Grayson Rural Electric Cooperative Corporation

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December 13, 2017

Ms. Gwen R. Pinson
Executive Director
Kentucky Public Service Commission
PO Box 615
211 Sower Boulevard
Frankfort, KY 40602

Dear Ms. Pinson:

RE: PSC Case No. 2017-00419

In accordance with the Commission's Order in the above referenced case, dated November 28, 2017, please find enclosed for filing with the Commission the original plus 6 (six) copies of the responses in the above referenced case.

If you have any questions about this filing, please feel free to contact me.

Very truly yours,

Carol Hall Fraley
President & CEO

Enclosures

The undersigned, Brian Poling, as Manager of Technical Services of Grayson Rural Electric, being first duly sworn, states that the responses herein supplied in Case No. 2017-00419, First Request for Information, are true to the best of my knowledge and belief formed after reasonable inquiry.

Dated: December 13, 2017

Grayson Rural Electric

By: Brian Poling
Brian Poling
Manager of Technical Services

Subscribed, sworn to, and acknowledged before me by Brian Poling, as Manager of Technical Services for Grayson Rural Electric on behalf of said Corporation this 13th day of December, 2017.

My Commission expires 22nd day of March, 2021.
Witness my hand and official seal this

13th Day of December, 2017

Notary Public in and for Carter Co., KY.
State at Large

The undersigned, James Bradley Cherry, as Manager of Finance and Accounting of Grayson Rural Electric, being first duly sworn, states that the responses herein supplied in Case No. 2017-00419, First Request for Information, are true to the best of my knowledge and belief formed after reasonable inquiry.

Dated December 13, 2017

Grayson Rural Electric

By: James Bradley Cherry
James Bradley Cherry
Manager of Finance and Accounting

Subscribed, sworn to, and acknowledged before me by James Bradley Cherry, as Manager of Finance and Accounting for Grayson Rural Electric on behalf of said Corporation this 13th day of December, 2017.

My Commission expires 22nd day of March, 2021.
Witness my hand and official seal this

13th Day of December, 2017

Notary Public in and for Carter Co., KY.
State at Large

Exhibit Index

Exhibit A – Project Information Log

Exhibit B – Vendor Comparison

Exhibit C – Features List

Exhibit D – AMI Functionality Staff Survey

Exhibit E – Project Timeline

1. Refer to the Application, Exhibit 2.

a. Regarding the 7,650 TS1 and 7,056 TS2 meters, explain whether these represent the total number of meters that Grayson owns, or whether these represent only those meters that are currently in use. If the latter, provide the number and type of meters that Grayson has in inventory.

RESPONSE: by Brian Poling

The meter counts are the total number of AMI meters both in the field and in inventory.

b. Explain in detail the "study, research, conversation, and observation" conducted by Grayson in connection with the proposed AMI project.

RESPONSE: by Brian Poling

A log was kept as we conducted our analysis. See Exhibit A.

c. Fully explain the need for Grayson to upgrade its current TS1 and TS2 meters to the proposed AMI meters.

RESPONSE: by Brian Poling

Grayson has noticed more communication failures on the TS1 meters over the past couple of years as they now have 17+ years in the field although Grayson has not actually tracked the failure rate. That TS1 technology does not allow for pre-pay or remote disconnects and TS1 does not deliver a daily read (reading take a little over 27 hours to transmit).

In 2014, Grayson allocated money in their Construction Work Plan to replace all the TS1 meters with TS2. However, at a Landis+Gyr Users Conference in 2015, Laurie Dally, a LANDIS+GYR presenter, talked about their new technology called PLX. She indicated in her presentation that LANDIS+GYR would like to have all PLC equipment converted to PLX by 2020. (PLX is a Power Line Carrier technology that allows for faster transmission times.) Immediately following the

meeting, Steve Bush, Brian Poling and Andrea McCleese spoke with Ms. Dally and expressed our concerns. They were told it would require all equipment to be replaced and they did not have much field experience with the product. At that point, Grayson began doubting their TS2 full deployment decision and stopped the plans to change all meters until Grayson had more time to investigate where the industry was going.

Based on the movement of other cooperatives and where the AMI market seems to be headed, we believe RF is the best choice for Grayson.

d. Identify the other three vendors that were solicited by Grayson with respect to the proposed AMI project and explain how Grayson selected these three vendors, along with Landis+Gyr, for the proposed meter upgrade.

RESPONSE: by Brian Poling

Grayson solicited bids from Aclara, Eaton and Sensus as well as Landis+Gyr. Grayson chose Aclara because of its reputation with other cooperatives and Grayson's billing system vendor. Eaton (formerly Cooper Power Industries) has been a vendor of Grayson's for power line equipment for many years. Sensus was a partner with one of our national organizations (NRTC) who tries to promote products and services that will be beneficial to the cooperatives.

e. In the last paragraph, Grayson stated that it "considered both a RF solution and a PLC solution." However, in the next-to-last paragraph, Grayson stated that it solicited four vendors for evaluation of an AMI upgrade utilizing RF technology. Explain why Grayson limited the solicitation to AMI meters with a RF communications platform.

RESPONSE: by Brian Poling

Grayson only solicited vendors who provided the RF technology based on the capabilities and future growth potential of the technology. However, ALCARA provided information concerning

their PLC technology that seemed to have RF comparable response times. It was then that we started seriously considering the ALCARA PLC technology as a possibility.

f. In the format set forth in paragraphs 4 and 5 of the Application, provide a comparison of the proposals received from each of the four vendors that Grayson solicited.

RESPONSE: by Brian Poling

See Exhibit B

g. Provide the projected net book value of the current meters when the proposed AMI project, if approved, is completed.

RESPONSE: by Bradley Cherry

The projected net book value at the end of 2019 will be $883,695

h. Provide the analysis performed by Grayson in evaluating the proposals from the four AMI vendors, and fully explain how Grayson selected Landis+Gyr as the vendor for the proposed AMI project.

RESPONSE: by Brian Poling

Grayson created a "Features" list and made a comparison of the capabilities of each of the proposed technologies. See Exhibit C.

The committee also had Grayson's Staff Members rank a list of AMI functionalities on a scale of 1-10. Those survey values were averaged and ranked. See Exhibit D.

After receiving the bids, Grayson compared the total expected cost of each quote. The AMI Committee then evaluated the quotes and how they aligned with the survey results and comparison list. Based on this evaluation, Landis+Gyr was selected.

l. Explain what Grayson intends to do with the net book value of the old meters after their retirement.

RESPONSE: by Bradley Cherry

Grayson would request an extraordinary retirement of the net book value and amortize the remaining balance over a five-year period

2. Refer to the Application, Exhibit 3, regarding the expected useful life of the proposed AMI meters. The product specification sheet for the Focus AX meters states that the meters are designed for "a 20+ year life." Provide documentation supporting this statement.

RESPONSE: by Brian Poling

The information provided in Grayson's Application was directly from Landis+Gyr. Please refer to Exhibit 3 of Application.

3. Refer to the Application, Exhibit 4, regarding the benefits of the proposed AMI project.

a. Provide an analysis quantifying the anticipated cost savings associated with the proposed AMI project, including, but not limited to, any reductions in meter reading expenses and connect/disconnect expenses.

RESPONSE: by Bradley Cherry

Grayson foresees minimal cost savings associated with the proposed AMI project. A majority of anticipated savings would be from avoiding investing in a technology that is likely to become obsolete before net value is realized.

Grayson does not anticipate reductions in meter reading expenses and connect/disconnect expenses should be minimal.

b. Refer to the "Additional Revenue" on page 2 of Exhibit 4.

(1) Explain in more detail how water or gas companies served by Grayson would be able to utilize the proposed RF infrastructure and the arrangement whereby Grayson would charge a rate to these companies for such use.

RESPONSE: by Bradley Cherry

Grayson plans to negotiate a rate through a contract agreement with those utilities that wish to utilize the RF infrastructure.

(2) Provide the estimated amount of revenues expected from other utilities for use of the RF infrastructure, and explain how the amount was determined?

RESPONSE: by Bradley Cherry

A formal study has not been conducted at this time.

(3) State whether Grayson has a proposed policy regarding the use of its RF infrastructure by other utilities, and if so, provide the policy.

RESPONSE: by Brian Poling

Grayson does not yet have a policy regarding the use of its RF infrastructure by other utilities.

4. Provide the timeline for the deployment of the proposed AMI project.

RESPONSE: by Brian Poling

The AMI Committee developed an estimated timeline at the beginning of their study. See Exhibit E

Exhibit A

January 18, 2017	**Visited Licking Valley RECC:** Steve Bush, Scott McGuire and Brian Poling visited Greg Chaney to see the Landis+Gyr RF metering equipment in action and talk about the process of design and deployment. We were impressed with the meters ability to find a communication path and how quickly it reports (typically 5-15 minutes). Greg also showed us how to see the 'hops' a meter takes to report and how quickly you could pull information from a meter register. Greg also took us to a collector installation and pointed out router installations along the way.
January 27, 2017	**Board Meeting:** The Board of Directors approved the study of moving to a new AMI system.
February 3, 2017	**Visited with Clark Energy:** Andrea McCleese, Steve Bush and Brian Poling visited Todd Peyton to discuss their planning, design and deployment of the Landis+Gyr RF metering equipment. Discussed timelines for evaluation of vendors, PSC approval, equipment lead-times. We also discussed how the network would be deployed as well as meter deployment along with the testing and disposal of meters that will be removed.
February 8, 2017	**Employee Discussion of RF Conversion:** Carol Fraley, Bradley Cherry, Brian Poling, Mike Martin, Kyle Clevenger, Andrea McCleese, Steve Bush and Scott McGuire met to discuss the items required to move to an RF Metering system. Brian, Andi and Steve had a Gantt chart with a proposed timeline and all the components they could think of needed to achieve a complete RF Metered system. It was agreed that the timeline looked plausible. We will need to confer with Mike Norman, RUS, concerning 1) How to add the costs into the next Construction Work Plan and 2) how to convert the existing TS2 conversion money in the 2015-2018 CWP over to RF Metering.
March 7, 2017	**Landis+Gyr RF Introduction:** Steve Bush, Bradley Cherry, Andrea McCleese and Brian Poling met with Gerald Deslatte and Chip Rhea from Irby. They reviewed their RF program and left a flash drive with the presentation.
March 13, 2017	**Adams Electric:** Steve spoke with Erica Ackley at Adams Electric concerning their AMI system and selection. Adams Electric chose EATON AMI. They looked at Elster and Tantalus. They choose EATON because it did not require tall towers. EATON required cell phone coverage at the 'gateways' and sounded similar to the Landis+Gyr system as far as

	equipment placement. They did not have capability of maintaining the equipment on tall poles. They have deployed about half of the 7500 meters. They use ITRON single phase and Elster polyphaser meters. They did not consider Landis+Gyr after being TS1 fully deployed and L/G dropped TS1 equipment without notice. Adams Electric is an NISC Company.
March 16, 2017	**Sensus AMI RF Introduction:** Mark Davis, NRTC, and Toby Smith, Sensus, met with Brian Poling, Steve Bush, Scott McGuire and Andrea McCleese. They spent a couple hours going over Sensus' AMI RF system and how it works. They also brought some of their equipment for our viewing. The Sensus system is a licensed frequency system utilizing the old paging system frequencies. Sensus uses a design that requires all meters to report directly to a tower. They support GE (Aclara) and Elster A3 meters. Base stations have 8 watts of power (80 watts effective power with antenna). They use 256 bit encryption and the system is UL 2735 listed. (We later learned they had some homes burn down in Canada prior to the UL listing of their equipment.)
April 3, 2017	Steve Bush, Scott McGuire, Andrea McCleese and Brian Poling participated in an online class "Gridstream RF Solution Overview" by Landis+Gyr. The presentation was an overview of how L&G's AMI RF system worked, their deployment options when developing a network, security options and how the system reacts during packet disruptions. We spent some time after the meeting discussing what we heard and what items needed further investigation at our upcoming Metering School and Landis+Gyr's Users Conference.
April 19, 2017	Andrea McCleese and Brian Poling met with Mark Davis, NRTC per his request. He informed us that NRTC was no longer a Sensus vendor and they had joined with SilverSprings. He encouraged us to pursue a quote from Sensus for a propagation study and possible quote. Mr. Davis also said he was not ready to present anything concerning SilverSprings at this time but would check back.
April 20, 2017	Carol Fraley, Mike Martin, Bradley Cherry, Brian Poling met with RUS Field Representative Mike Norman concerning the financing of our potential AMI RF project. Mr. Norman said incorporation of the equipment for AMI RF in our Construction Work Plan was not a problem and many other cooperatives were doing the same. He also noted that we had money allocated in the current work plan for meter change outs that could be

utilized for RF with a simple CWP Amendment. That means we could start project during this work plan.

April 25, 2017 — Andrea McCleese, Steve Bush and Brian Poling travelled to West Union, Ohio to visit with Adam's Rural Electric's General Manager, Bill Swango, concerning their deployment of Eaton AMI RF system. Mr. Swango started by saying he did not believe Eaton's propagation study because it placed equipment where there was not any power lines. He chose to design the network himself.
He reviewed their Yukon software (Eaton's software) and explained how it worked. The co-op has deployed 4000 meters since June of last year and have approximately 2500 remaining to complete their system.
Once finished with the software, Mr. Swango took us to the field to see some of the equipment and to explain the process of making meters report in their 'rough terrain' (which was similar to ours).
The visit raised a question about Eaton's security when transmitting data. Adam's Rural Electric was only using MAC addressing.
We need to question Eaton as to what type(s) of security they offer. We also need to look at each vendor's propagation studies closely understanding there will be a 'bidding propagation study' and a 'deployment propagation study" based on the vendor selected.

April 26, 2017 — Carol Fraley and Brian Poling met with Gerald Haney, Grayson Utilities. We explained that we were looking at an RF AMI system and the basics of how it would work. We also talked about where it would overlap their service area and the potential for them to utilize our network for gas and/or water meter readings. Explaining that we were in the study phase and wanted to submit data to vendors for propagation studies, we asked if Grayson Utilities would be interested in being a part of that system in the future. Mr. Haney expressed great interest in the project and wanted to be included in the study. The Utility Board Meeting is Friday and he is going to take the information to them and let us know officially following the board meeting.

April 27, 2017 — Carol Fraley and Brian Poling met with W.C. Gilbert, Manager of Rattlesnake Water District. We explained that we were looking at an RF AMI system and the basics of how it would work. He mentioned that Big Sandy Water District was implementing the Sensus system so he knew a little about how it worked. They had already talked with their Sensus representative about doing a study on their system but had not heard back from them.

Mr. Gilbert was interested in our proposal and will take the information to his board next Tuesday.

April 28, 2017

Steve Bush, Scott McGuire, Andrea McCleese and Brian Poling met with Larry Rygiel with ACLARA. Jason McClanahan, an applications engineer with ACLARA also joined us by phone. ACLARA is a Sun Capital Partners company that owns APEX, GE Meters (solid-state division) and Lighthouse Smart Sensor (Tallgrade). ACLARA has been in the AMR/AMI business for 20+ years. They originally developed the TWACS (PLC) system and recently moved to RF.

We ask if they could speak on their gas and water systems in addition to RF since we were considering allowing local gas and/or water companies who may be interested to join in our efforts and utilize our network for a recurring fee. ACLARA's gas and water system is referred to as Synergize STAR Network. It uses a different frequency than the electric on the network to avoid interference. They explained the process, which is much like the electric process. They also showed a leak detection option that uses ultrasound that could be placed in metering well.

Concerning the electrical AMI, their TWACS product uses the 60 HZ frequency as its carrier frequency instead of injecting an additional frequency as the carrier (as L/G currently does). The benefits of this method is: speed-they are getting 15-20 second response times for meter reads and less interference-meaning connections and/or equipment like capacitors or lightning arrestors.

Their RF system utilized a licensed frequency (450-470 MHz) system to utilize "home run deployment" (towers). The collectors have a 6-8 year battery life and can be powered by solar panels. They utilize 256-bit encryption as well as digitally signed certificates.

ACLARA already had interfaces for SEDC, Milsoft and OATI. Servers are Sequel Servers for RF and Oracle for TWACS.

May 1, 2017

Andrea McCleese spoke with Bill Bullock, AMI Integration at SEDC, concerning SEDC's integration with Landis+Gyr, Eaton, Sensus, and Aclara. The following are excerpts from our conversation as it related to integration with SEDC. Bill reported that over 50% of SEDC's AMI customers have Aclara's TWACS PLC system with customers still moving to that system. Their integration is very reliable and metrics with this PLC system are as good as RF. Only one of their customers has Aclara's RF

system and they are still working on the integration. SEDC has a good integration with Landis+Gyr's RF and it's a "solid product" from their prospective. Eaton's RF is pretty reliable with about a dozen SEDC customers utilizing it. Eaton's PLC product is not reliable. The integration with Sensus RF is "pretty good", but has some issues. They have about a dozen customers using Sensus.

May 24, 2017

Requests for propagation studies were submitted to ACLARA, Eaton and Landis+Gyr today. Because of the tower based approach of Sensus' system and their fee base propagation study, we opted not to ask them for a study or pricing. We did, however, decide to ask ACLARA for a quote on the PLC system (TWACS) also.

May 31, 2017

Buckeye Rural Electric Cooperative Corporation: Steve Bush, Andrea McCleese and Brian Poling visited Buckeye Rural Electric in Rio Grande, Ohio to visit with Ed Mollohan, Mark Thomas and some of their staff about their conversion from Landis+Gyr PLC to Aclara's TWACS system. Their choice to change from Landis+Gyr to another vendor was spurred due to Landis+Gyr's request to move from TS2 and their unwillingness to talk about any upgrades except RF technology. Buckeye said the propagation studies didn't show favorable toward RF so they made the choice to move to Aclara's PLC system.

They started the conversion in mid-February 2017 and have upgraded nine substations using in-house labor and installed approximately 1600 meters utilizing a contractor (Anixter). Their experience has not been problem free. They indicated Aclara did not offer installation training for the equipment in the substations. They figured that out on their own. The training was focused only on troubleshooting. The software interface training was "unstructured" so they had to figure out most of it themselves. They feel that they are a beta site for Aclara's interface with their CIS software (ATS) and have to work through many issues with tech support that they should not have had to do themselves.

Their bottom line was they love how the equipment worked. It was fast, not hampered by line noise and distance did not affect the speed. They do not really care for the software interface, the training or technical support. They said, "Landis+Gyr's support is light years above Aclara's". However, they also felt Aclara's technology was much, much better than Landis+Gyr's PLC technology.

July 12, 2017 — Scott McGuire, Andrea McCleese, Steve Bush and Brian Poling met with Larry Rygiel, Aclara, to discuss their eTWACS PLC system. Jason McClanahan, also with Aclara, joined us on a conference call to discuss more details concerning their PLC product. Aclara's PLC product utilized a different type of carrier that rides the 60 Hertz cycle making it less prone to line noise. They reviewed the substation equipment needed to operate eTWACS and what would be required for us to make the conversion. We would be able to keep the primary underground and the recloser CT's but everything else would change. It would also be advantageous to remove all the Landis+Gyr substation equipment, install the Aclara substation equipment and all the meters on that substation between billing cycles. Theoretically, it is possible to run both Landis+Gyr and Aclara's systems at the same time but physically difficult due to the need for a second primary underground feed (which most substations do not have available) and a need for additional recloser CT's. Even that would be a temporary requirement since the Landis+Gyr equipment would be removed at the end of the process.

Aclara's eTWACS system is expected to, according to Mr. Rygiel, collect 98-99% of reads each day. The remaining 1-2% would not report because of physical equipment breakdowns along the communication path or programming issues induced during deployment of a meter.

Aclara also offers services where they would install the substation equipment and/or do meter change outs. They also offer hosting services for the data.

August 16, 2017 — Steve Bush, Andrea McCleese and Brian Poling visited with South Kentucky Rural Electric, Somerset, Kentucky, for a review of their TWACS program. Joe Langdon along with four other employees (Dallas, Tony, Joni and Doug) discussed their decision to use TWACS and showed the software and how they were utilizing it to collect consumer reads, disconnects and voltage readings. They also showed how they could ping meters to determine if the power was on or not. We also visited a substation relatively close to the office where they explained the components that went into making the system work.

August 22, 2017 — Brian Poling polled the staff to obtain a priority list of AMI functionality. The results were as follows:

Item of Interest	**Average Score**
Longevity	**10.0**

Security	**10.0**
Remote Disconnect/Prepaid	**9.3**
Reliability and maintenance	**9.2**
Future Capabilities	**8.8**
Software Integration	**8.3**
Server Environment	**8.0**
GIS Integration	**8.0**
Ping Meters	**7.9**
Demand/TOU reporting	**7.8**
Automated Reporting of Outages	**7.3**
On Demand Readings	**7.1**
Night Light Disconnects	**6.7**
Isolation of R/W issues	**6.5**
Voltage Monitoring	**6.0**
CRC Integration	**5.3**

August 31, 2017 Scott McGuire, Andrea McCleese, Steve Bush and Brian Poling visited with Todd Payton at Clark Energy for a review of their Landis+Gyr RF implementation project. Todd said about one-third of their system now had network capabilities and even had one collector go online while we were there. He showed some of the functionality and speed of the systems remote disconnect capabilities as well as how quickly it would return data from a request. He polled a meter for voltage and it returned the value in well under a minute.

Todd took us to a substation so we could see the collector installation just outside the sub. He had a 55' pole with the antenna attached on the top and the collector and cellular antennas mounted around 16'.

Overall, Todd is very impressed with the system and had no complaints.

September 7, 2017 Gerald Deslatte, from Stuart C. Irby Co., and Stevven Timm, Landis+Gyr, met with Andrea McCleese, Steve Bush, Scott McGuire and Brian Poling to review the quote based on their propagation study. They emphasized the results were based on incomplete GPS data that we gave them and could be refined for accuracy once the GPS data points were collected and presented to Landis+Gyr for further study.

Stevven Timm reviewed their quote and made the following changes and notations:
1) Even though we had asked for 12,500 non-service disconnect switches

and 2500 with the SD, they chose to quote ALL 15,000 residential meters with service disconnect switches. According to Stevven, the trend has been to install service disconnects on all residential customers since the prices have gotten much better.
2) The line item for "RF Command Center Software License" could be removed from the quote since we already have Hosted Command Center with Landis+Gyr. We could also remove notes 18 and 19. Since we already have a support contract (as well as the Hosted Command Center) our prices with Landis+Gyr would not change.
3) The price for training includes 2 people.
4) Item 31 can be removed also because they do not (and would not) charge us for shipping even if we didn't have a full truck load.

Other items discussed included:

- Landis+Gyr's RF system does not report phasing. That would be dependent on the GIS system.
- The collectors all have firewalls built in and do not require a separate device.
- They have Smart Street Light modules that replace the photocell and allow security lights to be turned off remotely. The module would also act as a small router with the ability to 'fill the gap' should a router be required in that particular area. We discussed the viability of utilizing such a device especially on prepaid accounts that have security lights. The price would be $145 per module. (After the meeting, we discussed that since the Smart Street Light replaced the photocell that currently costs about $27, the difference in cost would be paid back quickly, eliminating trip charges).
- Mr. Timm also told us that Command Center Version 7.X would be compatible with multiple internet browser platforms giving us the freedom to utilize our existing iPads to access Command Center in the field. We later learned from Alice Rowland, our Hosting/Conversion Specialist from Landis+Gyr, the option is not available but under development.

September 8, 2017 Larry Rygiel, ACLARA, met via conference call with Brian Poling, Andrea McCleese, Steve Bush and Scott McGuire to present the ACLARA proposals for both a PLC and a RF solution.

ACLARA's PLC system is called TWACS (Two-Way Automated Communication System). The quote would require us to purchase

transformers, built to their specifications, for each substation plus installation of the equipment in the substation. ACLARA would check the installation once completed as part of the price provided.

Concerning RF, he stated they had a new Data Collection Unit (DCU) coming out in January. Our pricing was based on the new unit to reduce the number of DCU's required by around 250. The proposal calls for 464 DCU (new name) each having a cellular modem. The DCU's are designed to be 30'-50' off the ground but the higher the better.

There are additional software modules available that would give the system more flexibility. He indicated he would give us prices for those if we chose ACLARA as our vendor and thought we needed them.

ACLARA provides hosting services but he said only a couple people were using it and recommended we just virtualize the servers.

September 21, 2017 Eaton's representative, Daniel Scrima, conducted a phone conference to present their propagation study. Those present were Scott McGuire, Andrea McCleese, Brian Poling and Steve Bush. After difficulties with his web presentation, Mr. Scrima finally emailed us the proposal (something we had ask for over a month). As soon as he opened the first images of the propagation study it was obvious much of the system had been omitted from the study. Since we didn't have all the GPS data when the proposals were requested, we provided what we had. Eaton had forgotten to add in the actual GPS'ed data when they ran the propagation study. He ended the call and said he would get back to us with an update.

September 22, 2017 Daniel Scrima contacted Steve Bush and said the numbers wouldn't change that much even with the additional GPS'ed points so the total on the proposal would stand for our budgetary/comparison needs.

The AMI Committee (Steve Bush, Andrea McCleese, Brian Poling and Scott McGuire) presented their findings to the staff. All proposals were altered (based on vendor provided costs) to include remote disconnects for all residential customers. We also added estimated cooperative provided materials costs, estimated installation labor for equipment and meters, testing and disposal estimates as well as state taxes. Those figures, both as presented and as modified, were presented to the staff.

September 25, 2017	Brian Poling, Steve Bush and Andrea McCleese presented the study and a proposal to the Board of Directors. Carol Fraley asked the Board if they wanted to take a vote or wait until October. They decided to take a vote and approved moving forward with the Landis+Gyr AMI RF project.
September 29, 2017	The AMI Committee along with Peggy Skaggs met to discuss the next steps and some timelines. We modified our timeline somewhat and plan to contact Landis+Gyr as soon as possible to get another meeting scheduled. We have also started gathering information necessary for the PSC's CPCN application.
October 13, 2017	Submitted CPCN information to Attorney Jeffery Scott.
October 18, 2017	The AMI Committee along with Peggy Skaggs met with Stevven Timm from Landis+Gyr to discuss some details of the bid and talk about the future deployment methods and timing of the proposed project. We wanted him to know we would not be signing a contract until the PSC approved the project. We inquired about training classes, the order they should be taken and when we should begin. He recommended getting started as soon as possible since the classes were only offered periodically. He is going to get back with us on the order they should be taken.
October 19, 2017	Received CPCN application from Attorney Jeffery Scott.
October 20, 2017	Mailed the CPCN application to the Public Service Commission.

Exhibit B

		Landis+Gyr (RF)	Aclara (RF)	Eaton (RF)	Aclara (PLC)
A.	Meters with a Remote Service Switch	$1,863,000.00	$2,456,400.00	$3,225,000.00	$2,478,000.00
B.	Commercial and Industrial meters	$57,815.10	$53,130.00	$70,800.00	$71,519.42
C.	Network Equipment (RF Routers & Collectors)	$768,275.00	$3,345,440.00	$428,276.00	$443,706.00
D.	RF Engineering\Test Equipment	$2,070.00	$270,000.00	$3,899.00	$34,255.00
E.	Estimated Network Installation Labor	$143,250.00	$116,000.00	$348,500.00	$35,256.00
F.	Estimated Meter Change Labor	$145,000.00	$117,220.00	$145,000.00	$117,220.00
G.	Meter Testing\Disposal	$37,500.00	$37,500.00	$37,500.00	$37,500.00
H.	Shipping\Handling\Tax	$172,905.33	$522,228.94	$272,914.88	$282,523.84
I.	Additional Equipment (Poles\Grounds\etc.)	$59,195.37	*	$144,034.20	$185,962.83
J.	Project Delivery Services	$81,000.00	$229,530.00	$104,700.00	$303,130.00
K.	Employee Training	$50,400.00	**	**	**
	Total Initial Cost	$3,380,410.80	$7,147,448.94	$4,780,624.08	$3,989,073.09
	Anticipated Annual Fees	$16,600.00	$126,465.00	$9,700.00	$49,390.00

*Equipment mounts on existing transformer poles.
**Included in Project Delivery Services: only train as part of the Professional Services and conducted in office during installation of equipment.

Two weeks after our initial meeting with Sensus, NRTC informed us they had cut ties with Sensus. Sensus' RF system required a direct line of site to 90 feet or higher towers. Since Grayson does not have those towers they would be forced to lease and/or purchasing property and erect towers. Grayson knew that it would be impractical and cost prohibitive initially from an installation point-of-view as well as the annual expenses of ownership of those towers. It was for that reason Grayson did not ask Sensus for a quote.

Exhibit C

	Landis & Gyr		Aclara		Sensus	Eaton
Feature	PLC	RF Mesh	TWACS	Senergize	Flexnet RF	RF
2 layers of security	N/A	Yes	N/A	Yes	No	No
Affected by power line interference	Yes	N/A	No	N/A	N/A	N/A
Backwards compatible	No	No	Yes	Yes	?	?
Batteries Required	N/A	Yes	N/A	Yes***	Yes***	Yes***
Bucket Truck Required	No	Yes	No	Yes	No**	Yes
Collector Location Options	No	Yes	No	Yes	Yes	Yes
Connectivity in Meter Shop	No	Yes	No	Yes	Yes	Yes
Deployment Flexibility	No	Yes	No	Yes	Yes	Yes
Deployment of Network (time-frame) (months)		3.5	12	3.9	---	
Employee Training (Scale 1-10; 1-little 10-major)	1.0	7.0	7.6	9.7	9.7	9.7
Home Run" deployment	Yes	No	Yes	Yes	Yes	No
Licensed Frequency	N/A	No	N/A	Yes	Yes	No
Multipath of communication	No	Yes	No	2	No	Yes
Number of internet connections required	12	14	12	464		
On demand reads	Yes	Yes	Yes	Yes	Yes	Yes
Over the air programming of meters	No	Yes	No	Some	Yes	Yes
Plug-n-play	Yes	Yes	Yes	Yes	?	Yes
PSC CPCN Required	No	Yes	Yes	Yes	Yes	Yes
Remote Disconnect notification times	18-20 min	<1 min	<2 min	< 1 min	<1 min	< 1 min
Remotely Disconnect	Yes	Yes	Yes	Yes	Yes	Yes
Software Integration Changes	No	No	Yes	Yes	Yes	Yes
Supports Distribution Automation	No	Yes	No	Yes	Yes	Yes
Supports multiple browser platforms	No	No	Yes	Yes	?	?
Supports multiple meter manufacturers	No	No	Yes	Yes	Yes	Yes
Supports Multi-tenant	Yes	Yes	Yes*	Yes*	?	?
Towers Required	N/A	No	N/A	Yes	Yes	No
Usage shows against ambient temperature	No	No	Yes	Yes	No	No

Exhibit D

Item of Interest	Average Score
Longevity	10.0
Security	10.0
Remote Disconnect/Prepaid	9.3
Reliability and maintenance	9.2
Future Capabilities	8.8
Software Integration	8.3
Server Environment	8.0
GIS Integration	8.0
Ping Meters	7.9
Demand/TOU reporting	7.8
Automated Reporting of Outages	7.3
On Demand Readings	7.1
Night Light Disconnects	6.7
Isolation of R/W issues	6.5
Voltage Monitoring	6.0
CRC Integration	5.3

Exhibit E

DATE	MILESTONE
2/6/2017	GIS Field Data Collection
2/6/2017	Futura Begins Map Deliveries
3/1/2017	Begin Vendor Evaluations
9/25/2017	Board Approval
10/17/2017	Submit to PSC For Approval
4/3/2018	Begin RF Training
7/2/2018	End TS2 Meter Purchases
7/2/2018	Landis+Gyr Propagation Study
8/3/2018	Order RF Equipment
11/2/2018	Begin Install of RF Network
11/2/2018	Solicit Metering Contractors
2/1/2019	Install New RF Meters