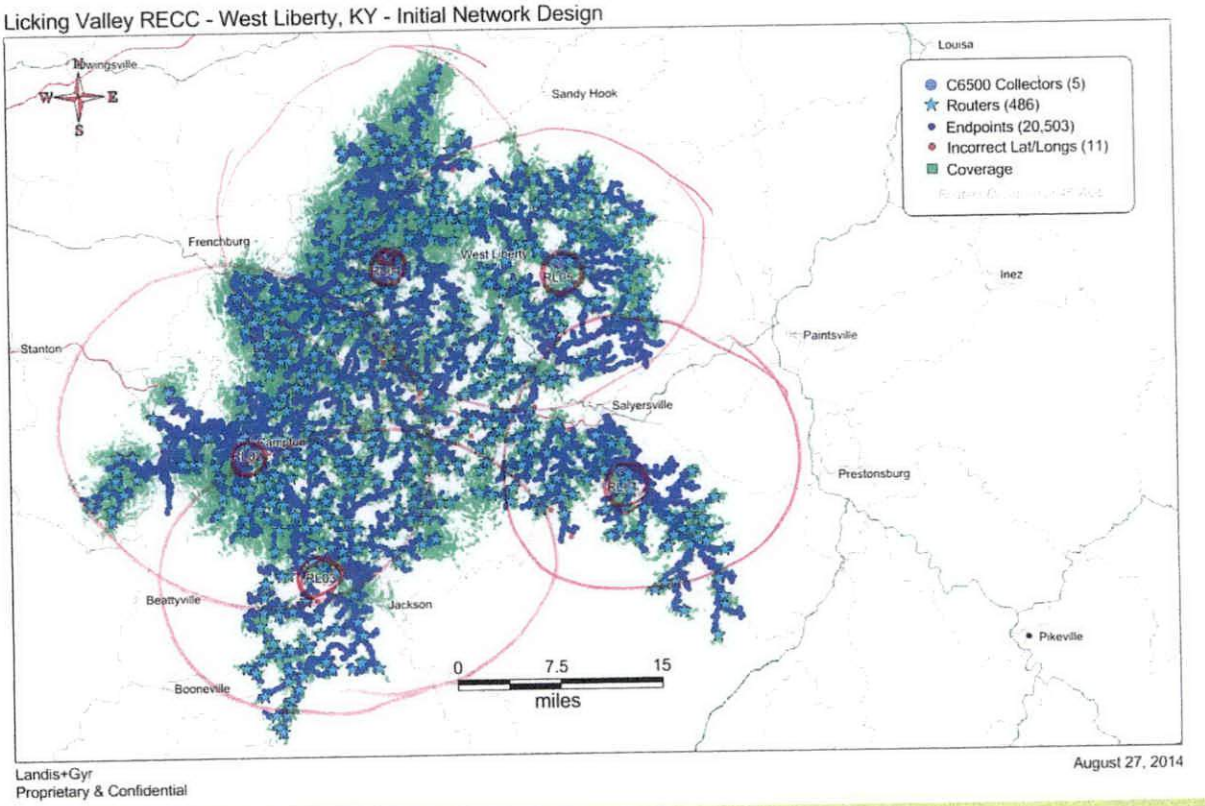
Greg Chaney
Licking Valley RECC
271 Main Street
West Liberty, KY 41472

Dear Mr. Chaney,

Landis+Gyr Technology, Inc. sincerely appreciates the opportunity to provide a budgetary quote to Licking Valley RECC (Licking Valley) for the provision of a Gridstream® RF system for its electric infrastructure. Landis+Gyr has proven experience in providing advanced metering systems for electric, gas and water meters. With over 15 years of experience in deploying AMI systems, Landis+Gyr is the largest supplier of AMI technology in the United States with 24 million endpoints deployed or under contract.

Network Design

To ensure that your territory can be served by Landis+Gyr's Gridstream solution, an initial design and density analysis was performed based on the 20,503-endpoint data set provided by Licking Valley. The results of our analysis, as shown below, validated that your territory can be served by Landis+Gyr's Gridstream RF Mesh solution.



Services Overview

In addition to providing pricing on the hardware and software required for your system, Landis+Gyr also provides implementation services. Those services have been priced based on the following assumptions:

Services	Landis+Gyr	Licking Valley
Project Management Support	√	
System Design	√	
Training	√	
Installation (network)		√
Installation (endpoint)		√
Integration Services		To be determined if required
System Administration		√
WAN Backhaul Communication Support		√

For the purposes of providing a budgetary quote, at a minimum, Landis+Gyr will provide:

a. project management support
b. system design
c. training on the operation of the Landis+Gyr system

The other services represented in the previous table are assumed to be performed by Licking Valley, as noted; however, these services can be provided by Landis+Gyr on a time-and-materials basis.

Gridstream RF Solution Pricing

The following table represents quantities and pricing for the proposed AMI solution.

Item	Quantity	Unit Price	Extended Price
Network Equipment			
RF C6500 Series Collector	5	$6,500.00	$32,500.00
RF C6500 Series Collector Mounting Kit	5	$850.00	$4,250.00
RF Routers	486	$1,615.00	$784,890.00
Meters with Communication Modules			
Landis+Gyr Gridstream RF FOCUS AX Meter with Communication Module for Residential (Form 2S)	~~14,479~~ 16000	$117.00 + 46.50 = 157.50	~~$1,694,043.00~~ 2,520,000
Landis+Gyr Gridstream RF FOCUS AX Polyphase Meter with Communication Module for Commercial & Industrial	~~1,608~~ 300	~~$237.50~~	~~$381,900.00~~
Services			
Project Management/Commissioning of 1 Collector	1 Lot	$45,400.00	$45,400.00
Training *	1 Lot	$6,000.00	$6,000.00
RF Tools			
RadioShop and Endpoint Test Manager License Fees and RF Field Tool Kit	1 Lot	$4,900.00	$4,900.00
		Total	$2,953,883.00

**Expenses associated with training and on-site support to be billed at cost.*

3,397,940.00

Clarifications

1. Gridstream RF Collectors and Routers are currently available with a 20-week manufacturing lead time after receipt of order.

2. Pricing for various meter adders is as follows:

FOCUS AX Meter Options	Unit Price
Battery	$6.00
Disconnect	$40.50
Reactive (KVA or KVAR)	$50.00
Config Port + Recon Button Short Cover (AX-SD Only)	$3.00
ANSI C12.18 Optical Port Short Cover	$3.00
ANSI C12.18 Optical Port + Recon Button Short Cover (AX-SD Only)	$4.00
ANSI C12.18 Optical Port Tall Cover	$4.00
ANSI C12.18 Optical Port + Demand Reset Tall Cover	$5.00
ANSI C12.18 Optical Port + Reconnect Tall Cover (AX-SD Only)	$5.00
ANSI C12.18 Optical Port + Demand Reset + Recon Button Tall Cover (AX-SD Only)	$7.00
FOCUS AX Polyphase Meter Options	**Unit Price**
Battery	$6.00
Reactive (KVA or KVAR)	$50.00

3. Network equipment (Collector and Router) installation and electric meter installation are not within the scope of Landis+Gyr's offering.

4. Project Management pricing is based on services being provided by Landis+Gyr for a period of six (6) months and includes commissioning of one RF Collector. Project Management services begin at the Licking Valley project kickoff meeting.

5. Training price assumes Gridstream RF Mesh Command Center classroom training will be attended by two Licking Valley employees in Landis+Gyr's Pequot Lakes, MN, or Alpharetta, GA, location and that two Licking Valley employees will attend Gridstream Network Deployment Training and become certified for RF Mesh. This class is available at Landis+Gyr's Pequot Lakes, MN, or Alpharetta, GA, locations only. This required class includes RF Mesh Fundamentals, RF Mesh Network Design & Site Survey, Collector Installation, Router Installation, Endpoint Test Manager and RadioShop. Both Command Center software training and Gridstream Network Deployment training are required.

   Optional WebEx training credits (24) have also been included for use with continuing education.

   Utility is responsible for its own travel/expenses. Delivery of product and system education is offered via several training venues, and selection of the appropriate type of training is negotiable.

6. Licking Valley currently has Command Center MSP (IT Hosting) valid through December 31, 2014 and it is assumed that the Utility will continue with Landis+Gyr hosting.

7. WAN backhaul is the responsibility of the Utility unless mutually agreed upon that Landis+Gyr will provide the WAN backhaul. Pricing may vary based on the cellular backhaul process of the service provider selected.

8. Additional support beyond the initial on-site installation support and training will be provided at the following rates:
    a. On-site Field Services Support at $3,000 for the first day and $1,000 for each additional day, plus travel and expenses billed at cost.
    b. Additional Help Desk-based support is also available on a quotation basis.

9. It is assumed that the endpoints will be deployed in a manner in which the electric endpoints are contiguous to enable adequate meshing.

10. The Network Equipment quantities are approximations of required quantities and have been developed from data provided by Licking Valley. Actual Network Equipment quantities necessary for the AMI System to function properly may vary based on verification of final meter quantities, system analysis and requirements, locations, deployment approach, and system optimization needs. The network quantities estimated assume a Collector and Router mounting height of 45 feet above ground level.

11. Pricing assumes Licking Valley will provide existing or new poles, of an appropriate height, with 120/240 V power source, for installation of RF Mesh network infrastructure.

12. RadioShop and Endpoint Test Manager License Fee includes the cost of a radio but does not include the cost of the PC required to run the software.

13. This quote is valid for 60 days and excludes any shipping and taxes.

14. Landis+Gyr's payment terms are net 30 days.

15. This proposal contains confidential and trade secret information of Landis+Gyr. Except as otherwise specified in a non-disclosure agreement regarding Landis+Gyr's confidential information, Landis+Gyr authorizes use and disclosure of the content of this proposal only as necessary for evaluation of Landis+Gyr's proposal or as required by law. No other license rights are intended or implied.

We look forward to taking this next step with you and welcome the opportunity to further define a Gridstream solution to address your needs. If you have any questions, please contact Stevven Timm at (727) 808-6610 or stevven.timm@landisgyr.com.

Sincerely,

Jay D. Evensen
V.P. Commercial Operations

tem of Intrest	Landis & Gyr	Tantalus
stimated Initial System Cost	3,397,940.00	3,163,316.70
Annual/Monthly Cost	16860.00 annually	49,790.00 per year
Meter/endpoint Cost	117.01	92.95
Meter/Endpoint/Discon cost	157.01	162.95
Annual Hosted Cost		Yes if hosted most don't
iscensed/unliscensed	unliscensed	Liscensed
Monthly hosting comm Cost	yes	In the 49000
Monthly per endpoint hosting fee	.08 per unit @16000 = 1280.00	
ong distance telephone comm	.05501 @ 2,138.52 min = 117.64	
Handheld GPS Capability	?	no
How does it work with prepay	Good	Good
How well does Remote Disc. Work	Good	Good
Speed of Pings		Seconds/Liscends
How often do we get readings		
Support		
Commisioning ?	Min. or Atlanta	
Over the line updates	yes	
Tamper alarm	yes	yes
Zigbee Ready	yes standard	no/can be with cost
Heat monitoring	yes	no
Voltage Monitoring	yes	yes with sag\swell
Remote Disconnect	yes	yes
Load Control	yes	yes
Healing time for failed meters		slow?
Blinks and outages	yes	yes
Future breaker/cap bank use	yes	yes
Prepay	yes	yes
What meters work with system	L&G, centro GE only with 3 ph	Itron and GE
Communicating with mapping	yes	yes
How many towers	5	4
How many routers	617	295
Use Comments on 1-10 scale		
Additional Charges		NISC Link 30000/1300mo
All charges on an as needed basis		

Questions for other users.

Est. Initial System Cost includes 16000 single phase meters with endpoint and disconnect disregarding po

Adjusted to 16000 meters

Sensus being meter to tower eliminates 600-700 routers that we install

do you have to stop readings to do load control L&G no

The teleph. Charges for L&G for April 2014 was 177.64. this is for the 5 existing stations.

Tantalus: NISC has a 30000.00 initial fee for their software and a 1300.00 monthly fee.

Sensus	
3738275.01	Infrastructure, Meters@16000 with disc voltage and hot lug monitoring
15000.01 annually	communication, per endpoint cost, nisc connection
77.01	
155.01	
15000.01	
Liscensed	
15040.01 FCC charges	
none	
yes	
Great/ Don Bowman	
Good	
3 Seconds	
Hourly @ 15 min int	
none	
Yes	
Yes With Alarms	
Yes With Alarms	
Yes With Alarms	
Through Meter	
Yes With Alarms	
Ready now	
Not a mesh System	
Yes With Alarms	
Compatible	
Compatable	
L & G, Sensus	
Compatable	
16	
less than 10	

Polyphase

AMI Study

This study began by looking at the different types of systems available. We looked at the two-way PLC power line carrier systems, and the RF radio frequency systems. It seems that either would work, but the RF systems were in most cases faster than the PLC systems. Also it seemed that while there is still plenty of support for the PLC systems, there seemed to be more movement in the direction of the RF systems. Meters, and equipment were more readily available for RF.

After moving more in the direction of RF there are two types of these systems to consider: Point-to-Point and Mesh. Point-to-point is an ideal system if all goes well. One vendor, however, basically said it wasn't cost effective to try in this area. Another said they could make it work. I have included that system in this study but I am not convinced of the feasibility of a Point-to-Point system.

This study is based on 16000 single phase meters for pricing purposes. Poly phase meters are not included in this study, but all manufacturers pricing will be reasonably close.

Estimated initial system cost including infrastructure, meters @ 16000 with disconnect capabilities, voltage and hot lug monitoring.

Landis & Gyr	3,397,940.00
Tantalus	3,163,316.00 Also a 30000.00 setup fee from NISC
Sensus	3,738,275.00

Annual/Monthly costs

Landis & Gyr	16,860.00 Based on our .08 per endpoint fees at present time
Tantalus	49,730.00 Annually. Also a 1300.00/Mo charge from NISC
Sensus	47,040.00 annually includes SaaS W/RNI 3.X software and LICENSED SPECTRUM FCC

Meter cost

Landis & Gyr	157.00
Tantalus	162.95
Sensus	155.00

Licensed/Unlicensed

Landis & Gyr	Unlicensed
Tantalus	Towers are licensed with a small fee for each. 900mghz meter to meter is not licensed
Sensus	Licensed

Over the line or radio updates

Landis & Gyr	Yes
Tantalus	Yes
Sensus	Yes

Future Scada Use

Landis & Gyr	OK
Tantalus	OK
Sensus	OK

What meters work with the system?

Landis & Gyr	L&G, Centron, GE on Polyphase only
Tantalus	Itron And GE
Sensus	Sensus and L&G

Collectors and Routers

Landis & Gyr	5 collectors and 486 routers. This can be adjusted to more collectors and fewer routers.
Tantalus	4 collectors and 295 routers
Sensus	16 collectors 150 ft.

Advantage/disadvantage of licensed/unlicensed

Licensed is dedicated to our system, we rent it and can keep others off of our frequency.This licensed would come at a cost and would have to be re-applied for from time to time. If we fail to reapply it could be lost and our system could be rendered useless. It seems that the vendors would take this responsibility and this shouldn't cause us any problem. Unlicensed has a range of frequencies (240) and if one is being used it jumps to another frequency.

Disadvantages to Point-to-point system:

With the Point to point we would have to build towers, set poles or rent tower space. These antennas would need to be 100-150 feet tall. Our trucks are not capable of setting these poles and I would question our ability to work off a rented tower. Would we have to be certified to work on these towers or pay the tower owners a maintenance fee?

Disadvantages to the Mesh systems:

A mesh system would be more difficult in the setup in that there is more infrastructure. The collectors would need to be in place and the repeaters/routers would need to be installed. However once this infrastructure is installed we would be at the same point we would be with the point-to-point system. Point-to-point would have to have repeaters in some cases and the mesh system will no doubt need additional repeater/routers in a few cases.

Summary

All of the AMI systems that I looked at seem good on the surface. All of them have good points and bad. The initial setup cost of infrastructure and meters are all within reason with Sensus being somewhat higher than the others.

Landis & Gyr applies their annual fees to a per endpoint fee which is presently at .08 per endpoint. This is invoiced monthly and runs about 1400.00 monthly bringing the yearly total to about 17,000.00. This came in significantly lower than the annual fees of the other systems.

The cost of the meters from all vendors are relatively close and assuming that there will be certain problems with any device, meters should not be too much of an influence in this study.

At first the unlicensed system was a problem for me. I did not like the idea of using a frequency that could be used by just anyone. But further explanation of the way these systems work show that there are 240 frequencies and if one is in use the meter would just hop to another frequency with no problem.

I see no problem with the licensed system except cost. There are charges for the license. The license would have to be renewed periodically, but it is my understanding that this would be the responsibility of the vendor and the cost passee on to Licking Valley.

Support for a system is very important. We have had our AMR system for several years and our relationship with the support group with Landis & Gyr has been excellent in my opinion. Keep in mind that this is the only AMR system we have dealt with. I'm sure that all vendors strive to do well in their support. Almost all correspondence I have had with other utilities have been positive where support is concerned, however I have spoken to two utilities that were not satisfied with the support from Tantalus.

The training for these systems are on-site with representatives from the AMI companies. All are capable of upgrades via the system without having to make trips to the site. Landis & Gyr and Tantalus seem to be more prepared for any future SCADA or capacitor control that we might have in mind.

The infrastructure was a hard part of this study. The point-to-point systems looks good on the surface. More collectors with fewer repeaters. This would be an ideal system. Less equipment means less equipment failure. Also, most of the system could be up and running, ready to install meters when the collectors are in place. However, our terrain is not too good for this type of a system. One vendor didn't feel that it was a good fit and told me so. Sensus said they could make it work with a guarantee of limited repeaters. Any repeaters that went over their quote would be paid for by them. For this reason Sensus was included in the study. There would still be the installation and up keep.

The mesh systems seemed a little cumbersome at first with so many repeaters. There would be hundreds of these repeaters to install and keep up. This seemed to be a lot of maintenance. But most of the utility people I spoke to have not had many failures on this equipment. Keep in mind that this is new technology and there has not been a lot of time for failures. Also some of these repeaters are made to fit into a security light head which makes installation quick and easy. Landis & Gyr has also developed repeaters with fault-finding capability that can be tied into our outage detection. The Tantalus representative said that this was something that they are working on also. As with the point-to-point system, once the infrastructure is installed, meaning the collectors and the repeaters, then the meters

can begin to be set mostly where and as we need them. As with the point-to-point system, additional routers or meters might be needed to bridge the gaps.

Load control was also an issue. We have load control switches now being used with the Landis & Gyr system. EKP seems to be satisfied with these. They are also using the Tantalus switches and say that they are working well. Stephanie Cornett said that they didn't have any experience with the Sensus system.

All systems seem to work well with prepay, Time of Use, remote disconnect and voltage monitoring. These systems have an added advantage that will allow us to monitor hot lug situations and either get a notice from the meter or program the meter to power down if a hot lug is detected.

Any of these systems would work well with any mapping and outage management system that we might consider.

Sensus:

While the initial costs for each system are close, Sensus is somewhat higher. Sensus is also on the high end of annual fees along with Tantalus. Also, Sensus collector antennaes will most likely have to be 100 to 150 feet high. As good as a point-to-point system would be, our terrain does not seem suitable.

Tantalus:

A newer system that seems to be doing very well. While I believe the Tantalus system would serve us very well, there are several things to consider. With the lowest initial cost of the three but the highest annual charges it becomes a much more expensive system to operate. There is also a setup fee with NISC of $30000.00 and a monthly fee of $1300.00. This would add to the annual cost of this system.

Landis & Gyr:

The initial cost of this system is in the middle of the three systems considered here. The annual /monthly fees are considerably smaller and are based on the number of endpoints we have on our system. Having experience with their software and "Command Center" makes the transition from PLC to RF smoother. Their support has been good.

To override my concerns about the number of repeaters, the vendors were willing to put a limit on these in their contracts. The vendors said they could guarantee the number of repeaters and they would cover the cost of any others that would be needed. There is still the cost of installation and maintenance.

Estimated initial system cost including infrastructure, meters @ 16000 with disconnect capabilities, voltage and hot lug monitoring.

Landis & Gyr	3,397,940.00
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