




Cumberland Valley Electric

A Touchstone Energy Cooperative 

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PUBLIC SERVICE
COMMISSION

March 28, 2018

Ms. Gwen R. Pinson
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602-0615

Re: Case No. 2018-00056

Dear Ms. Pinson:

Enclosed are an original and ten (10) copies of Cumberland Valley Electric, Inc.'s response to the Commission Staff's First Data Request for Information dated March 14, 2018.

Please contact Mark Abner, Manager of Engineering, at Cumberland Valley Electric at mark.abner@cumberlandvalley.coop or 606-258-2242, should you have any questions or need additional information.

Respectfully,



Ted Hampton
President & CEO

Enclosures

cc: W. Patrick Hauser

MAIN OFFICE:

P.O. Box 440 • Gray, KY 40734

Phone: 606-528-2677 • Fax: 606-523-2698

DISTRICT OFFICE:

P.O. Box C • Cumberland, KY 40823

Phone: 606-589-4421 • Fax: 606-589-5297

VERIFICATION OF MARK D. ABNER

The undersigned, Mark D. Abner, as Manager of Engineering of Cumberland Valley Electric, Inc. being duly sworn, states that the responses herein are true and accurate to the best of my knowledge and belief formed after reasonable inquiry.

Dated: March 28, 2018

Mark D. Abner

Mark D. Abner, Manager of Engineering
Cumberland Valley Electric, Inc.

COMMONWEALTH OF KENTUCKY
COUNTY OF KNOX

The foregoing verification statement was SUBSCRIBED AND SWORN to before me by Mark D. Abner, Manager of Engineering at Cumberland Valley Electric, Inc., on this 28th day of March 2018.

Barbara Elliott

Notary Public

My commission expires: 2-13-19



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1. Refer to the Application, Exhibit 2, page 1. Cumberland Valley states that it became aware that Landis & Gyr's support for the TSII system would end around 2020. Cumberland Valley also states that the wait time to procure equipment led Cumberland Valley to believe that Landis & Gyr was "moving its focus" from TSII to RF Gridstream.
 - a. Explain in specific detail how Cumberland Valley became informed that support of the TSII system would end.

Response:

In the spring of 2016, Cumberland Valley sent its Manager of Engineering and Assistant Engineer to Landis and Gyr's user conference. At the conference, they learned from Landis & Gyr employees that the company was committed to the TSII system only through the year 2020. In addition, Grayson RECC has outlined learning the same information at the 2015 user conference in its filing with the Commission (Case #2017-00419).

- b. Explain in specific detail why Cumberland Valley believes that Landis & Gyr would focus on RF Gridstream rather than TSII products.

Response:

Cumberland Valley cannot speculate on the motivations as to why Landis & Gyr is focusing its resources on RF Gridstream rather than TSII products. Cumberland Valley

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can only speak of the actions that Landis & Gyr has taken. These actions support Cumberland Valley's assertions that the RF Gridstream is the primary focus of Landis & Gyr. Employees of Landis & Gyr have informed Cumberland Valley that they have not sold a new TSII system in many years and lead times for replacement TSII equipment can be upwards of 40 weeks. This would indicate that the marketing and manufacturing of the TSII system is not a top priority of the company. The RF Gridstream product has had many enhancements and new features added via software releases, while the TSII system is primarily relegated to security patches and bug fixes. All of these actions seem to clearly indicate that Landis & Gyr has moved on from TSII and is now primarily focused on its RF Gridstream product.

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2. Provide the number of TSII meters Cumberland Valley has remaining in stock.

Response:

Cumberland Valley currently has approximately 450 TSII meters in stock.

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3. Refer to Exhibit 2, page 2 of 3, which lists four types of acceptable meters. Explain what meters were excluded from the list of acceptable meters in the Request for Proposals and why they were excluded.

Response:

Cumberland Valley limited the acceptable meters in its Request for Proposals to Landis & Gyr, Itron, Aclara and Elster. These four (4) meter manufacturers are each well known in the industry and together have millions of meters deployed across the United States. Cumberland Valley believes a project of this scope warranted a conservative approach when selecting a meter manufacturer. Therefore, Cumberland Valley restricted its Request for Proposals to only manufacturers it deemed to have a proven reliable history within the industry.

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4. Refer to Exhibit 3, page 2 of 35, which states that the meters support five-minute interval data. Explain how many times per day the meter will report usage information back to Cumberland Valley.

Response:

Typically, residential metering is collected on an hourly basis and hourly data is sent back to the office six (6) times daily. The commercial & industrial meters collect data every fifteen (15) minutes and is sent back to the office hourly. However, scripts can be written to collect five (5) minute data as well. These scripts would most likely feed data for use in other applications.

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5. Refer to the Application, paragraph 5, and Abner Testimony, page 2 of 3, which states that Cumberland Valley will pay for the proposed project using general funds, until new loan funds are needed to pay for construction.
- a. Provide a detailed breakdown showing the amount of general funds and loan funds that will be used to pay the cost of the proposed project.

Response:

Cumberland Valley Electric does not know at this time the breakdown of the amount of general funds and the amount of loan funds that could be used to pay the cost of the proposed project. See response to 5(b) below for further explanation.

- b. Explain how Cumberland Valley will determine when new loan funds, rather than general funds, will be needed to pay the cost of the proposed project.

Response:

Cumberland Valley Electric will pay the cost of the proposed project from general funds until such time as cash flow becomes an issue. When cash flow becomes an issue, Cumberland Valley Electric would drawdown from available RUS approved loan funds. These loan funds would be from Cumberland Valley Electric's current four (4) year work plan previously approved by the Commission.

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6. Refer to the Application, paragraph 6, which contains the estimated cost of the proposed project, and Exhibit 4, which contains tables that break out the cost components. Adding the figures from the tables in Exhibit 4 results in a greater amount than the estimated cost set forth in paragraph 6 of the Application. Reconcile the difference.

Response:

The total cost of the project outlined in Exhibit 4 is correct; however, the cost listed under project management is incorrect. The cost for project management should be reduced by \$634.25.

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7. Refer to the Application, paragraph 6. Provide a schedule with a detailed breakout of the components that make up the anticipated annual cost of operations.

Response:

The anticipated annual cost of operation is comprised of Cumberland Valley's annual cost for Software as a Service ("SaaS"). Cumberland Valley has negotiated an agreement to keep the cost of the SaaS the same over the next ten (10) years. This will help insulate Cumberland Valley from annual cost increases that are typically associated with software.

The SaaS is comprised of the following items:

Advanced Metering Manager ("AMM") – Software that supports full meter provisioning and readings as well as on-demand tasks such as pinging and remote service operations.

Firmware Upgrader ("FWU") – Provides the ability to remotely upgrade firmware on Network Interface Cards, Access Points, Replays, Bridges and meters.

Network Element Manager ("NEM") – Allows advanced network management capabilities while interoperating with existing back-office systems and storage.

Meter Program Configurator ("MPC") – Enables wireless remote programming of electric meters on a mass scale.

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

Response:

Cumberland Valley hereby requests deviation from the testing requirements in 807 KAR 5:041, Section 15(3). Cumberland Valley estimates that the cost of testing all TSII meters being removed from service would be approximately \$152,811.65. Cumberland Valley reviewed its meter testing data from the past three (3) years and found that only 00.2% of meters tested out of tolerance. Of those meters, Cumberland Valley had to refund \$407.12 and billed \$441.24 over the three year period of time. Based on these findings Cumberland Valley asserts that the testing of all TSII meters would result in an immaterial number of adjustments to member's accounts. When comparing the benefit gained by testing TSII meters against the cost, Cumberland Valley believes its members to be best serviced by requesting a deviation from the testing requirement.

Cumberland Valley does plan on contacting other utilities across the country to see if there is any interest in purchasing our existing TSII meters and equipment. At this time, it is unknown how much interest there is in used obsolete TSII equipment. Cumberland Valley will make every effort to be able to recoup as much of its investment in the TSII system as possible.

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9. Explain whether the TSII meters have been fully depreciated, and, if not, provide the amount of accumulated depreciation on the TSII meters and explain how Cumberland Valley intends to recover the undepreciated costs of the TSII meters.

Response:

The AMI station equipment, meters, and related equipment have not been fully depreciated. The accumulated depreciation is \$1,950,130.43. This equipment was being depreciated over a period of thirty years until PSC approval was received in Case 2014-00159 to shorten the useful life to 15 years.

The current equipment will continue to be depreciated until it is taken out of service.

When the new AMI project has been substantially completed and Cumberland Valley can reasonably estimate the net book value remaining in the current system, we will investigate the best option, for our members as well as Cumberland Valley, to dispose of the undepreciated cost. The remaining amount of undepreciated costs could be immediately expensed. Another option is to record remaining book value as an extraordinary retirement and amortize the amount over a period of years. At this time, it is estimated that the amortization period would be seven (7) years. If Cumberland Valley determines that the best option is to amortize the remaining undepreciated costs over a period of years, we will seek United States Department of Agriculture, Rural Utilities

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Service (RUS) and PSC approval to record the remaining net book value as an extraordinary retirement.

Cumberland Valley proposes and requests to depreciate the new AMI system over a 12 year period as was approved in Nolin Electric Cooperative Corporation Case No. 2014-00436.

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10. Refer to the Application, Exhibit 6.

- a. Explain whether the amounts in the Proposed Changes section of Exhibit 6 represent the total estimated cost of the proposed project.

Response:

The amounts listed in the Proposed Changes section of Exhibit 6 does not include cost of Software as a Service ("SaaS") or the cost of a test environment. The SaaS is an annual fee for access to Silver Spring Network's software. The SaaS and test environment were not included in the work plan amendment because they are not eligible to have funds drawn down against them.

- b. Confirm that the amount in the Method of Financing section lists only the amount of loan funds that will be used to pay for the proposed project and that the amount of general funds is not included in this section. If this cannot be confirmed, explain the discrepancy between the amount listed in the Method of Financing section and the total of the amounts listed in the Proposed Changes section.

Response:

The amount listed under Method of Financing is the amount needed to cover the cost of network equipment and professional services. These costs were not included in

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Cumberland Valley's current work plan. The estimated cost of meters is not included under the Method of Financing. Under the Proposed Changes section Cumberland Valley states, "The stated meter quantity and cost thereof will be covered by 740c code 601 loan funds is in our current work plan." Cumberland Valley's current work plan already has funds designated for meters, therefore, the meter cost is not listed in the Method of Financing in the work plan amendment.

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11. Cumberland Valley was granted approval for a prepay metering program in Case No. 2014-00139. Confirm that no charges for a meter are included in the \$3.00 monthly prepay fee.

Response:

Confirmed. Cumberland Valley's prepay monthly fee of \$3.00 only includes the incremental costs associated with prepay. The cost of the meter is not included.

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12. Refer to the Application, Exhibit 5, which lists projected benefits to Cumberland Valley and its members that will be derived from the proposed project. Quantify the cost of the projected benefits.

Response:

The projected benefits to members outlined in Exhibit 5 of the Application are inherent to the system that NRTC outlined in its proposal to Cumberland Valley. Detailed cost information for NRTC's proposed system is outlined in Exhibit 4 of the Application.

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13. Provide a detailed timeline for deployment of the meters if the Commission approves the CPCN.

Response:

Cumberland Valley has provided a detailed timeline for deployment as Exhibit A of this response. Dates provided within the timeline are subject to change based on weather, workforce availability, equipment lead times, etc.

ID	Task Name	Duration	Start	Finish
1	Cumberland Valley AMI Project	504 days?	Mon 6/4/18	Tue 6/2/20
2	CVE AMI Project Phase 1 Initial Deployment	173 days	Mon 6/4/18	Tue 2/12/19
3	Planning and Design	54 days	Mon 6/4/18	Fri 8/17/18
4	Initial Project Scoping	1 day	Mon 6/4/18	Mon 6/4/18
5	Kick-off Meeting	1 day	Mon 6/4/18	Mon 6/4/18
6	Milestone 1: Project Commencement	0 days	Mon 6/4/18	Mon 6/4/18
7	Project Deployment Strategy and Timeline	4 days	Tue 6/5/18	Fri 6/8/18
8	Develop strategy for deploying network equipment based on location, EP device, etc.	4 days	Tue 6/5/18	Fri 6/8/18
9	Identify team to perform and manage network installations	4 days	Tue 6/5/18	Fri 6/8/18
10	Determine post-deployment network resolutions, maintenance, and monitoring	4 days	Tue 6/5/18	Fri 6/8/18
11	Determine number of installation crews required	4 days	Tue 6/5/18	Fri 6/8/18
12	Finalize Disaster Plans in case of emergencies, events, etc.	4 days	Tue 6/5/18	Fri 6/8/18
13	Identify and Assign Administrative Logistics Responsibilities	2 days	Mon 6/11/18	Tue 6/12/18
14	Potential zoning issues	2 days	Mon 6/11/18	Tue 6/12/18
15	Pole access, leasing, and NW equipment power issues (voltage, etc.)	2 days	Mon 6/11/18	Tue 6/12/18
16	Customer notification responsibility	2 days	Mon 6/11/18	Tue 6/12/18
17	Confirm and Finalize NRTC/SSN, CVE and 3rd Party Roles and Responsi	2 days	Wed 6/13/18	Thu 6/14/18
18	CVE Personnel	2 days	Wed 6/13/18	Thu 6/14/18
19	NRTC/SSN	2 days	Wed 6/13/18	Thu 6/14/18
20	Installer	2 days	Wed 6/13/18	Thu 6/14/18
21	Develop Final Project Scope Document	5 days	Mon 6/18/18	Fri 6/22/18
22	Finalize project approach and strategy	5 days	Mon 6/18/18	Fri 6/22/18
23	Finalize deliverables and owners	5 days	Mon 6/18/18	Fri 6/22/18
24	Finalize master schedule	5 days	Mon 6/18/18	Fri 6/22/18
25	Finalize project success criteria	5 days	Mon 6/18/18	Fri 6/22/18
26	Finalize system performance targets	5 days	Mon 6/18/18	Fri 6/22/18
27	Document assumptions and risks/critical success factors	5 days	Mon 6/18/18	Fri 6/22/18
28	Finalize Project Organization	5 days	Mon 6/18/18	Fri 6/22/18
29	Finalized Risk Management and Contingency Plan	5 days	Mon 6/18/18	Fri 6/22/18

ID	Task Name	Duration	Start	Finish
30	Finalize Safety Plan	5 days	Mon 6/18/18	Fri 6/22/18
31	Publish and formally sign-off on project scope document	4 days	Mon 6/18/18	Thu 6/21/18
32	Final Kick-Off Meeting (with Entire Project team)	1 day	Fri 6/22/18	Fri 6/22/18
33	Design	5 days	Mon 6/25/18	Fri 6/29/18
34	Master Network Design	5 days	Mon 6/25/18	Fri 6/29/18
35	Review and possible update of the Initial Design	5 days	Mon 6/25/18	Fri 6/29/18
36	Site Survey Training	5 days	Mon 6/25/18	Fri 6/29/18
37	Develop Enhanced Master Network Design	5 days	Mon 6/25/18	Fri 6/29/18
38	Finalize Equipment Orders	6 days	Mon 7/2/18	Tue 7/10/18
39	Network Gear	3 days	Mon 7/2/18	Thu 7/5/18
40	Meter Equipment Configuration	5 days	Mon 7/2/18	Mon 7/9/18
41	Equipment Order	1 day	Tue 7/10/18	Tue 7/10/18
42	Submit full AP Order	1 day	Tue 7/10/18	Tue 7/10/18
43	Submit initial Relay Order	1 day	Tue 7/10/18	Tue 7/10/18
44	Submit Phase 1 Meter Order	1 day	Tue 7/10/18	Tue 7/10/18
45	Establish Warehousing and Installation Processes	15 days	Wed 7/11/18	Tue 7/31/18
46	Establish Warehouse and Inventory Mgmt	5 days	Wed 7/11/18	Tue 7/17/18
47	Establish warehouse process and procedures	5 days	Wed 7/11/18	Tue 7/17/18
48	Determine inventory mgmt controls and reporting	5 days	Wed 7/11/18	Tue 7/17/18
49	Installer Training	10 days	Wed 7/18/18	Tue 7/31/18
50	Training on the Network Equipment installation	10 days	Wed 7/18/18	Tue 7/31/18
51	NRTC to provide installation procedures, tools, documentation, and training to installers	10 days	Wed 7/18/18	Tue 7/31/18
52	Cover safety procedures	10 days	Wed 7/18/18	Tue 7/31/18
53	Cover RMA procedures and who to contact for any HW issues and/or questions	10 days	Wed 7/18/18	Tue 7/31/18
54	Cover troubleshooting techniques and processes	10 days	Wed 7/18/18	Tue 7/31/18
55	Back-Office Setup	39 days	Mon 6/25/18	Fri 8/17/18
56	SaaS Back Office HW Setup	10 days	Mon 6/25/18	Mon 7/9/18
57	SSN to install additional equipment for SaaS instance	10 days	Mon 6/25/18	Mon 7/9/18
58	SSN to conduct HW build validation	10 days	Mon 6/25/18	Mon 7/9/18

ID	Task Name	Duration	Start	Finish
59	UIQ Implementation, Training and Integration	29 days	Tue 7/10/18	Fri 8/17/18
60	Install UIQ - Test and Production	29 days	Tue 7/10/18	Fri 8/17/18
61	Workshop to discuss back office integration requirements	10 days	Tue 7/10/18	Mon 7/23/18
62	AMI Training	4 days	Tue 7/24/18	Fri 7/27/18
63	UIQ User Training	2 days	Mon 7/30/18	Tue 7/31/18
64	Training for Network Mgmt and Operations	3 days	Wed 8/1/18	Fri 8/3/18
65	SaaS UIQ Deployment	10 days	Mon 8/6/18	Fri 8/17/18
66	Milestone 2: Ready for Network Deployment	0 days	Fri 8/17/18	Fri 8/17/18
67	Customer CAT (Compliance Acceptance Test - Testing of SaaS setup with Lab Equip)	13 days	Mon 8/20/18	Wed 9/5/18
68	Test AP deployment and configuration	2 days	Mon 8/20/18	Tue 8/21/18
69	Test meter deployment (25 - 50 test meters)	3 days	Wed 8/22/18	Fri 8/24/18
70	Configuration of meters in test UIQ instance	2 days	Mon 8/27/18	Tue 8/28/18
71	Execute Test Cases	5 days	Wed 8/29/18	Tue 9/4/18
72	Customer Qualification End to End Test Sign-Off	1 day	Wed 9/5/18	Wed 9/5/18
73	Deployment	71 days	Thu 9/6/18	Mon 12/17/18
74	Phase I Network Installation (subset of FD network gear)	71 days	Thu 9/6/18	Mon 12/17/18
75	Conduct Site Surveys	10 days	Thu 9/6/18	Wed 9/19/18
76	Finalize Detailed Deployment Area Design	5 days	Thu 9/20/18	Wed 9/26/18
77	Network Equipment Configuration	8 days	Wed 11/14/18	Tue 11/27/18
78	Delivery of Network Infrastructure Equipment for Installation	1 day	Wed 11/14/18	Wed 11/14/18
79	Device Configuration	5 days	Thu 11/15/18	Wed 11/21/18
80	CVE Quality Control Audit	2 days	Mon 11/26/18	Tue 11/27/18
81	Deploy Network Infrastructure	4 days	Wed 11/28/18	Mon 12/3/18
82	Installation schedule validation	1 day	Wed 11/28/18	Wed 11/28/18
83	Deploy Network Infrastructure (4 Access Points?)	2 days	Thu 11/29/18	Fri 11/30/18
84	Deployment Validation and Testing	2 days	Fri 11/30/18	Mon 12/3/18
85	Installation Field Audit	1 day	Mon 12/3/18	Mon 12/3/18
86	Perform field audit on network installations	1 day	Mon 12/3/18	Mon 12/3/18
87	Field Network Troubleshooting	5 days	Tue 12/4/18	Mon 12/10/18

ID	Task Name	Duration	Start	Finish
88	Troubleshoot network connectivity issues between Network Infrastructure and Back-Office Systems	5 days	Tue 12/4/18	Mon 12/10/18
89	Preliminary Network Optimization	5 days	Tue 12/11/18	Mon 12/17/18
90	Optimization of Installed Network	5 days	Tue 12/11/18	Mon 12/17/18
91	Milestone 3: Phase I Network Installation Complete	0 days	Mon 12/17/18	Mon 12/17/18
92	Phase I Meter Installation (for CVE defined meter subset)	35 days	Tue 12/18/18	Tue 2/12/19
93	Finalize Detailed Deployment Area Design	5 days	Tue 12/18/18	Mon 12/24/18
94	Meter Equipment Configuration	8 days	Tue 12/18/18	Fri 1/4/19
95	Delivery of Meter Equipment for Installation	1 day	Tue 12/18/18	Tue 12/18/18
96	Device Configuration	5 days	Wed 12/19/18	Wed 1/2/19
97	CVE Quality Control Audit	2 days	Thu 1/3/19	Fri 1/4/19
98	Deploy Meters	12 days	Mon 1/7/19	Tue 1/22/19
99	Installation schedule validation	2 days	Mon 1/7/19	Tue 1/8/19
100	Deploy Meters 1000 meters (CVE crew of 5 doing 100 total per day)	10 days	Wed 1/9/19	Tue 1/22/19
101	Deployment Validation and Testing	5 days	Wed 1/16/19	Tue 1/22/19
102	Installation Field Audit	5 days	Wed 1/16/19	Tue 1/22/19
103	Perform field audit on meter installations	5 days	Wed 1/16/19	Tue 1/22/19
104	Field Network Troubleshooting	5 days	Wed 1/16/19	Tue 1/22/19
105	Troubleshoot meter connectivity issues	5 days	Wed 1/16/19	Tue 1/22/19
106	Network Optimization	5 days	Wed 1/23/19	Tue 1/29/19
107	Optimization of Installed Network	5 days	Wed 1/23/19	Tue 1/29/19
108	Acceptance Testing (ISAT)	10 days	Wed 1/30/19	Tue 2/12/19
109	Validation and acceptance that the system meets CVE functional requirements	10 days	Wed 1/30/19	Tue 2/12/19
110	Validation and acceptance that the system meets CVE performance requirements	10 days	Wed 1/30/19	Tue 2/12/19
111	Milestone 4: Meter Installation Complete	0 days	Tue 1/22/19	Tue 1/22/19
112	Milestone 5: Phase 1 Completion	0 days	Tue 2/12/19	Tue 2/12/19
113	CVE AMI Project Phase 2 Full Deployment	484 days?	Mon 7/2/18	Tue 6/2/20
114	Finalize Equipment Orders for Full Deployment	50 days	Mon 7/2/18	Mon 9/10/18
115	Network Gear	3 days	Mon 7/2/18	Thu 7/5/18

ID	Task Name	Duration	Start	Finish
116	Meter Equipment Configuration	5 days	Mon 7/2/18	Mon 7/9/18
117	Equipment Order (Full Deployment Orders)	1 day	Mon 9/10/18	Mon 9/10/18
118	Submit full AP Order	1 day	Mon 9/10/18	Mon 9/10/18
119	Submit 5 Route Relay Orders for Full Deployment	1 day	Mon 9/10/18	Mon 9/10/18
120	Submit 5 Route Meter Orders for Full Deployment	1 day	Mon 9/10/18	Mon 9/10/18
121	Phase 2 Network Installation (Full Deployment network gear)	58 days	Tue 12/18/18	Fri 3/15/19
122	Conduct Site Surveys	10 days	Tue 12/18/18	Tue 1/8/19
123	Finalize Detailed Deployment Area Design	5 days	Wed 1/9/19	Tue 1/15/19
124	Network Equipment Configuration	8 days	Fri 1/25/19	Tue 2/5/19
125	Delivery of Network Infrastructure Equipment for Installation	1 day	Fri 1/25/19	Fri 1/25/19
126	Device Configuration	5 days	Mon 1/28/19	Fri 2/1/19
127	CVE Quality Control Audit	2 days	Mon 2/4/19	Tue 2/5/19
128	Deploy Network Infrastructure	23 days	Wed 2/6/19	Fri 3/8/19
129	Installation schedule validation	1 day	Wed 2/6/19	Wed 2/6/19
130	Deploy Network Infrastructure (23 Access Points - 1 crew @ 2 per d:	12 days	Thu 2/7/19	Fri 2/22/19
131	Deployment Validation and Testing	10 days	Mon 2/25/19	Fri 3/8/19
132	Installation Field Audit	5 days	Mon 2/18/19	Fri 2/22/19
133	Perform field audit on network installations (representative sample)	5 days	Mon 2/18/19	Fri 2/22/19
134	Field Network Troubleshooting	12 days	Thu 2/7/19	Fri 2/22/19
135	Troubleshoot network connectivity issues between Network Infrastructure and Back-Office Systems	12 days	Thu 2/7/19	Fri 2/22/19
136	Preliminary Network Optimization	5 days	Mon 3/11/19	Fri 3/15/19
137	Optimization of Installed Network	5 days	Mon 3/11/19	Fri 3/15/19
138	Milestone 6: Phase 2 Network Installation Complete	0 days	Fri 3/15/19	Fri 3/15/19
139	Phase 2 Meter Installation (for CVE defined (5 Routes) meter subset)	253 days?	Fri 2/22/19	Mon 2/24/20
140	Meter Installation Route 1	70 days	Fri 2/22/19	Thu 5/30/19
141	Meter Equipment Configuration (Route 1)	16 days	Fri 2/22/19	Fri 3/15/19
142	Delivery of Meter Equipment for Installation	1 day	Fri 2/22/19	Fri 2/22/19
143	Device Configuration	10 days	Mon 2/25/19	Fri 3/8/19
144	CVE Quality Control Audit	5 days	Mon 3/11/19	Fri 3/15/19
145	Deploy Meters	54 days	Mon 3/18/19	Thu 5/30/19

ID	Task Name	Duration	Start	Finish
146	Installation schedule validation	4 days	Mon 3/18/19	Thu 3/21/19
147	Deploy Meters - 5000 meters (CVE crew of 5 doing 100 total per d	50 days	Fri 3/22/19	Thu 5/30/19
148	Deployment Validation and Testing (Validate a subset)	10 days	Fri 3/22/19	Thu 4/4/19
149	Installation Field Audit	5 days	Fri 3/22/19	Thu 3/28/19
150	Perform field audit on meter installations (Audit a subset)	5 days	Fri 3/22/19	Thu 3/28/19
151	Field Network Troubleshooting	50 days	Fri 3/22/19	Thu 5/30/19
152	Troubleshoot meter connectivity issues (On-going during installatio	50 days	Fri 3/22/19	Thu 5/30/19
153	Route 1 Meter Install Complete	0 days	Thu 5/30/19	Thu 5/30/19
154	Meter Installation Route 2	70 days?	Fri 5/3/19	Fri 8/9/19
155	Meter Equipment Configuration (Route 2)	16 days	Fri 5/3/19	Fri 5/24/19
156	Delivery of Meter Equipment for Installation	1 day	Fri 5/3/19	Fri 5/3/19
157	Device Configuration	10 days	Mon 5/6/19	Fri 5/17/19
158	PRECorp Quality Control Audit	5 days	Mon 5/20/19	Fri 5/24/19
159	Deploy Meters	57 days	Wed 5/22/19	Fri 8/9/19
160	Installation schedule validation	4 days	Wed 5/22/19	Mon 5/27/19
161	Deploy Meters - 5000 meters (CVE crew of 5 doing 100 total per d	50 days	Fri 5/31/19	Fri 8/9/19
162	Deployment Validation and Testing (Validate a subset)	10 days	Fri 5/31/19	Thu 6/13/19
163	Installation Field Audit	5 days	Fri 5/31/19	Thu 6/6/19
164	Perform field audit on meter installations (Audit a subset)	5 days	Fri 5/31/19	Thu 6/6/19
165	Field Network Troubleshooting	50 days	Fri 5/31/19	Fri 8/9/19
166	Troubleshoot meter connectivity issues (On-going during installatio	50 days	Fri 5/31/19	Fri 8/9/19
167	Route 2 Meter Install Complete	0 days?	Fri 8/9/19	Fri 8/9/19
168	Meter Installation Route 3	71 days?	Mon 7/15/19	Mon 10/21/19
169	Meter Equipment Configuration (Route 3)	16 days	Mon 7/15/19	Mon 8/5/19
170	Delivery of Meter Equipment for Installation	1 day	Mon 7/15/19	Mon 7/15/19
171	Device Configuration	10 days	Tue 7/16/19	Mon 7/29/19
172	CVE Quality Control Audit	5 days	Tue 7/30/19	Mon 8/5/19
173	Deploy Meters	55 days	Tue 8/6/19	Mon 10/21/19
174	Installation schedule validation	4 days	Tue 8/6/19	Fri 8/9/19
175	Deploy Meters - 5000 meters (CVE crew of 5 doing 100 total per d	50 days	Tue 8/13/19	Mon 10/21/19
176	Deployment Validation and Testing (Validate a subset)	10 days	Tue 8/13/19	Mon 8/26/19

ID	Task Name	Duration	Start	Finish
177	Installation Field Audit	5 days	Tue 8/13/19	Mon 8/19/19
178	Perform field audit on meter installations (Audit a subset)	5 days	Tue 8/13/19	Mon 8/19/19
179	Field Network Troubleshooting	50 days	Tue 8/13/19	Mon 10/21/19
180	Troubleshoot meter connectivity issues (On-going during installatio	50 days	Tue 8/13/19	Mon 10/21/19
181	Route 3 Meter Install Complete	0 days?	Mon 10/21/19	Mon 10/21/19
182	Meter Installation Route 4	72 days?	Mon 9/23/19	Fri 1/10/20
183	Meter Equipment Configuration (Route 4)	16 days	Mon 9/23/19	Mon 10/14/19
184	Delivery of Meter Equipment for Installation	1 day	Mon 9/23/19	Mon 9/23/19
185	Device Configuration	10 days	Tue 9/24/19	Mon 10/7/19
186	CVE Quality Control Audit	5 days	Tue 10/8/19	Mon 10/14/19
187	Deploy Meters	56 days	Tue 10/15/19	Fri 1/10/20
188	Installation schedule validation	4 days	Tue 10/15/19	Fri 10/18/19
189	Deploy Meters - 5000 meters (CVE crew of 5 doing 100 total per d	50 days	Wed 10/23/19	Fri 1/10/20
190	Deployment Validation and Testing (Validate a subset)	10 days	Wed 10/23/19	Tue 11/5/19
191	Installation Field Audit	5 days	Wed 10/23/19	Tue 10/29/19
192	Perform field audit on meter installations (Audit a subset)	5 days	Wed 10/23/19	Tue 10/29/19
193	Field Network Troubleshooting	50 days	Wed 10/23/19	Fri 1/10/20
194	Troubleshoot meter connectivity issues (On-going during installatio	50 days	Wed 10/23/19	Fri 1/10/20
195	Route 4 Meter Install Complete	0 days?	Fri 1/10/20	Fri 1/10/20
196	Meter Installation Route 5	53 days?	Wed 12/4/19	Mon 2/24/20
197	Meter Equipment Configuration (Route 5)	16 days	Wed 12/4/19	Thu 1/2/20
198	Delivery of Meter Equipment for Installation	1 day	Wed 12/4/19	Wed 12/4/19
199	Device Configuration	10 days	Thu 12/5/19	Wed 12/18/19
200	CVE Quality Control Audit	5 days	Thu 12/19/19	Thu 1/2/20
201	Deploy Meters	37 days	Fri 1/3/20	Mon 2/24/20
202	Installation schedule validation	4 days	Fri 1/3/20	Wed 1/8/20
203	Deploy Meters - 3000 meters (CVE crew of 5 doing 100 total per d	30 days	Tue 1/14/20	Mon 2/24/20
204	Deployment Validation and Testing (Validate a subset)	10 days	Tue 1/14/20	Mon 1/27/20
205	Installation Field Audit	5 days	Tue 1/14/20	Mon 1/20/20
206	Perform field audit on meter installations (Audit a subset)	5 days	Tue 1/14/20	Mon 1/20/20
207	Field Network Troubleshooting	30 days	Tue 1/14/20	Mon 2/24/20

ID	Task Name	Duration	Start	Finish
208	Troubleshoot meter connectivity issues (On-going during installatio	30 days	Tue 1/14/20	Mon 2/24/20
209	Route 5 Meter Install Complete	0 days?	Mon 2/24/20	Mon 2/24/20
210	Milestone 7: Phase 2 Meter Installation Complete	1 day?	Tue 2/25/20	Tue 2/25/20
211	Network Optimization	30 days	Wed 2/26/20	Tue 4/7/20
212	Optimization of Installed Network	30 days	Wed 2/26/20	Tue 4/7/20
213	Acceptance Testing (ISAT)	40 days	Wed 4/8/20	Tue 6/2/20
214	Validation and acceptance that the system meets CVE functional requirements	20 days	Wed 4/8/20	Tue 5/5/20
215	Validation and acceptance that the system meets CVE performance requirements	20 days	Wed 5/6/20	Tue 6/2/20
216	Milestone 8: System Validated - Project Complete	0 days	Tue 6/2/20	Tue 6/2/20