

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE ELECTRONIC APPLICATION OF MEADE)	
COUNTY RURAL ELECTRIC COOPERATIVE)	
CORPORATION FOR A CERTIFICATE OF)	CASE NO.
PUBLIC CONVENIENCE AND NECESSITY TO)	2020-00336
CONTINUE WITH THE FULL DEPLOYMENT)	
INSTALLATION OF ITS AUTOMATED)	
METERING AND INFRASTRUCTURE SYSTEM)	

MOTION FOR CONFIDENTIAL TREATMENT

Comes now Meade County Rural Electric Cooperative, Inc. (“Meade County”) by counsel, pursuant to KRS 61.878, 807 KAR 5:001 Section 13 and applicable law, and respectfully moves the Commission to afford confidential treatment to certain information and documents filed by Meade County in response to the requests for information propounded by Commission Staff, in the above styled matter. In support of this request, Meade County states as follows:

1. On October 28, 2020, Meade County filed its Application in this matter. On November 20, 2020, Commission Staff propounded requests for information upon Meade County. Meade County is filing responses to these requests for information contemporaneously herewith.
2. Pursuant to Commission regulation and in accordance with law, Meade County requests that the Commission afford confidential treatment to the following proprietary, personal, confidential, sensitive, and commercially valuable information (collectively, the “Confidential Information”):

- a. The solicitation responses from vendors provided in response to Item 2 of the Commission Staff's request for information and attached as Exhibit 2, Exhibit 3, and Exhibit 4.
 - b. The vendor bid evaluation sheets provided in response to Item 4 of the Commission Staff's request for information and attached as Exhibit 6.
3. Each item for which Meade County requests confidential treatment warrants protection from open viewing and distribution. These materials were furnished to Meade County solely for its own business purposes, and Meade County committed to vendors that it would maintain confidentiality of the vendors' pricing and other proposal content that were stamped as "proprietary" and "confidential". All of the Confidential Information is proprietary information that is retained by Meade County on a need-to-know basis and is only distributed within Meade County to those people holding select positions who must have access for business purposes. The Confidential Information is generally recognized as confidential and proprietary in the utility industry and elsewhere.
4. The Kentucky Open Records Act and applicable precedent exempts the Confidential Information from disclosure. See KRS 61.878(1)(a); KRS 61.878(1)(c)(1); *Zink v. Department of Workers Claims, Labor Cabinet*, 902 S.W.2d 825 (Ky.App. 1994); *Hoy v. Kentucky Industrial Revitalization Authority*, 907 S.W.2d 766, 768 (Ky. 1995). The public disclosure of the Confidential Information would potentially harm Meade County's competitive position in the marketplace, to the detriment of Meade County and its customers. Additionally, the Confidential Information is publicly unavailable and its confidentiality is critical to Meade County's effective execution of business decisions and strategy. The Commission has consistently recognized that public disclosure of

confidential information relating to bids provided to a utility can cause competitive harm to the utility. For example, In P.S.C. Case No. 2003-00054, the Commission granted confidential protection for bids submitted to Union Light Heat & Power (“ULH&P”). ULH&P argued, and the Commission implicitly accepted, that the bidding contractors would not want their bid information publicly disclosed, and that disclosure would reduce the contractor pool available to ULH&P, which would drive up ULH&P’s costs, hurting its ability to compete with other gas suppliers. *In the Matter of: Application of the Union Light, Heat and Power Company for Confidential Treatment*, Order, P.S.C. Case No. 2003-00054 (August 4, 2003). Similarly, in *Hov v. Kentucky Indus. Revitalization Authority*, the Kentucky Supreme Court found that without protection for confidential information provided to a public agency, “companies would be reluctant to apply for investment tax credits for fear the confidentiality of financial information would be compromised.” *Hoy v. Kentucky Indus. Revitalization Authority*, 907 S.W.2d 766, 769 (Kv. 1995). Likewise, if the Confidential Information is publicly disclosed, fewer vendors will be willing to bid on Meade County projects, driving up Meade County’s costs and hurting its ability to compete for economic development prospects, for the best financing prices and terms, and in other competitive markets.

5. For these reasons, the Confidential Information satisfies both the statutory and common law standards for affording confidential treatment.
6. Meade County does not object to limited disclosure of the Confidential Information described herein, pursuant to an acceptable confidentiality and nondisclosure agreement, to intervenors with a legitimate interest in reviewing the same for the sole purpose of participating in this case.

7. Contemporaneously with this motion, Meade County is filing an electronic, redacted version of its responses to the relevant requests for information. By mail, Meade County intends to tender one (1) hardcopy, redacted original of each response and, in a separate sealed envelope marked confidential, one (1) unredacted copy of the Confidential Information once the COVID-19 State of Emergency has lifted.
8. In accordance with the provisions of 807 KAR 5:001 Section 13(2), Meade County respectfully requests that the Confidential Information be withheld from public disclosure for ten (10) years.
9. If, and to the extent, the Confidential Information becomes publicly available or otherwise no longer warrants confidential treatment, Meade County will notify the Commission and seek to have confidential protection removed, pursuant to 807 KAR 5:001 Section 13(10).

WHEREFORE, on the basis of the foregoing, Meade County respectfully requests that the Commission classify and protect as confidential the specific Confidential Information described herein for a period of ten (10) years.

Dated this 4th day of December, 2020.

Respectfully submitted,



THOMAS C. BRITE
BRITE & HOPKINS, PLLC
ATTORNEYS AT LAW
P.O. BOX 309
HARDINSBURG, KY 40143
(270) 756-2184

tbrate@bbtel.com
Counsel for Meade County Rural
Electric Cooperative, Inc.

CERTIFICATE OF SERVICE

This is to certify that the foregoing electronic filing is a true and accurate copy of the document being filed in paper medium; that the electronic filing was transmitted to the Commission on the 7th day of December, 2020; that there are current no parties that the Commission has excused from participation by electronic means in this proceeding; and that a copy of the filing in paper medium will be filed with the Commission within thirty days of the current state of emergency for COVID-19 being lifted.



Counsel for Meade County Rural
Electric Cooperative, Inc.

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 1)** *Refer to the Application, Exhibit 6, page 1. The document states that Landis &*
2 *Gyr's support for the Power Line Carrier (PLC) AMR/AMI system would end in 2020.*

3 *a. Provide copies of communications from Landis & Gyr to Meade County RECC*
4 *indicating that Landis & Gyr will cease supporting its TS2 meters after 2020 and that*
5 *spare parts will no longer be available.*

6 *b. Explain in specific detail how Meade County RECC became informed that support of*
7 *the PLC system would end.*

8 *c. Explain in specific detail how Meade County RECC will continue to use its current*
9 *meters for four years after support ends and replacement parts are sparsely available.*

10 **Response)**

11 a. Please see Exhibit 6 in the Application – Correspondence from Landis + Gyr TS2 End of
12 Sales FAQ. Long lead times and decreasing availability of parts prompted discussions
13 between Meade County and Landis + Gyr on various occasions.

14 b. On January 17, 2018, Meade County received a phone call from a Technical Products
15 Specialist with Stuart C. Irby Company, regional Landis + Gyr distributor, inquiring on a
16 Sales FAQ that he had received. Meade County was forwarded a copy of the Sales FAQ
17 on January 18, 2018.

18 c. Meade County will maintain a supply of spare TS2 meters for new installations and
19 changeouts for the proposed two years until the completion of the new AMI deployment.

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 Meade County has been fortunate to procure some used parts and meters from other
2 cooperatives that have started or completed an AMI conversion.

3

4 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 2)** *Provide a copy of the solicitation sent to prospective venders and the responses.*

2

3 **Response)**

4 The solicitation sent by Meade County to prospective venders is attached as Exhibit 1.

5 The vender responses are included in the attachments: Exhibit 2, Exhibit 3, and Exhibit 4.

6

7 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 3)** *Provide the number of TS2 meters Meade County RECC has remaining in*
2 *stock.*

3

4 **Response)**

5 As of December 3, 2020, Meade County has 2,779 TS2 meters remaining in stock.

6

7 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 4)** *Provide the analysis that Meade County RECC performed, including the bid*
2 *evaluation sheets, surveys of other utilities, and a copy of the material supplied to Meade*
3 *County RECC's Board of Directors, supporting the selection of Landis + Gyr to be the vendor*
4 *for the AMI System.*

5

6 **Response)**

7 Please see Exhibit 5 for a survey of other utilities. Please see Exhibit 6 for bid evaluation
8 sheets. The Board of Directors was made aware of the need for a new system via discussions of
9 the 2018-2020 Construction Work Plan at the February 2018 Board of Directors meeting. The
10 Board of Directors was updated as to the selection of Landis + Gyr at the July 2019 Board of
11 Directors meeting.

12

13 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 5)** *Explain whether the TS2 meters have been fully depreciated. If not, provide the*
2 *amount of accumulated depreciation on the TS2 meters, and explain how Meade County*
3 *RECC intends to recover the undepreciated costs of the TS2 meters.*

4

5 **Response)**

6 The TS2 meters have not been fully depreciated. As of October 31, 2020, the amount of
7 accumulated depreciation on the TS2 meters totals \$2,804,241.68, and the remaining
8 depreciable basis is \$2,749,325.60. The depreciation rate for the TS2 meters was
9 accelerated in year 2016 due to the approval of Meade County's most recent depreciation
10 study that decreased the useful life of the TS2 meters from 30 years to 15 years. Meade
11 County plans to continue the depreciation of the TS2 meters and evaluate the remaining
12 depreciable basis at a time closer to the end of the proposed AMI deployment.

13

14 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 5)** *Explain whether the TS2 meters have been fully depreciated. If not, provide the*
2 *amount of accumulated depreciation on the TS2 meters, and explain how Meade County*
3 *RECC intends to recover the undepreciated costs of the TS2 meters.*

4

5 **Response)**

6 The TS2 meters have not been fully depreciated. As of October 31, 2020, the amount of
7 accumulated depreciation on the TS2 meters totals \$2,804,241.68, and the remaining
8 depreciable basis is \$2,749,325.60. The depreciation rate for the TS2 meters was
9 accelerated in year 2016 due to the approval of Meade County's most recent depreciation
10 study that decreased the useful life of the TS2 meters from 30 years to 15 years. Meade
11 County plans to continue the depreciation of the TS2 meters and evaluate the remaining
12 depreciable basis at a time closer to the end of the proposed AMI deployment.

13

14 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 6)** *Provide support for the useful life of the proposed AMI meters and components.*

2

3 **Response)**

4 Please see attached Exhibit 7 – E-mail correspondence from a Landis + Gyr
5 representative detailing the estimated useful life of the proposed AMI meters. Please see
6 attached Exhibit 8 – Presentation from National Rural Electric Cooperative Association
7 (NRECA) regarding the AMI Life Cycle and Next Generation. Meade County will apply
8 a useful life of 15 years to its proposed AMI meters and components.

9

10 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 7)** *Provide a detailed timeline for deployment of the meters if the Commission*
2 *approves the Certificate of Public Convenience and Necessity.*

3

4 **Response)**

5 Meade County estimates the following timeline for the proposed deployment of meters:

6

January 2021

- Order collectors, routers, and meters to cover first half of Meade's territory.
- Conduct router site surveys and submit to Landis + Gyr for approval.

April 2021

- Receive collectors, routers, and meters from Landis + Gyr.
- Begin installation of collectors and routers.

July 2021

- Complete installation of collectors and routers.
- Begin meter changeouts.

December 2021

- Complete meter changeouts.

January 2022

- Order collectors, routers, and meters to cover second half of Meade's territory.
- Conduct router site surveys and submit to Landis + Gyr for approval.

April 2022

- Receive collectors, routers, and meters from Landis + Gyr.
- Begin installation of collectors and routers

July 2022

- Complete installation of collectors and routers.
- Begin meter changeouts

December 2022

- Complete meter changeouts.

Witness) Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 8)** *Further explain the prepay solution for enrolled members and how this may aid*
2 *in usage reduction.*

3

4 **Response)**

5 Meade County will offer a prepay solution to its members when the new AMI system is
6 fully deployed. Members may avoid paying deposits by signing up to make prepayments
7 for their electric consumption. The prepay solution will allow members to load funds to
8 their accounts prior to receiving electric service. Meade County will provide its members
9 with the resources needed to be more mindful of consumption habits by implementing a
10 daily dollar measure instead of applying a monthly kWh total to be billed. The new AMI
11 system will enable Meade County to enhance the timeliness and efficiency of the
12 disconnection and reconnection of services which also aids usage reduction.

13

14 **Witness)** Mike French

Meade County Rural Electric Cooperative Corporation
Case No. 2020-00336 CPCN Application for AMI Full Deployment
Response to Commission Staff's First Set of Data Requests
Filed December 7, 2020

1 **Item 9)** *Provide support for the projected cost savings that are expected from the AMI*
2 *system when installed.*

3

4 **Response)**

5 Please see Exhibit 2, pages 2 and 3.

6

7 **Witness)** Mike French



Meade County RECC

A Touchstone Energy® Cooperative



Request for Proposals Advanced Metering Infrastructure Services

RFP. No. 2019-001

Issue Date: November 6, 2018

Due Date & Time: February 6, 2019 - 4:00 p.m. (Eastern)

1 INTRODUCTION

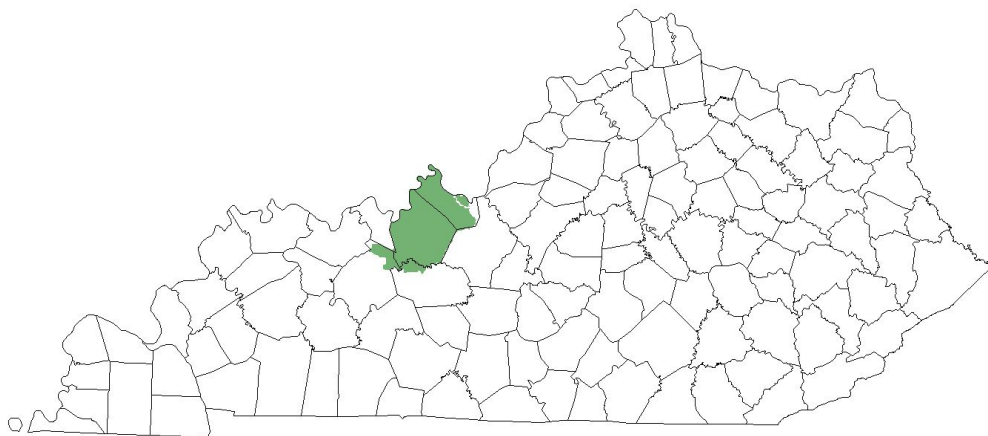
1.1 PROJECT OVERVIEW

Meade County Rural Electric Cooperative Corporation (Meade County RECC) is issuing this Request for Proposals (RFP) from qualified vendors for the design and installation of an Advanced Metering Infrastructure System (AMI System) utilizing radio frequency (RF) technology. The proposed project envisions the qualified vendor(s) will provide services to design and install the AMI System and all other supporting systems, including electric meters and communication infrastructure necessary to provide AMI services to Meade County RECC. Meade County RECC's desire is to have the system installed, tested, functional and accepted by Meade County RECC by September 1, 2020 for pilot, September 1, 2022 for full installation. Meade County RECC would like to make all vendors aware that it is currently using Landis and Gyr's PLC TS2 system and is transitioning to a new AMI system because the current TS2 system is approaching the end of its useful life. Any new RF system would be required to run alongside the current TS2 system until the expected project completion date of September 1, 2022.

1.2 ABOUT MEADE COUNTY RECC

Meade County RECC, a member-owned electric distribution cooperative, serves in excess of 29,000 households, commercial enterprises and industries along more than 3,200 miles of line in all or portions of 6 Kentucky counties. They include Breckinridge, Grayson, Hancock, Hardin, Meade, and Ohio. Meade has had the TS2 form of AMR/AMI since 2004.

Meade County RECC Headquarters is located at 1351 Hwy 79, Brandenburg, KY. Meade County RECC has one district office located in Hardinsburg, KY. The following map details the Meade County RECC service area:



2 RFP INFORMATION

2.1 GENERAL

This RFP is soliciting proposals for the following:

- I. Design and installation of an Advanced Metering Infrastructure System (AMI System) utilizing Radio Frequency (RF) technology, including all hardware and software.
- II. Installation of AMI Meters, end-of-life meter testing and storage of removed meters.
- III. Installation of a Meter Data Management System (MDMS).

Meade County RECC is soliciting proposals from vendors who provide one or more of the above. Vendors are encouraged to submit proposals for any of these activities for which they are qualified. Meade County RECC may select a single vendor to provide all of the above or may choose to select multiple vendors to complete this project. Please consider this as you prepare your proposal(s).

Proposals for item I, above, will be accepted for a Meade County RECC managed solution, not hosted.

2.2 INQUIRIES ABOUT THE REQUEST FOR PROPOSAL (RFP)

All inquiries and requests for information from prospective vendors concerning this RFP must be submitted in writing to mfrench@mcrecc.com. The subject line of the email should state "INQUIRY RFP – No. 2019-001 - Advanced Metering Infrastructure Services". Responses will be written and copies of the written responses will be issued via email and will be distributed to all prospective vendors. In the event it becomes necessary for Meade County RECC to revise any part of this RFP, an Addendum or Supplement to this RFP will be provided to all prospective vendors.

2.3 ANTICIPATED SCHEDULE

The following timeline is intended to illustrate the anticipated time line for the RFP and the project. Meade County RECC reserves the right to change activities and dates at its sole discretion.

Action	Completion Date
RFP Release	11/6/18
Pre-Proposal Conference Calls	Upon request
RFP Inquiries Deadline	2/1/19
Proposal Submission Deadline – 4:00 P.M. (Eastern)	2/6/19
Responses Evaluated	2/7/19 – 3/5/19
Notice of Award	3/6/19
Contract Negotiations/Contract Execution/Notice to Proceed	3/12/19 – 5/7/19
Pilot Meter Installation	11/5/19
Desired Project Pilot Installation complete.	11/22/19

Desired Project Completion (System Installed, Tested, Functional and Accepted by Meade County RECC)	9/1/2020 pilot 9/1/22 full install
---	---------------------------------------

2.4 PRE-PROPOSAL CONFERENCE CALLS

Please submit your request for a conference call time to mfrench@mcrecc.com. The specific time of your conference call and dial-in information will be confirmed with a return email. Please submit your questions in advance via email.

2.5 CONTENT OF PROPOSALS

A complete proposal should be compiled using the following format:

A. Company Information and Experience

Provide company background and history, including the number of years' experience in providing the proposed products/services. Include the following information for up to three (3) projects where this product/service has been deployed and is an operating AMI System serving electric utilities within the last two (2) years:

- Brief description of the project
- Project organization, including use of sub-contractors, utility provided services, etc.
- Total number of residential, commercial & industrial meters in each project
- Start and finish dates for the contract.
- A description of the specific services provided to the utility including service level agreement (SLA's) associated with each service.
- Provide relevant references within the utility that are familiar with the work performed. Include name, current phone number and current email address.

Provide an Annual Report or a Profit and Loss Statement covering the last 24 months for the vendor(s) proposing to provide products/services. Also include, where applicable, the total investment in research and development of AMI solutions and equipment for the past 5 years for each vendor.

B. AMI System

Include all information requested in Section 3 of this RFP titled **DESIGN AND INSTALLATION OF AN ADVANCED METERING INFRASTRUCTURE SYSTEM UTILIZING RF TECHNOLOGY, INCLUDING ALL HARDWARE AND SOFTWARE**, including the Function/Functionality Checklists.

C. Installation, Testing and Removal of Meters

Include all information requested in Section 4 of this RFP titled **INSTALLATION OF AMI METERS, END OF LIFE METER TESTING AND STORAGE OF REMOVED METERS**, including the Function/Functionality Checklists.

D. MDMS

Include all information requested in Section 5 of this RFP titled **INSTALLATION OF AN MDMS**, including the Function/Functionality Checklists.

E. Warranty Information

Provide a description of the warranty provided to Meade County RECC for each component and service contained in your proposal. Include the effective dates, the expiration dates, and the extent of the warranty coverage and any limitations of the warranty.

F. Additional Information

Provide additional information important or relevant to the products/services being proposed.

2.6 SUBMISSION

One (1) original and five (5) hard copies and one (1) electronic copy of all proposal materials shall be submitted. Sealed proposals shall be clearly marked with "***Request for Proposals - Advanced Metering Infrastructure Services RFP No. 2019-001***". Proposals shall be submitted as follows:

- If hand delivered or mailed using FedEx or UPS:

Meade County RECC
ATTN: Mike French
1351 Hwy 79
Brandenburg, Kentucky 40108

- If mailed using United States Postal Service:

Meade County RECC
ATTN: Mike French
P.O. Box 489
Brandenburg, Kentucky 40108

- Electronic submissions should be made via a portable storage device or appropriate electronic means. Email should **NOT** be used to submit the electronic copy.

3 DESIGN AND INSTALLATION OF AN ADVANCED METERING INFRASTRUCTURE SYSTEM UTILIZING RF TECHNOLOGY, INCLUDING ALL HARDWARE AND SOFTWARE

3.1 SPECIFICATIONS

Proposed products/services must meet the following specifications:

- System is a RF AMI solution (RF Mesh, Point to Multipoint RF, etc.) with two-way communication.
- Completion of a propagation study using data contained in Exhibit B and the attached electronic files and delivery of a detailed report that includes the following:
 - The quantity and type of equipment required to achieve:
 - 100% Coverage (all deployed meters are active on RF mesh network)
 - 99.9% delivery of billing determinants every 72 hours.
 - 95% of all meters must report back following an on-demand request.
 - Meters must be Aclara/GE or Landis & Gyr.
 - The system design results in an average of 8 hops per meter, no more than 12 hops per meter and allows each meter's "last gasp" to be delivered to Futura OMS.
 - Installation & maintenance specifications and requirements for collection devices, repeater devices and all equipment mounted on customer premises.
 - Detailed pricing for the above referenced system. Pricing must include:
 - One-time costs
 - Recurring costs itemized by year (and any other appropriate time period) for a period of 10 years. (10-year cost of ownership).
 - For System Guarantees/Maintenance Agreements, include initial coverage details and future year's coverage details. Also include the maximum length of a Maintenance Agreement available and the corresponding cost.
 - The cost for disconnect/reconnect switches for 100% of all applicable meters, by meter type.
- Provides integration to SEDC's UPN and MDM.
- Provides integration to Futura's GIS/OMS system.
- Provides integration to NISC iVue and MDM.
- Provides integration to Milsoft GIS/OMS.
- Provides integration to Survalent SCADA.
- Provides integration to OSI SCADA.
- Capable of sending and receiving DNP3 communication to control downline devices.
- During deployment through Meade County RECC's acceptance, a single point of contact with 24/7 accessibility will be provided.
- Any meter equipped with a disconnect/reconnect switch must be able to display the open/closed status of the switch on the meter display.
- Meters must have the ability to collect and report kWh, kW and voltage. Poly phase meters must additionally have the ability to collect and report Power Factor at peak kW.
- Poly phase meters shall be auto-ranging in voltage (120-480V).

Additionally, proposals should include the following:

- Methodology for deployment, including proposed process maps and deployment schedules for the products/services proposed in order to meet Meade County RECC's

desired acceptance date of September 1, 2020 for pilot, September 1, 2022 for full installation.

- Any cost associated with the training outlined in Section 6 of this RFP.
- Describe, in detail, cyber security measures/methods intended for use with your proposed AMI solution.
- If the proposed system allows for retrofitting of existing solid state meters, please specify meter brand and type and the cost of the module.
- Methodology of system design including propagation assumptions described in detail (including built in redundancy of the network).
- Any additional required testing equipment with estimated cost.
- List all standard report options through the management portal.
- Specs on the batteries of all devices that have them (such as routers and collectors) which should include but not limited to expected life, replacement process and if notifications are sent when the battery fails.
- Identify any exceptions to Meade County RECC's specifications.
- System Design must be able to run side by side with existing AMI Infrastructure until the existing PLC system is phased out.

3.2 FEATURES/FUNCTIONALITY CHECKLIST

Respond as follows:

YES Feature/Functionality is part of the product(s) being quoted in this proposal.

NO Feature/Functionality is NOT part of the product(s) being quoted in this proposal.

DESCRIPTION

3.2.1 General System Requirements	YES	NO
The AMI System can be deployed using an in house non-hosted model.		
The AMI System can be deployed using Microsoft SQL.		
The AMI System can be deployed using Oracle.		
The AMI System can be used by multiple browsers.		
The AMI System supports the use of iPad's for in field viewing of system.		
Currently provides Pre-Pay functionality.		
Currently provides distribution automation functionality.		
The AMI System can provide integration to Meade County RECC's SCADA system.		
The AMI System provides/allows for member load control.		
The AMI System fully supports Multispeak 3.		
The AMI System fully supports Multispeak 4.		

3.2.2 All Electric Meters		
Meter has nonvolatile data storage capable of storing up to 30 days of 15 minute interval data.		
Support for ANSI Reading and Programming Standards C12.18.		
Support for ANSI Reading and Programming Standards C12.19.		
Support for ANSI Reading and Programming Standards C12.22.		
Approval of Underwriters Laboratories (UL).		
Compliant to UL 2735 Standard for Safety, Electric Utility Meters.		
Meter has ability to report auto detection of zero use.		
Meter has ability to be programmed to meter bi-directional energy. The meter has two registers (delivered and received) for this operation and the registers are synced to a clock.		
The meter display has an alphanumeric display and a watt disk emulator that provides both direction and magnitude of energy registration.		
Meter has the ability to report tamper detection including reverse consumption, tilt, and unexpected consumption/diversion.		
Meter has backup battery.		
Meter has optional super capacitor as alternative to the backup battery.		
The meter's voltage reporting/ monitoring capability is guaranteed by the manufacturer to have +/- .5 volts accuracy of applied voltage as compared to a standard verified against NIST.		
The meter is built to function according to ANSI C12.1 Meter Temperature Requirements with a range of -40°F to +185°F.		
Meter has the ability to capture a log of up to 200 events (alerts, diagnostics, cautions, communication and meter operations).		
Meter & Module have documented mfg. lifecycle of at least 10 years.		
Meter has built in functionality to communicate with other equipment to allow member load control.		
Meter has current limiting functionality.		
Meter has the ability to detect and report voltage fluctuations and send alarm notifications within 3 minutes.		

The meter's voltage monitoring supports measurements of instantaneous voltage data (line-to-line and line-to-neutral) up to three phases depending on meter form.		
3.2.3 Single Phase Electric Meters		
Meter Includes safety button/switch for reconnects.		
Meter has ability to collect and report TOU metering measures, Critical Peak, Peak Rebate & Real-Time Usage.		
The meter is capable of rolling demand with the minimal capability to roll 5 into 15 minute demand intervals.		
3.2.4 Poly Phase Electric Meters		
Meters proposed to meet specification also report KVA with no additional cost.		
Meter has ability to report TOU metering measures, Critical Peak, Peak Rebate & Real-Time Usage.		
The meter is capable of rolling demand with the minimal capability to roll 5 into 15 minute demand intervals.		
Meter has capability of showing instantaneous demand measurement on display.		
Meter is capable of providing Power Factor at peak KW		
3.2.5 General Network & Meter Data Requirements		
AMI System included is capable of capturing all meter errors and events aligned with IEC 61698-9 and can forward these to the integration platform allowing external systems to subscribe to required data in near real-time.		
The AMI System supports measurement of other power quality data including RMS voltage/current, over/under voltage, sag/swell, voltage imbalance, and under frequency alerts.		
The AMI System provides aggregate daily meter reads to the integration bus to provide scheduled Revenue Residential Electric Meter Reads and is capable of providing 15 minute interval data, delivered at minimum every 4 hours.		
The AMI System provides aggregate daily meter reads to the integration bus to provide scheduled commercial electric meter reads and is capable of providing 15 minute interval data, delivered at minimum every 4 hours.		
The AMI System provides aggregate daily meter reads to the integration bus in kWh, KW, kvar, TOU, KVA, Power Factor and Demand Data.		
Within a selected meter type, Meade County RECC may desire to utilize different interval durations for endpoints. The AMI solution provides capabilities that allow different groups of meters to be configured at 5, 15 & 30 minute or other intervals.		

The AMI System can perform “Gap-filling” to ensure the maximum number of reads are received from the field to minimize the use of VEE in filling meter data gaps by the MDMS.		
The AMI System provides an on request (real-time) reading service that allows for retrieval of available meter reading data across the entire population of meters, including the most recent data stored. The following data is available on an “On-Request Meter Reading” query:		
a. Date and time of reading		
b. Meter number		
c. Cumulative kWh read		
d. Voltage		
e. Power Factor at peak KW (where available on meter)		
f. KW Demand (must be programmable up to a total of six digits)		
g. Remote disconnect status		
On-Request (Real Time) Meter Reading – meters respond within 15 seconds.		
System is capable of generating temperature alert.		
	YES	NO
3.2.6 General Billing Data		
System has ability to provide billing determinants supporting batch scheduled meter read delivery based on a configurable billing cycle schedule, off-cycle bills, and a final bill process.		
Peak demand reset can be performed to coincide with the billing determinant delivery.		
The AMI System utilizes a web-based utility portal allowing Meade County RECC to access each included sub-system using a single sign-on methodology integrated to Meade County RECC’s Active Directory authentication system.		
Service Oriented Architecture (SOA) integration adheres to NERC/CIP security compliance.		
System uses secure file based integration utilizing file transfer over https, sFTP, SCP, or FTPs.		
3.2.7 AMI System Features		
The AMI System does not require a network path that traverses infrastructure that is not reliably backed up. For example, hopping through non-battery backed up end devices.		
The AMI System is capable of remote, over-the-air support firmware upgradeability to system devices without affecting the normal operations of system such as regularly scheduled data retrieval.		
The AMI System does not require any changes or additional infrastructure in case of consumer “opt out” scenarios.		
The AMI System supports accurate time stamping.		
The AMI infrastructure supports optional packaging of the Local Area Network radio and Wide-area Network private, wireless data backhaul in		

a single enclosure, where the AMI backhaul is also capable of supporting near-real time Distribution Automation applications such as Capacitor bank Control, Reclosers, Fault Detection Isolation and Recovery, etc.		
The AMI System supports the following security attributes:		
a. Mutual entity authentication of all devices throughout the system		
b. Message authentication using AES 128 based CMAC or similar.		
c. Message confidentiality of the application data using at least AES 128-bit encryption		
d. Message confidentiality of the link layer using 3-key Triple DES or similar		
e. Limited anonymity by not disclosing the Meter ID over the air		
f. Verification of authentic firmware upgrade.		
g. Symmetric key algorithms with no over-the-air key exchange		
h. SSL encryption for backend IP-infrastructure		
i. Device keys shall be securely provisioned during manufacturing		
Capable of integration with Security Light controls.		
Does the system have the ability to support water and gas meters.		
Will the system export data to Google Earth.		
After the AMI infrastructure is installed, meters within the coverage area “plug-and-play” and do not require any processes or additional configuration after being powered on.		
Does the system perform “self-healing” functions.		
The network infrastructure supports two-way communication to multiple types of field device endpoints including electric meters.		
The devices on the network avoid connection redundancy by finding primary and alternate AMI infrastructure devices upon installation.		
The AMI System requires licensed frequencies for operation.		
If yes, does Meade County RECC have option to acquire and own license.		
All device emissions levels are significantly under FCC OET Bulletin 65 guidelines even if device is stuck in transmitting mode.		
Does the system support Phase detection		
3.2.8 Outage Notification and Monitoring Requirements		
The system will not false alarm on a momentary outage event. Duration for momentary outage is a parameter that Meade County RECC can set.		
System will provide restoration notice after power has been restored.		
The system provides full integration with Futura’s OMS.		
Last gasp performance does not degrade in the case of a large grid outage.		
Restoration performance (i.e. the amount of time that it takes for a restored meter to report restoration) does not degrade in the case of a large grid outage.		

The system detects an outage or power loss on monitored meters. When an outage is detected the system will:		
a. Notify a designated Meade County RECC representative		
b. Update GIS map with current status		
c. Update status on a map		
d. Log outage information in the system.		
Meade County RECC will have the ability to obtain status of meters within the electrical network (ping); response will be received in 15 seconds or less.		
During power restoration the AMI head-end receives and forwards all power up notifications.		
Does the system provide a real time status map		
The system provides trouble shooting capabilities such as:		
a. Current Meter route		
b. Real time trace		
c. Neighbor listing		
Log outage information in the system.		
Polling accuracy of routers and collectors greater than 99%.		
3.2.9 Asset Monitoring Functionality Requirements		
The system provides visualization of the wireless communications network during operation.		
Head-end System will store GPS and required data to link the meter to SEDC's UPN.		
System can update meter status on Meade County RECC's monitoring and mapping screen.		
Head-end system can display meter problems/communication problems.		
Meade County RECC will have the ability to query each meter from head-end system for detailed information.		

4 INSTALLATION OF AMI METERS, END OF LIFE METER TESTING AND STORAGE OF REMOVED METERS

4.1 SPECIFICATIONS

Proposed products/services must meet the following specifications:

- Installer shall submit required CSV file (See Exhibit C for Data requirements) within 48 hours following meter exchange.
- During installation through Meade County RECC's acceptance, a single point of contact with 24/7 accessibility will be provided.
- End of life testing:
 - Test facility and meter testers shall have certification from the Kentucky Public Service Commission.
 - All meter testing data shall be submitted in a CSV file as specified in Exhibit C.
 - All meters shall be tested and results returned to Meade County RECC within fourteen (14) days following removal.
 - All meters shall be tested for accuracy and stored for six (6) months; If meter shows an average meter error that is two (2) percent or greater fast or slow, or if the meter is stuck or dead, the meter should be returned to Meade County RECC's Brandenburg Office within 48 hours following testing.

Additionally, proposals should include the following:

- Methodology for deployment, including proposed process maps and deployment schedules for the products/services proposed in order to meet Meade County RECC's desired acceptance date of September 1, 2020 for pilot, September 1, 2022 for full installation.
- Turnkey solutions and third party installation services should provide information outlining services they can offer related to communications hardware installation, AMI meter installation (see Exhibit B), and end of life testing and 6 months of storage for old meters.
- Identify any exceptions to Meade County RECC's specifications.

4.2 FEATURES/FUNCTIONALITY CHECKLIST

Respond as follows:

YES Feature/Functionality is part of the product(s) being quoted in this proposal.

NO Feature/Functionality is NOT part of the product(s) being quoted in this proposal.

4.2.1 Meter Installation/ End of Life Testing Requirements	YES	NO
GPS data on installed meter will be provided without additional cost.		
Digital Images of the in meter, the empty socket, and the out meter are available via FTP and available for 3 years.		
Naming convention for image files will be by Meade County RECC meter number.		
Vendor trains all employees in safety, customer relations, hazardous conditions, and identification of meter tampering.		

Meter jaw tension testing		
---------------------------	--	--

5 INSTALLATION OF AN MDMS

5.1 SPECIFICATIONS

Proposed products/services must meet the following specifications:

- The consumer information, service delivery point information, and meter information contained in the MDMS must be integrated to SEDC’s UPN and MDM (and support integration to NISC iVue and MDM). Futura’s GIS/OMS system (and support integration to Milsoft GIS/OMS).
- The MDMS must supply billing determinants to SEDC’s UPN (and support integration to NISC iVue and MDM) as needed for billing.
- Detailed pricing for the above referenced system. Pricing must include:
 - One-time costs
 - Recurring costs itemized by year (and any other appropriate time period) for a period of 10 years. (10-year cost of ownership).

Additionally, proposals should include the following:

- Methodology for deployment, including proposed process maps and deployment schedules for the products/services proposed in order to meet Meade County RECC’s desired acceptance date of September 1, 2020 for pilot, September 1, 2022 for full installation.
- Any cost associated with the training outlined in Section 6 of this RFP.
- Include a 10-year cost of ownership for your proposed product(s)/service(s).
- Meade County RECC requires a minimum of 3 years of data storage be proposed with MDMS solution.
- Identify any exceptions to Meade County RECC’s specifications.

5.2 FEATURES/FUNCTIONALITY CHECKLIST

Respond as follows:

YES Feature/Functionality is part of the product(s) being quoted in this proposal.

NO Feature/Functionality is NOT part of the product(s) being quoted in this proposal.

5.2.1 Meter Data Management System Requirements	YES	NO
The MDMS supports time dynamic pricing (TOU, Critical Peak, Peak Rebate, Real-time Pricing) and load control rebate rates, inclining block rate, Bi-directional, and demand side management elements.		
The MDMS supports Prepayment (pay-as-you-go).		
The MDMS has the capability to aggregate usage across multiple meters.		

The MDMS will receive, validate, estimate and edit AMI collected meter readings for every meter, every day, to ensure accurate billing data.		
The MDMS tracks which intervals have been provided for billing, and supports exception processes for subsequent edits or replacements of the data.		
Meter Data Management System Requirements	YES	NO
The MDMS captures and stores all meter events that are provided by the AMI System.		
The MDMS has the capability to identify unauthorized consumptions extracted from the AMI System status and alerts and from disconnect status information extracted from the existing UPN system.		
The MDMS has the capability to identify theft of service as indicated by AMI status and alerts extracted from the AMI System.		
The MDMS stores meter read intervals in the increment supplied by the meter: 5 min, 15 min, 30 min, hourly, daily, monthly from AMI System.		
The MDMS supports consumer lifecycle-move in/move out, disconnect/connect at pole, disconnect/connect at meter.		
All reads that are presented to the consumer through NISC's MDM must be validated through the MDMS before presentation.		
The MDMS supports the meter provisioning process through UPN.		
The MDMS has the capability to store lat. and long. coordinates for meter location.		
The MDMS provides the capability for users to create new validation and estimation rules.		
The MDMS includes validation rules such as sum check, spike check, kvar check, hi-lo check, and missing data check.		
The MDMS has the flexibility to apply validation and estimation rules to various configured groups.		
The MDMS allows configuration thresholds and boundaries for estimation on specific accounts by meter/consumer, group, tariff/rate, or service provider.		
The MDMS provides reports on edited interval data, including original and new values, reason, process, and user.		
The MDMS adjusts meter estimates based on recent interval values that are received after the fact to ensure accurate billing data.		
The MDMS has the ability to perform line loss analysis.		
The MDMS allows line loss analysis to be broken down by substation and feeder.		
The MDMS has the ability to perform transformer loading analysis.		

6 TRAINING SERVICES

Vendor will provide training to support the deployment and operation of the proposed system as part of the service.

At a minimum, vendor must provide the following training services:

- Two weeks on-site initial training with option to purchase one additional week of on-site training.
- One week follow-up on-site training upon request.

Training will take place at Brandenburg and Hardinsburg office locations. Vendor must provide recommended positions intended for training. Vendor should also provide a course listing and associated fees for all available optional off-site, WebEx and user group training.

Minimum topics to be covered during training:

System Introduction

Course will provide an introduction to relevant services, Consumer Web Portal, Hardware, Software and Support System and documentation.

A. System Installation, Operation, and Maintenance Training

Course will train selected Meade County RECC maintenance personnel on the installation, operation, and maintenance of the proposed system. At the end of the training the meter maintenance personnel will understand the meter fault error codes, proper installation & maintenance procedures, and operation of software and troubleshoot best practices. IT Staff will understand installation, and maintenance of backend services and operating systems.

B. Operator Training

Course will train Meade County RECC's operators how to access and utilize all services. At the end of the training the operators should know how to log into system, request on demand meter read, request historical data, assist consumers in configuring the prepayment system and use the outage and asset monitoring services.

C. Maintenance and Operation

Course will train selected Meade County RECC personnel to configure and change services to support the Meade County RECC meter database and configurations. At the end of the session the Meade County RECC administrator will know how to add, delete or modify consumer meter information, update meter asset monitoring, and enroll consumers in prepayment systems while also maintain network infrastructure equipment and update systems.

MDMS Training

Vendor will provide training to support implementation and integration of the proposed MDMS software as part of the service and shall be included as part of the monthly service fee. Vendor will provide outline of proposed training and recommended positions intended for training. Vendor should also provide a course listing and fees for all available optional off-site, WebEx and user group training.

7 RFP TERMS AND CONDITIONS

7.1 MEADE COUNTY RECC STANDARD TERMS AND CONDITIONS

The Meade County RECC Standard Terms and Conditions, found in Exhibit D, will apply to all procurements contained in this RFP.

7.2 RIGHT TO CANCEL PROCUREMENT OR REJECT ALL OFFERS

This RFP in no manner obligates Meade County RECC to the purchase of any products or services described, implied or which may be proposed until confirmed by a written contract. Progress towards this end is solely at the discretion of Meade County RECC and may be terminated without penalty or obligations at any time prior to the signing of a contract. Meade County RECC reserves the right to cancel this RFP at any time, for any reason, and to reject any or all proposals or any parts thereof.

7.3 VENDOR EXPENSES

Expenses for developing and presenting proposals shall be the entire responsibility of the vendor and shall not be chargeable to Meade County RECC. All supporting documentation submitted with this proposal will become the property of Meade County RECC.

7.4 WITHDRAWALS

Proposals may be withdrawn if requested, in writing, or on the vendor's letterhead signed by an authorized representative and received by Meade County RECC prior to RFP closing time.

7.5 COMPLIANCE WITH LAWS

The vendor shall comply with all applicable federal, state and local laws, statues, rules, regulations and ordinances.

7.6 RFP AND PROPOSAL PART OF CONTRACT

This RFP, along with all submitted proposals and materials will become part of the final contract upon which implementation and performance shall be based.

7.7 ASSURANCES

By submitting a proposal, vendor makes the following assurances:

A. Vendor has read and understands all instructions, requirements, site conditions, and terms and conditions contained herein, including the attachments and Exhibits listed in this RFP.

B. Vendor has the authority and/or responsibility to submit a proposal and to bind the vendor's organization in all phases of this RFP process.

C. The information provided is true and accurate to the best of the vendor's knowledge.

D. Vendor has not and will not discriminate against any employee or subcontractor.

EXHIBIT A

CONTACT INFORMATION

Company Name: _____

Company Address: _____

Telephone Number: _____ Fax Number: _____

FEDERAL ID NUMBER: _____

Primary Contact: _____

Address: _____

Telephone Number: _____ Email Address: _____

Secondary Contact: _____

Address: _____

Telephone Number: _____ Email Address: _____

EXHIBIT B

A. ELECTRIC METER FORMS

Form	Volt	Class	Phase	Active Meters to be Changed Pilot System	Active Meters to be Changed Full System	Amount to be Quoted
2S Disconnect	240	200	1	4770	28796	29300
2S	240	320	1	22	78	130
12S Disconnect	120	200	1	14	65	85
4S	120	20	1	17	97	130
9S	120-480	20	3	41	201	240
16S	120-480	320	3	89	202	240
Total				4953	29439	30125

EXHIBIT C

METER EXCHANGE AND TESTING REQUIREMENTS

A. METER EXCHANGE DATA REQUIREMENTS

See File: MeterSwap.csv

B. END OF LIFE METER TESTING REQUIREMENTS FOR DATA

See File: MeadeTestedMeters.csv

EXHIBIT D

MEADE COUNTY RECC STANDARD TERMS AND CONDITIONS

I. Purchase Terms and Conditions

1) Agreement - The following terms and conditions shall apply to the purchase of the service(s) or product(s) identified on a purchase order form by Meade County RECC from the entity defined herein as "Seller". These terms and conditions, together with specifications contained in this RPF, a submitted response to the RFP or a purchase order form or attached hereto, shall constitute an "Order".

2) Acknowledgement and Acceptance - Seller will acknowledge receipt of the Order immediately and advise if shipment cannot be made on or before date specified. Acceptance must be without qualification. Meade County RECC will not be bound by any different terms and conditions contained in the acceptance, unless agreed to in writing by Meade County RECC. Seller's action in (a) delivering materials, or (b) performing services called for hereunder shall constitute an acceptance of these terms and conditions. THIS ORDER EXPRESSLY LIMITS ACCEPTANCE TO THE TERMS AND CONDITIONS STATED HEREIN, AND ANY ADDITIONAL OR DIFFERENT TERMS PROPOSED BY THE SELLER ARE REJECTED UNLESS EXPRESSLY ASSENTED TO IN WRITING BY MEADE COUNTY RECC. NO CONTRACT SHALL EXIST EXCEPT AS HEREIN PROVIDED.

3) Cancellation – Meade County RECC reserves the right to cancel all or any part of the unperformed portion of the Order at any time. Cancellation will be provided in writing to the Seller. On the date of such cancellation stated in said notice, Seller shall discontinue all work pertaining to the purchase order, shall place no additional orders and shall preserve and protect material on hand purchased for or committed to this purchase order. Upon such cancellation, Seller shall be paid the earned portion of the total cost of all work completed as of the date of cancellation, and this amount shall be Seller's sole remedy for Meade County RECC's cancellation. Meade County RECC may, at its option, have those costs, which are reimbursable under this Section, audited by either Meade County RECC's auditing staff or by independent certified public accountants selected by Meade County RECC. Meade County RECC shall not be liable to Seller as a result of cancellation of this Order for any costs, claims, losses, damages or liabilities including, without limitation, loss of anticipated profits, reimbursements for costs associated with the portion of the Order that Seller has not performed as of the date of Buyer's termination notice.

4) Pricing - Prices specified on the Order are quoted as firm through delivery, except when escalation is clearly and definitely provided on the face of or attached to the accompanying Purchase Order Form, and a formula for determining such escalation is provided on the face of or attached to the Purchase Order Form. No price escalation shall be effective after the earlier of the specified date or completion date. The Seller, by act of offering a quotation or bid, constitutes an express warranty that the quoted price is not subject to adjustment. Where approval drawings are required, the shipping date specified in the quote shall include a minimum of two weeks for Meade County RECC's review of drawings, plus one-week transit time.

5) Invoices and Payment - Seller shall render invoices upon delivery or completion of the services or, as per specific instructions embodied in the Order. Invoices shall be itemized and contain the Order number that is on the accompanying Purchase Order Form, accompanied by freight carrier receipt or parcel post receipt at the time material is shipped. Payment of invoice will agree to the specified payment terms in this Order. Payments may be withheld to the extent

necessary to make adjustments for shortages, damages and rejections of the product or service, or where in good faith Meade County RECC challenges the accuracy of such invoice. Seller must send an invoice for payment to Meade County RECC within six months of completion of the project or sale. Any invoices received after this time will be subject to non-payment by Meade County RECC.

6) Taxes - Sales tax, where applicable, is to be remitted by the Seller to the applicable state or locality. The Seller shall show taxes charged to Meade County RECC as a separate item on the invoice. The Seller shall not charge Meade County RECC for any tax on the Seller's gross or net income, license tax, or any other tax or governmental fee except sales or similar transaction taxes. Upon request of Seller, Meade County RECC shall provide certification to Seller for any applicable tax exemptions.

7) Shipping and Risk - All products shipped must be suitably packed for shipping. Each container, shipping cases, and packages shall include the Order number. The Bill of Lading shall include the Order number. The Packing List (in duplicate), must be furnished with each shipment and include the Order number. Unless otherwise stated in the Order, Seller shall pay all shipping costs. All shipments, including return shipments in the event of rejections, shall be made at Seller's risk and expense unless otherwise stated in the Order. Regardless of whether the Order is FOB Origin-Freight Collect or FOB Charges Destination-Freight Allowed, risk of loss shall not pass to Meade County RECC until delivery to Meade County RECC.

8) Scheduled Delivery - Delivery shall be strictly in accordance with the specified delivery date embodied in the Order. Time is an essential element of this Order unless stated otherwise herein. If no scheduled date is specified, delivery shall be within a reasonable time following the date of the Order. Meade County RECC has the right to cancel all or part of an Order, without obligation of any kind to Seller, should delivery of any shipment not be made on schedule.

9) Changes/Substitutions - Changes to the Order, including but not limited to brand substitutions, shall not be effective until Meade County RECC issues a revised Order approving the change, or similar document that manifests Meade County RECC's intent to revise the Order ("Change Order"), and Seller accepts such Change Order in writing. Any request by Seller for a revised Order shall include any proposed price increase or decrease attributable to the change.

10) Inspection and Receipt - Inspection and payment by Meade County RECC prior to shipment does not constitute acceptance and does not relieve Seller from responsibility for furnishing goods and services strictly in accordance with specifications. Meade County RECC has the right to inspect and fully test all materials and workmanship hereunder. This right shall extend to the inspection of the products during manufacture, at no cost to Meade County RECC, upon reasonable notice to the Seller. Meade County RECC has the right to inspect any service operations hereunder, at no cost to Meade County RECC, upon reasonable notice. Meade County RECC reserves the right to reject any products or services that it finds to be defective or at variance with the Order specification, regardless of the time or place of discovery of the defect or variance and, in the case of non-apparent defects or variances, regardless of any prior acceptance of the products. Regardless of anything stated herein, the Seller shall bear all costs necessitated by disassembly for inspection and reassembly. For rejected products or services Meade County RECC shall have the option (1) return the same at Seller's expense, for full credit, including transportation both ways; (2) require the replacement or correction of goods or services at Seller's expense, including transportation both ways; (3) accept the same in the present condition and either satisfactorily correct it at Seller's expense or use it in its present condition at a renegotiated equitable reduction in price which, if already paid, shall be refunded by Seller

forthwith; or (4) cancel this Order in whole or in part.

11) Warranties – Seller warrants that the goods furnished and covered hereunder will be of merchantable quality, fit for Meade County RECC's purposes, free from defects in title, design, material and workmanship and that the goods or services will conform to Meade County RECC's specifications. Seller further warrants that the goods furnished hereunder shall conform to all representations, affirmations, promises, descriptions, samples or models forming the basis of this Order. Those warranties shall survive acceptance of the goods. Seller further warrants that all services performed for or on behalf of Meade County RECC will be performed in a competent workmanlike manner and shall be free from faults and defects. These warranties are in addition to any other warranties given by Seller to Meade County RECC. **NONE OF THE FOREGOING WARRANTIES AND NO OTHER IMPLIED OR EXPRESS WARRANTIES MAY BE DISCLAIMED, OR EXCLUDED, OR MODIFIED EXCEPT BY WRITTEN AGREEMENT SIGNED BY AN AUTHORIZED MEADE COUNTY RECC REPRESENTATIVE.** Seller agrees to hold Meade County RECC harmless from any loss, damage or expense whatsoever, including, but not limited to, damage to collateral equipment and attorney's fees, which Meade County RECC may suffer from breach of these warranties.

12) Indemnification - Whether on Meade County RECC's premises or otherwise, Seller agrees to indemnify and save Meade County RECC, its Directors, officers, agents and employees harmless from any and all losses, liabilities, damages, claims, demands, suits, actions, proceedings, subrogation and expense, including court costs and reasonable attorney's fees arising from this contract, or the services performed or goods delivered under this Order, which are claimed or made by any person, firm, association or corporation, including employees, workmen, servants or agents of the Seller and its subcontractors, whether or not due in whole or in part to conditions, acts or omissions done or permitted by Meade County RECC. Seller further agrees to promptly assume full responsibility for the defense of any and all such suits, actions, or proceedings which may be brought against Seller or against Meade County RECC. In the event Seller uses Meade County RECC's machinery or equipment in the performance of any work that might be required under this Order, such machinery or equipment shall be considered as being under the sole custody and control of Seller during this period of such use by Seller.

13) Insurance - (1) The Seller shall take out and maintain throughout the period of this Order insurance of the following minimum types and amounts to protect the Seller and Meade County RECC: (a) Worker's compensation and employer's liability insurance, as required by law, covering all their employees who perform any of the obligations of the contractor, engineer, and architect under the contract. Employers Liability Insurance limits shall be at a minimum of \$500,000 each accident, \$500,000 by disease each employee, and \$500,000 by disease policy limit. If any employer or employee is not subject to worker's compensation laws of the governing State, then insurance shall be obtained voluntarily to extend to the employer and employee coverage to the same extent as though the employer or employee were subject to the worker's compensation laws; (b) Commercial General Liability insurance covering all operations under the contract shall have a combined single limit of not less than \$1 million each occurrence, including bodily injury or death, property damage, as well as products and completed operations and \$2 million general aggregate limit as well as products and completed operations aggregate limit for accidents during the policy period. This required insurance may be in a policy or policies of insurance, primary and excess including the umbrella or catastrophe form; (c) Automobile liability insurance on all motor vehicles used in connection with the contract, whether owned, non-owned, or hired, shall have a combined single limit of not less than \$1 million per occurrence of bodily injury or death, as well as property damage. This required insurance may be in a policy

or policies of insurance, primary and excess including the umbrella or catastrophe form. (2) Meade County RECC shall have the right at any time to require Commercial General Liability insurance and property damage liability insurance greater than those limits required in paragraphs (1)(b) and (1)(c) of this section. In any such event, the additional insurance premium or premiums payable solely as the result of such additional insurance shall be added to the Order price. (3) Meade County RECC shall be named as Additional Insured on all policies of insurance required in (1)(b) and (1)(c) of this section and/or any excess or umbrella insurance applicable and given a waiver of subrogation for each requirement stated in 1(a); 1(b); and 1(c). Such insurance shall be primary over any other insurance coverage available to Meade County RECC. Any other insurance coverage available to the Meade County RECC, or any insurance maintained by Meade County RECC, shall be excess and non-contributory to the insurance extended by the seller under this agreement. (4) The policies of insurance shall be in such form and issued by such insurer as shall be satisfactory to Meade County RECC. The Seller shall furnish Meade County RECC a certificate evidencing compliance with the foregoing requirements that shall provide not less than 30 days prior written notice to Meade County RECC of any cancellation or material change in the insurance.

14) Remedies - In addition to any remedies specifically stated herein, Meade County RECC shall retain any other legal remedies it would have in the event of Seller's breach of the Order.

15) Patents and Copyrights - Any good or work developed under this Order shall be deemed a "work made for hire" under the intellectual property and copyright laws of the United States. Seller shall defend any suit or proceeding brought against Meade County RECC that is based on a claim that any article or apparatus, or any part thereof constituting goods furnished under this order, as well as any device or process necessarily resulting from the use thereof, constitutes an infringement of any patent or copyright of the United States. Seller shall pay all damages and costs awarded therein. In the case use of said article or apparatus, part or device is enjoined, Seller shall, at its own expense and at its option, either procure for Meade County RECC the right to continue using said article or apparatus, or replace same with a no-infringing equivalent or remove said article or apparatus and refund the purchase price and the transportation and installation costs thereof.

16) Compliance - The Seller agrees that in performing the work under this Order, it will not discriminate against any employee or applicant for employment because of race, color, national origin, sex, religion, handicap or veterans status. Unless otherwise exempted by rules, regulations or orders of the Secretary of Labor, the Seller shall comply with the Equal Opportunity Clause of the DOL Regulations for Executive Order 11246 section 202; The Affirmative Action Clause of the DOL Regulations under Section 503 of the Rehabilitation Act of 1973; and the Affirmative Action Clause of the DOL Regulations under Section 402 of the Vietnam Era Veterans Readjustment Assistance Act of 1974; and all applicable rules and regulations promulgated under the above. Seller shall comply with any safety regulations and programs of Meade County RECC applicable to Meade County RECC's premises. Seller represents and warrants that all equipment and work practices shall conform to all industrial safety regulations, including, but not limited to The Occupational Safety and Health Act (OSHA), and all applicable federal, state and local laws, rules and regulations.

17) Hazardous Substances - Seller must notify Meade County RECC of any hazardous substances included in the Order and which may not be readily apparent to Meade County RECC or its personnel. Seller must provide a Materials Safety Data Sheet (MSDS) for any item shipped under this order, which may produce hazardous gases, liquids, or solids with each shipment. Seller shall promptly and thoroughly clean up any leaks or spills of any hazardous substance or

waste including leaks or spills during shipment. Seller shall not dispose of any hazardous substance or waste on Meade County RECC's property. Seller shall notify Meade County RECC immediately of any spill.

18) Assignment - Seller shall not assign or subcontract out any of the sums due or to become due, nor shall Seller subcontract any of the work to be performed under this Order, nor shall Seller subcontract for completed or substantially completed material called for by this Order without Meade County RECC's prior written consent.

19) Title - Title to products or the product of services, if any, passes upon delivery of such products or product of services, by Seller to Meade County RECC.

20) Delivery - Meade County RECC shall have the right to defer delivery of product or services under this Order by giving notice of the deferral to Seller. Meade County RECC shall be responsible for any documented additional costs to Seller directly attributable to such delay. Seller shall make every effort to minimize such costs. Seller shall give Meade County RECC the benefit of any savings resulting directly from the delay.

21) Confidentiality - Seller and Meade County RECC shall employ all reasonable means to assure that material that is labeled "privileged", "confidential", or "proprietary" or that is labeled with similar wording and that comes into each other's possession in the course of performing this Order ("Confidential Information") shall not be disclosed without authorization from the disclosing party to anyone other than employees of the receiving party with a need to know. At minimum, Seller and Meade County RECC will employ the same procedures to protect Confidential Information from disclosure as each uses for its own privileged, confidential or proprietary materials. Recipient of Confidential Information shall, at the conclusion of the Order, or upon its termination, return or certify the destruction of the Confidential Information to the disclosing party.

22) Force Majeure - Neither party, without fault or negligence, shall be in default of its obligations hereunder because of force majeure, which includes only acts of God, acts of the public enemy, riot, civil commotion, expropriation or condemnation of Meade County RECC's or Seller's facilities, changes in applicable law(s), floods, droughts, fires, explosions, sabotage, terrorism, war, police or hostile action, criminal behavior, or other catastrophes, accidents causing damage to or destruction, in whole or in part, or to the equipment or property necessary to fulfill the Order, or failure or refusal by any regulatory or other agency to act upon or grant permits, or licenses. Each party shall give notice to the other as soon as possible of any event of force majeure, which potentially affects its performance hereunder. Force majeure shall not operate to excuse, but only to delay the Order's fulfillment.

23) Waiver - The failure of Meade County RECC to insist, in any one or more instances, upon the performance of any of the terms, covenants, or conditions of the Order or to exercise any right hereunder, shall not be construed as a waiver of relinquishment of the future exercise of such right, but the obligation of Seller with respect to such future performance shall continue in full force and effect.

24) Governing Law - This Order shall be subject to and governed in all respects, including issues of validity, interpretation, performance and enforcement, by the laws of the State of Kentucky.

25) Independent Contractor - Seller shall perform the work as an independent contractor with

exclusive control of the manners and means of performing the work, subject only to Meade County RECC's right to inspect and oversee the work to assure that it is performed in accordance with the specifications and other requirements of the Order.

26) Entire Agreement - The Order constitutes the entire agreement between the parties and supersedes all other representations or agreements. Except as specifically provided herein this Order may be amended only in writing signed by both parties. The parties acknowledge and agree that neither of them has made any representation with respect to the subject matter of this agreement or any representations inducing the execution and delivery of this agreement, except such representations as are specifically set forth in this agreement, and each of the parties acknowledges that such party has relied on such party's own judgment in entering into the agreement. However, both parties agree that if any provision of this Order should conflict with any provision of any Contract or Rural Utilities Service Form that may be applicable to the transactions contemplated by this Order, then to the extent of such conflict the pertinent provision of such Contract or Rural Utilities Service Form shall prevail over the conflicting provision of this Order without invalidating or affecting the remaining provisions of this Order in any manner.

THIS EXHIBIT IS BEING FILED
UNDER SEAL PURSUANT
TO A MOTION FOR
CONFIDENTIAL TREATMENT

THIS EXHIBIT IS BEING FILED
UNDER SEAL PURSUANT
TO A MOTION FOR
CONFIDENTIAL TREATMENT

THIS EXHIBIT IS BEING FILED
UNDER SEAL PURSUANT
TO A MOTION FOR
CONFIDENTIAL TREATMENT

Survey of Utilities

Meade County formed an AMI Committee and arranged site visits and conference calls with various cooperatives that had completed an AMI conversion to gain knowledge about the experience with each prospective vendor.

AMI Committee members collaborated to form an outline prior to the cooperative meetings. Discussions were outlined with the following questions:

- What percentage of read rates are you seeing?
- Did the vendor meet your design criteria?
- Did the vendor meet all RFP requirements?
- Did you have a guarantee in place for additional collectors and routers or DCU's?
- Was the system design correct for collectors and routers or DCU's?
- Did you need to add any collectors and routers or DCU's, and if so, did the vendor meet the guarantee?
- Did you have any equipment lead time issues?
- Did the vendor meet your installation time requirements?
- Have you had to do very many firmware upgrades?
- Have you had any locations with coverage issues and if so, how did you overcome this?
- Did you do the installation and meter changes in house or did you use a contractor?
- Was the vendor's project manager and team easy to work with and did you have any issues with them?
- How is the vendor's support team?
- Was training adequate?
- Did the vendor have any issues integrating with other systems?
- What lessons did you learn, and would you have done anything differently?
- Would you still make the same decision to go with this vendor again?

THIS EXHIBIT IS BEING FILED
UNDER SEAL PURSUANT
TO A MOTION FOR
CONFIDENTIAL TREATMENT

From: [REDACTED]
To: [Michael French](#)
Subject: Life of system
Date: Monday, November 23, 2020 6:46:37 PM
Attachments: [PS_FocusMeterE330AX_E350AXSD.pdf](#)
[2020.05-COL-PDT-E650S4xPolyphase.pdf](#)

Mike,

I looked at both of these cut sheets for the meters and they do not have a published life span. However, in general...the meters are good for a 15 year life and the majority of my other utility customers use a 10, 12, or 15 year depreciation for the AMI system as a whole.

Thanks,

[REDACTED]

Account Executive
Landis+Gyr

[REDACTED]

[REDACTED]

www.landisgyr.com

manage energy better

 PLEASE CONSIDER OUR ENVIRONMENT BEFORE PRINTING THIS EMAIL.

This e-mail (including any attachments) is confidential and may be legally privileged. If you are not an intended recipient or an authorized representative of an intended recipient, you are prohibited from using, copying or distributing the information in this e-mail or its attachments. If you have received this e-mail in error, please notify the sender immediately by return e-mail and delete all copies of this message and any attachments. Thank you.



Residential:
E330 FOCUS AX
E350 AX-SD
Single Phase



Scalability Delivered in Advanced Residential Metering

Overview

The FOCUS® AX surpasses other meters in its class to deliver options you need for a highly functional and affordable metering solution. The combination of the FOCUS Service Disconnect base module and powerful AX register supports a variety of connect/disconnect and service-limiting applications. The result: A single solution to manage demand, time of use, load profile and reactive—with no costly upgrades.

Features such as reactive energy and power quality measurements deliver empowering data to run advanced applications such as voltage monitoring, VAR control and load curtailment.

The E350 FOCUS AX-SD incorporates a 200A, motor-driven, cam action disconnect/connect switch under the meter cover. This advanced, market-leading switch, coupled with the field-proven reliability of the E350 AX-SD, delivers Landis+Gyr's third-generation design answer to today's evolving utility requirements.

FEATURES & BENEFITS:

Why Landis+Gyr makes a difference.

- Most advanced cam-driven switch design to withstand 10K cycles at full rated current
- Switch continues operation even under low voltage conditions
- Prepay ready
- Power quality data (sag/swell)
- Magnetic/DC presence detection (based on leading current)
- 8 channels of load profile
- Surpasses ANSI requirements for surge protection (10KV) and meter accuracy
- Full 200 amp disconnect rating
- Advanced over-the-air-flashable firmware upgrades avoids loss of billing or configuration data

Product Specifications: **E330 FOCUS AX and E350 AX-SD Single Phase**

Specifications

General Specifications	Active Energy “kWh-kW” meter and Reactive Energy “kVA or KVAR”	
	Digital Multiplication Measurement Technique	
	Non-Volatile Memory	
	Designed for 20+ years life	
	Meets ANSI standards for performance	
	Utilizes ANSI protocol (between meter and AMI device)	
	9-Digit LCD	
	Display scroll sequence programmable (factory or end user)	
	Configuration Port – cover does not have to be removed or optional ANSI C12.18 optical port available	
Operating Temperature	-40C to +85C under cover	
Nominal Voltage	120V or 240V	
Operating Voltage	80% to 115% of Vn	
Frequency	60Hz +/- 5%	
Humidity	5% to 95% relative humidity, non condensing	
Starting Load (Watts)	Class 20	0.005 Amp (0.6W)
	Class 100	0.030 Amp (3.6W)
	Class 200	0.050 Amp (12W)
	Class 320	0.080 Amp (19.2W)
	Class 480	0.120 Amp (28.8W)
Voltage Burden	< 1.9W Max	
Load Performance Accuracy	Accuracy Class 0.2% (reactive energy 0.5%)	
Available Forms	Self-Contained	1S, 2S, 2SE, 12S, 25S
	Transformer Rated	3S, 4S
	K-Base	2K
Display Options	Energy Metrics: +kWh, -kWh, Net kWh, and added kWh (Security), kVAh or kVARh	
	Metric Energy Display Format – 4x1, 4x10, 5x1, 5x10, 6x1 or 6x10	
	Time of Use and Demand Billing	
AMI Platform	Modular or Integrated	
Selectable Meter Multiplier	Up to 4096 as result of PT ratio • CT ratio	
Applicable Standards	ANSI C12.1 for electric meters	
	ANSI C12.10 for physical aspects of watt hour meters	
	ANSI C12.18 Protocol specifications for ANSI Type 2 Optical Port	
	ANSI C12.19 Utility Industry End Device Data Tables	
	ANSI C12.20 for electricity meters, 0.2 and 0.5 accuracy classes	
	CAN3-C17-M84 Canadian specifications for approval of type of electricity meters	
Service Disconnect	10,000 operations at full rated current (disconnect/connect)	
	Available forms: 1S, 2S, 12S, 25S	
International Certifications	Measurement Canada (MC) AE-1641, AE-2041 (integrated)	

Phone: **678.258.1500**

FAX: **678.258.1550**

landisgyr.com

8.11.14

E650 S4x Polyphase



Enhanced Metering for Commercial and Industrial Applications

Expanding upon the industry-leading flexibility of Landis+Gyr polyphase meters, the E650 S4x sets a new standard for versatility in a C&I metering platform. Out of the box, the S4x is a full-featured C&I meter that provides four-quadrant measurements of active and reactive energy, load profile, and TOU without a battery when existing on an AMI network.

The E650 S4x provides the metrics utilities need to take full advantage of advanced grid management technologies. Delivered, received, and per quadrant measurements of active, reactive, and apparent energy are all simultaneously calculated, as are their respective demand values. Additionally, the S4x provides two alternative methods for calculating reactive and apparent energy and demand values. They can be either directly measured or vectorially derived, giving an electric utility the ultimate flexibility in how they measure and bill their customers.

The E650 S4x provides all of its metrics at significantly higher resolution than most competitive C&I meters. All energy and demand metrics are stored with milliunit resolution. All instrumentation metrics such as voltage, current, and phase are stored in microunits.

The E650 S4x raises the bar on security and tamper detection capabilities. A tilt and vibration sensor can identify significant shock force applied to the meter. A dedicated Hall effect sensor is used to detect strong magnetic field presence. The physically actuated cover removal switch can trigger an alarm and log an event. A new optical port lockout feature allows total control over port access through a compatible communication module.

The S4x has significantly more RAM, ROM, and non-volatile memory for load profile, self-reads, and event logs. Standard 16 channel load profile memory of 256 KB can be upgraded to 1 MB without the need for additional hardware.

SUPERIOR METRICS

- Four-quadrant measurement
- Delivered and received kW, kVA and kVAR demands
- Two alternate methods of VAR and VA calculation
- Milliunit energy and demand resolution
- Microunit instrumentation resolution

LOAD PROFILE

- 16 CH 256K standard, 1 MB option
- 2nd recorder option
- 32 bit data storage

UNIQUE SECURITY

- Magnetic tamper detection
- Cover removal switch
- Tilt and vibration sensor

HARDWARE OPTIONS

- Enhanced Gridstream RF module
- I/O board
- Three-phase power supply

RF COMMUNICATION OPTIONS

- Series 5
- Series 6



SUPERIOR METRICS



LOAD PROFILE



HARDWARE OPTIONS



UNIQUE SECURITY



RF COMMUNICATION OPTIONS

E650 S4x Polyphase

An optional second 16 channel recorder can be configured with a different interval length than the first, making it an ideal instrumentation recorder for continuously monitoring voltage, current, phase, and frequency. Load profile data is stored in 32 bit registers that can easily handle the increased data resolution the S4x offers without interval overflow or the need for a scale factor.

The meter is available with multiple hardware options that further expand its capabilities. With the addition of an enhanced RF communications module, the S4x becomes a powerful C&I endpoint on the industry-leading Landis+Gyr Gridstream® Connect IoT network. An I/O board enables inputs that can increment a load profile channel or trigger a different billing rate; and outputs that can provide KYZ pulses or trigger load control devices. The Enhanced RF module and I/O board are available together for even greater functional versatility. A true three-phase power supply can ensure that the S4x keeps metering, even if a voltage phase is lost.

PRODUCT SPECIFICATIONS

GENERAL SPECIFICATIONS	
Specifications	Active and reactive energy are standard TOU and 256K load profile are standard ANSI C12.19 standard protocol Unsurpassed 10KV surge protection for safety Designed for 20+ years of life Extensive event logging Magnetic tamper detection via Hall effect sensor Cover removal switch Tilt and vibration sensor
Operating Temperature	-40C to +85C under cover
Frequency	50 or 60Hz ± 5%
Humidity	Less than or equal to 95% relative humidity, non-condensing
Accuracy Class	Class 20, 120, 200, & 320 meters ± 0.2% Class 480 meters and forms 36S, 29S, 36A ± 0.5%
Over Voltage Withstand	Temporary (.5 sec) 150% rated voltage Continuous (5 hours) 120% rated voltage
Voltage Burden	≤ 2.5W
NOMINAL VOLTAGE	
Standard Power Supply	120–480V (2 and 3 wire 120, 208, 240, 277, 347, 480. 4 wire 120/208, 240/416, 277/480, 347/600)
Three-phase Power Supply Option	120– 277V (2 and 3 wire 120, 208, 240, 277. 4 wire 120/208, 277/480)

Kbps = Kilobytes per second

This information is provided on an “as is” basis and does not imply any kind of guarantee or warranty, express or implied. Changes may be made to this information.

OPERATING VOLTAGE	
Standard Power Supply	98 to 552 VAC (line to neutral) autoranging power supply
Three-phase Power Supply Option	98 to 318 VAC (line to neutral) autoranging power supply
STARTING CURRENT (AMPS)	
Class 20	0.005 Amp
Class 150	0.050 Amp
Class 200	0.050 Amp
Class 320	0.080 Amp
Class 480	0.120 Amp
AVAILABLE FORMS	
Self-Contained S-Base	2S, 12S, 14/15/16/17S, 25S, 1S, 2SE, 12SE, 14/15/16/17SE, 25SE
Self-Contained K-Base	12K, 14/15/16K, 27K
Self-Contained A-Base	16A
Transformer Rated S-Base	3S, 3SC, 4S, 8/9S, 45S, 36S, 29S
Transformer Rated A-Base	8/10A, 45A, 36A
APPLICABLE STANDARDS	
ANSI C12.1 for electric meters ANSI C12.10 for physical aspects of watt hour meters ANSI C12.20 for electricity meters, 0.2 and 0.5 accuracy class CAN3-C12-M84 Canadian specs for approval of electrical meters CAN3-Z234.4-79 Canadian specs for all numeric dates and times	

GET IN TOUCH.

For more information and nationwide warranty terms, visit us at landisgyr.com or call us at 888-390-5733.



LET'S BUILD A BRIGHTER FUTURE TOGETHER

Since 1896, Landis+Gyr has been a global leader of energy management solutions. We've provided more than 3,500 utility companies all over the world with the broadest portfolio of products and services in the industry. With a worldwide team of 1,300+ engineers and research professionals, as well as an ISO certification for quality and environmental processes, we are committed to improving energy efficiency, streamlining operations, and improving customer service for utility providers.

Webinar Presentation

AMI Life Cycle and Next Generation

December 13, 2018



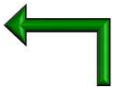
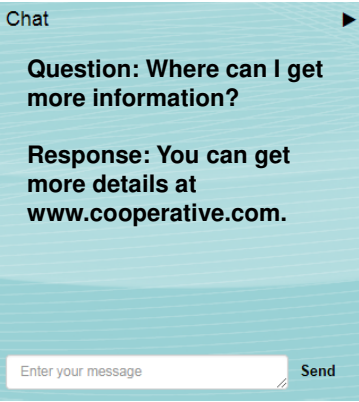
Contact Technical Support

- If you are listening through your computer speakers, please email NRECA@commpartners.com.
- If you are listening over the phone, please press *0.



December 13, 2018 | Pg. 1

Submit Your Questions



Step 1: Type in your question.

Step 2: Click the Send button.



Download Today's Files



1. Click here in the Links box to open the presentation slides or handout.



2. Click on an icon to print or save the file.



Webinar Objectives

1. Understand the AMI life cycle, challenges and opportunities
2. Learn more about next generation (NextGen) AMI technologies, vendors and their related communication systems
3. Understand decision factors and value delivered for implementing NextGen AMI
4. Learn leading approaches to integrating and protecting AMI systems

Who We Are

- NRECA Business and Technology Strategies (BTS) is a division of NRECA, providing valuable research, collaboration and resources to help America's Electric Cooperatives successfully operate, optimize and transform their systems and relationships with member-owners in our evolving industry.
- NRECA National Consulting Group (NCG) is part of BTS's family of services providing specialized consulting services to better enable Cooperatives achieve higher performing results. Among our services:
 - Strategic Planning
 - Technology Planning
 - Organization and Functional Analysis
 - Operational Technology Support Services, including AMI and MDM

Presenters



Henry Cano, Sr. Principal - NRECA National Consulting Group



Greg Johnson, Katama Technologies and NRECA NCG Lead Business Associate for Technology Systems



Tony Thomas, Sr. Principal – Distribution Engineering, NRECA BTS



BTS and NCG

December 13, 2018 | Pg. 6

Our Experience

- Technology practice established in 2003, led by our Business Associate, Greg Johnson
- We've with nearly 100 Electric Cooperatives across the country
- Our management and technology consulting services include:
 - **Planning** (Strategy, Technology Roadmap, Business Case)
 - **Acquisition** (Spec's, Use Cases, RFP Construction, Proposal Analysis, Decision Support, Contract Negotiation, Presentations)
 - **Implementation** (Scheduling, Testing, Verification, Project Management)
 - **Support** (Business Process Improvement, Training, Communications, Updates to Key Metrics)



BTS and NCG

December 13, 2018 | Pg. 7

Polling Question

What is the status of your AMR or AMI program (select one that best applies)?

- A) No plan to change, satisfied with current system
- B) Developing a plan to replace
- C) Evaluating vendors
- D) Early stages of implementation
- E) Recently updated and deployed

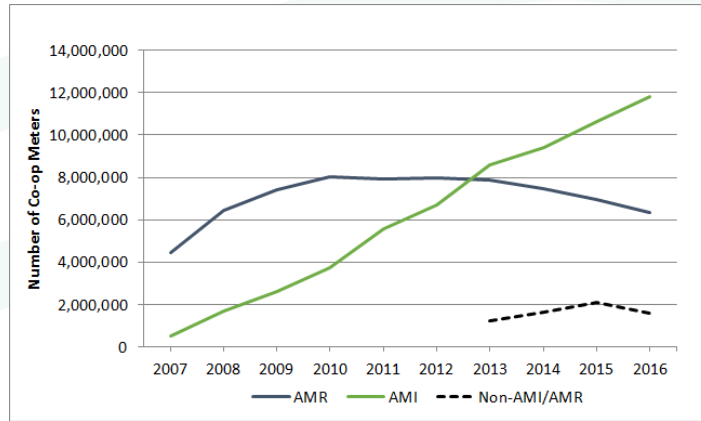
Polling Question

In general, how well are you realizing the value of your AMR or AMI system?

- A) For the most part we are getting the most out of our system
- B) Not there yet, but getting there
- C) Not nearly enough, we have work to do
- D) No, our current system is not able to get us there

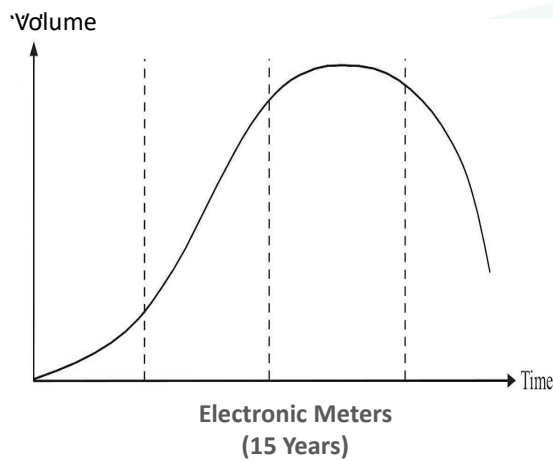
Co-op AMI Meters Are More Prevalent than AMR Meters

Electric Cooperative Advanced Meter Adoption



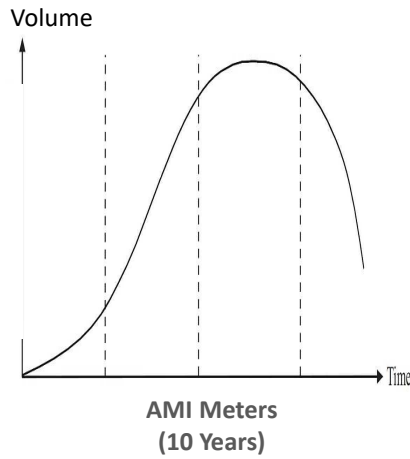
Source: NRECA analysis of EIA-861 data, February 2018

Product Life Cycles



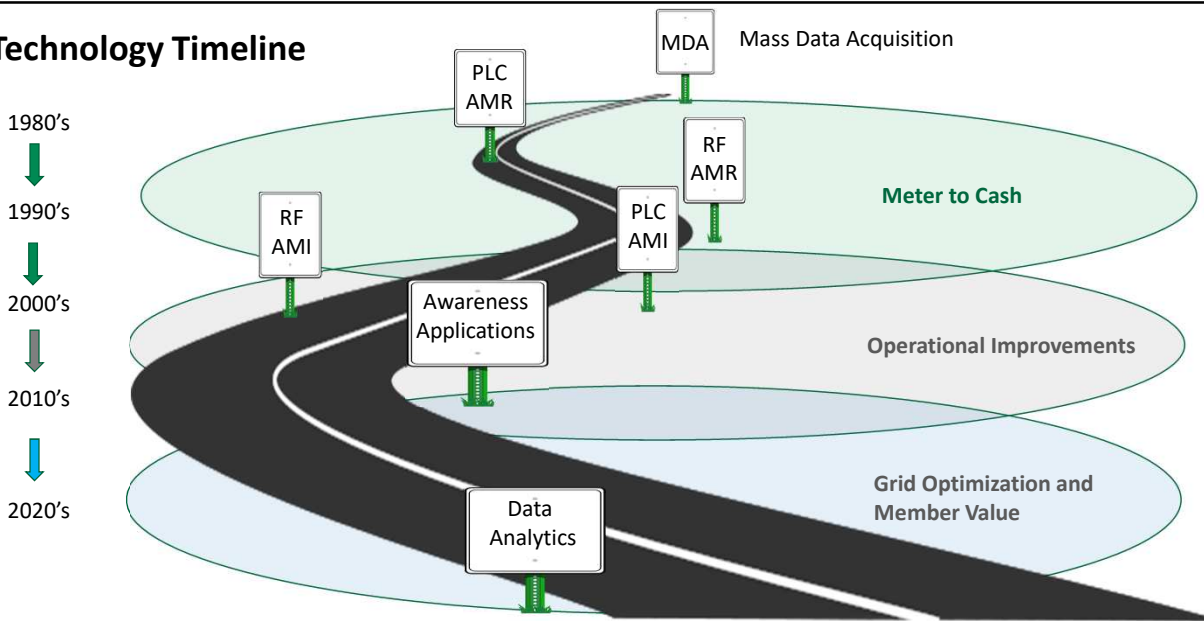
Key electronic components typically last 15 – 20 years before exhibiting intolerable failure rates.

Functional Life Cycles



As technology advances, product life cycles shorten due to functional obsolescence rather than physical obsolescence.

Technology Timeline



NextGen AMI is One Part of the SmartGrid

Planning for your new AMI system must account for integration and functionality to be delivered by a combination of systems!

BTS and NCG

December 13, 2018 | Pg. 14

NextGen AMI – What’s it all about

← Active today
Emerging →

Integration - Interoperability

- Outage
- SCADA
- Volt VAR Control

End points

- Load Control
- Street/security Lights
- Distribution automation
- "Over-the-Air"

Networks

- Increased:
 - Coverage
 - Reliability
 - Data-rate
 - Capacity
 - Lower latency
 - Higher security

Standards

- Wi-SUN, LoRaWAN
- Meter independence
- Plug and play interoperability
- Customer access

Field Intelligence

- Peer to peer communications
- End-point applications
- Local controls and alarms

BTS and NCG

December 13, 2018 | Pg. 15

Signs it may be time to Implement NextGen AMI

Internal	Vendor	Other
<ul style="list-style-type: none"> <input type="checkbox"/> Age of AMI equipment <input type="checkbox"/> AMI assets depreciated <input type="checkbox"/> AMI data integration deficiencies, e.g. outage <input type="checkbox"/> Reliability adequacy of AMI system <input type="checkbox"/> Rising operation & maintenance costs <input type="checkbox"/> Internal needs cannot be met by current system 	<ul style="list-style-type: none"> <input type="checkbox"/> AMI vendor future plans or product road map not aligned <input type="checkbox"/> Level of vendor support for the AMI equipment is inadequate <input type="checkbox"/> AMI vendor end-of-life notifications <input type="checkbox"/> Cost of major upgrade is excessive <input type="checkbox"/> Throughput capacity, latency and coverage concerns 	<ul style="list-style-type: none"> <input type="checkbox"/> Security features of the system not kept pace with today's threats <input type="checkbox"/> Related strategic initiatives challenged from AMI functionality and performance <input type="checkbox"/> Customer needs cannot be delivered by current system <input type="checkbox"/> Availability of advance systems replacements

Sample Vendors for NextGen AMI





Powering Business Worldwide



THE POWER OF CONNECTED

















manage energy better

Notable Vendor Changes Since 2016

Company	Major Acquisition	Acquired By
Aclara	GE Metering (2017)	Hubbell Inc. (2018)
Honeywell	ABB/Elster (2016)	
Itron	Comverge (2017) Silver Spring Networks (2017)	
Landis+Gyr		IPO (2017)
Sensus		Xylem (2016)
Tantalus	Energate (2017)	

NextGen AMI – Enabling Greater Value

New Rate Design	Grid Efficiency	Service Response	Service Programs
<ul style="list-style-type: none"> • Enable Rate Design for Greater Revenue Stability • Align Rates with Changing Power Supply and Demand Patterns • Provide Value Price Options: <ul style="list-style-type: none"> — Time-of-Use — kW Demand-based — Demand Response Incentives on Peak Days 	<ul style="list-style-type: none"> • Smart Feeder Switching • Conservation Voltage Reduction, Edge Volt/VAR Control • DER Analytics and Optimization • Advance Sensors and SCADA Functionality • Line Loss Analytics • Idle Service and Transformer Load Monitoring • Metering Accuracy • Phase Identification 	<ul style="list-style-type: none"> • Distributed Generation Status Monitoring • Member Notification of Power Outage Status • Power Quality Analysis on Momentary Outages, Sags, and Steady State Voltage • OMS Integration to Improve Coordination of Outage Response • Street Light and Security Light Control • Remote Connection and Disconnection 	<ul style="list-style-type: none"> • End-use Energy Monitoring and Notification • Interval Load Profiling for C&I Accounts • Customer Selected Due Date • Pre-pay • Summary Billing on Multiple Site Accounts • Demand Reduction • Smart Thermostat and Appliance Load Control

AMI Communication Infrastructure

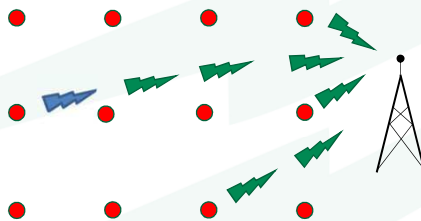
AMI and Advanced Distribution Management Systems are primarily communication networks.

The technology is the communication network.
The applications are meter reading, remote disconnect, etc.

You **MUST** get the communication system right.

Wireless AMI Networks

Point to Multipoint Wireless



Pros:

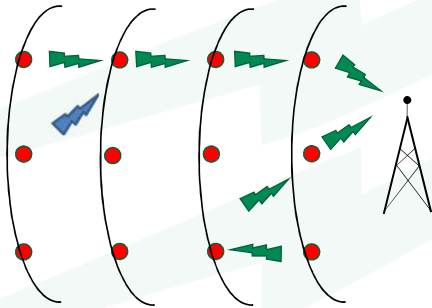
- Typically licensed spectrum
- High power infrastructure
- Good to excellent bandwidth
- Easy to add new meters
- Can be overlaid on top of existing PLC
- Excellent coverage with little infrastructure
- System performance is consistent

Cons:

- Infrastructure can be more expensive
- Typically works best with very high tower installations
- License maintenance can be a bit troublesome

Wireless AMI Networks

Mesh Wireless



Pros:

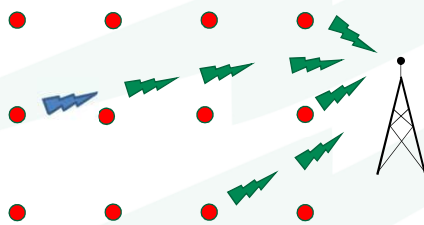
- Typically unlicensed spectrum
- Self healing networks
- Low power, relatively low cost infrastructure
- Good bandwidth
- Easy to add new meters
- Can be overlaid on top of existing PLC

Cons:

- Lots of infrastructure may be required
- System performance can become “muddy” and inconsistent
- Infrastructure can be underbid significantly

Wireless AMI Networks

Cellular Wireless



Pros:

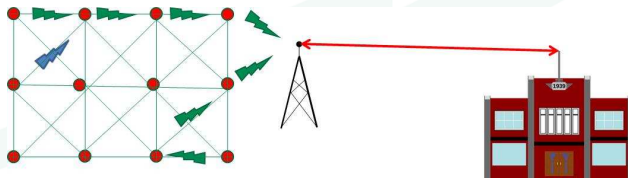
- Medium power infrastructure
- Good to excellent bandwidth
- Easy to add new meters
- Can be overlaid on top of existing PLC
- Little infrastructure investment

Cons:

- Infrastructure not owned by the utility
- Uncertainty of maintenance & other issues that arise from using public infrastructure
- Utility may not be 1st priority in the event of severe weather & other events
- May not be available everywhere you need it to be
- System performance may be slightly inconsistent

Data Backhaul

All AMI systems are designed with the AMI communication system functioning as the “last mile” and a data backhaul network is used for bulk data transfer back to the office.



Data backhaul can be of many different types of communication medium

- Fiber-optic cable
- 900Mhz radio
- 220Mhz radio
- Microwave radio
- Telephone systems
- Leased line
- Others...

Note: Do the path studies if you're planning on doing radios!

Cybersecurity within AMI

- Assess cybersecurity when evaluating your communication networks and associated end-points
- Assess cybersecurity within the vendors' software applications, methods and practices
- Recognize cybersecurity risks for your implementation and manage accordingly

Business Plan Approach to NextGen AMI



1

Assess Strategic Direction

- Changing member needs and service alignment
- Reliability and service response
- Enhancing system efficiency
- Co-op's role on distributed energy resources
- Financial standing and rate design
- Technology position



BTS and NCG

December 13, 2018 | Pg. 26

Business Plan Approach to NextGen AMI



AMR/AMI Head-end
Applications and Integration
Backhaul Communications
Network Management
Device Management

2

Assess the Current Technology

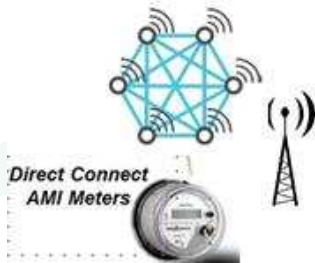
- Technical performance and capacity
- Vendor support (e.g., vendor end-of-life notifications)
- Functional capabilities to meet member service and internal needs
- Operation and maintenance costs
- Gaps and needs



BTS and NCG

December 13, 2018 | Pg. 27

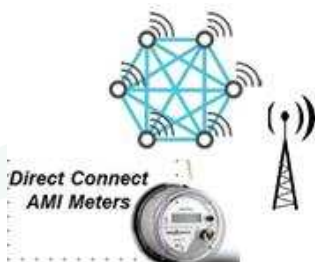
Business Plan Approach to NextGen AMI



3 Assess Technology Options

- Understand emerging AMI technologies
- Learn from other leading AMI deployments
- Confirm technical and functional specifications
- Are additional systems/applications required to meet your needs
- Define use-cases
- Evaluate AMI vendor options
- Study alternative paths

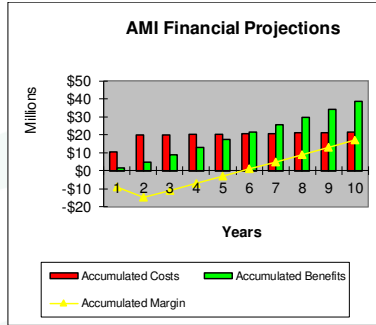
Business Plan Approach to NextGen AMI



3 Understand Communication Options

- Understand AMI communication networks
- Ask for references from AMI deployments
- Understand how the communication technology works in your territory.
- Are additional repeaters required to meet your needs
- Define your required communication performance

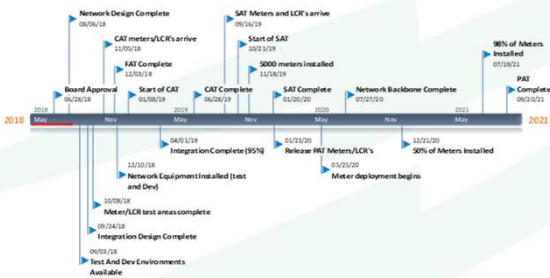
Business Plan Approach to NextGen AMI



4 Assess the Financial Impacts

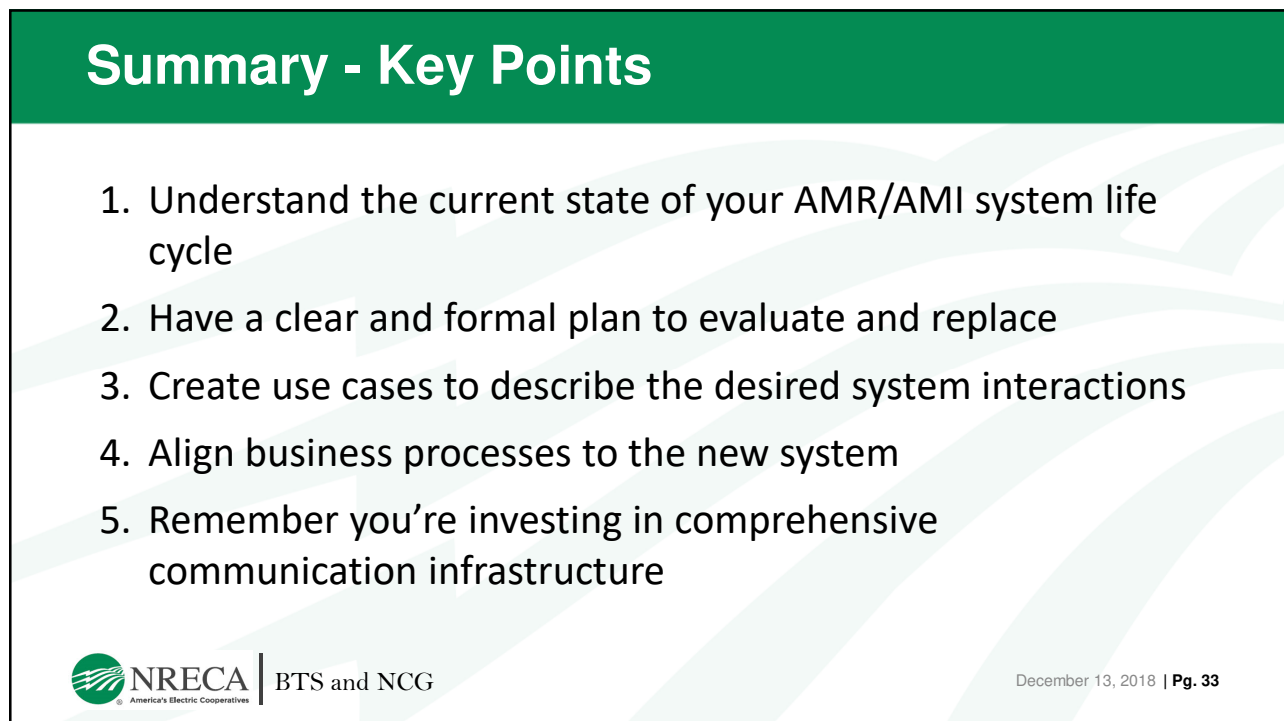
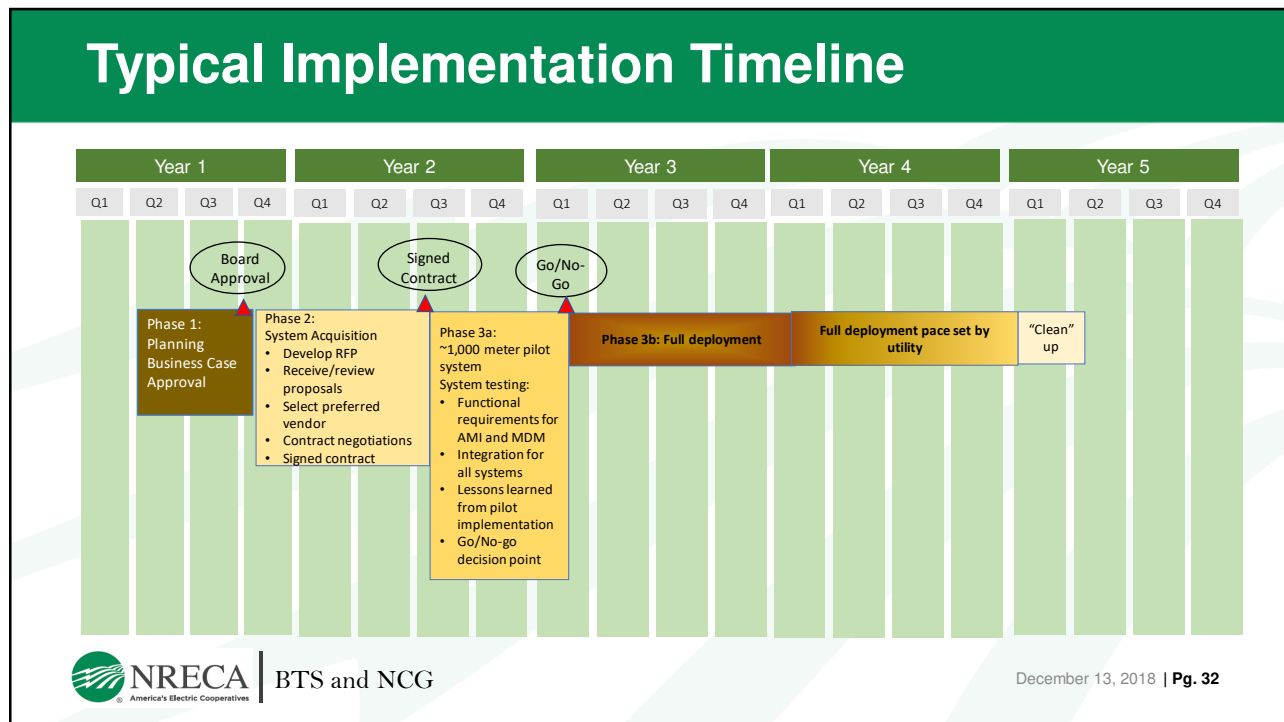
- Current depreciation recovery impacts
- Cost-benefit economic analysis
- Investment and financial plan
- Integration costs for current suppliers
- Identify risks and contingencies

Business Plan Approach to NextGen AMI



5 Develop implementation plan

- Pilot the AMI deployment
- Service value and strategic rationale
- Technology selection and expected performance
- Business process implications
- Investment schedule
- Risk evaluation
- Planned approach



Contacts for Questions

Henry Cano, NRECA NCG
henry.cano@nreca.coop | 602-621-3905

Greg Johnson
Katama Technologies, Inc. and NCG Business Associate
gjohnson@katamatech.com | 704.225.7864

Tony Thomas, NRECA BTS
tony.thomas@nreca.coop | 703.850.4718

