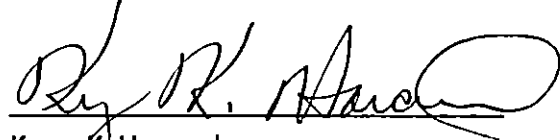


VERIFICATION

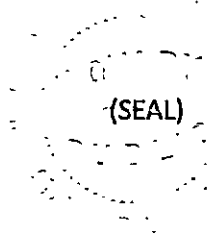
The undersigned, Kerry K. Howard, General Manager/CEO of Licking Valley Rural Electric Cooperative Corporation certifies that the response contained in this document are true and accurate to the best of her knowledge, information and belief formed after a reasonable inquiry.

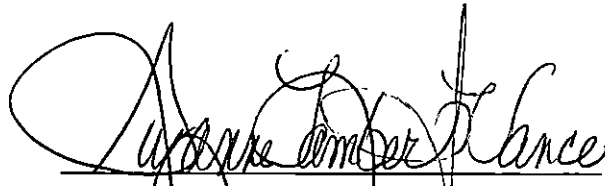

Kerry K. Howard

COMMONWEALTH OF KENTUCKY

COUNTY OF MORGAN

Subscribed and sworn to before me by Kerry K. Howard, General Manager/CEO of Licking Valley Rural Electric Cooperative Corporation to be his free act and deed this 6th day of April, 2016.




Notary Public
466856

My Commission Expires:

05/29/2016

ID: 466856

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

FIRST REQUEST FOR INFORMATION

CASE NUMBER 2016-00077

APRIL 05, 2016

INDEX

Exhibit 1	RFP NRTC (Sensus)
Exhibit 2	RFP Tantalus
Exhibit 3	RFP GE
Exhibit 4	RFP Landis+Gyr
Exhibit 5	Economic Analysis Landis+Gyr
Exhibit 6	Information concerning Meter Pilot Project
Exhibit 7	Discussion at LVRECC Board Meetings

LICKING VALLEY RURAL ELECTRIC
COOPERATIVE CORPORATION

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

Question 1. Refer to the cover letter to Licking Valley's application ("Application") in which Licking Valley requests expedited review.

Question 1a. Explain in specific detail why Licking Valley has requested and expedited decision.

Answer 1a. 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. 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from power line carrier for metering data thus LVRECC did not want to invest additional money in a technology that is outdated. We also request that the PSC refer to NOLIN RECC Case No. 2014-00436 Initial Request for Information response #1. In this response, NOLIN reported correspondence with L&G regarding the discontinuance of support for the TS2 metering platform.

Question 1b. State the date by which Licking Valley requests a decision.

Answer 1 b. As soon as possible

Question 1 c. Explain how the proposed project would be affected if Licking Valley has not received a decision by the requested expedited date.

Answer 1c. By not receiving approval, LVRECC will be required to purchase additional TS1 & TS2 meters.

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Question 2. Refer to the application, Exhibit 1, page 1.

Question 2a. Describe Licking Valley's current distribution of TS1 and TSII enabled meters.

Answer 2a. Currently, LVRECC has 5 of the 10 substations TS2 Ready. We have deployed approximately 3563 TS2 meters of the 17,327 total meters, as of 3/28/2016. The remaining balance of 13764 are TS1 meters.

Question 2b. Describe Licking Valley's current non-deployed meter inventory stock, by meter and TS type.

Answer 2b. 320 TS1; 236 TS2; as of 3/28/2016

Question 2c. Provide the number of TSII communication modules Licking Valley has remaining in stock.

Answer 2c. As of 3/28/2016, we have zero in stock.

Question 2d. Explain why Licking Valley deployed only 50 percent of its TSII enabled meters by January 1, 2015.

Answer 2d. We were installing TS2's as time allowed since we were doing the substation upgrades in house. This also helped us keep the expenses minimal.

Question 2e. Provide the current status of deployment of Licking Valley's TSII enabled meters.

Answer 2e. All TS2 meters are currently deployed. This number is approximately 3563 meters.

Question 2f. Explain whether Licking Valley plans to simultaneously operate a power line carrier-based system and a radio frequency ("RF")-based communication system. If so, explain under what conditions and for what time period.

Answer 2f. Yes. We would anticipate the rollout of the RF meters taking 2-3 years.

Question 2g. Describe the limitation of the TSII-enabled meters and their future support by the vendor, and explain how this led to Licking Valley's decision to research other Automated Meter Information ("AMI") solutions.

Answer 2g. TS2 meters will only allow LVRECC to see reads every 27 hours at a minimum. On RF meters, we would have a quicker response on connects and disconnects, real

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time communication, voltage monitoring and hot lug detection. L&G has noted that support for the TS2 meters will be discontinued. Also reference NOLIN RECC case no. 2014-00436 Initial request for information Response #1.

Question 2h. Provide information regarding the AMI systems that Licking Valley researched and assessed.

Answer 2h. LVRECC Request For Proposal ("RFP") from the following vendors: Landis & Gyr, Tantalus, GE and NRTC/Sensus. In addition to these, we also looked at other RF and Mesh metering vendors. See attached Exhibit 1 – NRTC/Sensus; Exhibit 2 – Tantalus; Exhibit 3 – GE; Exhibit 4

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Question 3. Refer to the Application, Exhibit 1, page1, which states that the system wide conversion to AMI meters was 50 percent implemented as of January 1, 2015. Refer also to Exhibit 4, which states the Licking Valley expects to purchase 17,000 meters for residential use and 300 meters for commercial and industrial use. State the percentage of existing meters that will be replaced by the new AMI meters.

Answer3. Just to clarify, 50% of our substations (5 of 10) had been upgraded to allow for the TS2 meters. We would be replacing 100% of the current meters when fully deployed.

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Question 4. Refer to the Application, Exhibit 1, page 2, regarding the vendor selection process.

Question 4a. Describe in detail Licking Valley's AMI system vendor selection process and how Licking Valley ultimately selected Landis+Gyr as the vendor to implement the proposed project.

Answer 4a. We looked at the leading vendors in the industry (see response 2H above) and requested an RFP. From those RFP's, 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. 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.

Question 4b. Provide a copy of the economic analysis performed by Licking Valley to evaluate the various AMI system alternatives and to justify why Landis+Gyr was selected as the vendor. If no economic analysis was performed, provide a detailed explanation for why one was not conducted.

Answer 4b. – See attached Exhibit 5

Question 4c. At the bottom a page 1 and the top of page 2 of Exhibit 1, Licking Valley noted that the Landis+Gyr RF technology was selected based, in part, on the fact that it met certain specification, including the utilization of Landis+Gyr meters and that it could integrate with National Information Solutions Cooperative ("NISC's") 'Smart-Hub and iVUE systems.'

(1) Explain why Licking Valley required an AMI solution be capable of utilizing Landis+Gyr meters.

Answer 4c(1). This should have been explained, stating system not meters.

(2) Provide a detailed explanation of the NISC SmartHub and iVUE Systems.

Answer 4c(2) Smarthub is an online portal that allows members to pay their bills on line or via an app on smartphones. It will also allow members to view their current usage, view

Witness: Kerry K. Howard

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past bills, contact LVRECC and see how weather/temperatures are affecting their usage. IVUE is the software program LVRECC uses to maintain our member data base and also our cash register and all other customer service related activities.

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Question 5. Refer to the Application, Exhibit 3, page 1, Section 2.2, regarding NISC's provision of technical support for the duration of the deployment.

a. What is the time period for which NISC will provide ongoing technical support?

Answer 5a. They are currently providing support and we do not anticipate any changes in the support they provide.

b. Explain how Licking Valley selected NISC as the vendor for the Meter Data Management System 9"MDMS").

Answer 5b The relationship between LVRECC and NISC goes back to when the company was called CADP several years ago. SEDC and NISC are the two main software providers cooperatives use across the country. LVRECC has been more than satisfied with the support and technology that NISC provides to us.

c. Provide the cost that Licking Valley will incur for NISC's delivery of MDMS, NISC's supporting "the integration of the MDMS with the head-end system, CIS and other appropriate systems," NISC's performing System Acceptance Testing, and NISC's training of Licking Valley personnel on the use of the MDMS system.

Answer 5c. LVRECC doesn't anticipate any significant training requirements with the integration of the Landis & Gyr RF meters. LVRECC has been using iVUE for many years as well as Landis & Gyr software (command center) & meters

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Question 6. Refer to the Application, Exhibit 3, page 2, Section 2.3.

- a.** Explain in detail Licking Valley's plans for the existing meters that will be replaced, including testing for accuracy in accordance with 807 KAR 5:041, Section 15(3).

Answer 6a. Any meters that are removed, will be brought to the meter shop, tested and redeployed as needed if meter specifications are met.

- b.** Explain in detail whether these meters have been fully depreciated.

Answer 6b. At this time TS-1 meters are 95% depreciated and TS-2 meters are 50% depreciated.

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Question 7. Refer to the Application, Exhibit 3, page 2, Section 2.4.

- a. State whether Licking Valley has begun any RF system installation, beyond the pilot deployment.

Answer 7a. No

- b. Provide an updated meter deployment timeline.

Answer 7b. Approval from PSC on CPCN – TBD

Begin system wide meter installation as needed – Immediately following CPCN Approval
Project Completion – Approximately 2-3 years from time CPCN approval is received.

- c. Provide the data collected in support of the line item ‘Satisfied with results of the pilot project.’

Answer 7c. See Exhibit 6

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Question 8. Refer to the Application, Exhibit 5, page 1, regarding member satisfaction.

- a. Describe in detail the customer's experience as they access information about their account via Licking Valley's website.

Answer 8a. Members have access to the following information via www.lvrecc.com: Start/stop service, Rebates, Bill Payment, Outage information, Information on programs such as pre-paid metering, Contact us links, Billing Insights (home auditing tool)

- b. Describe in detail the timeliness of the available information to the customer.

Answer 8b. With the current TS2 meters, the member can only see data that is no earlier than 27 hours. With the RF meters, this data would be as soon as 15 minute intervals.

- c. Explain in detail Licking Valley's intent concerning the distribution of remote disconnect meters.

Answer 8c. We plan to implement 100% of our meters with remote disconnect functionality. This would allow all our members to have access to pre-paid metering and allow LVRECC to have the capability of doing disconnects/reconnects without sending out our servicemen.

- d. State the numbers of meters that will include remote connect and disconnect functionality.

Answer 8d. 100% once fully deployed

- e. Describe how a meter with remote connect and disconnect capability is physically different from a standard meter.

Answer 8e. Remote disconnect meter has an internal switch.

- f. Explain the decision process for installing a remote connect and disconnect meter.

Answer 8f. We plan for a 100% deployment of remote disconnect meters.

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Question 9. Refer to the Application, Exhibit 5, page 1, regarding enhanced data collection. Explain what alternative rate structures Licking Valley is considering for future use, and how Licking Valley will evaluate the data collected from AMI meters in evaluating alternative rate structures.

Answer 9. LVRECC currently has no alternative rate structures; however, the deployment of these meters will give us the opportunity to evaluate those options in the future.

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Question 10. State whether Licking Valley performed a formal study in connection with the decision to deploy AMI RF metering. If so, provide a copy of the study. If not, explain why a formal study was not conducted.

Answer 10. LVRECC did not perform a formal study in our decision to deploy AMI RF metering. Our employees attend meter schools and training regularly and discussions were of the opinion that TS-1 technology was obsolete and TS-2 was fast becoming outdated. With the need for metering technology to be as modern as possible LVRECC thought it would be in the membership's best interest to go ahead and solicit RFP's from other vendors to see which technology would fit our growing needs going into the future and from information collected the RF system that was chosen from Landis+Gyr performed the best in our service territory

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Question 11. Provide a copy of the minutes from the Board of Directors meeting approving the AMI RF system.

Answer 11. LVRECC Board of Directors has not voted to approve the new RF metering system pending CPCN approval. It was discussed during the following board meetings beginning in Sept 2013, Jan 2015, May 2015, Oct 2015, Nov 2015, and Feb 2016. See Exhibit 7

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Question 12. Refer to the information filed in response to the Commission's deficiency letter with respect to 807 KAR 5:001, Section 15(2)(f), the estimated annual cost of operation after the proposed facilities are placed in service. Licking Valley states that its meter expense for 2015 was \$730,148 and estimates a 3 percent annual cost increase for the operation of the metering program.

a. Provide the amount of meter expense for the years 2011 through 2014.

Answer 12a.

2011 -	\$624,560
2012	\$717,731
2013	\$702,124
2014	\$782,351

b. Provide the basis for the statement that the meter expense will have an annual 3 percent increase for the operation of its metering program.

Answer 12b Inflation

b. Provide a breakdown of the meter expenses.

Answer 12c.

Property Tax = \$18,023.00

Transportation = \$ 96,928.00

Labor = \$ 578,987.00

Fees-Miscellaneous collections = **-\$1,215.00**

Yearly Support = \$35,491

Electric Bill for Metering Dept = \$2,156.00

d. State the amount that meter reading expense is expected to decrease from 2016 through 2020.

Answer 12d. LVRECC does not anticipate a decline in meter reading expenses.

e. Identify and quantify any other cost increases or decreases associated with the AMI program including telecommunications, substation expenses, etc.

Witness: Kerry K. Howard

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Answer 12e. LVRECC does not anticipate any additional increases or decreases with the exception of inflation.



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

Quote

(Sensus)

NRTC AMI Solutions Quotation

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

Date: 7/1/2014
Quote #: 406

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

2,490,000.00
2,016,000



Quote

Date Quote # 7/1/2014 406

Line #	Part #	Item Description	Qty	Unit Price	Est. 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 SOFTWARE 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-PRJMGMT-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

Email

*?
1 time
Annual
Monthly*

*? one time
or Annual*

? one time

Yearly

←



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
--------------	-----------------------

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

Member Signature _____

Print Name & Title: _____

PO#: _____ Date: _____

3,738,275.00

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 quantity 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 letter 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 product(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 Invalidation. 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.



Tomorrow's Smart Grid. Today.

Tantalus Systems Inc. 1121 Situs Court, Suite 190, Raleigh NC 27608
P: 919.900.8970 | F: 919.900.8978 | www.tantalus.com

*overhaul of operations gives good Backup
we will have a project manager -
Add + A System Engineer.
FCC Personal Cell #'s
Licensed 290 system - Annual Fees*

05/29/2014

Prepared for: Licking Valley RECC

Deployment Costs

Tantalus Material

Quantity	Unit Price	Extended Price
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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
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Network Controllers

NC-2200	Network Controller - One Channel <i>Antennas</i>	4	\$ 45,000.00	\$ 180,000.00
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Advanced Metering Collectors & Transceivers

RT-3205	220 MHz Transceiver - Form 2S <i>Cat House w/meter Shark Fin</i>	165	\$ 375.00	\$ 61,875.00
TR-1901	900 Mhz LAN Repeater-Router (XR-100 Mounting Brackets Included) <i>Repeaters</i>	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) <i>Like a Shark Fin</i>	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
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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
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Price for Tantalus Material	<i>without End point Cost = 556,116.70</i>	\$ 1,582,466.70
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Add 30,000 NISC Setup

Total Annual Costs		\$ 49,790.00
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1300/mo NISC

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*Meter data does not get lost when Meter "3" goes bad.
can tell meters to reassociate now.*

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 CI200	\$27.95	\$441,330.50
100	FM 2S CI200 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 →

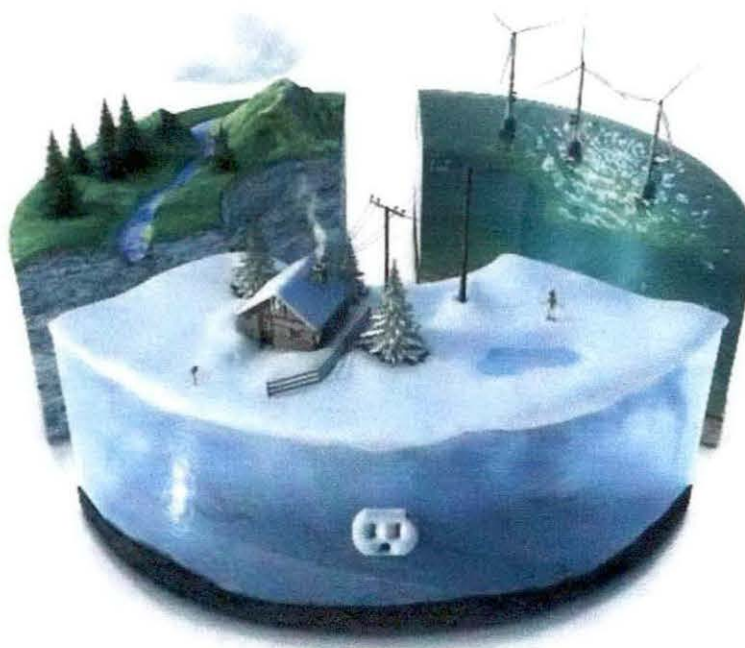
Polyphase Meter Pricing			
Quantity	Form	Price per Unit	Extended Pricing
190 250	Sentinel 3Φ Socket Level 1	\$187.50	\$35,625.00 46,875.00
Total Price for Itron Electric Meters			\$481,129.25

→ + 11,250
581,250.00

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

Total Adjusted est. BY 1/16
3,163,316.20

GE
Digital Energy



Licking Valley Rural Electric Cooperative

GE Grid IQ™ Connect

Budgetary Pricing Estimate

June 9, 2014



imagination at work

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GE Digital Energy

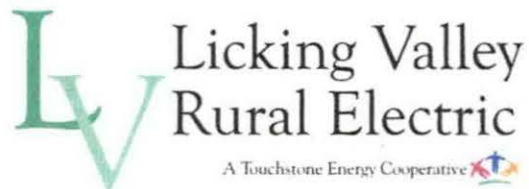
1. Introduction

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:

- 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.

1 | GE Grid IQ™ Connect Budgetary Estimate – Licking Valley Rural Electric Coop
GE Proprietary and Confidential



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

² GE Grid IQ™ Connect Budgetary Estimate – Licking Valley Rural Electric Coop
GE Proprietary and Confidential



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 <i>16,000</i>	\$ 11,280 <i>9,600</i>
Meters (res)	\$ 104.00 <i>172,000</i>	16,920 <i>16,000</i>	\$ 1,759,680 <i>2,740,800.00</i>
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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M +1 256 777 3937

E DAMON.DOUGHERTY@GE.COM



September 16, 2014

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

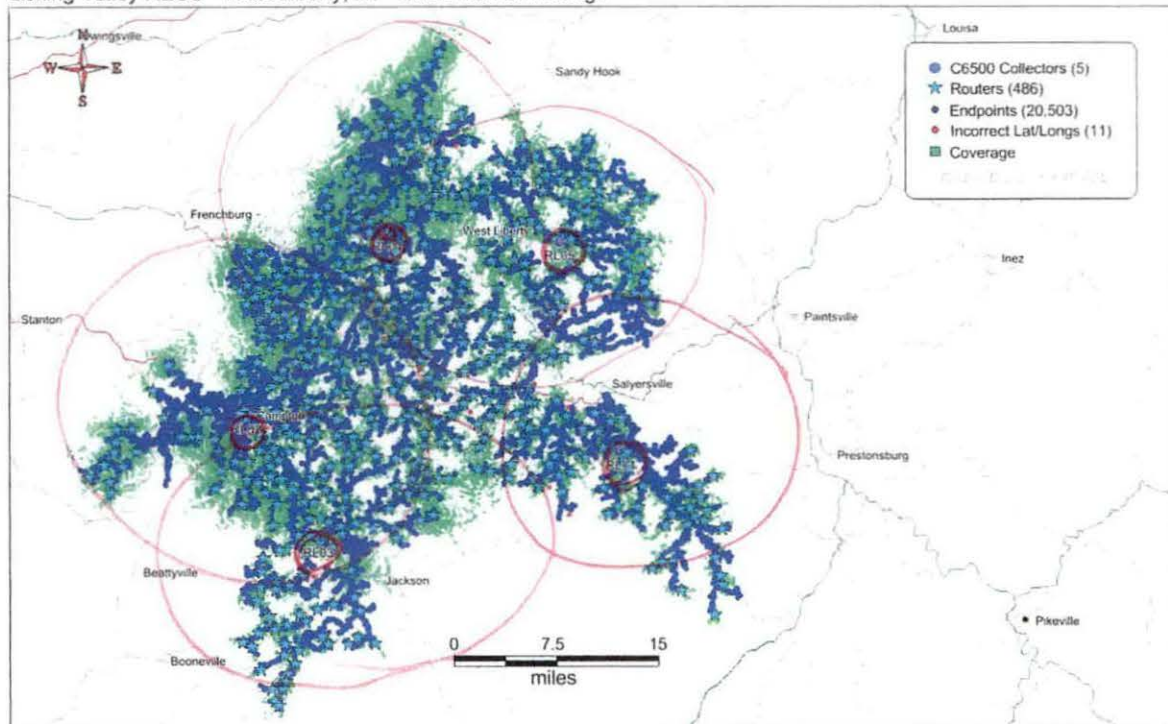
Dear Mr. Chaney,

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.

Licking Valley RECC - West Liberty, KY - Initial Network Design



Landis+Gyr
Proprietary & Confidential

August 27, 2014

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 <i>16000</i>	\$117.00 <i>+ 42.50 159.50</i>	\$1,694,043.00 <i>2,570,000</i>
Landis+Gyr Gridstream RF FOCUS AX Polyphase Meter with Communication Module for Commercial & Industrial	1,608 <i>300</i>	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.

3,397,990.00

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

Item of Interest	Landis & Gyr	Tantalus
Estimated 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
Licensed/unlicensed	unlicensed	Licensed
Monthly hosting comm Cost	yes	In the 49000
Monthly per endpoint hosting fee	.08 per unit @16000 = 1280.00	
Long 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		
Commissioning ?	Min. or Atlanta	
Over the line updates	yes	
Tamper alarm	yes	yes
igbee 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?
Links 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	ltron 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.

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

Adjusted to 16000 meters

License 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	
scensed	
5040.01 FCC charges	
none	
es	
Great/ Don Bowman	
ood	
Seconds	
hourly @ 15 min int	
none	
es	
Yes With Alarms	
es With Alarms	
es With Alarms	
Through Meter	
es With Alarms	
ready now	
Not a mesh System	
es With Alarms	
Compatible	
ompatible	
& G, Sensus	
Compatible	
16	
ess than 10	

phase

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. 900mhz 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 passed 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 look 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 antennae 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
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
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Licensed/Unlicensed

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

Usage Report

Customer Information			
Account Number		Meter Number	
Customer ID		Service Location	
Customer Name		Map Location	
Customer Address			
Billing Cycle	1	Collector	RF Maytown
Meter Multiplier	1	Feeder	2
Demand Multiplier	1.0	Status Groups	*
Custom1	*	Grid Location	171
Custom2	*		

* Denotes gaps in available information

Usage Date	Meter	Total kWh	Max	Max Demand Time
Thu Nov 19, 15	3682	27		11/19/2015 12:00 AM
Fri Nov 20, 15	3735	53		11/20/2015 12:00 AM
Sat Nov 21, 15	3797	62		11/21/2015 12:00 AM
Sun Nov 22, 15	3850	53		11/22/2015 12:00 AM
Mon Nov 23, 15	3910	60		11/23/2015 12:00 AM
Tue Nov 24, 15	3971	62		11/24/2015 12:00 AM
Wed Nov 25, 15	4017	46		11/25/2015 12:00 AM
Thu Nov 26, 15	4074	57		11/26/2015 12:00 AM
Sat Nov 28, 15*	4156	38		11/28/2015 12:00 AM
Sun Nov 29, 15	4199	43		11/29/2015 12:00 AM
Mon Nov 30, 15	4229	30		11/30/2015 12:00 AM
Tue Dec 01, 15	4263	34		12/1/2015 12:00 AM
Wed Dec 02, 15	4308	44		12/2/2015 12:00 AM
Thu Dec 03, 15	4366	58		12/3/2015 12:00 AM

Usage Report

Fri Dec 04, 15	4437	71	12/4/2015 12:00 AM
Sat Dec 05, 15	4507	71	12/5/2015 12:00 AM
Sun Dec 06, 15	4566	58	12/6/2015 12:00 AM
Mon Dec 07, 15	4611	45	12/7/2015 12:00 AM
Tue Dec 08, 15	4661	50	12/8/2015 12:00 AM
Wed Dec 09, 15	4717	56	12/9/2015 12:00 AM
Thu Dec 10, 15	4758	41	12/10/2015 12:00 AM
Fri Dec 11, 15	4782	24	12/11/2015 12:00 AM
Sat Dec 12, 15	4829	47	12/12/2015 12:00 AM
Sun Dec 13, 15	4860	31	12/13/2015 12:00 AM
Mon Dec 14, 15	4880	20	12/14/2015 12:00 AM
Tue Dec 15, 15	4923	43	12/15/2015 12:00 AM
Wed Dec 16, 15	4959	36	12/16/2015 12:00 AM
Grand Total		1260	

Printed On 4/20/2016 07:18 AM
Start Date 11/1/2015 12:00 AM
End Date 12/16/2015 11:59 PM

Info	Interval Date- Gap(*)	kWh	rxKWh	Interval	Status	UTC Offset
Published	3/29/2016 12:00:00 AM	0.3396	0.0000	15 Minute	OK	-300
Published	3/29/2016 12:15:00 AM	1.0770	0.0000	15 Minute	Long	-300
Published	3/29/2016 12:30:00 AM	1.5096	0.0000	15 Minute	OK	-300
Published	3/29/2016 12:45:00 AM	1.5012	0.0000	15 Minute	OK	-300
Published	3/29/2016 1:00:00 AM	0.4716	0.0000	15 Minute	OK	-300
Published	3/29/2016 1:15:00 AM	0.1572	0.0000	15 Minute	OK	-300
Published	3/29/2016 1:30:00 AM	0.1650	0.0000	15 Minute	OK	-300
Published	3/29/2016 1:45:00 AM	0.1704	0.0000	15 Minute	OK	-300
Published	3/29/2016 2:00:00 AM	0.2016	0.0000	15 Minute	OK	-300
Published	3/29/2016 2:15:00 AM	1.1916	0.0000	15 Minute	OK	-300
Published	3/29/2016 2:30:00 AM	1.5132	0.0000	15 Minute	OK	-300
Published	3/29/2016 2:45:00 AM	1.4388	0.0000	15 Minute	OK	-300
Published	3/29/2016 3:00:00 AM	0.1716	0.0000	15 Minute	OK	-300
Published	3/29/2016 3:15:00 AM	0.1632	0.0000	15 Minute	OK	-300
Published	3/29/2016 3:30:00 AM	0.2292	0.0000	15 Minute	OK	-300
Published	3/29/2016 3:45:00 AM	0.1650	0.0000	15 Minute	OK	-300
Published	3/29/2016 4:00:00 AM	0.5790	0.0000	15 Minute	OK	-300
Published	3/29/2016 4:15:00 AM	1.4784	0.0000	15 Minute	OK	-300
Published	3/29/2016 4:30:00 AM	1.4790	0.0000	15 Minute	OK	-300
Published	3/29/2016 4:45:00 AM	0.8502	0.0000	15 Minute	OK	-300
Published	3/29/2016 5:00:00 AM	0.2268	0.0000	15 Minute	OK	-300
Published	3/29/2016 5:15:00 AM	1.3626	0.0000	15 Minute	OK	-300
Published	3/29/2016 5:30:00 AM	0.9588	0.0000	15 Minute	OK	-300
Published	3/29/2016 5:45:00 AM	0.1968	0.0000	15 Minute	OK	-300
Published	3/29/2016 6:00:00 AM	0.2994	0.0000	15 Minute	OK	-300
Published	3/29/2016 6:15:00 AM	0.2100	0.0000	15 Minute	OK	-300

LVRECC BOARD MEETING

September 19, 2013

Page 05 of 06

T2 METERING

We met with Mark Davis of the National Rural Telecommunications Cooperative and discussed the future of metering. T2 is nearly out-of-date even though Licking Valley RECC's conversion is near complete.

LVRECC BOARD MEETING

January 15, 2015

Page 04 of 05

**METERING
PILOT
PROGRAM**

General Manager / CEO Kerry K. Howard reported LVRECC
would start the Metering Pilot Program within the next month or so.

LVRECC BOARD MEETING

May 14, 2015

Page 03 of 04

**LV / PSC
METERING
CONF CALL**

General Manager/CEO Howard reported meeting with the PSC by way of conference call to discuss LVRECC's new metering system, work plan, and letter mailed to the PSC regarding the quarterly report of meters. The Commission requested we discuss with them more on our plans for metering. We are required to report back with them in three months on our discovery.

LVRECC BOARD MEETING

October 15, 2015

Page 04 of 06

METERING

We are required to file reports with the Public Service Commission on our metering system status. Hopefully we will receive a good report from them.

LVRECC BOARD MEETING

November 19, 2015

Page 04 of 05

METERING

We plan to meet with RUS on our metering project to see if we can include the project efforts in our Work Plan.

LVRECC BOARD MEETING

February 18, 2016

Page 05 of 05

METERING

We have applied for CPCN through the Public Service Commission on the metering project. We have returned the first information request and hopefully we will have the Order to get started on our metering project.