

Exhibit No. 17P

Exhibit No.: _____
Issues: AMI, Substation Security
Witness: Chad C. Hook
Type of Exhibit: Surrebuttal Testimony
Sponsoring Party: The Empire District
Electric Company
Case No.: ER-2021-0312
Date Testimony Prepared: January 2022

**Before the Public Service Commission
of the State of Missouri**

Surrebuttal Testimony

of

Chad C. Hook

on behalf of

The Empire District Electric Company

January 2022



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FOR THE SURREBUTTAL TESTIMONY OF CHAD C. HOOK
THE EMPIRE DISTRICT ELECTRIC COMPANY
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1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Chad C. Hook, and my business address is 602 Joplin Avenue, Joplin,
4 Missouri, 64802.

5 **Q. Are you the same Chad C. Hook who provided direct and rebuttal testimony in this**
6 **matter on behalf of The Empire District Electric Company (“Empire” or the**
7 **“Company”)?**

8 A. Yes.

9 **Q. What is the purpose of your Surrebuttal Testimony in this proceeding before the**
10 **Missouri Public Service Commission (“Commission”)?**

11 A. The purpose of my Surrebuttal Testimony is to respond to the portions of the rebuttal
12 testimony of Office of Public Counsel (“OPC”) witness Dr. Geoff Marke regarding
13 Empire’s implementation of advanced metering infrastructure (“AMI”) and Empire’s
14 substation security project known as Project Guardian.

15 **II. ADVANCED METERING INFRASTRUCTURE.**

16 **Q. In his direct testimony at page 23, beginning at line 7, OPC witness Dr. Marke states**
17 **that Empire has not quantified benefits related to its AMI implementation, and that**
18 **AMI is not beneficial without Time of Use (“TOU”) rates. How do you respond?**

19 A. Dr. Marke continues to express a narrow focus of the benefits of AMI, which is primarily
20 monetary in nature. As I previously mentioned, AMI is a foundational investment that

1 enables a wide range of benefits to customers, only one of which is the ability to provide
2 interval readings for rate designs like TOU. These benefits have been discussed at length
3 throughout my direct and rebuttal testimonies.

4 AMI allows Empire to read customer meters remotely, avoiding the need to send a
5 technician to a customer's premise each month to collect the reads necessary for billing
6 purposes. Witness Tisha Sanderson discusses the Company's pro forma adjustment related
7 to monthly meter reading in her direct testimony but, put simply, use of AMI reduces
8 Empire's proposed operating costs by approximately \$1.8M each year. Additionally,
9 Empire will be able to avoid future customer premises visits by leveraging the AMI
10 technology when a customer moves in or moves out of a location and, also, during storm
11 restoration activities. Each avoided visit to a customer premise results in avoided employee
12 time as well as vehicle and maintenance expense. While it is difficult to project the exact
13 amount of future avoided expense, Empire has committed to tracking the costs it otherwise
14 would have incurred but for the deployment of AMI in monthly meter reading; off-cycle
15 meter reading; remote connect, disconnect, and reconnect functionality; and, in storm
16 restoration costs.

17 Empire's AMI implementation directly provides and enables our customers with
18 greater convenience and transparency over their energy consumption. Customers with a
19 smart meter can choose to access their detailed usage information through the My Account
20 portal, where they can also sign up for multi-channel and multi-point notifications.
21 Customers can choose to customize their billing notification preferences such as when their
22 bill is coming due and confirmation after a payment has been made. Customers with a

1 smart meter can also choose to receive updates on outages affecting their service including
2 the estimated restoration time and a notification when service has been restored.

3 **Q. In his direct testimony at page 24, beginning at line 1, Dr. Marke states that, “As I**
4 **pointed out approximately two years ago in Empire’s last rate case, state commissions**
5 **in Virginia, New Mexico, Massachusetts and Kentucky all rejected utility AMI**
6 **proposals because the customer benefits did not outweigh the costs to customers.”**
7 **How do you respond?**

8 A. Neither in his rebuttal testimony in this proceeding, nor in his direct testimony in the last
9 proceeding, has Dr. Marke provided any degree of specificity around the details of the AMI
10 implementation plans in the states he cites. He fails to provide any direct comparison
11 between the AMI implementations in those states and the one Empire is proposing in this
12 case, and I am unable to decipher if Dr. Marke understands the proposals he loosely
13 references. Dr. Marke does not provide sufficient information to analyze, let alone validate,
14 those comparisons. I have spent more than twenty-four years in electric operations, and
15 throughout my career I’ve learned that no two projects are the same. In an AMI
16 implementation, the customer and operational benefits to customers of replacing metering
17 infrastructure vary greatly depending on the type of system being replaced and the
18 proposed AMI solution. For example, all things equal, there would likely be more
19 operational benefits realized by upgrading Empire’s analog metering system, where
20 technicians must physically visit each meter to read it, than if the legacy solution were an
21 automated metering or “drive-by” metering solution. Regardless of the type of legacy
22 system being replaced, AMI is a customer-focused, proven technology that directly enables
23 operational efficiencies, increased customer access to information, and is a foundational

1 investment for alternative pricing mechanisms like TOU rates. Continuing to invest in
2 Empire's aging metering infrastructure or replacing it with technology that is not industry-
3 standard is neither sustainable nor prudent. Adoption of AMI is a necessary step to
4 transition to a more efficient and more customer focused utility.

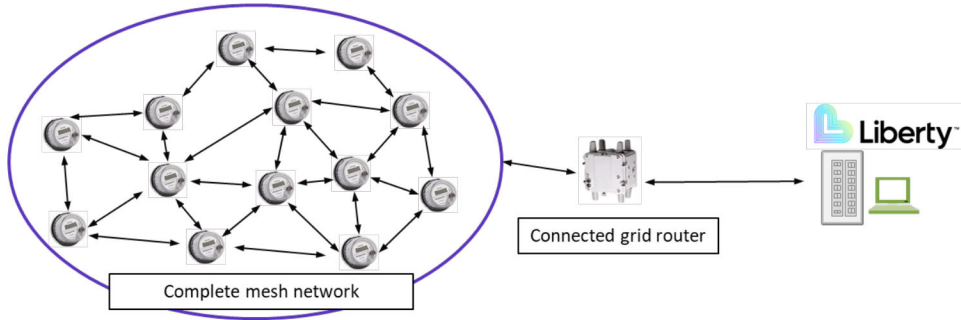
5 **Q. In his direct testimony at page 26, beginning at line 1, Dr. Marke recommends the**
6 **Commission disallow a return on the undepreciated meters being replaced by**
7 **Empire's AMI investment. How do you respond?**

8 A. Dr. Marke suggests that Empire's request to recover the undepreciated legacy meters is
9 "putting shareholders before ratepayers." This comment shows that Dr. Marke does not
10 fully understand the Company's AMI systems and their implementation. Simply put,
11 Empire did not install all its legacy meters at the same time, and the meters will not all be
12 fully depreciated on the same date. Unless Empire stopped replacing its infrastructure as
13 it failed (which is obviously not an option), the Company will always carry undepreciated
14 meters on its books.

15 As I discussed in my direct testimony, Empire carefully designed and planned its
16 AMI system in 2019 and began installing the system by sectors. Moving through Empire's
17 territory by sector allowed Empire to replace all in-scope meters in an area before moving
18 onto the next. This is a more efficient approach than skipping the undepreciated meters in
19 sectors, and then travelling all over the service territory to replace those meters ad hoc as
20 they depreciate. Additionally, the AMI solution being implemented by Empire relies on a
21 mesh network. This means that each meter in the system acts as a repeater and forms a
22 mesh network that communicates with Empire's meter data management system. When
23 all the meters in a sector are smart meters, they work in concert with each other to create a

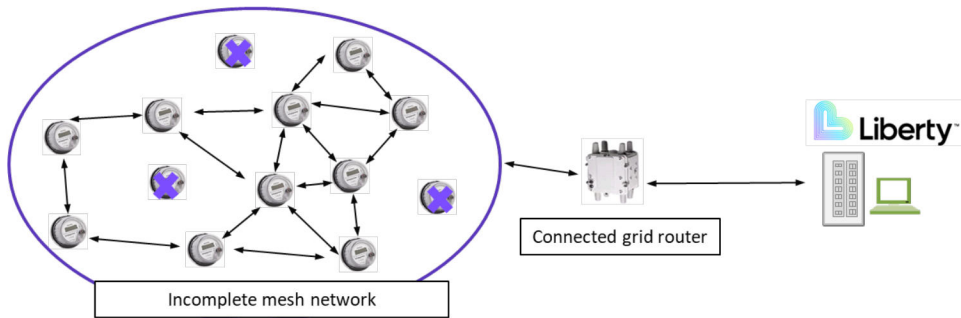
1 strong mesh network of two-way communication between the customers and Empire, as
2 demonstrated in Figure 1 below.

Figure 1: Complete AMI mesh network



3 However, if Empire were to only replace fully depreciated meters, there would be
4 fewer smart meters to act as repeaters, and the resulting mesh network would be weaker
5 than the one described above. With reduced overlapping coverage, there is greater risk of
6 meters becoming stranded and unable to communicate with Empire.

Figure 2: Incomplete AMI mesh network



7 Furthermore, if, for the sake of argument, Empire only replaced fully depreciated
8 meters, this would have prevented some Empire customers from realizing benefits of the
9 AMI system at the same time as their neighboring customers, even though they are paying
10 for a portion of the AMI implementation. Empire strongly believes all customers should
11 be able to access the benefits I have discussed at length throughout my direct, rebuttal, and
12 surrebuttal testimonies.

1 **III. PROJECT GUARDIAN.**

2 **Q. On pages 27-30 of his rebuttal testimony, OPC witness Geoff Marke discusses**
3 **Empire’s substation security program known as Project Guardian. Has the Company**
4 **completed this program?**

5 A. No. To begin Project Guardian, a list of ranking criteria for tiering Empire’s existing 180
6 sites, based on the unique risk to each substation and criticality of the site to Empire’s
7 operations and its customers, was developed. Please see attached Surrebuttal Schedule
8 CCH-5 for the technology assessment prepared by Burns & McDonnell Engineering
9 Company, Inc., and Surrebuttal Schedule CCH-6 for the site tiering evaluation data. The
10 ranking criteria formed the basis for assigning tiers to the 180 substations based on the
11 identified weighted risk criteria, and Empire intends to complete the Project Guardian
12 program by 2025.

13 **Q. Are any capital investments or expenses associated with Project Guardian at issue in**
14 **this case?**

15 A. Yes. Empire’s requested revenue requirement in this case includes \$931,520 for two Project
16 Guardian investments: (1) the initial substation physical security and reliability project at
17 the “Sub 109 Atlas Junction” electrical substation located in Joplin, MO; and (2) in
18 conjunction with the Sub 109 physical security and reliability implementation, installation
19 of a physical security monitoring center (“SMC”).

20 **Q. Does OPC witness Geoff Marke allege that the Company imprudently incurred costs**
21 **for these two projects?**

22 A. No. On page 29 of his Rebuttal Testimony, Dr. Marke is asked if he believes “the
23 approximate \$1 million in security upgrades were a prudent investment,” and Dr. Marke

1 responds with, "I don't know." He does, however, on page 28 of his Rebuttal Testimony,
2 state that he does not recommend that the Company make capital investments to prevent
3 sniper fire at substations.

4 **Q. Was Project Guardian designed in response to a concern about potential sniper fire?**

5 A. No. Project Guardian was designed to improve system security and service reliability.
6 However, as the risk of physical attacks on infrastructure increases, Empire is countering
7 the risk through enhancements to the physical security measures of its substations. Projects
8 in the Project Guardian program will upgrade deterrents like fencing, gates, and alarms, as
9 well as install remote monitoring through video cameras, infrared cameras, and other
10 sensors. Access controls will also be upgraded to limit substation access to only authorized
11 personnel and to track access accurately. Limiting access to substation infrastructure will
12 reduce the risk of impacts to service from a range of intentional and unintentional threats.
13 Increased monitoring, sensing, and access control will also improve safety of employees
14 and others by restricting access to only those that have received the proper training and
15 authorization. While we cannot determine the express purpose of any physical security
16 breach, property damage, or vandalism, such incidents have occurred, and the Company's
17 position is to protect the assets to ensure safety of employees and the general public, and
18 to maintain reliability and resiliency of all circuits to best provide continuous service to
19 customers.

20 **Q. Was it reasonable and prudent for the Company to implement the two projects for**
21 **which the costs are at issue in this case?**

22 A. Yes. Physical security and reliability technologies pertaining to security cameras, radar
23 scanners, deterrent lighting, thermal sensors, servers, and related video management and

1 analytical software were investigated for the Sub 109 Atlas Junction project. A physical
2 security technical integrator provided professional services in developing technical
3 specifications and installation for solutions that met Empire's physical security and
4 reliability goals and requirements. The physical security and reliability (equipment thermal
5 monitoring) systems were installed, commissioned, and documented through developing
6 detailed engineering drawings. Technical specifications were provided by all equipment
7 vendors. For the second project, the SMC requirements for the security monitoring center
8 in the Joplin call center radio room were also specified through a joint effort between
9 Empire and the technical integrator.

10 **Q. Are any other Project Guardian costs at issue in this rate case?**

11 A. No.

12 **Q. What is Dr. Marke's recommendation regarding Project Guardian?**

13 A. On page 29 of his Rebuttal Testimony, Dr. Marke recommends that Empire meet with Staff
14 and OPC.

15 **Q. Is the Company opposed to meeting with Staff and OPC to discuss its Project
16 Guardian investments?**

17 A. Not at all. In fact, instead of just addressing the two specific projects, the Company
18 provided an overview of Project Guardian, through my Direct Testimony in this
19 proceeding, due to the Company's desire to keep stakeholders informed and involved. The
20 Company's plant-in-service accounting ("PISA") filings and meetings also provide an
21 opportunity for stakeholders to learn about and comment on the Company's planned capital
22 investments.

1 Q. Does this conclude your Surrebuttal Testimony?

2 A. Yes, at this time.

VERIFICATION

I, Chad C. Hook, under penalty of perjury, on this 20th day of January, 2022, declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/ Chad C. Hook