

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF CUMBERLAND VALLEY	)	
ELECTRIC, INC. FOR COMMISSION APPROVAL	)	
FOR A CERTIFICATE OF PUBLIC CONVENIENCE	)	CASE NO.
AND NECESSITY TO INSTALL AN ADVANCED	)	2018-00056
METERING INFRASTRUCTURE (AMI) SYSTEM	)	
PURSUANT TO KRS 807 KAR 5:001 AND KRS 278.020	)	

ORDER

On February 1, 2018, Cumberland Valley Electric, Inc. (Cumberland Valley) filed an application, pursuant to KRS 278.020, requesting a Certificate of Public Convenience and Necessity (CPCN) to purchase and install an Advanced Metering Infrastructure (AMI) system, and to deviate from meter testing requirements set forth in 807 KAR 5:041, Section 15(3). There are no intervenors in this matter. Pursuant to a procedural schedule, Cumberland Valley responded to two rounds of discovery. An informal conference was held on May 22, 2018. An evidentiary hearing was held on May 30, 2018. Cumberland Valley responded to post-hearing data requests. This case now stands submitted for a decision.

BACKGROUND

Cumberland Valley is an electric cooperative that serves 23,636 owner-members in Bell, Clay, Knox, Laurel, Harlan, Leslie, Letcher, McCreary, and Whitley counties in eastern Kentucky.<sup>1</sup> In 1997, Cumberland Valley installed Landis + Gyr's TSI automated

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<sup>1</sup> Application at paragraph 1; 2017 Annual Report at 34.

meter reading system, which is a one-way communication system that allowed meter data to be sent to a central office for recording.<sup>2</sup> In 2004, Cumberland Valley replaced the TSI meters with Landis + Gyr's next-generation meter technology, TSII, which allowed for two-way communication with remote service functions.<sup>3</sup>

Cumberland Valley proposes to replace the existing TSII meters with a new AMI system because TSII meters are becoming obsolete. In the spring of 2016, Cumberland Valley was informed that Landis + Gyr planned to end its support for the TSII system in 2020 and that it had not sold a new TSII system since 2010.<sup>4</sup> In a subsequent document, Landis + Gyr stated that it would stop taking orders for TSII replacement equipment on October 31, 2019, and that technical support would end in 2022.<sup>5</sup> Cumberland Valley reported a 16 to 40 week lead time for replacements for failed TSII equipment.<sup>6</sup> As a result, Cumberland Valley has had to borrow TSII replacement equipment from another cooperative in order to make necessary repairs to maintain reliable, adequate service.<sup>7</sup>

### DISCUSSION

In 2016, Cumberland Valley began investigating the options for replacing the TSII meters by identifying leading AMI meter vendors.<sup>8</sup> In addition to direct contact with AMI

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<sup>2</sup> Application, Exhibit 2 at 1.

<sup>3</sup> *Id.*

<sup>4</sup> Cumberland Valley's Response to Commission Staff's First Request for Information (Response to Staff's First Request), Item 1(a)–(b).

<sup>5</sup> May 31, 2018 Hearing Video Transcript (HVT) at 10:14:49; Cumberland Valley's Response to Staff's Post-Hearing Request for Information (Response to Staff's Post-Hearing Request), Item 5, p. 2.

<sup>6</sup> Response to Staff's First Request, Item 1(b); Response to Staff's Post-Hearing Request, Item 5.

<sup>7</sup> Application, Exhibit 2 at 1; Application, Exhibit 7, Direct Testimony of Mark D. Abner (Abner Testimony) at 2.

<sup>8</sup> HVT at 9:14:28.

vendors, Cumberland Valley engaged in discussions with and made field visits to other electric cooperatives regarding their AMI systems.<sup>9</sup>

Based upon its investigation, Cumberland Valley submitted a request for proposal (RFP) on June 26, 2017, to the following vendors: Silver Spring Networks (Silver Spring), Landis + Gyr, Aclara, Elster, Sensus, and Tantalus.<sup>10</sup> After a review of the bids, in-person meetings, discussions with other utilities, and a weighted vendor evaluation, Cumberland Valley selected Silver Spring, who is partnering with National Rural Telecommunications Cooperative (NRTC), a technology service provider for rural electric and telecommunications cooperatives.<sup>11</sup> Cumberland Valley stated that Silver Spring provided both the least cost and the most effective AMI system to serve the mountainous topography of Cumberland Valley's service territory.<sup>12</sup>

#### Proposed AMI System

Cumberland Valley proposed to purchase and install 24,235 AMI meters over 24 to 36 months.<sup>13</sup> The proposed system consists of AMI meters equipped with a remote service switch, network hardware, spare equipment, professional network design, software, and technical support services.<sup>14</sup> NRTC will provide project management, network design, testing, deployment, and training services. Silver Spring's AMI system

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<sup>9</sup> *Id.*

<sup>10</sup> Application, Exhibit 2 at 2 and Exhibit 8.

<sup>11</sup> *Id.* at Exhibit 2 at 2–3.

<sup>12</sup> *Id.* at Exhibit 2 at 3; Abner Testimony at 2.

<sup>13</sup> Application at paragraph 4 and Exhibit 6.

<sup>14</sup> *Id.* at Exhibits 2, 3, and 6.

provides two-way, real-time data communications with central control of outage management, power quality monitoring, load control, and distribution automation.

The proposed system is a wireless, mesh peer-to-peer network, with each endpoint and device enabled to communicate and relay information within the network.<sup>15</sup> A mesh network allows for extended coverage with improved reliability.<sup>16</sup> Each access point is connected to the Silver Spring software application through a secure virtual private network.

### Cost

The estimated capital cost for the proposed AMI system is \$4,713,104, with an estimated annual operating cost of \$34,211.<sup>17</sup> Cumberland Valley negotiated a ten-year contract for the operating software, which keeps the software costs flat over the ten-year contract term.<sup>18</sup> Cumberland Valley and NRTC entered into a cost-allocation agreement for additional AMI equipment beyond that anticipated in the master purchase and sales agreement necessary to achieve satisfactory system functionality at the time of implementation. Under that agreement, NRTC will be responsible for the first \$40,000 in costs incurred for additional equipment, Cumberland Valley will be responsible for the next \$40,000 in additional AMI equipment costs, and NRTC will be responsible for the remaining costs for additional AMI equipment.<sup>19</sup>

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<sup>15</sup> *Id.* at Exhibit 3 at 1.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* at paragraph 6.

<sup>18</sup> Response to Staff's First Request, Item 7.

<sup>19</sup> Response to Staff's Post-Hearing Data Request, Item 4.

## Financing

Cumberland Valley proposed to finance the AMI project from general funds until cash flow becomes an issue, at which time Cumberland Valley will draw down from available RUS-approved loan funds.<sup>20</sup> The RUS loan funds would come from Cumberland Valley's current four-year work plan previously approved by the Commission.<sup>21</sup> Cumberland Valley does not have a projected date when it will begin to draw down RUS loan funds.

## Depreciation – Proposed AMI System

Cumberland Valley initially requested Commission approval for a 12-year depreciation period for the proposed AMI system based on a depreciation period approved in another case and on Cumberland Valley's experience with equipment failure with its existing TSII system.<sup>22</sup> However, after obtaining additional information from manufacturers of the proposed AMI system components, Cumberland Valley revised its request and now seeks a 15-year depreciation period.<sup>23</sup> According to the manufacturers, the meters have an expected useful life of approximately 15 years; the relays, network interface cards, and ethernet access points have an expected useful life of 20 years; and the cellular access points have an expected useful life of 13 years.<sup>24</sup>

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<sup>20</sup> Application at paragraph 5; Response to Staff's First Request, Item 5(a)–(b).

<sup>21</sup> Response to Staff's First Request, Item 5(b).

<sup>22</sup> *Id.* at Item 9.

<sup>23</sup> Response to Staff's Post-Hearing Request, Item 2.

<sup>24</sup> *Id.*

### Net Book Value of TSII System

The accumulated depreciation on the TSII system is \$1,950,130.<sup>25</sup> The TSII system was being depreciated over a 30-year period until the Commission shortened the depreciation period to 15 years in Case No. 2014-00159.<sup>26</sup> Cumberland Valley expects to continue depreciating the TSII meters until they are taken out of service.

Cumberland Valley stated that it would not know the exact remaining net book value for the TSII meters until the proposed project is substantially completed because the existing meters continue to depreciate until the new system is deployed, which will take between 24 and 36 months. Cumberland Valley calculated an estimated remaining net book value of \$3,445,081, if deployment is completed within 24 months, and \$2,995,081 if deployment is completed within 36 months.<sup>27</sup>

Cumberland Valley has not yet decided whether it will immediately expense the undepreciated costs of the TSII system once the proposed project is completed or whether it will amortize the undepreciated costs over seven years.<sup>28</sup> Cumberland Valley averred that it would seek Commission approval if it determines it will amortize the undepreciated costs.

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<sup>25</sup> Response to Staff's First Request, Item 9.

<sup>26</sup> Case No. 2014-00159, *Application of Cumberland Valley Electric, Inc. for an Adjustment of Rates* (Jan. 16, 2015).

<sup>27</sup> Cumberland Valley's Response to Commission Staff's Second Request for Information (Response to Staff's Second Request), Item 1.

<sup>28</sup> *Id.*

## Projected Costs and Benefits

In response to concerns raised by the Commission at the May 30, 2018 hearing, Cumberland Valley conducted a cost-benefit analysis of implementing the proposed AMI deployment in 2018 or delaying the deployment until 2019. The analysis contained a detailed written narrative and a quantitative analysis. Cumberland Valley concluded that postponing deployment of the proposed AMI system would not be a prudent management decision due to financial, reliability, and customer service issues.

Cumberland Valley argued that delaying AMI deployment by one year extends the time and costs for operating an obsolete TSII system.<sup>29</sup> According to the analysis, the benefit of postponing implementation of the AMI until July 1, 2019, would be \$506,517, while the cost of postponing implementation would be \$600,880.<sup>30</sup> The projected benefits include avoiding interest, property tax, insurance, and new AMI system depreciation expenses that would not be incurred, and increasing the amount of interest income that would be received if the project were delayed by one year. The projected financial costs include expenses incurred for an additional year for TSII depreciation, meter reading, meter testing, property tax, insurance, failed TSII equipment replacement, and estimated energy theft.

Cumberland Valley stressed that the cost of replacing failed TSII equipment could be avoided by implementing the proposed AMI system immediately, rather than postponing deployment for one year. Cumberland Valley reported that it averaged 1,995 endpoint/electromechanical meter failures per year since 2010, and averaged two

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<sup>29</sup> Response to Staff's Post-Hearing Request, Item 5, pp. 2–3.

<sup>30</sup> *Id.* at Item 5, pp. 6–7.

transformer control unit (TCU) and four substation processing unit (SPU) failures per year in the past four years.<sup>31</sup> Cumberland Valley stated that failed endpoint replacements cost \$73 each; failed electromechanical meter replacements cost \$126 each; failed SPU replacements cost \$16,800 each; and failed TCU replacements cost \$11,880 each.<sup>32</sup> It further stated that the total annual average cost for replacing failed endpoints is \$156,505; for replacing failed meters is \$143,406; for replacing failed SPUs is \$67,200; and for replacing failed TCUs is \$23,760.<sup>33</sup>

In addition to the financial costs, Cumberland Valley pointed to the difficulties in obtaining replacement equipment for the TSII system that may adversely affect its ability to provide reliable and adequate electric service to its owner-members. If the deployment were extended by one year and took three years to complete, then Cumberland Valley would operate an obsolete system for a three-year period beyond the last date that new TSII equipment is available.<sup>34</sup> The cost and delay in obtaining TCU and SPU for failing substations were of particular concern. Cumberland Valley currently has three spare TCUs and one spare SPU, all of which were obtained on the secondary market in used condition.<sup>35</sup> In addition, the TCU on one of the substations is not compatible with the spare TCUs in Cumberland Valley's inventory. Thus, Cumberland Valley must place an

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<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<sup>34</sup> The last date that Landis + Gyr will ship new equipment is October 2019. With the 16 to 40 week lead time for manufacturing the equipment, new equipment must be ordered in advance of that date.

<sup>35</sup> Response to Staff's Post-Hearing Request, Item 5, pp. 3–4. Cumberland Valley reported four spare TCUs in its inventory, but also noted that one of the four TCUs will be used to replace a TCU that is currently failing.



order or seek out a replacement on the secondary market in the near future if the proposed AMI system is postponed for one year. Cumberland Valley emphasized that if replacements for failed TCUs or SPUs cannot be obtained, the current AMI system would cease to function creating a significant impact on daily operations for members served by that substation.<sup>36</sup> For example, the prepaid program would end because daily readings would not be available, and meters could only be read manually, which is a costly, labor-intensive process.<sup>37</sup>

Cumberland Valley highlighted that, if financial concerns were the only issue, it would not oppose delaying deployment of the proposed AMI system for one year. Cumberland Valley argued that an analysis of reliability, customer service, and financial factors demonstrate that immediate deployment of the proposed AMI system is in the best interest of Cumberland Valley and its owner-members.

#### Secondary Market for TSII Components

Cumberland Valley initially proposed to make the TSII meters in its inventory available for purchase by other utilities to recoup as much as it can of its investment in TSII meters and offset costs, but it noted that it was unsure whether a market existed for its inventory. However, Cumberland Valley was uncertain whether there was a robust secondary market for TSII components. In response to Staff's Post-Hearing Requests, Cumberland Valley surveyed three electric cooperatives in Kentucky and discussed the

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<sup>36</sup> Response to Staff's Post-Hearing Request, Item 5, p. 4.

<sup>37</sup> *Id.*

issue with its third-party meter tester and with a meter brokering firm recommended by Landis + Gyr's Kentucky vendor, IRBY.<sup>38</sup>

From its investigation, Cumberland Valley concluded that the existing secondary market for TSII components is limited.<sup>39</sup> Cumberland Valley's third-party meter tester opined that the secondary market for TSII components is not reliable and is diminishing "to the point it is almost non-existent" because many utilities already moved to other AMI systems and liquidated or disposed of their TSII equipment.<sup>40</sup> None of the three Kentucky cooperatives, who have transitioned or are transitioning from the TSII system, have TSII equipment available for resale. One cooperative surveyed noted that not only is the secondary market for TSII equipment exhausted, but that expecting used TSII equipment to last up to four more years is unreasonable given the age of the equipment and the history of TSII equipment failures.<sup>41</sup> The meter brokerage informed Cumberland Valley that it did not have any TSII equipment for sale but did offer to purchase solid state/digital meters from Cumberland Valley for two percent of retail cost.<sup>42</sup>

#### Deviation from Meter Testing Requirements

Cumberland Valley also requested approval to deviate from the end of service and periodic meter testing requirements set forth in 807 KAR 5:041, Section 15 until January 2021. Cumberland Valley indicated it would incur costs of approximately \$152,812<sup>43</sup> and

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<sup>38</sup> *Id.* at Item 6, p. 1.

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at Item 5, p. 3, and Item 6, p. 2.

<sup>41</sup> *Id.* at Item 6, p. 4.

<sup>42</sup> *Id.* at Item 6, p. 2.

<sup>43</sup> Response to Staff's First Request, Item 8.

\$229,454 for end of service and periodic testing, respectively, through the implementation of the new AMI system if it was required to complete end of service testing for all meters taken out of service and periodic testing on all meters subject to periodic testing through December 31, 2020 (about 9,000 meters).<sup>44</sup> However, in reviewing meter-testing data from the past three years, Cumberland Valley found that only 0.2 percent of its meters were outside of acceptable accuracy levels, with Cumberland Valley refunding its members \$407.12 for overbilling and billing its members \$441.24 for underbilling over the three-year period.<sup>45</sup> Thus, Cumberland Valley argued that granting its request to deviate from the end of service and periodic testing would provide significant savings to its members.

#### FINDINGS

Having reviewed the record and being otherwise sufficiently advised, the Commission finds that Cumberland Valley has established a need to upgrade its metering system in order to provide adequate, reliable service to its owner-members. We note that the evidence shows that Cumberland Valley's current metering system consists of TSII meters that will become obsolete in the near future. The Commission further finds that the proposed AMI system is the least-cost alternative to addressing Cumberland Valley's metering needs and is not a wasteful duplication of facilities.

The record also shows that the reliability, customer service, and financial benefits of deploying the AMI system with the date of entry of this Order is outweighed by the costs of postponing deployment until July 2019. With the limited market for used TSII

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<sup>44</sup> Response to Staff's Post-Hearing Request, Item 1. Cumberland Valley calculates the expense in 2018 to be \$93,638; in 2019 to be \$74,629; and in 2020 to be \$61,156.

<sup>45</sup> Response to Staff's First Request, Item 8.

equipment, Cumberland Valley would be required to place an order for replacement equipment well in advance of the October 2019 deadline for shipping new TSII equipment in order to have a sufficient inventory of necessary equipment if the deployment was delayed until July 2019. To expend funds on spare equipment under these circumstances would not be prudent. For the above reasons, the Commission finds that Cumberland Valley's request for a CPCN to install the proposed AMI system, as set forth in the application, is reasonable and should be approved.

The Commission also finds that a 15-year depreciation schedule for the proposed AMI system as requested by Cumberland Valley is reasonable and should be approved. Concerning the undepreciated costs of the TSII system, once the proposed AMI system has been deployed, Cumberland Valley should either provide the Commission with written notice of its intent to expense the undepreciated costs of the TSII system or seek Commission approval to amortize the undepreciated costs.

Last, the Commission finds that Cumberland Valley's request for a deviation from periodic meter testing requirements per 807 KAR 5:041, Section 15(3) is reasonable and should be granted. Cumberland Valley should resume periodic meter testing in January 2021 or upon completion of the deployment of the proposed AMI system, whichever is earlier. The Commission also finds that Cumberland Valley's request for a deviation from testing requirements when a meter is removed from service is unreasonable and should be denied. This is especially so given that periodic testing will be suspended during the installation of the new AMI system. The Commission finds that all meters removed from service as a result of this project should be tested in accordance with 807 KAR 5:041,

Section 15(3), and that any meters found to be inaccurate should be handled as prescribed by 807 KAR 5:041, Section 17.

IT IS THEREFORE ORDERED that:

1. Cumberland Valley's request for a CPCN to purchase and install an AMI system as described in its application is approved.

2. Cumberland Valley's request to deviate from the meter testing requirements of 807 KAR 5:041, Section 15(3) is granted in part and denied in part.

3. Cumberland Valley's request for relief from periodic testing of meters pursuant to 807 KAR 5:041, Section 15(3), is granted.

4. Cumberland Valley shall resume periodic testing of meters pursuant to 807 KAR 5:041, Section 15(3) in January 2021, or upon completion of the deployment of the proposed AMI system, whichever occurs earlier.

5. Cumberland Valley's request for relief from the requirement to test meters upon removal from service pursuant to 807 KAR 5:041, Section 15(3), is denied.

6. Cumberland Valley shall ensure that all meters removed from service as a result of this project shall be tested in accordance with 807 KAR 5:041, Section 17. Any meter determined to register inaccurate readings shall be handled in accordance with 807 KAR 5:041, Section 17. The meter test results for all meters tested as part of this project shall be reported to the Commission on Cumberland Valley's Quarterly Meter Report and shall include a full explanation of any billing adjustments resulting from the tests.

7. Cumberland Valley shall depreciate the new AMI system over a 15-year period.

8. Cumberland Valley shall not establish a regulatory asset for the undepreciated value of TSII equipment without prior Commission authorization.

By the Commission

ENTERED  
JUL 09 2018  
KENTUCKY PUBLIC  
SERVICE COMMISSION

ATTEST:

  
Executive Director

Case No. 2018-00056

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