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PUBLIC SERVICE
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**Commonwealth of Kentucky
Before the
Public Service Commission**

**Case Number 2016-00220
Clark Energy's Response to
Commission Staff's First Information
Request**

Clark Energy Cooperative, Inc.

Winchester, Kentucky

COMMONWEALTH OF KENTUCKY

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BEFORE THE PUBLIC SERVICE COMMISSION

SEP 1 2016

PUBLIC SERVICE
COMMISSION

In the Matter of:

THE APPLICATION OF CLARK ENERGY)
 COOPERATIVE, INC. OF WINCHESTER,)
 KENTUCKY, FOR COMMISSION APPROVAL)
 FOR A CERTIFICATE OF PUBLIC)
 CONVENIENCE AND NECESSITY TO) CASE NO. 2016-00220
 INSTALL AN ADVANCED METERING)
 INFRASTRUCTURE (AMI) SYSTEM)
 PURSUANT TO 807 KAR 5.001 AND)
 KRS 278.020)

RESPONSES OF CLARK ENERGY COOPERATIVE, INC. TO
COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION

Comes Clark Energy Cooperative, Inc. ("Clark Energy"), by
counsel, and pursuant to Commission Staff's First Request for
Information dated August 19, 2016, files its responses.

Todd Peyton, Manager of Engineering Services, is the
witness responsible for Clark Energy's responses.

Respectfully submitted,

GRANT, ROSE & PUMPHREY
51 South Main Street
Winchester, Kentucky 40391
Telephone: (859) 744-6828

By: 
John S. Pumphrey

ATTORNEYS FOR
CLARK ENERGY COOPERATIVE, INC.

VERIFICATION

I, Robert C. Brewer, as the person supervising the
preparation of these responses on behalf of Clark Energy

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SEP 1 2016

PUBLIC SERVICE
COMMISSION

COMMONWEALTH OF KENTUCKY
BEFORE THE
KENTUCKY PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

THE APPLICATION OF CLARK ENERGY COOPERATIVE, INC. OF)
WINCHESTER, KENTUCKY, FOR COMMISSION APPROVAL FOR A)
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO)
INSTALL AN ADVANCED METERING INFRASTRUCTURE SYSTEM)
(AMI) PURSUANT TO 807 KAR 5:001 AND KRS 278.020)

CASE NO. 2016-00220

CLARK ENERGY'S MOTION FOR CONFIDENTIAL TREATMENT
OF CERTAIN INFORMATION CONTAINED IN THE ATTACHED CLARK ENERGY RESPONSE TO
PSC STAFF'S FIRST INFORMATION REQUEST

Clark Energy Cooperative, Inc. of Winchester, Kentucky, hereinafter referred to as "Clark", respectfully requests pursuant to 807 KAR 5:001, Section 13 and KRS 61.878 the Public Service Commission of Kentucky grant confidential treatment to certain information that Clark is simultaneously filing as part of its application for a Certificate of Convenience and Necessity. The information Clark seeks to protect is confidential and hereinafter referred to as the "Confidential Information".

1. Pursuant to 807 KAR 5:001, Section 13, a single copy in a separate envelope with the Confidential Information highlighted in yellow, is being filed with this motion along with ten (10) copies with the Confidential Information redacted.
2. The Confidential Information if openly disclosed could permit an unfair advantage to competitors of Clark and or the Vendor which in this case is Landis+Gyr.
3. The information which has been marked for confidential treatment involves competitively bid products and services which could be bid again in the future and therefor Confidential Information could be used by competitors to the detriment of Clark and Landis+Gyr. Clark and Landis+Gyr have agreed to keep pricing for products and services confidential.
4. The time period for which the material should be considered confidential is ten (10) years from the date of this motion. This should allow sufficient time for the prices to become outdated and no longer a detriment to Clark and or Landis+Gyr.

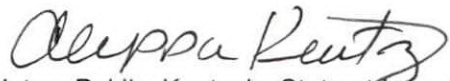
Based on the information above Clark believes the Confidential Information is entitled to confidential treatment. However, if the Commission disagrees with Clark that this information should be treated as confidential, then Clark requests the Commission to hold an informal conference regarding this issue.

CLARK ENERGY COOPERATIVE, INC.



Robert C Brewer, President and CEO

Subscribed and sworn to before me by Robert C Brewer, this 1st September ^{ok} of ~~June~~, 2016



Notary Public, Kentucky State-at-Large

My Commission Expires 9/7/2016

My Commission Expires: _____ Notary ID 471829

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Winchester, KY 40391
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Attorney for Clark Energy Cooperative

By: 
JOHN S PUMPHREY

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #1

Responsible Party: Todd Peyton

1. Refer to Clark Energy's application ("Application"), paragraph 3, which states that the proposed Automated Metering Infrastructure ("AMI") system will be installed over a 48-month period. Explain in detail why a four-year installation period was chosen rather than any other time period, and whether there is a deadline to be met.

Response: The 48-month installation period was chosen by Clark Energy as a balance between cash flow and work flow so Clark Energy personnel could be utilized for the infrastructure installation. No deadline is in place; however, this time frame may be advanced depending on TS1\TS2 product support and or equipment failure. If necessary advancing the proposed time frame would protect Clark Energy from investing additional money in aging infrastructure and maintaining three generations of AMR\AMI equipment for an extended amount of time.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #2

Responsible Party: Todd Peyton

2. Refer to the Application, paragraph 4.
 - a. Provide a cost breakdown of the meters, meters with remote service switch, radio frequency ("RF") collectors, and RF routers associated with the proposed RF AMI system. The breakdown of these costs should be provided in a format similar to the one provided in Case No. 2016-00077¹ by Licking Valley Rural Electric Cooperative Corporation's Application, Exhibit 4, a copy of which is attached hereto as Appendix A.
 - b. Explain the difference between Meters and Meters with Remote Service Switch.

Response:

- a. See Exhibit 1 – Estimated Meter and Infrastructure Installed Cost
- b. The metering functionality is identical between Meters and Meters with Remote Service Switch. However, meters with Remote Service Switch have a self-contained motor-driven cam action switch under the meter cover that allows for the remote disconnect and re-connection of power to the facility being served.

Clark Energy Cooperative, Inc.

PSC Case No. 2016-00220

1st Information Request

Request #3

Responsible Party: Todd Peyton

3. Refer to the Application, paragraph 5. Provide a detailed breakdown showing the various components that make up the anticipated annual cost of operations.

Response: Average annual expense for 2013 and 2014 - \$60,820

- 2013 Communications expense-Annually \$14,142; monthly average \$1,178
 - Includes – Monthly fees from wireless and landline phone carriers and replacement of any failed communication equipment.
- 2013 Operational expense- Annually \$51,747.77; Monthly average \$4,312
 - Includes – Office and field personnel required to maintain and operate the system.
- 2014 Communications expense-Annually \$11,804; monthly average \$983.73
 - Includes – Monthly fees from wireless and landline phone carriers and replacement of any failed communications equipment
- 2014 Operational expense – Annually \$43,947; monthly average \$3,662
 - Includes – Office and field personnel required to maintain and operate the system.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #4

Responsible Party: Todd Peyton

4. Refer to the Application, paragraph 6. Provide a copy of the Rural Utilities Service ("RUS") approval notice for the AMI implementation, and indicate when RUS loan funds will be needed and provided.

Response: See Exhibit 2 – RUS Approval of 2016-2016 CWP, for RUS approval. The AMI project will be financed initially with general funds until such time as load funds from RUS are needed. RUS funds are available to be requested on an as-needed basis.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #5

Responsible Party: Todd Peyton

5. Refer to the Application, Exhibit 2.
 - a. Provide the total number of meters that are currently in use and a breakdown of the number of TS1 and TS2 meters that are currently in use.
 - b. State whether the currently installed TS1 meters are solid-state, electromechanical, or a combination of both.
 - c. If the answer to Item 5.b. above indicates both types of TS1 meters are in service, provide the number of each type.
 - d. Provide the number of TS1 solid-state, TS1 electromechanical, and TS2 meters that Clark Energy has in inventory.
 - e. Exhibit 2 states that "due to limitations with PLC technology TS2 would not fully function as needed for Clark Energy. This limitation would not allow Clark Energy to offer energy conservation\direct load control (DLC) or prepaid metering programs to all consumers across Clark Energy's system." This statement seems to indicate that the mentioned program options would be available to some, but not all, of Clark Energy's consumers with TS2 technology meters. Provide the time periods when Clark Energy was informed of the limitations in PLC technology, a detailed description of those limitations, and the date when Clark Energy stopped the deployment of TS2 infrastructure.

Clark Energy Cooperative, Inc.

PSC Case No. 2016-00220
1st Information Request

Request #5 - Continued

Responsible Party: Todd Peyton

- f. Provide the anticipated length of time that Clark Energy plans to simultaneously operate a power line carrier-based system and a radio frequency ("RF") - based communication system.
 - (1) Explain in detail under what conditions the simultaneous operation will continue.
 - (2) Explain in detail what is anticipated in the "end of product life" of previously installed TS1 and TS2 meters, if different than above.
- g. Provide information regarding the three AMI vendors that Clark Energy researched and assessed, and state whether pricing of those AMI systems was the primary factor in the decision made.
- h. Clark Energy indicated several performance criteria desired in its evaluation. Provide a detailed explanation of NISC Software Compatibility and MultiSpeak Compliance and why these criteria are required and desired.
- i. Provide a copy of any formal evaluation performed by Clark Energy in its analysis of the proposals submitted by General Electric, Sensus, and Landis & Gyr. If none was performed, explain why Clark Energy did not conduct such an analysis.

Response:

- a. Total meters in use: (26,625), TS1 meters (18,527), TS2 meters (8,098).

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Response 5 Continued:

- b. Currently installed TS1 meters are a combination of solid state and electromechanical.
- c. Electromechanical (12,700), Solid State (5,827)
- d. TS1 solid state – 312, TS1 electromechanical – 82, TS2 – 225
- e. Limitations were first discovered in late 2013 and further TS2 infrastructure deployment was stopped at this time, Clark Energy and Landis&Gyr (Clark Energy’s current PLC vendor) worked together on the issues into mid-2014. At that time it was determined that “cross-talk” was the root cause of the problems being experienced. Examples of problems are: weak TS2 signal reaching the meter, weak meter signal reaching the collector, inability to communicate to DLC switches, and inability to confirm DLC switch operation. TS2 infrastructure was stopped so that further “cross-talk” issues were not introduced into the system further compounding the issue. “Cross-talk” occurs when meters hear commands from and try to communicate with multiple collectors and the meters cannot differentiate the collector they are supposed to communicate with.
- f. There is no specific length of time that Clark Energy will operate both the existing PLC system and the proposed RF system.
 - (1) Problem “cross-talk” areas will be targeted first with the RF infrastructure to eliminate the problem and then Clark Energy will be able to provide consumers in those areas with the DLC program. TS1 meters will be targeted as many TS1 meters are 15+ years old which is the anticipated usable life. TS2 meters can be reused in other parts of the system until the RF infrastructure is fully deployed at which time TS2 meters will be retired through attrition.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Response 5 Continued:

- (2) This is referenced in the prior response, (5,f,1).
- g. All three vendors that Clark Energy researched and assessed are RF systems. Landis&Gyr – Mesh network design utilizing individual meters as relay points to gain access to routers and collectors to complete the communication chain. Sensus – Direct communication design that requires meters to communicate directly to collectors. GE – Direct communication design that requires meters to communicate directly to collectors but does have the ability to utilize extender devices to extend the range between meter and collector. Landis&Gyr was the lowest cost provider, and price was a major factor in Clark Energy’s decision to go with Landis&Gyr. But also considered was that utilization of currently installed hardware and software could continue as Clark Energy’s currently installed PLC system is Landis&Gyr, and that all equipment can be installed on standard distribution equipment, as opposed to towers or monopole installations that Clark Energy is not equipped to handle.
 - h. NISC (Clark Energy’s Billing and Accounting software) and Landis&Gyr are both Multispeak compliant, this interface is used to communicate between the software packages, allowing meter readings to load between Landis&Gyr software and NISC. If RF AMI is approved, this interface will then allow for more frequent meter readings, assisting consumers with monitoring usage online, the possibility of developing other rate structures to offer to Clark Energy’s consumers, and the ability to offer pre-paid metering.
 - i. Clark Energy did not perform a formal cost-savings study of the proposed RF system. Because Clark Energy has had a PLC system in place since 2001, Clark Energy approached the RF system as a technology upgrade and as a means to prevent investing addition money in obsolete (TS1) technology or TS2 technology that did not perform as

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Response 5 Continued:

- i. marketed and that is becoming outdated as well. Clark Energy issued a request for proposal (RFP) from each vendor. (General Electric, Sensus, and Landis&Gyr). After reviewing each RFP, meeting with each vendor, meeting with each vendor's engineering staff, and holding multiple internal discussions, Clark Energy chose Landis&Gyr as the best vendor choice. By choosing Landis&Gyr Clark Energy believes this solidifies RF as an upgrade to the existing Landis&Gyr system that Clark Energy currently operates. See Exhibit 3 – AMI RF Vendor Comparison, for cost comparison.

Clark Energy Cooperative, Inc.

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Request #6

Responsible Party: Todd Peyton

6. Refer to the Application, Exhibit 3. Provide details of whether Clark Energy expects to purchase only new AMI meters for residential use, or for commercial and industrial use also.

Response: The currently proposed RF meter will do all residential as well as small commercial loads. Clark Energy has a small number of industrial loads, and other variants of Landis&Gyr RF meters are available and will be implemented at a later date.

Clark Energy Cooperative, Inc.

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Request #7

Responsible Party: Todd Peyton

7. Refer to the Application, Exhibit 3, which states that "data is transmitted utilizing multiple channels in the 902-928 MHz bandwidth." Provide details on the number of channels to be used by Clark Energy's system, if different from the 80 available channels indicated.

Response: Clark Energy will utilize the 80 available channels.

Clark Energy Cooperative, Inc.

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1st Information Request**

Request #8

Responsible Party: Todd Peyton

8. Refer to the Application, Exhibit 3, which states: "This RF infrastructure will communicate with the existing Landis&Gyr AMR\AMI software system already in place for the existing TS1 and TS2 systems."
- a. Provide details about the software system and its adequacy.
 - b. Explain whether additional software and/or patches will be needed.
 - c. Provide the cost and timing of any additional software Indicated as needed in Item 8.b. above.

Response:

- a. The software system is Landis&Gyr standard issue software used by all Landis&Gyr Systems. The software has been in use by Landis&Gyr systems for many years and is designed and enhanced specifically for this purpose.
- b. Additional software is not needed but a software upgrade is required for RF. Patches are a normal part of all software packages and occur as part of normal software operation.
- c. Because the AMI vendor chosen by Clark Energy is Landis&Gyr, no additional software is required. However, the required software upgrades (NISC-OMS-Landis&Gyr) will be approximately \$26,235 and must be installed before the RF system infrastructure.

Clark Energy Cooperative, Inc.

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1st Information Request**

Request #9

Responsible Party: Todd Peyton

9. Refer to the Application, Exhibit 3, the Gridstream RF Network Layers Flow Chart. It is illustrated that the collectors will communicate utilizing the World Wide Web.
 - a. Explain in detail how the collectors access and connect to the World Wide Web.
 - b. Once connected to the World Wide Web, the collectors then communicate information directly to what, whom, and where?

Response:

- a. Each collector is equipped with a cellular data modem that has a unique "IP" (Internet Protocol) address. Clark Energy utilizes a "VPN" (Virtual Private Network) established within the cellular carrier's network to securely transmit encrypted data from the collector to the World Wide Web.
- b. Data is transmitted through the World Wide Web to a Clark Energy firewall, and data that passes programmed protocols is routed to a Clark Energy server containing Landis&Gyr software that decrypts the transmitted data.

Clark Energy Cooperative, Inc.

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1st Information Request

Request #10

Responsible Party: Todd Peyton

10. Refer to the Application, Exhibit 3, page 3. The information provided states that "[t]he E350 FOCUS AX-SD incorporates a 200A, motor-driven, cam action disconnect/connect switch under the meter cover." Confirm that the E330 does not have a built-in switch and the E350 does have a built-in switch, thus any need for an external device is eliminated.

Response: The E330 does not have a built-in switch. The E350 does have a built-in switch under the meter cover incorporated into the meter; therefore, no external device or collar is needed or required.

Clark Energy Cooperative, Inc.

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1st Information Request

Request #11

Responsible Party: Todd Peyton

11. Explain in detail Clark Energy's intent concerning the placement of remote disconnect/connect meters.
- a. State the number of meters having remote connect/disconnect functionality.
 - b. Explain the decision process for installing a remote connect/disconnect meter.
 - c. State whether each residential member will receive a meter capable of remote disconnect/reconnect.

Response:

- a. 1,920
- b. Clark Energy intends to install meters with remote connect/disconnect functionality on traditionally high volume connect/disconnect locations such as rental property and seasonal accounts.
 - Note: Provided the PSC approves Clark Energy's future application for a Pre-Pay tariff, the same type meter would be used on any future Pre-Pay accounts also.
- c. Each residential member will not receive a meter capable of remote disconnect/reconnect.

Clark Energy Cooperative, Inc.

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1st Information Request

Request #12

Responsible Party: Todd Peyton

12. Refer to the Application, Exhibit 3, page 5. Explain whether the RF system would include battery back-up at the router and at the collector; if not, explain why.

Response: Yes, both the router and the collector will include a battery back-up.

PSC Request 13

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #13

Responsible Party: Todd Peyton

13. Refer to the Application, Exhibit 3, page 5. Explain what and how many other smart grid applications and functions Clark Energy anticipates utilizing.

Response: Clark Energy anticipates utilizing the 5 smart grid applications listed below.

- Direct Load Control
- Additional Rate Structures, such as Real-Time Pricing, Time of Use, On Peak\Off Peak, and Time of Day as listed in PSC Case 2012-00428
- Pre-Pay Metering
- Distribution Automation – Communication to distribution equipment such as regulators, reclosers, and fault indicators.
- Voltage Data – Individual member-delivered voltage data as well providing PSC-required system voltage data.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #14

Responsible Party: Todd Peyton

14. Refer to the Application, Exhibit 3, page 7. Two RF Collectors are mentioned, one is Ethernet only, and the other uses a wireless modem; explain which model Clark Energy intends to purchase and use, or whether both will be purchased and used at specific and selected locations.

Response: Clark Energy intends to use the wireless modem model at all locations.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #15

Responsible Party: Todd Peyton

15. Refer to the Application, Exhibit 4, Pre-pay Metering, which states, "Clark Energy will be able to develop and offer a Pre-pay metering tariff to all residential customers." Explain whether Clark Energy anticipates filing a tariff for a pre-pay metering program, and provide the estimated date it intends to submit the tariff filing.

Response: Clark Energy does anticipate filing a tariff for pre-pay metering. To allow Clark Energy adequate time to install a significant portion of the proposed RF infrastructure, Clark Energy anticipates filing a tariff for pre-pay metering in 12-24 months.

Clark Energy Cooperative, Inc.

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1st Information Request

Request #16

Responsible Party: Todd Peyton

16. Refer to the Application, Exhibit 4, Voltage Data. The information provided indicates that this system has the capability to "provide system wide voltage levels instead of rotating voltage recorders on the end of individual feeders around the system as required by the PSC." State in detail the intent of Clark Energy in regard to meeting 807 KAR 5:041, Section 7.

Response: Clark Energy intends, with the capabilities of the RF system, to have at a minimum, voltage data that complies with 807 KAR 5:041, Section 7 available from the end of each feeder. As RF meters are deployed throughout the distribution system, the voltage data will be available throughout the length of individual feeders.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #17

Responsible Party: Todd Peyton

17. Explain in detail Clark Energy's plans for the existing meters that will be replaced, including testing for accuracy in accordance with 807 KAR 5:041, Section 15(3).

Response: All meters that are removed, for any cause, by Clark Energy are tested for accuracy in accordance with 807 KAR 55:041, Section 15(3). Clark Energy will follow this same procedure for all meters that will be replaced with RF meters. Meters that will no longer be used have all identifying labels removed and are recycled.

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #18

Responsible Party: Todd Peyton

18. Explain in detail whether the meters being replaced have been, or will be, fully depreciated.

Response:

- All electromechanical TS1 meters have been fully depreciated and will not be reused.
- Solid-state TS1 meters will be tested and reused in existing TS1 areas of Clark Energy's system until such time as the proposed RF infrastructure is complete. Solid state TS1 meters can then be replaced per consumer request or meter failure with RF meters. Clark Energy anticipates that some solid-state TS1 meters may remain in use for several years on low-use basic service type facilities such as barns, garages, and water pumps, at which time these meters will be or nearly will be fully depreciated. This time frame may be advanced depending on product support and/or TS1 collector equipment failure.
- TS2 meters will also be tested and reused in existing TS2 areas of Clark Energy's system that does not currently have PLC communication issues, until such time as the proposed RF infrastructure is complete. TS2 meters can then be replaced per consumer request or meter failure with RF meters. Clark Energy anticipates continuing to utilize installed TS2 meters on low-use basic service type facilities such as barns, garages, and water pumps, allowing Clark Energy to get the most from existing investment. This time frame may also be advanced depending on product support and/or TS2 collector equipment failure.

PSC Request 19

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #19

Responsible Party: Todd Peyton

19. Provide a copy of the minutes from the Board of Directors meeting approving this RF AMI system.

Response: See Exhibit 4 – AMI approval minutes October 2015 Board Meeting

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
1st Information Request**

Request #20

Responsible Party: Todd Peyton

20. In PSC Staff Opinion 2016-003A, attached hereto as Appendix B, it is noted that Clark Energy would be purchasing 10,638 new AMI meters and 1,920 new upgraded meters with built-in remote service switch devices as part of Clark Energy's 2016-2019 Construction Work Plan ("CWP").²

a. Confirm that the number of new AMI meters and new upgraded meters with built-in remote service switch devices (totaling 12,558 meters) to be purchased under the 2016-2019 CWP is the same number of meters to be purchased in the instant case.

b. Clark Energy currently has approximately 26,029 customers. If Item 20.a. above is confirmed, and assuming Commission approval of the instant case, explain Clark Energy's plans to expand the RF-based AMI metering system for the remaining 13,471 customers.

Response:

- a. Yes, the total of 12,558 meters to be purchased under the 2016-2019 CWP is the same number of meters to be purchased in the instant case.
- b. Clark Energy plans, as discussed in the response to Question 18, to continue to utilize existing PLC infrastructure as the proposed RF infrastructure is deployed throughout Clark Energy's system. Clark Energy believes that the number of meters projected to be purchased will be sufficient for this planning cycle to cover meter replacement per member request, failure, attrition, and planned change-out as discussed in Response (5,f,1). Because a massive meter\equipment failure is highly unlikely and the proposed RF infrastructure would be in place

Clark Energy Cooperative, Inc.

**PSC Case No. 2016-00220
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Request #20

Responsible Party: Todd Peyton

Response continued:

- b. by the end of this planning cycle, Clark Energy plans to include additional RF meters in the next Construction Work Plan to upgrade all meters to RF. This allows Clark Energy to fully utilize existing infrastructure. If product support becomes unavailable for the aging equipment Clark Energy may advance this time frame.

Exhibit Index

Exhibit 1 – Estimated Meter and Infrastructure Installed Cost

Exhibit 2 – RUS Approval of 2016-2019 CWP

Exhibit 3 – AMI RF Vendor Comparison

Exhibit 4 – AMI Minutes October 2015 Board Meeting

Exhibit 1

Estimated Meter and Infrastructure Installed Cost

Estimated Meter and Infrastructure Installed Cost

Equipment	Quantity	Cost	Total
RF Meters	10,368		
RF Meters with Remote Service Switch	1,920		
Meter Installation (Includes: Labor, Transportation, Overhead)	12,288		
RF Collector	12		
RF Collector Mounting Kit	12		
RF Collector (Installation) (Includes: 45FT pole, 120v power source, mounting kit, transportation and overhead)	12		
RF Router	341		
RF Router (Installation) (Includes: 6FT aluminum arm, 120v power source, installation, transportation and overhead)	341		
Computer Infrastructure	1		
RF Engineering/Test Equipment	1		
Software/Support Services (Includes: Project Management, training, software interface programming and upgrade)	1		
Total			

*Note: \$30 Difference from application is spreadsheet rounding

Exhibit 2

RUS Approval of 2016-2019 CWP



Rural Development

Rural Utilities Service

1400 Independence
Ave SW, Room 5135
Stop 1510
Washington, DC
20250

Voice 202.720.9540
Fax 202.720.1725

December 23, 2015

2016-2019 Construction Workplan (CWP)

**Chris Brewer, President & CEO
CLARK ENERGY COOPERATIVE**

I have completed my review of the cooperative's 2016-2019 CWP, which was prepared by Leidos Engineering, and find it to be generally satisfactory for loan contract purposes. Approval to proceed with the proposed distribution system construction is contingent upon RUS's review and approval of an Environmental Report (reference 7 CFR 1794).

You should make a special effort to inform all of the cooperative's employees and contractors, involved in the construction of utility plant of any commitments made in the Environmental Report covering the construction of the facilities recommended in the CWP.

Changes (line improvements, tie lines, extensions, substations, etc.) in the CWP will require RUS approval. The environmental acceptability of any such changes shall also be established in accordance with 7 CFR 1794. The procedure for satisfying these environmental requirements shall be the same as that used in connection with this CWP approval.

It is your responsibility to determine whether or not loan funds and/or general funds are available for the proposed construction. If general funds are used, the requirements as outlined in 7 CFR 1717 need to be followed.

The construction shall be accomplished in accordance with RUS requirements. Specific reference should be made to 7 CFR 1726, Electric System Construction Policies and Procedures.

Mike Norman

Mike Norman
RUS Field Representative

USDA is an equal opportunity provider and employer.

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter to us by mail at U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at program.intake@usda.gov.

Exhibit 3

AMI RF Vendor Comparison

Exhibit 4

AMI Minutes October 2015 Board Meeting

The fifth item on the agenda was to discuss and consider approving the AMI upgrade vendor selection. Todd Peyton, Manager of Engineering Services, led the directors through a presentation titled "Advanced Metering Infrastructure (AMI) Upgrade and Vendor Selection," during which he explained, among other things, how from the beginning through 1994, customer-members read their own meters and reported the readings to Clark Energy. Then in 1994, Clark Energy began contracting with vendors to have the meters read. But since 2001, Clark Energy has employed automatic remote meter reading (AMR) technology. Clark Energy President and CEO Chris Brewer told the directors that the method by which Clark Energy has received this data since 2001 is by a power line carrier (PLC) system, the system now being considered being an RF (radio frequency) system. Todd explained that Clark Energy's PLC equipment is nearing its end of life and that replacement parts are no longer available. Furthermore, the increased data and functionality available today are more than Clark Energy's existing PLC equipment can handle, so Clark Energy is limited in the services that can be offered to its members.

With this backdrop, Todd detailed the functionality available with an upgrade to an RF system: meter reads at 5-/15-/30-/60-minute intervals; nearly real time outage detection/restoration notification; remote meter programming (allowing net metering functionality); voltage readings; remote fault indication; distribution automation (regulators and reclosers); demand response/direct load control (of HVAC and water heaters); self healing with system alarms--no single point of failure; meter data management available to consumer-members online; prepaid metering; remote connect/disconnect; and equipment loading information (transformers). He then described three options/vendors that Clark Energy has considered: Landis&GYR, Sensus, and General Electric.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Todd then demonstrated the new equipment's communications capabilities through graphical and video demonstrations.

Director Hollon asked Todd whether this upgrade could prevent bad readings over time, and Scott replied that equipment still can fail but that this equipment was more likely to provide consistent information. Chairman Shearer asked whether there are any down sides to this system, and Todd replied that the down sides are (1) expense, (2) the "Big Brother" effect--people do not like being "spied on," (3) that RF systems' "output" of radiation versus power line carrier systems is sometimes cited as a criticism for possible health risks (though Todd explained the radiation output is minimal), and (4) that some people claim the meters catch fire (another brand than Landis&GYR has had some complaints of this). At the end of the discussion, Director Hollon made a motion that Clark Energy's staff's selection of the Landis&GYR RF system be approved, and Director Ballard seconded the motion, which passed.

The sixth item on the agenda was to discuss changes to the Clark Energy membership form. [REDACTED]

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