voluntarily provide an attestation that they adhere to the data privacy requirements established by the Commission, Texas law, and industry standards. Upon completing the registration process, the third-party is able to engage a customer using the SMT Portal to establish an agreement with that customer that allows the third-party to access the customer's energy data and/or HAN devices. As mentioned earlier, at the request of Commission Staff, the third-party functionality also includes a mechanism for customers to rate their experiences with third-parties for other SMT Portal users to see.

Q. WHAT WEB PORTAL FUNCTIONALITY WAS DEVELOPED TO ADDRESS THE ON-DEMAND READ CAPABILITIES DEVELOPED BY THE AMIT?

A. Functionality was developed and deployed in 2013 that provides the ability for all authorized SMT Portal account holders to submit online requests that initiate an on-demand meter reading through the appropriate utility's AMS.

Q. PLEASE EXPLAIN MORE ABOUT THE USER EXPERIENCE REVIEW REQUESTED BY STAFF IN 2013.

A. At the request of Commission Staff and in an effort to improve the overall SMT Portal user experience, the Joint TDSPs hired a consumer insights professional with over ten years of experience in the user experience industry to perform a review of the SMT Portal site (including the third-party functionality, which was in design stage) as it relates to usability. The professional conducted an evaluation of the SMT Portal user interface against industry standards and best practices, proposed changes for the Joint TDSPs to consider to improve the user experience, and validated those changes in focus groups. The Joint TDSPs implemented many of the proposed
changes to the SMT Portal in 2014 in conjunction with the third-party functionality. Those costs were not anticipated or included in the original AMS surcharge model.

Q. WERE THERE OTHER SIGNIFICANT CHANGES TO THE WEB PORTAL FUNCTIONALITY THAT WERE IMPLEMENTED BUT NOT INCLUDED IN THE ORIGINAL COST ESTIMATE?

A. Yes. At the suggestion of the Commission Staff and the AMIT participants, the Joint TDSPs agreed to jointly develop the common AMS web portal known as the SMT. The transition to a joint development method, as well as the expanded web portal functionalities identified by the AMIT, contributed to the variance for actual costs incurred in 2012 through 2018.

Q. ARE THERE OTHER FACTORS THAT CONTRIBUTED TO ADDITIONAL COSTS BEING INCURRED RELATED TO THE SMT PORTAL?

A. Yes. In April 2015, the Joint TDSPs had to refresh the SMT Portal solution, which meant replacing/updating the underlying hardware and software that supports the SMT Portal. The original solution was five years old and required a technology refresh because some of the components were reaching end of life. As a result of the system refresh, SMT Portal productivity was improved, which led to customers and REPs having access to electric usage data earlier than was available before the refresh.

Q. WHAT ESTIMATED COSTS WERE INCLUDED IN THE COMPANY’S AMS SURCHARGE MODELS FOR A WEB PORTAL?

A. In their AMS Surcharge Models, the Company estimated $3.00 million of capital expenditure ($2.41 million for TCD and $0.59 million for TND) would be needed for
the development and deployment of an AMS web portal. In addition, the Company
estimated that O&M expenses of $6.21 million ($4.98 million for TCD and
$1.23 million for TND) would be incurred for O&M expenses associated with an
AMS web portal through December 31, 2018.

Q. WHAT ACTUAL COSTS RELATED TO THE SMT PORTAL DID THE
COMPANY INCUR THROUGH THE END OF THE RECONCILIATION
PERIOD?

A. Through December 31, 2018, the Company incurred approximately $9.78 million in
capital costs ($8.01 million for TCD and $1.77 million for TND). The Company has
also incurred $15.78 million in O&M expenses related to the SMT Portal through
December 31, 2018 ($12.73 million for TCD and $3.04 million for TND). These
amounts are the Company’s pro rata share, as defined in the JDOA, of the total
capital and O&M expenses associated with the development and deployment of the
SMT Portal (including costs associated with hiring the Project Manager, designing
and building the Common AMS Web Portal, hosting and running the common AMS
web portal, and the security audits described below).

Q. WHY ARE THE COMPANY’S ACTUAL COSTS THROUGH THE END OF THE
RECONCILIATION PERIOD MORE THAN THE ESTIMATED COSTS
INCLUDED IN THE COMPANY’S AMS SURCHARGE MODELS?

A. The higher costs are a result of the change in the web portal functionalities that I have
discussed. The Company’s original estimates were based on assumptions that the
SMT Portal would provide functionality generally reflected in the business
requirements that are attached to the Order in Docket No. 36928 while operating a
less complex and robust interim web portal until the SMT Portal became available.

After the Company's AMS Deployment Plan and AMS surcharges were approved by
the Commission, additional required functionalities were adopted by AMIT that were
substantially in excess of the initial functionalities.

Q. WERE THE ACTUAL COSTS INCURRED BY THE COMPANY RELATED TO
THE SMT PORTAL REASONABLE AND NECESSARY?

A. Yes. The actual costs incurred by the Company related to the SMT Portal were
expended in accordance with the AMS Deployment Plan approved by the
Commission and are therefore presumed to be reasonable and necessary in
accordance with 16 TAC § 25.130(k)(6). As discussed above, actual costs incurred in
excess of those estimated in the Company's AMS Surcharge Models result from
compliance with the increasingly numerous and complex requirements of the SMT
Portal developed by AMIT in Project No. 34610, as well as the Company's share of
joint development costs incurred in developing the Common AMS Web Portal
pursuant to the terms of the JDOA. As discussed above, joint development costs
include those paid to a Project Manager, those paid to IBM as the result of a
competitive bidding process that was designed to find the best vendor for the job at a
reasonable cost, and those paid for security audits that were also the result of a
competitive bidding process. The actual costs incurred through December 31, 2018,
that are in excess of those included in the Company's original cost estimates are
therefore reasonable and necessary. The actual costs associated with capital
expenditures for the SMT Portal are included in Exhibit 2-D (TCD) and Exhibit 2-C
(TND). The actual expenses associated with O&M for the SMT Portal are shown in Exhibit 1-K (TCD) and Exhibit 1-K (TND).

C. Communication Networks

Q. PLEASE DESCRIBE THE COMMUNICATION NETWORKS CONTEMPLATED IN THE COMPANY'S AMS DEPLOYMENT PLAN.

A. The communication networks contemplated in the Company’s AMS Deployment Plan are those associated with enabling two-way transmission of information between the advanced meters and the Company’s back-office systems. The communication networks are comprised of two primary networks: (1) a data collection network and its associated equipment; and (2) a backhaul network and its associated equipment.

The data collection network is comprised of advanced meters, routers, and collectors used to manage the communications between the advanced meter and the collectors. For approximately 80% of the AMS deployment, the Company anticipated using RF mesh network technology between the advanced meters and the collectors, and for the remaining 20% of the AMS deployment, the Company anticipated the need for a more cost-effective solution for the low density, remote meter locations.

The backhaul network consists of the communication network(s) from the collectors to the AEP data center, using a combination of the Company’s and AEP’s internal wide-area-network and public cellular networks.
Q. WERE THERE ANY CAPITAL EXPENDITURE ESTIMATES ASSOCIATED WITH THE COMMUNICATION NETWORKS INCLUDED IN THE AMS SURCHARGE MODELS?

A. Yes. As described in Exhibit 2-C Network Plant (TCD) and Exhibit 2-B Network Plant (TND), the AMS Surcharge Models included estimated capital expenditures associated with AMS communication networks to be incurred through December 31, 2018 of $37.03 million. This amount includes:

(1) Approximately $26.48 million for TCD, of which approximately $20.42 million was for equipment and approximately $6.06 million was for the aggregation of network design and installation labor and remaining expenditure items.

(2) Approximately $10.55 million for TND, of which approximately $8.4 million was for equipment and approximately $2.14 million was for the aggregation of network design and installation labor and remaining expenditure items.

Q. PLEASE DESCRIBE THE COMMUNICATION NETWORKS THE COMPANY HAS IMPLEMENTED TO SUPPORT THE AMS SYSTEM.

A. The communication networks were implemented in phases based on meter deployment requirements and timelines included in the Company’s Commission-approved AMS Deployment Plan. Through December 2018, the advanced meters, aerial-mounted routers, pole-mounted collectors, and associated structures used to support a fully-functional RF mesh network have been installed to support advanced meters. The RF mesh network is fully deployed in accordance with the Company’s Commission-approved AMS Deployment Plan.
Backhaul network communications with the Company's Data Center has used the Company's and AEP's internal wide-area-network (using a combination of Company- and AEP-built fiber optic, wireless, and wired networks including leased circuits) or public cellular networks as driven by the collector location.

Q. WERE ANY MODIFICATIONS TO THE COMMUNICATION NETWORKS CONTEMPLATED IN THE COMPANY'S AMS DEPLOYMENT PLAN THAT WOULD INVOLVE DIFFERENT IMPLEMENTATION THAN CONDUCTED TO DATE?

A. Yes. Some of the deployment areas include locations that are deemed low density, remote meter locations. In these locations the communication network requirements might be better satisfied by modified network technology better suited for those conditions, as opposed to unmodified use of the RF mesh network technology used in the higher density locations. Certain of the areas intended for deployment in years 2010 to 2013 included locations that were deemed to be low density, remote meter locations, and these locations were placed on hold pending the outcome of internal studies on what technology might be deemed cost-effective for those locations.

The Company issued a request for proposals to address the low density, remote meter locations, which comprise approximately 20% of the AMS deployments. As a result of the request for proposals process, the technical solution selected was to continue the use of the RF mesh solution augmented by the recent availability of smaller, lower-cost collectors. The Company and AEPSC awarded the request for proposals to L+G, the previously selected bidder for the AMS project.
Q. PLEASE DESCRIBE THE ACTUAL CAPITAL EXPENDITURES ASSOCIATED WITH THE COMMUNICATION NETWORKS IMPLEMENTED TO SUPPORT THE COMPANY'S AMS THAT HAVE BEEN INCURRED THROUGH THE END OF THE RECONCILIATION PERIOD.

A. As shown on Exhibits 2-C Network Plant (TCD), and Exhibits 2-B Network Plant (TND), through December 31, 2018, the Company has incurred capital expenditures moved to Plant-in-Service associated with AMS communication networks totaling $46.41 million, with $12.37 million retired from Plant-in-Service. These amounts include:

1. Approximately $29.82 million cumulative Plant-in-Service for TCD Network Plant and Tools, which is approximately $3.34 million more than estimated in the AMS Surcharge Models. Of the amount incurred for TCD, approximately $19.2 million was for equipment and approximately $10.62 million was for the aggregation of network design and installation labor and approximately $8.79 million was retired from Plant-in-Service,

2. Approximately $16.59 million cumulative Plant-in-Service for TND Network Plant and Tools, which is approximately $6.04 million more than estimated in the AMS Surcharge Models. Of the amount incurred for TND, approximately $11.81 million was for equipment and approximately $4.78 million was for the aggregation of network design and installation labor and approximately $3.58 million was retired from Plant-in-Service.

Q. WHY ARE THE COMPANY'S ACTUAL CAPITAL EXPENDITURES DIFFERENT FROM THE ESTIMATED CAPITAL EXPENDITURES FOR AMS COMMUNICATION NETWORKS IN THE AMS SURCHARGE MODELS?

A. Certain expenditures were higher than estimated and certain expenditures were lower than estimated in the AMS Surcharge Models, the net effect of which was a more than estimated level of capital expenditure related to AMS communication networks.
There are several reasons for the lower than estimated level of capital expenditure associated with AMS communication networks:

1. The AMS Surcharge Models’ AMS communication networks capital expenditure estimates were based on multiplying the meter quantities per year (as documented in the AMS Surcharge Models’ CapEx worksheet) times the average communication network capital expenditures per meter deployed across TCD or TND for the entire Deployment Plan Period. The actual communication network capital expenditures were dependent upon the actual characteristics of the geographical areas for the particular meters quantified in the AMS Deployment Plan. The higher meter density areas generally have lower than the average communication networks capital expenditure dollars per deployed meter metric.

2. Availability and use of lower-cost collectors for certain of the low density, remote meter areas, previously modeled using the higher capacity and higher-cost collectors generally used in high density meter areas.

3. The anticipated need to expand and increase the capacity of the Company’s and AEP’s internal backhaul wired network via leased circuits was not necessary during the AMS Deployment Plan period.

There are a few expenditures associated with AMS communication networks that were higher than estimated level of capital expenditure, but this category of expenditures was not completely offset by the lower capital expenditures components:

1. The AMS Surcharge Models did not account for the capital expenditures for the communications network field surveys other than the initial field surveys conducted by the AMS Network vendor that were included in Exhibit 2-C (TCD) and Exhibit 2-B (TND) capital expenditures. Company personnel have been utilized to perform the remaining field survey work.

2. The AMS Surcharge Models’ AMS capital expenditures for communications networks were based on initial design estimates for quantities of routers and collectors. The actual detailed meter deployment area field surveys generally resulted in greater actual quantities of collectors and routers than estimated to provide adequate communication network coverage for the meter deployment areas listed in the AMS Deployment Plans.

3. The AMS Surcharge Models’ AMS communication networks capital expenditure estimates were based on multiplying the meter quantities per year
(as documented in the AMS Surcharge Models’ CapEx worksheet) times the average communication network capital expenditures per meter deployed across TCD or TND for the entire Deployment Plan Period. The actual communication network capital expenditures were dependent upon the actual characteristics of the geographical areas for the particular meters quantified in the AMS Deployment Plan. The lower meter density areas generally have higher than the average communication networks capital expenditure dollars per deployed meter metric; a large percentage of TND service territory has lower meter density.

(4) The AMS Surcharge Models AMS communications networks capital expenditure estimates did not include additional network equipment, design, deployment needed for years 2014-2018 AMS meter growth, new locations not in already in AMS network coverage areas, and additional network tuning were not included in the Surcharge Model costs.

(5) AMS Surcharge Models’ AMS communications networks capital expenditure estimates did not include AMS network equipment obsolescent technology upgrades and replacements that were incurred.

Q. WERE THE ACTUAL COSTS OF THE AMS COMMUNICATIONS NETWORKS EXPENDED IN ACCORDANCE WITH THE COMPANY’S COMMISSION-APPROVED AMS DEPLOYMENT PLAN?

A. Yes. All actual costs associated with AMS communication networks were expended in accordance with the Company’s Commission-approved AMS Deployment Plan and are entitled to the presumption of reasonableness and necessity provided by 16 TAC § 25.130(k)(6).

Q. ARE ALL ACTUAL COMMUNICATION NETWORK COSTS INCURRED BY THE COMPANY TO DEPLOY AMS REASONABLE AND NECESSARY?

A. Yes. All actual costs incurred by the Company associated with the AMS communication networks are reasonable and are necessary to support the Company’s AMS.
Q. PLEASE DESCRIBE THE AMS COMMUNICATION NETWORKS O&M CONTEMPLATED IN THE COMPANY’S AMS DEPLOYMENT PLAN.

A. In the Company’s AMS Deployment Plan, AMS communication networks O&M consisted of two major telecommunications components: AMS network O&M and AMS network backhaul O&M. Support for both of these AMS communication network components are provided by a combination of: Information Technology field operations, telecommunications field technicians, distribution engineering and operations personnel, substation engineering and operations personnel, AEPSC network operations and telecommunication engineers, and additional contracted services.

The Company’s AMS Surcharge Models’ AMS communication networks capital and O&M forecasted labor was the equivalent of five full-time employees for the Company’s telecommunication field technicians, which represented new incremental work above the staffing levels at the time of the AMS Surcharge Models’ filings.

Q. WERE EXPENSE ESTIMATES ASSOCIATED WITH THE AMS COMMUNICATION NETWORKS O&M INCLUDED IN THE AMS SURCHARGE MODELS?

A. Yes. As shown on Exhibit 1-J Network (TCD) and Exhibit 1-J Network (TND), for the period January 1, 2012 through December 31, 2018, the AMS communication networks O&M totaled $9.23 million. This amount included:
(1) Approximately $5.67 million for TCD for labor, network backhaul communication expenses, equipment, material, expenses, and field tool lease; and

(2) Approximately $3.56 million for TND for labor, network backhaul communication expenses, equipment material expenses, and field tool lease.

Q. PLEASE DESCRIBE THE ACTUAL EXPENDITURES ASSOCIATED WITH THE AMS COMMUNICATIONS O&M NECESSARY TO SUPPORT THE COMPANY'S AMS INCURRED THROUGH THE END OF THE RECONCILIATION PERIOD.

A. As shown in Exhibit 1-J (TCD) and Exhibit 1-J (TND), for the period January 1, 2012 through December 31, 2018, the AMS communication networks O&M actual expenditures totaled $5.95 million. This amount included:

(1) Approximately $4.23 million for TCD for labor, network backhaul communication expenses, equipment, material, expenses, and field tool lease.

(2) Approximately $1.72 million for TND for labor, network backhaul communication expenses, equipment, material, expenses, and field tool lease.

Q. WHY ARE THE COMPANY'S ACTUAL AMS COMMUNICATIONS O&M EXPENSES DIFFERENT FROM THEIR ESTIMATED EXPENSES?

A. Expenses were lower than estimated in the AMS Surcharge Models. There are several reasons for a lower than estimated level of AMS communication networks O&M expenses:

(1) The AMS Surcharge Models' communication networks O&M labor expenditures assumed all incremental labor. Actuals exclude in-the-field internal labor regular time expenditures.

(2) The backhaul communication networks deployed did not create a need to expand the existing internal Company's and AEP's use of leased circuits as initially anticipated in the AMS Surcharge Models.
(3) The actual backhaul communication network cellular recurring data plan fees were less than the fees projected in the AMS Surcharge Models.

(4) Equipment failure rates trended lower than included in the Surcharge Model.

(5) Ramp-up to adding the incremental support labor estimated in the Surcharge Model took longer to materialize.

Q. WERE THE ACTUAL AMS COMMUNICATION NETWORKS O&M EXPENSES ASSOCIATED WITH SUPPORT OF THE AMS INCURRED IN ACCORDANCE WITH THE COMPANY'S COMMISSION-APPROVED AMS DEPLOYMENT PLAN?

A. Yes. All actual costs associated with field operations to support the Company's AMS were expended in accordance with the Company's Commission-approved AMS Deployment Plan and are entitled to the presumption of reasonableness and necessity provided by 16 TAC § 25.130(k)(6).

Q. ARE ALL ACTUAL EXPENSES INCURRED BY THE COMPANY ASSOCIATED WITH COMMUNICATIONS NETWORKS O&M IN SUPPORT OF AMS REASONABLE AND NECESSARY?

A. Yes. All actual costs incurred by the Company associated with field operations conducted in support of AMS are reasonable and necessary to support the Company's AMS.

D. Information Technology and Network-Related Affiliate Costs

Q. WHAT INFORMATION TECHNOLOGY AND NETWORK-RELATED AFFILIATE CAPITAL COSTS WERE INCLUDED IN THE AMS COSTS?
AEPSC provided services in connection with the following Information Technology and network-related aspects of the AMS: advanced metering infrastructure and system integration, meter data management, advanced metering communications network, advanced metering joint web portal (SMT Portal), advanced metering system command center, and advanced metering infrastructure interim web portal.

These services provided by AEPSC were reasonable and necessary for the development or installation of the Information Technology and network-related AMS infrastructure in accordance with the Commission-approved Plan for AMS deployment. These services were necessary for ensuring that the Information Technology and network elements would meet the requirements of the Commission approved Deployment Plan and that the Information Technology and network elements would operate and function as contemplated by the Commission approved Deployment Plan.

Q. WHAT INFORMATION TECHNOLOGY AND NETWORK-RELATED AFFILIATE O&M COSTS ARE INCLUDED IN THE AMS COSTS AS OF THE END OF THE RECONCILIATION PERIOD?

A. The Information Technology and network-related services provided by the Information Technology department, include mainframe and other Information Technology-related services, and lease costs and related outside maintenance contract costs associated with the Intel and Unix platforms.

The Information Technology and network-related affiliate O&M charges were reasonable and necessary for the operation of the AMS system in accordance with the Commission-approved plan for AMS deployment.
VII. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.
<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>Dollar amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2017</td>
<td>ITUOP0805 - Texas AMS - AEPSC</td>
<td>21,337,453</td>
<td>Provided IT related work required to support Texas Central Company’s and Texas North Company’s proposed Advanced Metering System and infrastructure implementation. The IT work included, but was not limited to, modifications to AEP back-office systems, the development of an interface to a common web portal, data warehouse development, and integration development to the AMS head end system.</td>
</tr>
<tr>
<td>2017</td>
<td>ITSSV1558 - Oracle Strategic Agreement</td>
<td>16,412,100</td>
<td>Following a 10-year IT planning exercise and an assessment of AEP's current state, IT and several corporate partners agreed to commit to one infrastructure and application solutions vendor for most enterprise solutions. In the electric utility industry, the enterprise solutions market is evenly split between SAP and Oracle. Since AEP's existing solutions included several Oracle products and (effectively) no SAP products, the IT team and application users were more familiar with Oracle solutions. This familiarity with Oracle solutions was an important factor in the decision to commit to Oracle as a strategic partner. A commitment to the Oracle set of products opened up the opportunity for AEP to become one of a handful of Key Accounts (KA) in the U.S. utility industry sector. In turn, the KA status opened up the opportunity to create a strategic, 10-year agreement for AEP. This agreement is designed to give AEP access to Oracle's entire on-premise software catalog, a significant discount on future implementations of cloud-based solutions, and a significant total cost of ownership savings over a standard, non-strategic procurement approach. Further, a proactive, deliberate effort to simplify AEP’s solution architecture with a single vendor's technology will introduce efficiencies and innovation to position AEP as the utility of the future.</td>
</tr>
<tr>
<td>2015-2018</td>
<td>ITSSV1612 - IT IBM ELA</td>
<td>2,161,077</td>
<td>The existing IBM Enterprise License Agreement (ELA) expired June 30, 2018. The Applications and Infrastructure teams identified an opportunity to renegotiate the ELA in a manner that will add value and reduce total cost of ownership for the next three years. AEP has a significant deployment of IBM products used by Cyber Security, Asset Management, Analytic Services, and Infrastructure. IT worked with technologists representing various AEP departments to develop a list of IBM applications that AEP has deployed or plans to deploy. This list served as the starting point for negotiations with IBM. The goal was to ensure all programs included in the ELA are currently in production or planned to be deployed to production within the term of the ELA. Procurement has negotiated lower maintenance fees which will be recognized across the three-year term and has locked in not-to-exceed pricing for years four and five. Several new initiatives using IBM tools have been identified, and whose adoption will be enabled by extension of the ELA. For example, the infrastructure team has been looking for an applications monitoring system to replace our current tool from BMC Software. A proof of concept running IBM Netcool with Predictive Insights ran earlier this year. Once the pilot is complete, AEP will likely need additional licenses to support the monitored environment, which will also be facilitated by the ELA extension. Analytics is deploying IBM's data governance tools to improve AEP's reporting needs. Our recent deployment of Cognos is being expanded in the environment to replace the legacy reporting system, Business Objects. These are just a few of the initiatives that have been incorporated into the renewed ELA.</td>
</tr>
<tr>
<td>2006-2018</td>
<td>ITUOP0005 - IT Utility Operations Blanket</td>
<td>12,827,149</td>
<td>Blanket work orders are commonly used for capital projects that are smaller in scope and cost, usually high-volume and have the same depreciable life and plant accounting category. This allows the company to more efficiently govern and account for these ongoing capital items, such as maintenance and development of software applications. It would not be practical to attempt to separately track and depreciate each instance of a programmer modifying a program. Blanket work orders are a standard property accounting and industry solution to efficiently account for smaller software capital investments. For example, enhancements to MACSS, EE Data Feed, and M.O.M.</td>
</tr>
<tr>
<td>2015-2018</td>
<td>ITSSV0003 - IT Shared Services Blanket</td>
<td>8,807,627</td>
<td>Blanket work orders are commonly used for capital projects that are smaller in scope and cost, usually high-volume and have the same depreciable life and plant accounting category. This allows the company to more efficiently govern and account for these ongoing capital items, such as maintenance and development of software applications. It would not be practical to attempt to separately track and depreciate each instance of a programmer modifying a program. Blanket work orders are a standard property accounting and industry solution to efficiently account for smaller software capital investments. For example, enhancements to ARCS and ShareNow, weblogic upgrade, and Analytic tools.</td>
</tr>
<tr>
<td>Year</td>
<td>Project Description</td>
<td>Dollar amount</td>
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<tr>
<td>2013-2018</td>
<td>IITU0P1262 MDM Upgrade to V2</td>
<td>8,712,059</td>
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<tr>
<td>2016-2018</td>
<td>ITPFP1421 Maximo Implementation</td>
<td>6,621,453</td>
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<td>2018</td>
<td>ITSSV1578 Data Center 2</td>
<td>5,524,995</td>
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<td>2015-2017</td>
<td>ITSSV1374 IBM ELA Licenses</td>
<td>5,430,132</td>
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<td>2014-2015</td>
<td>ITSSV1323 High Avail Data Ctr Planning</td>
<td>5,390,825</td>
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<td>2017-2018</td>
<td>ITSSV1608 IT Dell EMC ELA</td>
<td>3,610,999</td>
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<tr>
<td>2012-2016</td>
<td>ITUOP1126 PowerOn Version 4.2</td>
<td>2,606,056</td>
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</table>

**AEP is approaching an unsupported version of the MDM (Meter Data Management) system.** When an application gets too many versions behind, a vendor may stop supporting the application, until the more current version is being used. The MDM provides important functions in the processing of Advanced Metering Infrastructure (AMI) data for AEP Texas, Public Service of Oklahoma (PSO), Indiana, and AEP Ohio. The main purpose of the MDM is to provide validated AMI data to our customer information system, MACSS, and to web portals for customer and market participants to view interval data. The MDM also performs processes to ensure the delivery of data files that have been customized to meet market requirements in AEP Texas.

**Enterprise Asset Renewal - Maximo Implementation.** The purpose of this project is to implement IBM Maximo to replace the ABB Asset Suite. IBM Maximo Asset Management is an enterprise asset management (EAM) software solution product produced by IBM. It is a solution which is used to operate, maintain and dispose of enterprise assets. The IBM Maximo implementation is a key element of AEP's Cornerstone Program, which was established to build shared enterprise business processes in support of AEP’s efforts to keep pace with energy company technological innovation. The Program is focused on improving the management and performance of utility business and operations supported by modernized technology platforms and efficient business processes.

**AEP has taken significant strides to improve operational reliability and sustainability of our Information Technology (IT) infrastructure and applications, by implementing a Tier III data center in New Albany, Ohio.** The next step is to improve AEP's disaster recovery (DR) capabilities, currently located in Roanoke, Virginia, to better support current business requirements. This Improvement Requisition is for the build-out of the IT infrastructure for a second, back-up, data center within 50 miles of New Albany to specifically design to improve disaster recovery.

**AEP has negotiated a new IBM Enterprise License Agreement (ELA) to replace the existing agreement.** A new ELA is required to stay in compliance with IBM product licenses. As part of this multi-year agreement, AEP will have the opportunity to leverage unlimited licenses for many of IBM’s software applications. This opportunity will continue our growth of IBM’s existing products as well as implement new IBM products. Examples of products: Passport Advantage Programs (e.g., IBM InfoSphere Guardium Standard Activity Monitor for z/OS), Mainframe programs (e.g., IBM InfoSphere Guardium), New Passport Advantage Appliances (e.g., IBM InfoSphere Guardium—security for file and database protection), Real Estate management tools/programs (e.g., IBM Tririga); Asset Management tools (e.g., Maximo); Enterprise Reporting (e.g., Cognos).

**This was a project to replace the corporate data center that was over 30 years old, had experienced physical and mechanical malfunctions, and could not be retrofitted to current data center design best practices.** This is a shared data center located near Columbus, Ohio for hosting all of the AEP enterprise and business applications.

**AEP has been running both Dell and EMC products under an Enterprise License Agreement (ELA) for several years.** AEP runs software and hardware from both companies that provide extensive business benefits. Dell/EMC products support AEP's storage requirements, virtual environments, business continuity and disaster recovery plans. As such, their products serve as the backbone for AEP business applications. The current ELA is set to expire in April 2018. With Dell’s recent purchase of EMC, the Infrastructure Team identified an opportunity to combine their current agreements and renew early to obtain significant discounts. Additionally, the vendor offered further incentives to extend the agreement from a 3-year to a 5-year term. Five-year agreements come with T-Credits, which are credits that can be used across Dell, EMC or VMWare for software, services and education. The 5-year commitment also comes with additional discounts for hardware and will lock in production support and subscription savings. Extending the term of this contract will reduce administrative costs. This requisition funds a 5-year license renewal contract with Dell/EMC, preventing the need to terminate access to the solutions, and thus avoiding business continuity impacts to the many business units that are running the supported business applications.

**This project implements an upgrade of the PowerOn system.** The project reduces costly customizations, maintains a supported platform, and integrates with the distribution management and geographic information systems.
The Cyber Attack Resiliency (CAR) Program is a risk-mitigation effort. The solution considered both technical and business recovery strategies to recreate AEP's operations data in the event of a cyber-attack that destroys or locks production data in the New Albany & Roanoke data centers. AEP partnered with EY and Dell EMC to implement a solution that protects AEP from a total data loss in the event of certain types of cyber-attacks.

This project allowed the Texas market, Electric Reliability Council of Texas (ERCOT), Competitive Retailers (CR), and Utility Companies to accommodate the newest transaction upgrade to support advance meter implementations, deferred payment plan, and critical care.

This project replaced the GE SmallworldTM Geographic Information System (GIS) with GE SmallworldTM Electric Office (EO). The project supported minimizing customizations, leveraging functional enhancements, maintaining a supported platform, and integrating the GIS with the distribution management and outage management systems.

The Infrastructure Complex Services team identified hardware as to which advances in the technology justified purchase with capital funds rather than leasing. New versions of the EMC SAN (Storage Area Network) and storage appliances came with software pre-loaded, and the technical teams used menus to configure the units. Because specific new functionality was required, and the selected vendor only sells that functionality as an integrated software and hardware appliance, the acquisition cost of the hardware was properly capitalized as a software appliance.

These contracts/agreements were necessary to ensure AEP maintains current technologies, provides lowest total cost of ownership for our IT environment, and ensures the integrity of its systems and data. Examples of products: Passport Advantage Programs (e.g., IBM InfoSphere Guardium Standard Activity Monitor for z/OS), Mainframe programs (e.g., System Z Programs—data encryption, computer interface tools), New Passport Advantage Appliances (e.g., IBM InfoSphere Guardium—security for file and database protection); Real Estate management tools/programs (e.g., IBM Tririga); Asset Management tools (e.g., Maximo); Enterprise Reporting (e.g., Cognos).

The AEP Customer Experience (CX) program improves customer satisfaction by elevating the customer experience and improving the way AEP communicates and does business with its customers. New tools and enhanced processes were required to achieve this objective at AEP. This investment implements the Oracle CX Suite of tools for Customer Relationship Management (CRM). Implementation of the Oracle CX Suite builds the foundation of one enterprise system with one 360 degree view of the customer. Phase 1 of 3 of the requisition includes CRM system planning.

Blanket work orders are commonly used for capital projects that are smaller in scope and cost, usually high-volume and have the same depreciable life and plant accounting category. This allows the company to more efficiently govern and account for these ongoing capital items, such as maintenance and development of software applications. It would not be practical to attempt to separately track and depreciate each instance of a programmer modifying a program. Blanket work orders are a standard property accounting and industry solution to efficiently account for smaller software capital investments. Examples, enhancements to Documentum, IPS, TGIS, and RTO Central.

Corporate and Cyber Security risks have been identified in association with the use of old and outdated versions of various technologies. The Enterprise Architecture Review Board has categorized the following technologies as "Technology Risk and Obsolescence," meaning they need to be remediad: Java, .NET, MS Access, VB6, Classic ASP, Lotus Notes and others. This project funded the program for 2018 to continue the work started in 2017 to remediate these technology risks based on the level of risk and/or the business priorities. The remediation of the vulnerabilities is key to improving AEP's overall compliance and prevention of risks to data and/or AEP's business reputation. This effort utilized a third-party professional services provider engagement to remediate risks due to running outdated technology by working with AEP's business units to identify and prioritize target applications.
<table>
<thead>
<tr>
<th>Year</th>
<th>Project Description</th>
<th>Dollar amount</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-2018</td>
<td>Blanket work orders are commonly used for capital projects that are smaller in scope</td>
<td>1,346,687</td>
<td>Blanket work orders are commonly used for capital projects that are smaller in scope and cost, usually high-volume and have the same depreciable life and plant accounting category. This allows the company to more efficiently govern and account for these ongoing capital items, such as maintenance and development of software applications. It would not be practical to attempt to separately track and depreciate each instance of a programmer modifying a program. Blanket work orders are a standard property accounting and industry solution to efficiently account for smaller capital investments. Examples, enhancements to PeopleSoft, ARCS Insurance, Tax, and Treasury systems.</td>
</tr>
<tr>
<td>2008-2013</td>
<td>This project assessed the needs of the organizations that rely on the CEAS (Consolidated Energy Accounting System) data to determine the best approach, and incorporate the best technical design to: retain load data on hourly or even 15-minute intervals; allow for kWh precision on all data, re-vamp the user-interface to be more user-friendly; implement tighter controls to comply with audit mandates; and, where multiple sources of loads exist, allow administrators to flag official sources, re-design load definitions, and create better reporting capabilities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017-2018</td>
<td>EcoSys and Primavera (P6) are AEP Transmission core systems for planning, scheduling, and tracking construction spend and schedules. The existing implementation of EcoSys Enterprise Project Controls (EPC) no longer fully met business process needs. Since the original implementation, EcoSys EPC has added the Project Controls Module (PCM) configuration. This configuration consists of the core project controls functionality such as Budgeting, Forecasting, Change Management, Actuals, Commitments, and Workflow. In addition, the current user base was greater than the current purchased license allotment. The current EcoSys system was designed for 50 people; however, required access grew to 325 people, with an additional 1500 people waiting for access. This project upgraded to the new version of EcoSys, and purchased additional licenses to cover all the employees that need access to the system. Implementation of this solution helped Transmission in effectively planning and executing their capital spend for 2017 and beyond.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017-2018</td>
<td>Corporate and Cyber Security risks were identified in association with outdated versions of various application development technologies. These vulnerabilities were discovered through a process referred to as the Technology Risk of Obsolescence Review, which considers both vendor support lifecycle of each technology as well as cyber security vulnerabilities associated with the aging technology. This Infrastructure Technology Modernization Project remediated these technology risks based on security and business risk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>AEP Supply Chain and Fleet Operations department desired to provide the Telematics service for 7000+ fleet vehicles (including Distribution, Transmission, Generation, and Shared Service) to improve driver behavior and safety performance. Implementation of Telematics is also expected to achieve cost savings through improved vehicle utilization and fuel saving through idling optimization. The additional evidence provided by the system in the event of an accident aid in litigation investigation and improves efficiencies in utilization of labor resources. The solution includes integrations to systems including PowerOn Restore and other down-stream systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016-2017</td>
<td>AEP purchased ServiceNow in 2011 with a 5-year license agreement. That agreement expired in mid-December, 2016. Since inception, the utilization of the ServiceNow application has grown tremendously, beginning with Information Technology and organically growing to serve other business units including Transmission, Distribution, Generation, Workplace Services, Telecom, Fleet, Supply Chain, and NERC CIP. ServiceNow quickly became a primary component to support work management and critical business processes for all of these organizations. This 5-year license renewal contract with ServiceNow prevented termination of access to the solution, and thus avoided business continuity impacts to the many business units that have chosen to automate processes within the application.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008-2013</td>
<td>This project allowed the Identity and Access Management (IAM) Program Team to perform the following activities: define an AEP IAM taxonomy; assess the significance of IAM to AEP operations and business; and review and document current processes relevant to IAM Program Initiation.</td>
<td>1,178,958</td>
<td>This project allowed the Identity and Access Management (IAM) Program Team to perform the following activities: define an AEP IAM taxonomy; assess the significance of IAM to AEP operations and business; and review and document current processes relevant to IAM Program Initiation.</td>
</tr>
<tr>
<td>Year</td>
<td>Project</td>
<td>Dollar amount</td>
<td>Description</td>
</tr>
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<td>--------</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2015-16</td>
<td>ITSSV1415 Oracle ULA 2015</td>
<td>1,121,309</td>
<td>This project was for the purchase of an Unlimited License Agreement (ULA) with Oracle to support AEP's data center environment. The agreement allowed AEP IT the ability to deploy an unlimited number of product licenses. There is no true-up at the end of the contract and the support costs do not increase based on our license count. Aggressive use of the unlimited deployment capability provides AEP a lower total cost of ownership than if the same number of licenses were purchased on an as-needed basis. Additionally, the project supported AEP access to Oracle's Platform as a Service to enable cloud offerings at AEP. This arrangement supports existing data centers and plans for growth to support business capabilities, as well as the implementation of a multi-data center strategy to support AEP's business continuity and disaster recovery plans.</td>
</tr>
<tr>
<td>2013-16</td>
<td>ITSSV1255 Adv Cyber Security Tools</td>
<td>1,106,855</td>
<td>This project addressed a number of items in AEP's enterprise cyber security program. The project upgraded the MyAccess application. This application provides user account registration, provisioning, termination, and quarterly access reviews for a significant number of AEP users, and is the key platform for compliance (Sarbanes-Oxley, North American Electric Reliability Corporation Critical Infrastructure Protection, and Segregation of Duties functionality). The project also enabled purchase and deployment of the Security Network Access Control (SNAC) platform. SNAC is a critical security tool that can identify all network connected devices and then only allow access to approved systems and accounts. Further, the project supported design and deployment of a configuration management monitoring capability platform for the enterprise to ensure that critical security attributes are configured and maintained on network connected devices like servers and key devices. Finally, the project enabled purchase and deployment of a normalization tool required as part of AEP's Archer platform for software vulnerability monitoring, assessments and mitigations to help identify those assets within the network that have known cyber-attack vulnerability and enable deployment of an efficient mitigation program.</td>
</tr>
<tr>
<td>2018</td>
<td>ITSSV1560 NADC Growth</td>
<td>1,066,007</td>
<td>When the New Albany Data Center (NADC) was built, the project team reserved empty space (i.e., empty &quot;rows&quot;) in the facility to accommodate future growth and computing needs. The Service Management team identified the need to build out the last eight (8) rows to accommodate network consolidation, storage life cycle and increased computing. Build-out equipment included racks, cabinets, power cables, cold air containment, cages and security appliances. In addition, the Infrastructure Storage team conducted a storage life-cycle project commencing the first quarter of 2018. This project included storage replacement and storage growth to meet increased business needs.</td>
</tr>
<tr>
<td>2008-10</td>
<td>ITSSV0264 Indus Passport-AEPSC</td>
<td>3,391,093</td>
<td>This project upgraded the current version of Indus PassPort (8.0.4) to the current release (Asset Suite 6) or, as necessary, replaced this application with a comparable vendor solution.</td>
</tr>
<tr>
<td>2006-08</td>
<td>ITCRH0140 PS Fin Upgrade-AEPSC</td>
<td>3,281,694</td>
<td>This project supported Phase 1 of the PeopleSoft Finance Version 9.0 Upgrade Effort. This project upgraded the current version of the PeopleSoft Finance (8.0) to a current release. Phase 1 was the assessment phase and included a Gap Assessment and Vision Scope Statement. Planning activities were performed.</td>
</tr>
<tr>
<td>2012-18</td>
<td>TCCAMIO01/TCCAMIO10 and TNCAMIO01/TNCAMIO10 AMI Activity</td>
<td>47,463,923</td>
<td>This project supported work is for the AMI program management, advance metering infrastructure, and joint web portal.</td>
</tr>
<tr>
<td>2007-12</td>
<td>ITUOP0410 and ITUOP0411 gridSMART</td>
<td>4,016,103</td>
<td>This project enabled customer systems changes to support gridSMART, which is a distribution system-based suite of technology improvements and advanced customer programs needed to support modernization and innovation in energy delivery and customer services.</td>
</tr>
<tr>
<td>2006-18</td>
<td>Projects under $1,000,000</td>
<td>52,699,833</td>
<td>Total of IT capital projects smaller in cost of $1,000,000</td>
</tr>
</tbody>
</table>

Total Software Capital Additions: 235,182,332
PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF

AEP TEXAS INC.

FOR AUTHORITY TO CHANGE RATES

DIRECT TESTIMONY OF

DAVID STANDLEY

FOR

AEP TEXAS INC.

MAY 2019
## TESTIMONY INDEX

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION.

A. My name is David Standley. I am Managing Director of Telecommunications for American Electric Power Service Corporation (AEPSC). My business address is: 850 Tech Center Dr. Gahanna, Ohio 43230. I am responsible for the system-wide engineering, construction, operations, and support of American Electric Power Company, Inc.'s (AEP) Telecommunications systems.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND WORK EXPERIENCE.


Before joining AEP, I worked as a COBOL & COBOL CICS programmer for Shoe Corporation of America, Columbus Ohio, Ranco Controls, Plain City Ohio, and BEACON Oil Company, Hanford CA, while also serving in the National Guard. In 1985,
I went to work for Columbia Gas of Ohio as a Senior Analyst, became a Supervisor of IT Business Applications and was eventually promoted to IT Manager of Columbia Retail Services. In 2001, I joined AEP as the IT Manager of AEP Retail Services, and in 2005 promoted to Director of IT Application Support. In 2010, I was promoted to Managing Director of Telecommunications, where I currently manage the largest private Telecommunications network of any utility in the United States.

Q. ARE YOU A MEMBER OF ANY TELECOMMUNICATIONS-RELATED GROUPS OR ASSOCIATIONS?

A. I am a member of the Utilities Technology Council (UTC) Washington D.C. and Electric Power Research Institute ICT Advisor (SmartGrid), Palo Alto, CA.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS OR BEFORE ANY OTHER REGULATORY BODY?

A. No.

II. PURPOSE OF TESTIMONY

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.

A. My testimony has several purposes. First, I provide an overview of AEP's Telecommunications organization, staffing and services. In particular, I explain how telecommunications services are provided to AEP Texas. This information supports the cost analysis that AEP Operating Companies use to determine their desired level of services. Second, I support the reasonableness of Telecommunications operations and maintenance (O&M) charges to AEP Texas, using cost trends, budgeting processes, process improvements, and headcount trends. Third, I show that the capital costs
Telecommunications bills to AEP Texas are reasonable and necessary for AEP Texas to gain efficiency and effectiveness in serving its customers.

III. ORGANIZATION OF TELECOMMUNICATIONS

Q. WITH REGARD TO THE UTILITY OPERATIONS OF AEP TEXAS AND THE OTHER AEP OPERATING COMPANIES, WHAT DOES TELECOMMUNICATIONS CONSIDER TO BE ITS MISSION?

A. The mission of Telecommunications is to provide reliable and secure Telecommunications services that deliver value to our customers (AEP Texas and other AEP business units), while striving for continuous improvement in an open and safe work environment.

Q. PLEASE PROVIDE SOME EXAMPLES OF THE TELECOMMUNICATIONS SERVICES PROVIDED TO AEP TEXAS.

A. Telecommunications provides network communication across the AEP Texas footprint. This enables connectivity to Distribution and Transmission Dispatch Centers to monitor and control the organization’s SCADA systems. Among other things, telecommunications provides a communication path that allows automated meter reading and the ability to remotely connect and disconnect meters. The 800 MHz radio system provides communication to corporate vehicles and mobile data computers, which is a tool for the service technicians to troubleshoot meter issues as well as get service requests sent to the vehicle. Telecommunications provides a reliable network backbone with redundancy that mitigates the risk of network outages. This is achieved through a robust fiber network and
microwave communications. Telecommunications also supports the local LAN/WAN network including all IP based assets, which include the Cisco desk phones.

Q. PLEASE PROVIDE AN OVERVIEW OF HOW TELECOMMUNICATIONS IS ORGANIZED.

A. Telecommunications is one of eight organizations aligned under the AEP's Executive Vice President & Chief Administrative Officer. All Telecommunications services are centrally managed. The chart below depicts the Telecommunications organizational structure.

Q. HAVE THERE BEEN ANY RECENT ORGANIZATIONAL CHANGES IN TELECOMMUNICATIONS?

A. The Telecommunications and IT organizations were one “IT” department until October, 2017. At that time, Telecommunications became its own department aligned under the AEP’s Executive Vice President & Chief Administrative Officer. The sheer amount of telecommunications expansion and different technologies made it difficult to manage under one Chief Information Officer. Telecommunications aligns directly with the business unit and operating companies along with operations employees directly located in AEP Texas.

Q. WHAT IS THE PURPOSE OF THE TELECOMMUNICATIONS ORGANIZATIONAL STRUCTURE?
A. The purpose of this organizational structure is to streamline access to the Telecommunications organization, reduce complexity in providing solutions, and increase the flexibility and agility of Telecommunications to respond to AEP's business needs. Telecommunications uses common centralized resources to meet common needs resulting in delivery with the lowest reasonable cost and greatest efficiency. AEP operating companies collaborate to identify business unit requirements that are communicated to Telecommunications. All requests are funneled through the Project Planning team to provide consistent estimates to our business units. The business units focus on consistent solutions for shared requirements and unique solutions where necessary for individual operating companies.

Q. WHY HAS AEP CHOSEN TO TAKE A CENTRALIZED APPROACH TO THE PROVISIONING OF TELECOMMUNICATIONS SERVICES?

A. Since most business processes are common across AEP Texas and other AEP Operating Companies, a centralized model creates the opportunity to leverage purchasing power and to apply standard architectures to promote cybersecurity practices, centralized support and improve network availability.

Q. WHAT ARE THE FUNCTIONS AND TYPES OF COSTS OF EACH OF THE TELECOMMUNICATIONS ORGANIZATIONS?

A. Telecommunications Business Office:

The Telecommunications Business Office team provides financial analysis and support to help manage Telecommunications budget, Telecommunications safety coordination and support, material management, work release/invoice processing, training services, process
improvement and asset management. Costs for this area are labor and labor related for the specialists who provide these services.

Projects & Planning:

The Projects & Planning team provides Planning Services in alignment with the business units to satisfy communication needs, project scoping and estimating. It also partners with the Telecommunications organization to implement new, standard technology. The team also provides Project Management Services, which include financial, scope, scheduling and tracking. Costs for this area are labor and labor related for the specialists who provide these services.

Engineering:

The Engineering team provides engineering design, standards, documentation, procurement and support for multiple technologies; including transport, wireless, voice and data, SCADA, Advanced Metering Infrastructure (AMI) and Distribution Automation (DA) systems. The team provides a standard, enterprise architecture to provide reliable and secure systems to AEP Texas business units and customers. Costs for this area are internal labor and outsource contractors.

Construction:

The Telecommunications Construction organization provides services for fiber engineering / construction and Telecommunications Site construction. The fiber work consists of engineering and design, documentation, procurement and coordination of fiber installation via third party contractors. The Telecommunications site construction activities consist of coordination of: 1) pre-construction site work, 2) construct foundations for equipment, buildings and towers, 3) tower installations and modifications.
and 4) demo and removal of decommissioned buildings and towers and associated foundations. Costs for this area includes internal labor, staff augmentation contractors, and 3rd party construction contractors.

**Enterprise Operations:**

The Telecommunications Enterprise Operations team provides 24x7 centralized operational support of Telecommunications devices and circuits including operating, monitoring, incident resolution, maintenance, repair, change/outage management and compliance aspects. This team also provides implementation support for the same devices providing configuration and standards support. The devices cover corporate, SCADA and external facing networks and the following technologies: transport, wireless, SCADA, AMI, and DA. Costs for this area are internal labor, contract labor and outsource contractors.

**AEP Texas Telecommunications Ops:**

AEP Texas covers 97,000 square miles in Texas. The AEP Texas Telecommunications Operations team supports territory from the Oklahoma Border, to the Gulf of Mexico, to the border of Mexico. Personnel are located across the system to ensure timely response to productivity issues. Telecommunications Technicians work closely with our customers to resolve issues that pertain to 800 MHz Radios, AMI connectivity, mobile computing, fiber and microwave outages. The team also works with the Construction teams to implement new technologies. Costs for this area are internal labor and outsourced contractors. There are also Telecommunications Ops teams within the Telecommunications organization for the other AEP operating companies that form similar functions to AEP Texas Telecommunications Ops.
Q. WHAT IS THE COMPOSITION OF THE TELECOMMUNICATIONS WORKFORCE?

A. The central management and leadership of Telecommunications is provided by AEPSC employees, but the Telecommunications-related work to support the operating companies is carried out by a combination of service company and operating company personnel, as well as third-party contractors.

As of December 31, 2018, the Telecommunications work force was composed of a total of 221 service company employees, 204 operating company employees and 94 staff augmentation contractors. Fifty (50) of the operating company employees are AEP Texas employees.

Q. HOW DO YOU DISTINGUISH BETWEEN SERVICE COMPANY (AEPSC) AND OPERATING COMPANY EMPLOYEES?

A. Telecommunications employees who perform work for the benefit of more than one AEP operating company are employed by AEPSC. Employees whose work is dedicated to a single operating company are employed by that operating company.

Q. ARE THE SERVICES PROVIDED BY TELECOMMUNICATIONS TO AEP TEXAS NECESSARY FOR AEP TEXAS TO PROVIDE RELIABLE UTILITY SERVICE?

A. Yes. Each service provided to AEP Texas is essential to the mission of providing safe and reliable utility service in a cost-effective manner. Telecommunications provides essential support for the systems that allow AEP Texas to coordinate outage response and repair, perform system operation, manage system construction and maintenance, maintain cyber security, bill its customers and account for its costs, which enable virtually all AEP
Texas employees to perform their work and serve customers as effectively and efficiently as possible.

Q. ARE TELECOMMUNICATIONS SERVICES DUPLICATED BY PERSONNEL OUTSIDE TELECOMMUNICATIONS, WITHIN AEP TEXAS OR ANY OTHER ENTITY?

A. No. There is no duplication of the work performed by Telecommunications in AEP Texas or any other AEP business unit or other entity.

IV. REASONABLENESS OF AEP TEXAS’ TELECOMMUNICATIONS COSTS

Q. WHAT ARE THE TEST YEAR AFFILIATE TELECOMMUNICATIONS OPERATIONS AND MAINTENANCE (O&M) COSTS BILLED TO AEP TEXAS BY AEPSC TELECOMMUNICATIONS?

A. The total test year affiliate O&M Telecommunications costs for AEP Texas are $1,263,276. These charges do not include costs related to operating company employees.

Q. WHAT TYPES OF PROOF OF REASONABLENESS OF THESE COSTS DO YOU PRESENT IN THIS TESTIMONY?

A. I have applied a number of methods for demonstrating the reasonableness of affiliate costs, including cost trends, budgeting controls, process improvements, full-time equivalent (FTE) trends, outsourcing, and cost-effective additions of services. Each of these is discussed below.
A. Cost Trends

Q. HOW HAVE TELECOMMUNICATIONS AFFILIATE CHARGES BEEN TRENDING OVER THE LAST FEW YEARS FOR AEP TEXAS?

A. The table below sets forth AEP Texas’ Telecommunications affiliate charges for calendar years 2015, 2016 and 2017, as well as the test year.

<table>
<thead>
<tr>
<th>AEP Texas Telecomm Affiliate Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>$1,245,668</td>
</tr>
</tbody>
</table>

Q. WHAT ARE SOME OF THE PRIMARY REASONS FOR THESE TRENDS?

A. As can be seen by the above table, the cost of providing Telecommunications services to AEP Texas has held static over the four-year period. The small variability shown is due to the fluctuation in demand for Telecommunications services on a year-to-year basis for support. As business requirements change, Telecommunications efforts vary and, in turn, the costs incurred by each business unit and operating company will fluctuate.

Q. WHAT DO YOU CONCLUDE FROM THESE COST TRENDS?

A. The Telecommunications organization is continuously seeking more efficient and effective ways to provide services and providing additional capabilities. Our O&M spending trend over the four-year period has held steady.

B. Budgeting Controls

Q. WHAT TYPE OF BUDGETING PROCESS IS EMPLOYED WITH REGARD TO TELECOMMUNICATIONS O&M AND CAPITAL COSTS?

A. Budgets are developed annually for each AEP organization. The current year budget is compared to actual spend on a monthly basis and year-end projections are revised as appropriate. The budget is created by considering corporate and operating company
financial and business requirements, and market conditions relevant to AEP’s overall
electric utility business.

Q. ONCE BUDGETS ARE IN PLACE, WHAT FURTHER COST MONITORING
OCCURS?

A. Within Telecommunications, managers at every level are responsible for monitoring and
controlling budgets that are assigned to their respective teams or projects. Proposals for
new projects are reviewed to ensure that the work is necessary and can be reasonably
funded. Telecommunications senior management reviews all capital proposals to ensure
that:

• projects are aligned with corporate initiatives and are properly budgeted and
funded;
• existing technology is utilized wherever possible as opposed to building or buying
new technology;
• business cases have clear justifications for new technology or enhancements;
• duplicate systems are not built; and
• the Telecommunications management team works with the managing director as
necessary to address any exceptional requests (e.g., temporary staffing, training
opportunities, requests that do not align with our standards, etc.).

Q. WHAT TYPE OF CORPORATE OVERSIGHT OF TELECOMMUNICATIONS
ACTIVITIES IS IN PLACE TO ENSURE THAT ITS SERVICES SUPPORT AEP
TEXAS’ UTILITY SERVICE IN A COST-EFFECTIVE MANNER?

A. The corporate oversight process begins approximately six months prior to each calendar
(fiscal) year. The Chief Financial Officer leads a process to establish ‘operating and
maintenance’ (O&M) and capital budget guidelines for the following year. The
Telecommunications leadership team works within these guidelines to prioritize and plan
detailed expenditures.
The O&M budget is managed through a collaboration of Telecommunications and Corporate Planning & Budgeting (CP&B). Actual expenditures are monitored against the budget every month.

The capital budget is managed through a collaboration of operating companies, business units and CP&B. The AEP Subsidiary Company Board grants final approval for major (over $2M) capital investments each month. Investments below this threshold are evaluated and prioritized by Telecommunications leadership with each business unit and ultimately approved by the leadership of the operating companies, business unit and Telecommunications. The planning process is used to prioritize capital investments for the following year. While some changes do occur during the year, for the most part, the highest priority capital projects are implemented.

C. Process Improvements

Q. WHAT ARE THE MAJOR TELECOMMUNICATIONS PROCESS IMPROVEMENT EFFORTS TO ENSURE THAT ITS SERVICES SUPPORT AEP TEXAS UTILITY SERVICE IN A COST-EFFECTIVE MANNER?

A. The Telecommunications organization has a standard project process delivery format. This includes a bidding process to suppliers for material and services to ensure AEP Texas gets the best quality and price for its customers.

Q. HOW DOES TELECOMMUNICATIONS ENSURE THAT EFFECTIVE SERVICES ARE DELIVERED TO AEP TEXAS?

A. AEP Telecommunications has a Network Operations Center (NOC) and Smart Grid desk, which monitors our network 24x7, 365 days per year. The NOC is Level 1 support, meaning they attempt to resolve the issues remotely if possible, if not then
Telecommunications Operations is dispatched using the ServiceNow tool which is used to create a ticket to assign the work. These issues are tracked and measured to ensure effectiveness of the network system. Telecommunications Field Managers monitor ServiceNow to detect trends. In situations where abnormal issues are detected, Telecommunications Operations engages Telecommunications Engineering to develop a solution. The AEP Texas Telecommunications Operations teams have the ability to be engaged locally or can do remote diagnostics. Telecommunications also has tools to do Quality of Service checks on the network systems.

D. FTE Trends

Q. WHAT ARE THE STAFFING TRENDS FOR TELECOMMUNICATIONS?

A. The table below depicts overall annual average staff levels (including AEP employees and staff augmentation contractors). The table shows steady employee increases, driven by the support of transmission and distribution capital growth. In addition, contractor levels fluctuate in response to the number of capital projects in progress.

<table>
<thead>
<tr>
<th>Year</th>
<th>AEPSC FTE</th>
<th>TX FTE</th>
<th>OTHER OPCO FTE</th>
<th>Total FTE</th>
<th>Total Contractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>127</td>
<td>46</td>
<td>131</td>
<td>304</td>
<td>20</td>
</tr>
<tr>
<td>2016</td>
<td>173</td>
<td>47</td>
<td>107</td>
<td>327</td>
<td>34</td>
</tr>
<tr>
<td>2017</td>
<td>199</td>
<td>48</td>
<td>142</td>
<td>389</td>
<td>29</td>
</tr>
<tr>
<td>2018</td>
<td>221</td>
<td>50</td>
<td>154</td>
<td>425</td>
<td>94</td>
</tr>
</tbody>
</table>

DIRECT TESTIMONY
DAVID STANDLEY
Q. CAN YOU EXPLAIN THE USE OF CONTRACTORS WITHIN TELECOMMUNICATIONS?

A. Contractors are used to supplement Telecommunications workforce in areas such as Engineering, Engineering Design, Construction, and Project Management. Using contractors is more cost effective than keeping fulltime employees year round because it allows AEP to staff up during times when more people are needed for large projects and be lean when those projects are completed.

E. Outsourcing

Q. HOW DOES OUTSOURCING PROVIDE A MEANS TO CONTROL TELECOMMUNICATIONS COSTS?

A. Telecommunications outsources to control and reduce costs while maintaining or improving operational efficiency and effectiveness. Telecommunications utilizes contract resources as work increases and decreases. By using proper planning and project management practices, this allows the Telecommunications organization to determine if employee resources are available or if contract resources should be utilized.
Telecommunications utilizes corporate work release process, solicits competitive bids for maintenance activities including: tower inspections and site maintenance, anchor replacement, antenna alignment, and fiber replacement and splicing. Third party construction activities include: underground fiber placement, tower builds, and tower buildings. With limited exceptions, all external work over $100,000 is put out for bid. In some instances, the bid process is waived (with management approval) to address urgent repairs for system outages.

Q. HOW DOES TELECOMMUNICATIONS ENSURE THAT ITS USE OF OUTSOURCING IS COST-EFFECTIVE?

A. AEP Telecommunications uses competitive bidding, preferred vendor pricing, fixed cost contracts and volume discounts for all types of outsourced services. Contract negotiation processes that include ‘best and final’ requests ensure that all products and services are procured at competitive rates. Periodic contract reviews, driven by the annual budget cycle and contract renewal dates, trigger lease and license renewal negotiations ensure that marketplace opportunities to improve service or reduce costs are captured in a timely manner.

Q. WHAT DO YOU CONCLUDE FROM THE ABOVE INFORMATION REGARDING THE USE OF OUTSOURCING?

A. Telecommunications utilizes outsourcing in a targeted manner to optimize overall cost and performance using a mix of external capabilities and firms (to encourage competition). Each outsourcing opportunity is carefully evaluated to ensure it provides AEP with a lower cost and equal or higher level of service than an equivalent internal solution or team.
F. Cost-Effectiveness

Q. HOW HAS THE INCREASED DEMAND FOR TELECOMMUNICATIONS SERVICES AFFECTED TELECOMMUNICATIONS COSTS?
A. Despite increased demand for Telecommunications services, we have successfully added new capabilities while controlling our costs. We continue to work closely with Transmission and Distribution to evolve a 10-year capital improvement plan to increase AEP’s internal network capabilities and to reduce dependency on external services (i.e., leased lines). The expanded fiber footprint will provide greater bandwidth and more secure and reliable technology to substations across the system, reducing usage of current lower bandwidth devices. This internal network growth further provides much needed redundancy for reliability and sustainability.

V. TELECOMMUNICATIONS CAPITAL ADDITIONS

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?
A. In this section of my testimony, I describe the Telecommunications-related capital additions to rate base that reflect affiliate charges from AEPSC to AEP Texas.

Q. WHAT IS THE TOTAL AMOUNT OF TELECOMMUNICATIONS-RELATED CAPITAL ADDITIONS INCLUDED IN AEP TEXAS’ RATE BASE SINCE ITS LAST BASE RATE CASE?
A. The total for AEP Texas is $54,707,682 in Telecommunications charges.

Q. HOW ARE THE COSTS OF TELECOMMUNICATIONS AFFILIATE CAPITAL PROJECTS CAPTURED AND TRACKED?
The affiliate capital costs are captured and billed in much the same way as other affiliate costs, using the AEPSC accounting processes and systems. The means of gathering and billing costs by work order is explained more fully in the testimony of AEP witness Mr. Brian J. Frantz. The capitalized Telecommunications costs that I support can be charged to work orders specific to a certain project, or charged to work orders established to capture ongoing maintenance and routine support of the distribution and transmission. AEP Texas affiliate Telecommunications capital additions include blanket work orders and standalone work orders. These services are either direct billed, or allocated using the same principles as described above for cost allocation of O&M work and in the testimony of AEP witness Mr. Frantz.

Q. HOW WERE THE AFFILIATE CAPITAL COSTS RECORDED AND TRACKED?

A. Capital charges are recorded by Telecommunications to work orders by project. These work orders are set up to bill to appropriate benefiting locations using allocation factors that reflect cost causation principles.

Q. WHY IS A BLANKET WORK ORDER USED TO BILL SOME OF THESE CAPITAL ADDITIONS?

A. Blanket work orders are commonly used for capital projects that are smaller in scope and cost, usually high-volume and have the same depreciable life and plant accounting category (starting 2018 with a <$2,000,000 loaded cost threshold). Blanket work orders are a standard property accounting and industry solution used to efficiently account for smaller capital investments.
Q. SINCE THE LAST RATE CASE, WHAT WERE THE MAJOR TELECOMMUNICATIONS-RELATED PROJECTS REFLECTED IN AEP TEXAS’ CAPITAL ADDITIONS?

A. The majority of the following capital projects, each with project costs in excess of $100,000, relate to radio and microwave upgrades. The chart below shows 20 projects totaling $54,477,253 and 6 projects under $100,000 each that make up the remaining $230,429 of the $54,707,682. The key systems that are used in the financial management, distribution and transmission areas of AEP Texas, along with a description of the benefits of these investments include:

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEP Texas Next Generation Radio System</td>
<td>The new digital, IP-based communications network has the capacity and forward engineered design for improved existing systems as well as new technologies and applications. The Next Generation Utility communications system provides quality, highly reliable, voice and data communications for all AEP Texas field users.</td>
<td>$14,688,986</td>
</tr>
<tr>
<td>AEP Texas Central Co - Dist</td>
<td>A blanket project has been established for small capital projects in the central division that fall under the $2M capital investment threshold such as infrastructure rebuilds, fiber connections and microwave updates.</td>
<td>$10,542,392</td>
</tr>
<tr>
<td>Laredo to Del Rio Transport</td>
<td>This project involved the replacement of obsolete/unsupported microwave and circuit multiplex electronic equipment that comprises the regional communications backbone from Laredo, TX to Del Rio, TX. In addition to the electronic equipment, this project provides funding to replace six buildings and two towers.</td>
<td>$7,127,587</td>
</tr>
<tr>
<td>AEP Texas North Co- Dist</td>
<td>A blanket project has been established for small capital projects in the north division that fall under the $2M capital investment threshold, such as infrastructure rebuilds, fiber connections and microwave updates.</td>
<td>$5,873,859</td>
</tr>
<tr>
<td>Project ID</td>
<td>Description</td>
<td>Amount</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>TCC Corp Chr-Pharr-La Palma MW Upgrade</td>
<td>New microwave radios with enhanced availability features were installed to replace non-supported microwave radios. Also, new antenna systems were installed along with replacement of microwave towers; that no longer met federal and state structural building requirements. The central division microwave system is used to provide connectivity for SCADA, land mobile radio and network access for multiple Texas facilities. The microwave radios and associated equipment provide a lower cost and more reliable alternative than leasing.</td>
<td>$3,823,430</td>
</tr>
<tr>
<td>Oklaunion - Abilene MW Upgrade</td>
<td>This project covers the replacement of obsolete/unsupported microwave and circuit multiplex equipment that comprises the communications backbone from the Oklaunion Power Station to the Abilene Telecom hub. The entire project addresses electronic equipment addition and replacement at 11 sites that support electric system operations and general business functions in the northern portion of the north division service territory, as well as the replacement of one 280-foot communications tower and three equipment buildings.</td>
<td>$2,845,121</td>
</tr>
<tr>
<td>Abilene-San Angelo MW Rebuild</td>
<td>This project upgraded the microwave path from Abilene to San Angelo. The purpose of the project was to upgrade the existing microwave infrastructure in order to ensure better reliability and communications along this microwave path. Sites impacted were; KRBC TS, Bald Knob TS, Talpa TS, San Angelo Power Station PS, Orient LMR TS, Abilene T&amp;D TS, and Abilene SC TS. The new Winters TS was constructed. The new Cedar Gap TS was later added and built as the leased KRBC TS collapsed as a result of a major ice storm.</td>
<td>$2,001,589</td>
</tr>
<tr>
<td>Laredo to Del Rio Tower Construction</td>
<td>This project provided for the replacement of communication towers that are not compliant with new loading standards in a section of service territory between Laredo, TX and Uvalde, TX. The towers in question are key to providing reliable backbone and mobile radio communications to approximately 300 miles of transmission lines, 30 transmission substations and 2 regional service centers.</td>
<td>$1,796,534</td>
</tr>
<tr>
<td>Laredo Area Telecom System Upgrade</td>
<td>This was a Telecom project to upgrade telecom sites and infrastructure in the Laredo area in order to improve reliability and communications along this microwave path in the Laredo area. Sites impacted were; Laredo Division Office, North Laredo Switch Station, Lobo Switch Station, and Webb MW TS.</td>
<td>$1,459,997</td>
</tr>
<tr>
<td>AEPTC Power Plants MW Upgrade</td>
<td>This was a Telecom project to upgrade existing telecom microwave infrastructure equipment to some of the power plants in the central division to improve reliability and communications along this specific microwave path. Sites impacted were; Lon Hill Plant TS, Sinton TS, Corpus Christi ESO, Holly Station, and Barney Davis PS TS.</td>
<td>$1,101,621</td>
</tr>
<tr>
<td>Project ID</td>
<td>Description</td>
<td>Amount</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Iraan Tower Replacement</td>
<td>This project replaces the 800 MHz Land Mobile Radio (LMR) tower near the town of Iraan, Texas that has been out of service since November 2013. This was one of the main sites in this area for radio coverage around Iraan, Sheffield, Fort Lancaster, etc. This is a green field site which also required a new propane tank, 1 building, road work to the site to allow for these improvements and new site fencing. In 2015, AEP TNC reached an agreement with a land owner to lease space for AEP TNC to construct a replacement tower in the Iraan area that would meet the required radio coverage for this area. It is especially critical to have this radio coverage for storm recovery. The cell phone coverage in this area is sparse so the crews in this area depend on the 800 MHz radio coverage to meet their work and restoration needs.</td>
<td>$754,162</td>
</tr>
<tr>
<td>AEPTC ESO Building Expansion</td>
<td>Telecommunications equipment installed was necessary for the AEPTC 2007 Electric System Operations (ESO) Building expansion upgrade.</td>
<td>$601,773</td>
</tr>
<tr>
<td>Laredo Area Microwave Rebuild</td>
<td>New Dilley TS sub project has this WO as part of the Laredo Area Telecom MW System upgrade for 4 sites and looks like Levi Grooms/Jeremy Grooms/Mo have this project.</td>
<td>$569,826</td>
</tr>
<tr>
<td>Gilliland - Childress TS MW Upgrade</td>
<td>This project continues the replacement of obsolete/unsupported microwave and circuit multiplex electronic equipment in the northern section of the north division’s service territory. Additionally, this project will allow the completion of a regional ring that will provide communications system route diversity, increased reliability, as well as increased communications system capacity.</td>
<td>$436,623</td>
</tr>
<tr>
<td>Webb Tower Foundation &amp; Anchor</td>
<td>This project provided new microwave radios with enhanced availability features were installed to replace non-supported microwave radios. Also, new antenna systems were installed along with replacement of microwave towers that no longer met federal and state structural building requirements. The central division microwave system is used to provide connectivity for SCADA, land mobile radio and network access for multiple Texas facilities. The microwave radios and associated equipment provide a lower cost and more reliable alternative than leasing</td>
<td>$159,464</td>
</tr>
<tr>
<td>TCC - TCC Disaster Recovery</td>
<td>This project is part of the larger AEP Texas Disaster Recovery plan, which involves the preparation of AEP Texas for a hurricane hitting the headquarters (HOB) and ESO in Corpus Christi, TX. This telecom capital project furnishes the funds for the engineering, purchase, and installation of equipment necessary for the re-routing of selected WAN, mobile radio and substation SCADA circuits to/from areas unaffected by the hurricane.</td>
<td>$149,293</td>
</tr>
<tr>
<td>Project ID</td>
<td>Description</td>
<td>Amount</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Weleetka - Oklaunion Backbone</td>
<td>This project upgraded the Weleetka-Oklaunion Microwave Backbone.</td>
<td>$145,428</td>
</tr>
<tr>
<td>Cline to Del Rio Microwave Upgrade</td>
<td>This project continues the replacement of obsolete/unsupported microwave and circuit multiplex electronic equipment.</td>
<td>$140,789</td>
</tr>
<tr>
<td>AEP Texas Central - Transmission</td>
<td>A blanket project has been established for small capital projects that fall under the $2M capital investment threshold such as infrastructure rebuilds, fiber connections and microwave updates.</td>
<td>$129,894</td>
</tr>
<tr>
<td>AEPTC - Replace Equipment Shelter at Columbus, TX</td>
<td>Replaced the telecom equipment shelter at the Columbus TS (Tx) for the purpose of housing the telecommunication infrastructure equipment at this site.</td>
<td>$128,886</td>
</tr>
</tbody>
</table>

Q. WHAT PROCESSES DOES TELECOMMUNICATIONS HAVE IN PLACE TO ENSURE THAT THE COSTS OF THESE PROJECTS ARE REASONABLE?

A. I have already described in section IV of my testimony the internal planning, budgeting, approval, and quality control that combine to control the costs of Telecommunications O&M. These same processes equally apply and are utilized to control Telecommunications capital project costs. Each capital project over $2,000,000 includes an evaluation of the options considered – including a high-level assessment of costs and benefits of each option. Project estimates are prepared after an analysis phase that includes collaboration of business partners, operating companies, and Telecommunications departments. Estimates are reviewed and refined through a series of increasingly narrower thresholds to the final approval. The estimates are reviewed by Telecommunications management and approved on a regular basis. If a third party is engaged, the project is bid to multiple vendors. The proposal for each project identifies the high level requirements and goals for the project. Each project is actively monitored to ensure that the requirements are met and the project is within budget. Moreover,
overall staffing trends support the conclusion that we have a reasonable amount of staff devoted to these and other Telecommunications projects.

VI. SUMMARY AND CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. I have discussed the Telecommunications services provided to AEP Texas by AEP Telecommunications. I have demonstrated that AEP Texas' Telecommunications O&M costs are reasonable and necessary by describing a combination of process improvements, cost and staffing trends, and budgeting controls.

Finally, I have described the affiliate Telecommunications capital additions and reasons that they are reasonable and necessary.

In summary, my testimony supports the conclusion that Telecommunications capital and expense (O&M) charges satisfy Commission standards for inclusion in AEP Texas' rates.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.
PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF
AEP TEXAS INC.
FOR AUTHORITY TO CHANGE RATES

DIRECT TESTIMONY OF
STANLEY E. PARTLOW, JR.
FOR
AEP TEXAS INC.

MAY 2019
# TESTIMONY INDEX

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<td>V. SUMMARY AND CONCLUSION</td>
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</tbody>
</table>
I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION.

A. My name is Stanley E. Partlow, Jr. My business address is One Riverside Plaza, Columbus, Ohio 43215. I am employed by American Electric Power Service Corporation (AEPSC) as Chief Security Officer. AEPSC, a wholly owned subsidiary of American Electric Power Company, Inc. (AEP), provides centralized professional and other services to subsidiaries of AEP, which includes AEP Texas Inc. (AEP Texas or the Company).

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE, AND PROFESSIONAL QUALIFICATIONS.

A. I earned a Bachelor of Arts degree in Psychology from Bowling Green State University in 1980. I obtained a Master of Science in Administration degree from Central Michigan in 1990. In 1995, I graduated from the Capital University School of Law where I earned a Juris Doctor degree. In addition, I am a graduate of the Northwestern University School of Police Staff and Command and the Ohio Association of Chiefs of Police Executive Leadership College.

I am a Certified Law Enforcement Executive through the Ohio Association of Chiefs of Police, and I hold the Certified Protection Professional certification through ASIS, a worldwide security organization. I also completed the Insider Threat Management Program developed by Carnegie Mellon University and obtained the Cyber Risk Oversight certificate through the National Association of Corporate Directors. Finally, I recently completed the FBI Domestic Security Executive Academy.
I joined AEP in 2005 as Director – Security and Aviation after a 25-year career in law enforcement. While at AEP, I have been responsible for the motor vehicle fleet, the procurement function, and the business continuity function, in addition to security and aviation. In 2015, I was appointed Vice President and Chief Security Officer for AEP. The office of the Chief Security Officer is responsible for the Enterprise Security Program for the AEPSC and all subsidiaries, including AEP Texas. The Enterprise Security Program is focused on protecting all employees, contractors and visitors as well as all AEP assets. That goal is accomplished through a physical security program that provides physical protections and training as well as a cyber-security program that protects the AEP network and associated hardware and software.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS OR BEFORE ANY OTHER REGULATORY BODY?
A. No.

II. PURPOSE OF TESTIMONY
Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.
A. My testimony has several purposes. First, to demonstrate the necessity of AEPSC’s security services in support of AEP Texas’ utility operations, I provide an overview of AEP Security’s organization, staffing, and services. In particular, I explain how AEP Security supports AEP Texas.

Second, I describe the test year charges from AEP Security to AEP Texas and show that the level of these costs are reasonable. In this connection, I describe the reasonableness of the AEP Security trends in costs billed to AEP Texas. I further
explain how AEP Security controls its costs through prudent budgeting, process improvement, use of outsourcing, and appropriate staffing levels. Further information on the allocation and billing of AEP Security affiliate charges is discussed in the testimony of AEP Texas witness Brian J. Frantz.

III. ORGANIZATION OF AEP SECURITY SERVICES

Q. WITH REGARD TO THE UTILITY OPERATIONS OF AEP TEXAS AND THE OTHER AEP OPERATING COMPANIES, WHAT DOES AEP SECURITY CONSIDER TO BE ITS MISSION?

A. The mission of the AEP Security team is to protect the people, information, and assets of our utility operating companies and our customer’s way of life, though proactively making safety, compliance and reliability the driving factors in AEP’s security programs.

As a component of the nation’s critical infrastructure, the electric power grid is subject to an array of threats, from naturally caused phenomenon such as extreme weather to vandalism, terrorism and insider risks that jeopardize reliability, safety and data security. The stakes are high; our response to an event affects our customers, our reputation and the reliability of the power grid.

The growing risk from third-party products and services has prompted new regulations to protect the grid’s resilience and reliability. As threats have become more sophisticated and massive breaches have occurred outside of AEP, it is a continual challenge to maintain the security of the information and assets of AEP Texas and the other AEP operating companies. Faced with this reality, our comprehensive risk
management strategy – known as “Defense in Depth”—must assume a broad and ever
increasing range of possible security threats, such as physical theft, unauthorized access
to data, and incidental threats as a result of dangers that do not specifically target
protected systems or assets.

Q. PLEASE PROVIDE SOME EXAMPLES OF HOW AEP SECURITY HAS
ADDRESS THESE IMPORTANT SECURITY ISSUES.

A. The AEP leadership team continually takes steps to enhance the AEP system’s
capabilities for identifying and neutralizing security risks and threats. Those efforts are
highlighted in the sections below:

24x7x365 Monitoring

AEP operates a dedicated 24x7x365 Cyber Security Intelligence and Response Center
and a dedicated Physical Security Operations Center responsible for monitoring the
AEP System for threats as well as collaborating with internal and external threat sharing
partners from both industry and government. The operators that staff those positions
have the authority to take immediate action to minimize risk to AEP Texas and other
AEP affiliates.

Industry Collaboration

AEP is a member of a number of industry specific threat and information sharing
communities, including the Department of Homeland Security and the Electricity
Information Sharing and Analysis Center. Sharing information regarding security
threats across the industry allows AEP Security to learn from the experience of its peers
and to share best practices as they evolve.
Enterprise Risk

In 2017, AEP incorporated cyber and physical security risks into the new enterprise risk management framework. This provides a more comprehensive approach to understanding these risks in relation to other enterprise risks. This approach allows us to make security decisions based on the level of the risk posed to AEP by looking at our total risk profile, and supports more informed decisions based on our priorities and resources. The enterprise risk framework uses legitimate worst case scenarios that are plotted on a graph with impact and likelihood as the axes. This risk assessment allows AEP Security to determine how various security investments could change the risk profile by reducing the likelihood or the impact of a given security breach.

Technology

AEP Security leverages advanced technologies to monitor and respond to cyber and physical threats. On the physical side, a centralized access control system along with cameras and alarm systems are monitored by a centralized dedicated physical operations center that utilizes a security event and information management tool to monitor and respond to events. On the cyber side, various network and host based technologies are leveraged through strategic vendor and government relationships. Advanced threat technologies acquired through both commercial and strategic partnerships are coupled with security analytics technologies to enable high fidelity alerting and automated response.

Q. PLEASE PROVIDE AN OVERVIEW OF HOW THE ORGANIZATION IS STRUCTURED.
A. Please see the AEP Security organizational chart below. There are four departments under my oversight that are further described in the chart below—Cyber Risk and Security Services, Cyber Security Intelligence and Defense, Physical Security, and Aviation. AEP Texas is not seeking recovery for any aviation costs in this case.

Q. WHAT ARE THE ACTIVITIES AND SERVICES PROVIDED BY THE VARIOUS DEPARTMENTS WITHIN AEP SECURITY, OTHER THAN AVIATION?

A. The detailed description of these departments is as follows:

Cyber Risk and Security Services—This department has all the teams which are key to the success of cybersecurity operations and AEP security. The Cybersecurity Ambassadors have individual members aligned with each part of the business to ensure
we can properly understand and support the utility functions. They also serve as a first point of contact on cyber security issues for the business. The Security Education & Regional support team runs all security awareness functions across AEP ranging from videos, to communications to phish testing. This team also has individuals located within each operating company to ensure we understand their unique requirements. Cybersecurity Architecture & Engineering provides guidance and strategy for projects and programs across AEP. Cybersecurity Registration Services does user and system account management for AEP. Cybersecurity Data Protection & Privacy provides programs to protect AEP's critical customer, employee and proprietary data. Cybersecurity Programs & Standards does all project management cybersecurity projects and is responsible for all AEP Security Policies & Standards.

Cybersecurity Intelligence and Defense— All operational cyber security functions are included in this organization. Cybersecurity Testing & Assessments has dedicated employees to perform penetration testing across AEP, application security experts and a Third Party Risk function. The Cybersecurity Vulnerability management team tracks all vulnerabilities across the corporation, all get evaluated on patching and mitigations. Cybersecurity Analytics manages all enterprise logging and leverages that data to do various analytics to identify insider and hard to identify threats. Cybersecurity Infrastructure manages all of the network security systems and devices monitoring and protecting AEP. Cybersecurity Protective Services is responsible for security of all enterprise end points, desktops, servers, etc. AEP has a large number of complex security tools deployed on each laptop/desktop. Cybersecurity Monitor &
Response and the Cyber Intelligence Response Center is our 24x7x365 team of experts monitoring and responding to external intelligence and events in real-time.

Physical Security— the Physical Projects team does all project management physical security projects, such as new badging systems, alarm systems, fencing and risk assessments. The Physical Security Operations Center is the 24x7x365 monitor and response center for security events across AEP. The Physical Security Coordinators are individuals assigned to each operating company, often retired law enforcement, to handle events across the state wherein they are located. The contract guard force is funded and managed by AEP Physical security.

Q. HOW HAS THE AEP SECURITY ORGANIZATION CHANGED IN RECENT YEARS?

A. Our most important change was to combine the physical and cyber security departments. Combining our physical and cyber security efforts allows AEP to leverage the expertise of both teams to make our security operations even more robust in the face of increasingly more sophisticated and persistent threats. AEP now has one overall security program, which makes messaging, training and interactions with employees and contractors more efficient. The combination of the two organizations has resulted in greater visibility for the program and increased executive level support. For instance, the Chief Security Officer reports directly to the General Counsel, who reports to the Chief Executive Officer.

Q. WHY HAS AEP CHOSEN TO TAKE A CENTRALIZED APPROACH TO THE PROVISION OF PHYSICAL AND CYBER SECURITY SERVICES?
A centralized organization allows for cost efficiencies through utilization of a single staff serving multiple affiliates, as well as shared technology. Absent use of the centralized model, each operating company would need to separately hire its own fully skilled security staff and deploy expensive technologies. AEP runs one IT/Telecom network and only two Internet access points across the entirety of its eleven state footprint, thus allowing for more efficiency in the deployment and use of its technology, and particularly in security monitoring and response functions.

Q. DOES AEP SECURITY HAVE STAFF RESOURCES DEVOTED SPECIFICALLY TO AEP TEXAS?

A. Yes. AEP Security has dedicated Physical Security Region coordinators located at each operating company. The coordinators have a law enforcement background, and bring a wealth of experience and useful connections with local law enforcement agencies. AEP Texas has a Physical Region Coordinator, who is an AEP Texas employee located in Corpus Christi, Texas. AEP Security also has Regional Security Ambassadors assigned to each operating company, including AEP Texas. Security Ambassadors are the liaisons between their assigned business area or region and the other security teams. They are the primary contacts for most non real-time functions that a business unit or individual may require when in need of AEP Security services.

In addition, AEP hires an independent party to conduct mandated testing of the advanced metering infrastructure system every year. The AEP Security team provides oversight to the contract vendors who conduct those tests.

Q. ARE THESE SERVICES DUPLICATED BY PERSONNEL OUTSIDE AEP SECURITY, WITHIN AEP TEXAS OR ANY OTHER ENTITY?
A. No. There is no duplication of the work performed by AEP Security services for AEP Texas or any other AEP business unit or other entity.

Q. ARE THE SERVICES PROVIDED BY THE AEP SECURITY ORGANIZATION TO AEP TEXAS NECESSARY FOR AEP TEXAS TO PROVIDE RELIABLE UTILITY SERVICE?

A. They most certainly are. AEP Security services are necessary to ensure the integrity of AEP Texas’ facilities and information systems, so those assets remain available for the reliable service of customers, and available to support AEP Texas and AEPSC employees in their provision of that service.

IV. REASONABLENESS OF THE AEP TEXAS SECURITY COSTS

Q. WHAT ARE THE TEST YEAR AFFILIATE AEP SECURITY OPERATIONS AND MAINTENANCE (O&M) COSTS BILLED TO AEP TEXAS (EXCLUDING AVIATION)?

A. The AEP Security O&M expenses for AEP Texas for 2018 are $877,194.

The test year costs are broken out by major function in the table below:

<table>
<thead>
<tr>
<th>AEP Security Services To AEP Texas</th>
<th>2018 Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cybersecurity Intelligence &amp; Defense</td>
<td>$431,404</td>
</tr>
<tr>
<td>Cyber Risk &amp; Security Services</td>
<td>$225,715</td>
</tr>
<tr>
<td>Physical Security</td>
<td>$220,075</td>
</tr>
<tr>
<td><strong>Total Adjusted Test Year</strong></td>
<td><strong>$877,194</strong></td>
</tr>
</tbody>
</table>

DIRECT TESTIMONY
STANLEY E. PARTLOW, JR.
A. Cost Trends and Budget Performance

Q. WHAT HAS BEEN THE TREND IN AEP SECURITY COSTS BILLED TO AEP TEXAS?

A. Please refer to the following chart, which shows costs billed for 2015-2017, and the test year. Figure 1

[Chart showing Cyber & Physical Security O&M Actuals Allocated to Texas with costs for 2015-2017]

Q. WHAT ARE THE KEY DRIVERS OF THE INCREASE IN O&M CHARGES BETWEEN 2015-2018, IN TERMS OF STAFFING AND SECURITY PROGRAMS AND INITIATIVES?

A. Cyber and physical security threats are increasing daily, and the upward trend reflects AEP’s efforts to meet these emerging threats by increased protective measures such as adding specialized security staff and advanced technology. AEP has focused on the needs of the accelerating digital business, IT and OT convergence, cloud computing, and general awareness. People influence security far more than any technology or policy, so the Company must invest in tools that increase security awareness and influence behavior.
Q. WHAT TYPES OF PROOF OF REASONABLENESS OF THESE COSTS DO YOU PRESENT IN THIS TESTIMONY?

A. I use several different indicators of the reasonableness of the AEP Security costs. These include: budget performance and budget controls; process improvements; FTE trends; utilization of outsourcing; and cost effectiveness tools.

Q. HOW HAS AEP SECURITY PERFORMED OVERALL IN TERMS OF BUDGETED TO ACTUAL EXPENSES?

A. As you can see in the chart below, AEP Security consistently manages the budget to ensure we do not go over the forecasted amount. This chart records direct security forecast and actuals under the control of the Chief Security Officer.

Figure 2

O&M Actuals vs Forecast

Q. WHAT DO YOU CONCLUDE FROM THESE COST TRENDS?

A. AEP Security is always looking for cost efficiencies and are typically very effective at managing our budgets.
B. Budgeting Controls

Q. WHAT TYPE OF BUDGETING PROCESS IS EMPLOYED WITH REGARD TO AEP SECURITY O&M?

A. Budgets are developed annually for each AEP organization. The current year budget is compared to actual spend on a monthly basis and year-end projections are revised as appropriate. The budget is created by considering corporate and Operating Company financial and business requirements, operational and cost benchmarks and market conditions relevant to AEP’s overall electric utility business.

Q. ONCE BUDGETS ARE IN PLACE, WHAT FURTHER COST MONITORING OCCURS?

A. Within AEP Security, directors are responsible for monitoring and controlling budgets that are assigned to their respective teams or projects. The O&M budget is managed through a collaboration of AEP Security and Corporate Planning & Budgeting (CP&B). Actual expenditures are monitored against the budget every month. Proposals for new projects are reviewed by all security managers and directors to ensure that the work is necessary and can be reasonably funded.

C. Process Improvements

Q. WHAT ARE THE MAJOR AEP SECURITY PROCESS IMPROVEMENT EFFORTS TO ENSURE THAT AEP SECURITY SERVICES SUPPORT AEP TEXAS’ UTILITY SERVICE IN A COST-EFFECTIVE MANNER?

A. The security organization has added a dedicated project management and organizational change management function to ensure that projects are completed on time and at or under budget. The organizational change management function was
added to ensure adoption of new technology and new or modified process and procedures. The number of FTEs in the security ambassador function has increased in an effort to identify business needs early in the process to allow security to be built-in to the technology instead of bolted-on later. This methodology drives costs down and increases adoption by end users.

Q. HOW DOES AEP SECURITY ENSURE THAT EFFECTIVE SERVICES ARE DELIVERED TO AEP TEXAS?

A. I am part of the AEP Quarterly Management Review meeting, where I interact with the President of AEP Texas. In addition, the Region Security Coordinator attends the quarterly AEP Texas matrix leadership meetings. Through these interactions, we ask for feedback regarding the level of service and learn about new issues that impact AEP Texas.

AEP Security solutions are designed to benefit the enterprise, including all operating companies. By leveraging a centralized service model, AEP Texas gets the benefit of efficiencies in cost and process, and a significantly more mature security organization. If an event occurs anywhere within the AEP Enterprise, AEP Security will implement mitigations measures to ensure the threat is contained and does not occur more broadly across the system.

D. FTE Trends

Q. WHAT ARE THE STAFFING TRENDS FOR AEP SECURITY?

A. Figure 3 below illustrates how the organization has grown in headcount to meet the growing needs of cyber and physical security. The growth in head count at AEP Security has come in concert with a growing need for mounting an effective defense
against ever-increasing security threats, with potential for disruption to AEP Texas and its customers. AEP Security staff has grown only as needed. Moreover, AEP Security has experienced very good retention of staff including entry level positions which is not common for security staff. Good staff retention is a huge benefit to maintain a strong culture and continuous maturity growth.

Figure 3

Chief Security Officer Headcount

E. Outsourcing

Q. HOW DOES OUTSOURCING PROVIDE A MEANS TO CONTROL AEP SECURITY COSTS?

A. Contractors are utilized for specialized niche skills that fluctuate with project demands. AEP Security also uses outsourcing for the physical guard force staff and the Physical Security and Event Monitoring Center. Using a contracted guard force and operations personnel is much less expensive than hiring AEP employees. The guard force company and the operations center vendor is more efficient in recruiting, hiring and training the security officers than AEP Security could be. The guard force company is
a global company that can use its size to achieve economies of scale in purchasing
uniforms and equipment related to their function.

F. Cost-Effectiveness

Q. HOW HAS THE INCREASED DEMAND FOR SECURITY SERVICES AFFECTED
AEP SECURITY COSTS?

A. AEP Security continuously evaluates cyber and physical security defenses to ensure
protection of the electric grid, business operations and, in particular, customers’
personal information. While it is impossible to ensure complete security protection,
AEP Security balances investment with compliance requirements and risk mitigation.
While security mitigation costs continue to rise, AEP Security utilizes internal process
controls and targeted implementation to insure costs are appropriately controlled.

Q. WHAT TYPE OF CORPORATE OVERSIGHT OF AEP SECURITY’S ACTIVITIES
IS IN PLACE TO ENSURE THAT ITS SERVICES SUPPORT AEP TEXAS’
UTILITY SERVICE IN A COST-EFFECTIVE MANNER?

A. The corporate oversight process begins approximately six months prior to each
calendar (fiscal) year. The Chief Financial Officer leads a process to establish O&M
and capital budget guidelines for the following year. The AEP Security leadership team
works within these guidelines to prioritize and plan detailed expenditures.
The O&M budget is managed through a collaboration of AEP Security and CP&B
efforts.
V. SUMMARY AND CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. AEP Security has created a converged security organization that combines physical and cyber security. This model creates a one stop shop for our internal and external customers and leverages common functions across both domains in a cost effective manner. Investments in the security program are risk based. AEP Security evaluates risk by conducting internal and external tests and interfacing with peers, third party experts and government partners. AEP operates a single network across eleven states and seven operating companies. AEP Texas benefits from the total corporate investment in staff and tools to protect the network as opposed to a model where each operating company attempts to protect their own network and assets. AEP Security constantly seeks cost effective ways to protect people, assets, data and the integrity of the grid and the distribution delivery systems.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.
PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF
AEP TEXAS INC.
FOR AUTHORITY TO CHANGE RATES

DIRECT TESTIMONY OF
NORA D. WILLIAMS
FOR
AEP TEXAS INC.

MAY 2019
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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is Nora D. Williams. I am manager of load research for American Electric Power Service Corporation (AEPSC), a subsidiary of American Electric Power Company, Inc. (AEP). My business address is 1 Riverside Plaza, Columbus, Ohio 43215.

Q. WHAT ARE YOUR CURRENT JOB RESPONSIBILITIES?

A. I am currently responsible for the load research sampling and analysis activities for all of the AEP operating companies, and also have responsibility for load profiling and load aggregation activities for the AEP jurisdictions where customers are able to choose their energy supplier.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I hold a Bachelor of Science in Electrical Engineering from The Ohio State University. I began my career in the Transmission Planning organization at AEPSC in 1985. I joined the Load Research Section, as a Load Research Analyst, in October 2000 and have 18 years of experience involving all facets of load research. I assumed increasing responsibilities within that section and was named Manager of Load Research Analysis in January of 2016. I am a member of the Association of Edison Illuminating Companies (AEIC) Load Research Committee.

Q. HAVE YOU EVER TESTIFIED BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS?
A. Yes, I provided testimony in Docket No. 46449, *Application of Southwestern Electric Power Company for Authority to Change Rates.*

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS DOCKET?

A. I sponsor various schedules prepared by the Load Research Section for AEP Texas’ rate filing proceeding, including the schedules which provide the rate class load information on test year actual and test year adjusted bases. Data from these schedules are used in the Cost of Service studies performed by Company witness John Aaron.

Q. WHAT WAS THE BASIS FOR THE DERIVATION OF THE TEST YEAR, AND ADJUSTED TEST YEAR CLASS LOAD INFORMATION?

A. The actual test year class load information was derived from actual test year sample customer interval meter usage data. The adjusted test year load information was derived by applying weather and customer adjustments provided by Company witnesses Chad Burnett and Jennifer Jackson, respectively, to the actual test year class information.

II. RATE FILING PACKAGE SCHEDULES

Q. WHAT SCHEDULES IN THE RATE FILING PACKAGE DO YOU SPONSOR?

A. I sponsor the following schedules:

- Schedule II-H-1.3 Unadjusted Test Year Load Data
- Schedule II-H-1.4 Adjusted Test Year Load Data
- Schedule IV-J-4 Load Research Data
Q. PLEASE DESCRIBE THE CONTENT OF THOSE SCHEDULES.

A. Schedule II-H-1.3 contains unadjusted test year coincident peaks, non-coincident peaks, energy usage and monthly load factors by rate class.

Schedule II-H-1.4 contains adjusted test year coincident peaks, non-coincident peaks, energy usage and monthly load factors by rate class.

Schedule IV-J-4 supplies:

a) monthly 60-minute based non-coincident peak demands and class peak demands for rate classes for which the majority of customers are interval metered;

b) stratification information for each rate class for which demands were derived from randomly-sampled interval meters. Information supplied includes strata usage boundaries, sample sizes, and stratum contributions to the various class peak demand values, for each month of the test year. In addition, a bill frequency relating customers in a rate class population to the rate class strata is provided; and

c) a description of the methodology used to develop demand estimates for rate classes not listed in a) or b).

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.
PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF

AEP TEXAS INC.

FOR AUTHORITY TO CHANGE RATES

DIRECT TESTIMONY OF

CHAD M. BURNETT

FOR

AEP TEXAS INC.

MAY 2019
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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is Chad Burnett, and I am the Director of Economic Forecasting for American Electric Power Service Corporation (AEPSC), the service company affiliate of AEP Texas Inc. (AEP Texas or the Company). My business address is 212 East 6th Street, Tulsa, Oklahoma 74119.

Q. WOULD YOU PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE?

A. I earned a Bachelor of Science degree in Business Administration from the University of Tulsa in 1998 with a double major in Economics and Finance. In 2002, I earned a Master of Business Administration degree from the University of Tulsa. In 2005, I completed the Executive Strategic Leadership program at The Ohio State University.

I have worked in the utility industry as an economist since 1997 when I was employed by Central and South West Service Corporation, which later merged with American Electric Power Company, Inc. (AEP) in June 2000. I became the Manager of Economic Forecasting in June 2007. In October 2013, I was promoted to Director of Economic Forecasting. In my current role, I am responsible for preparing customer, sales, peak demand, and revenue forecasts for each of the AEP operating companies in the eleven jurisdictions and three regional transmission organizations (RTOs) that cover the AEP service territory. In addition, I am responsible for weather normalization calculations and sales and revenue variance reports for each of the AEP operating companies including AEP Texas.
I also work as an Adjunct Professor of Economics at Southern Nazarene University where I have taught Managerial Economics, Health Care Economics, and the Survey of Economics in the graduate business school program since 2002.

Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY AS A WITNESS BEFORE ANY REGULATORY COMMISSION?


Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to present the weather normalization process used to adjust the test year billing determinants.

Q. HOW DID WEATHER IMPACT THE COMPANY'S SALES DURING THE TEST YEAR?

A. Weather had a favorable impact in 2018, meaning AEP Texas sales were approximately 172 GWh higher than they would have been under normal weather conditions.

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3 Docket No. 16-00001 in 2016.
4 Cause No. 44967 in 2017.
II. WEATHER NORMALIZATION PROCESS

Q. WHAT IS THE PURPOSE OF MAKING A WEATHER ADJUSTMENT TO NORMALIZE THE TEST YEAR BILLING DETERMINANTS?

A. Test year billing determinants are used to set rates in a rate proceeding. The authorized revenue requirement by class is divided by the test year billing determinants to come up with the new effective rates. If the test year billing determinants are too high because of a favorable impact of weather, then the new rates would be set too low for the utility to recover the authorized revenue requirement under normal conditions going forward. Likewise, if the test year billing determinants were too low due to unfavorable weather during the historical test year period, then the rates would essentially be set too high, enabling the utility to recover more than the authorized revenue requirement.

To address this issue, the PUC allows the utility to adjust the test year billing determinants for abnormal weather so that the ultimate rates that are set in a rate proceeding are normalized for the impact of weather.

Q. PLEASE DESCRIBE THE METHODOLOGY USED TO ESTIMATE THE IMPACT OF WEATHER ON KWH SALES?

A. Weather adjustments to residential and commercial kWh sales for AEP Texas are computed by multiplying differences between actual and average degree days by the weather coefficients from the forecast usage models and then multiplying by the number of actual customers for each month. The general equation takes the form:
Weather Impact_t = \left[ \beta_{CDD} \times (CDD_t - NCDD_t) + \beta_{HDD} \times (HDD_t - NHDD_t) \right] \times \text{Customers}_t.

Where:

\beta_{CDD} and \beta_{HDD} are the kWh per customer per degree day parameter estimates from the regression model used to produce the company's monthly short-term forecast of energy sales.

CDD_t and NCDD_t are the actual and average cooling degree days for month t.

HDD_t and NHDD_t are the actual and average heating degree days for month t.

Customers_t is the actual customer count for month t for the corresponding customer class.

This exercise is done independently for the residential, commercial, and wholesale classes, although for the wholesale class, these computations are done on an individual customer basis.

Q. DOES THE COMPANY MAKE ANY WEATHER ADJUSTMENTS FOR THE INDUSTRIAL CLASS OF CUSTOMERS?

A. No. The Company does not compute a weather adjustment for the Industrial class because Industrial sales are generally not weather sensitive. Similarly, the Company does not compute a weather adjustment for the lighting classes. A weather adjustment is only computed for classes whose consumption patterns are impacted by weather. If a class is weather sensitive, the sales should increase during the winter and summer months (when heating and cooling loads are on), and a decrease during the spring and fall months when the heating and cooling loads are not utilized. The chart below (Figure CMB-1) illustrates why the Company does not compute a weather adjustment for the Industrial class. It clearly shows that AEP Texas'
Industrial sales are relatively steady throughout the year and do not exhibit the same seasonal consumption patterns as the weather sensitive classes.

**Figure CMB-1**

![AEP-TX Industrial Sales and Degree Days](image)

Q. WHAT VARIABLES ARE INCLUDED IN THE FORECAST MODELS FROM WHICH THE WEATHER COEFFICIENTS ARE DERIVED?

A. The regression models are estimated using monthly billing-cycle weighted cooling and heating degree days, monthly average number of days billed, indicator variables as needed, as well as any auto-regressive moving average (ARMA) error structure deemed necessary to predict monthly kWh per customer values for each class of customers.

Q. HOW DO YOU COME UP WITH THE MONTHLY BILLING-CYCLE WEIGHTED COOLING AND HEATING DEGREE DAYS THAT GO INTO THE WEATHER NORMALIZATION CALCULATION?
The monthly billing-cycle weighted degree days are computed using daily average temperatures measured from various weather stations. Corpus Christi, McAllen, and Laredo stations are used for the AEP Texas Central Division (TCD) service territory in the southern region of Texas. Abilene and San Angelo weather stations are used for the AEP Texas North Division (TND) service territory in west Texas. Each month’s degree day value is summed using a simple “triangular” weighting scheme whereby the days of each month and its previous month are given weights that increase linearly throughout the previous month’s days and then decrease linearly over the current month’s days. These particular weights imply that equal shares of customers are billed in each billing cycle and that the last day of the previous month and the first day of the current month are included in the largest number of customers’ bills. The corresponding average values are computed by taking average daily temperatures over the normalization period and adjusting them for billing cycles in the same manner.

Q. WHY ARE THE TERRITORIES OF TCD AND TND MODELED SEPARATELY IN THE COMPANY’S WEATHER NORMALIZATION COMPUTATION?

A. The reason the Company still models the TCD and TND service territories independently is because the territories differ geographically, as well as in their mix of weather sensitive load.

The map included in Figure CMB-2 below shows the location of the weather stations used in the Company’s weather normalization calculations as well as the maximum temperature recorded on 7/19/2018, one of the days included in the 2018 ERCOT 4CP calculation. It shows that on that day, the maximum temperature in
Corpus Christi, which is located near the bay area of the Gulf of Mexico was approximately 14 degrees milder than what was experienced in San Angelo in the western part of AEP Texas’ service territory.

**Figure CMB-2**

Max Temperatures of 7/19/2018

In addition to the geographical distinction between the TCD and TND service territories, another key distinction between the two areas is their respective population density and the concentration of weather sensitive loads. The TCD service territory has 3 of the 10 largest metropolitan statistical areas (MSA) in the state of Texas (McAllen, Corpus Christi, and Brownsville), which means it has a
relatively higher mix of weather sensitive load (Residential and Commercial). In contrast, TND's service area only includes 1 of the 20 largest MSAs in the state (Abilene), which ranked 18th out of 20. The TND service territory also has a much higher concentration of Industrial load, which is not weather sensitive. Figure CMB-3 below shows the share of the 2018 load that was made up by weather sensitive classes. Since the weather patterns can be significantly different across the AEP Texas service territory and the responsiveness to weather will be different based on the different saturations of weather sensitive loads, it is still appropriate to model the service territories separately for weather normalization and then aggregate the results for reporting purposes.

**Figure CMB-3**

Former TCC  

Former TNC

Q. DESCRIBE THE WEATHER ASSUMPTIONS USED IN BOTH FORECAST MODELS.

A. The forecast model assumes normal weather during the entire forecast horizon. One of the primary reasons to use normal weather is to be able to make probability
assessments regarding the test year billing determinants. In other words, when you
have a normal distribution there is an equal chance that weather will be above the
normal mean as there is that the temperatures will be below the normal mean. The
industry standard is to use a 30-year normal as it aligns with the statistical and
meteorological science which says if you recognize that there are weather trends that
prevent temperatures from being normally distributed then you need at least 30
observations to be able to make the same normal probability assessments for the
non-normal distribution of temperature data. However, in recent base rate cases, the
Commission has directed utilities to use a 10-year average to normalize billing
determinants in its base case. As a result, the Company has used a rolling 10-year
average of heating and cooling degree days to compute the projected normal degree
days for this case, even though they are clearly not normally distributed.

Q. WHY DO YOU SAY THAT THE USE OF A 10-YEAR AVERAGE OF HEATING
AND COOLING DEGREE DAYS TO PROJECT THE NORMAL DEGREE DAYS
WILL RESULT IN A PROJECTION THAT IS CLEARLY NOT NORMALLY
DISTRIBUTED?

A. A normal distribution implies a symmetrical bell-shaped distribution curve around a
mean that is useful in making probability assessments (see Figure CMB-4 below). It
other words, if the weather data is normally distributed, then the average or “normal”
degree days will have the highest probability of occurring and there will be an equal
chance that the temperature in the next period will be higher or lower than the mean.


DIRECT TESTIMONY
CHAD M. BURNETT
However, in its Final Order in both Docket No. 40443 and Docket No. 46449, the PUC ruled that "Weather data is not randomly distributed by year" and that "There can be weather trends". Once you acknowledge that weather trends exist, you must also acknowledge that the distribution of weather data is not normal because it is clearly not symmetrical. And if the distribution is not normal, then none of the probability relationships that exist in a normal distribution as described earlier would apply.

Q. HOW CAN METEOROLOGISTS DEFINE "NORMAL WEATHER" IF IT HAS BEEN PROVEN THAT WEATHER TRENDS EXIST AND WEATHER DATA IS NOT NORMALLY DISTRIBUTED?

6 See Application of Southwestern Electric Power Company for Authority to Change Rates and Reconcile Fuel Costs, Docket No. 40443, Order on Rehearing at Finding of Fact No. 256 (Mar. 6, 2014); see also Docket No. 46449, Order on Rehearing at Finding of Fact No. 271.
A. The science of meteorology has known that weather trends exist and that weather data is not normally distributed. They rely on statistics, specifically the Central Limit Theorem (CLT), to guide their definition. The CLT states that if you know a data series is not normally distributed, but you want to be able to make the same kind of normal probability assessments, if you have at least 30 observations, the data will approximate a normal distribution around that trended mean. That is why meteorologists and utilities across the country use the 30-year definition for normal degree days. It is also why utilities in the state of Texas used the 30-year normal definition in base cases prior to Docket No. 40443.

Q. WHAT ARE THE IMPLICATIONS OF USING A 10 YEAR NORMAL?

A. Switching to a 10-year normal greatly increases volatility in normal weather computation and therefore weather impacts. As such, this could cause AEP Texas to over-collect or under-collect its authorized revenue requirement. This volatility could also increase the frequency of case filings, which, in turn, increases the volatility of customer rates.

III. RATE FILING PACKAGE SCHEDULES

Q. PLEASE DESCRIBE THE CONTENTS OF THE RATE FILING PACKAGE SCHEDULES YOU ARE SPONSORING.

A. The Rate Filing Package schedules that I sponsor present the summary of test year data by rate class, such as kilowatt hour (kWh) sales, billing demands, customers and the related revenue impacts. Specifically, I sponsor the following schedules:
Schedule H-2.1 provides model information to derive adjustments to the test year operating statistics.

Schedule H-2.2 provides all data used to develop the models in Schedule H-2.1.

Schedule H-2.3 provides raw model data prior to any transformations.

Schedule H-5.1 provides historical weather data the by weather station for the test year.

Schedule H-5.2 provides historical weather data after weighting for billing cycle adjustments.

Schedule H-5.3 provides normal heating and cooling degree days on a monthly basis for the test year.

IV. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.
PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF
AEP TEXAS INC.

FOR AUTHORITY TO CHANGE RATES

DIRECT TESTIMONY OF
JOHN O. AARON

FOR
AEP TEXAS INC.

MAY 2019
TESTIMONY INDEX

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is John O. Aaron. I am Director, Regulated Pricing and Analysis in the Regulatory Services Department of American Electric Power Service Corporation (AEPSC). AEPSC is a subsidiary of American Electric Power Company, Inc. (AEP) that provides corporate support services to the operating subsidiaries of AEP, including AEP Texas (AEP Texas or Company). My business address is 212 East Sixth Street, Tulsa, Oklahoma 74119-1295.

Q. PLEASE BRIEFLY DESCRIBE YOUR CURRENT JOB RESPONSIBILITIES.

A. As Director, Regulated Pricing and Analysis, I supervise the preparation of cost-of-service studies, rate design, special contracts and pricing, and tariff provisions for the AEP West operating companies. I am also responsible for the preparation of, and support for, filings before the regulatory commissions exercising jurisdiction over the electric operating companies of the western portion of AEP, including AEP Texas.

Q. WOULD YOU PLEASE REVIEW YOUR EDUCATIONAL AND BUSINESS BACKGROUND?

A. I received a Bachelor of Science in Accounting from Louisiana State University in Shreveport in May 1980. I am a Certified Public Accountant (CPA) in the State of Oklahoma and a member of the American Institute of CPAs and the Oklahoma Society of CPAs. Upon graduation from college, I was employed as an Internal Auditor for a multi-state wholesale appliance and electrical supplier in Shreveport, Louisiana. In May 1984, I accepted employment with Southwestern Electric Power Company (SWEPCO) as an accountant in the Property Accounting Department.
From 1985 through 1995, I held various positions in the Accounting, Internal Auditing and Rate Departments, including Supervisor of Regulatory Accounting Support and Supervisor of Wholesale Marketing Support. From 1995 through 2010, I held various accounting positions in the Regulatory Accounting Services Department at Central and South West Services, Inc. (CSWS), the service company for the former Central and South West Corporation (CSW) System. With the merger of AEP and CSW, as of January 1, 2001, AEPSC became the successor to CSWS. In August 2010, I transferred to the Regulatory Services Department of AEPSC as manager and was promoted in April 2019 to my current position as Director, Regulated Pricing and Analysis.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY?

A. Yes. Before the Public Utility Commission of Texas (PUC or Commission) I have filed testimony in the following: AEP Texas North Company Docket Nos. 18607, 18970, 21385 and 23477; AEP Texas Central Company Docket No. 22352; and SWEPCO Docket Nos. 32624, 32672, 32898, 35137, 36949, 37364, 40443, 42089, 42448, 44496, 45961, 46449, 47461, 48233, and 49042. I have also filed testimony before the Oklahoma Corporation Commission and the Louisiana Public Service Commission.
II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to present and support AEP Texas class cost-of-service study submitted in this proceeding and to support various Rate Filing Package (RFP) schedules. I also sponsor the adjustments to the test year ending December 31, 2018 billing determinants and revenues reflected in the class cost-of-service study. The class cost-of-service study is used by AEP Texas witness Jennifer L. Jackson to develop the proposed rates for AEP Texas.

Q. WHAT SCHEDULES ARE YOU SPONSORING?

A. I sponsor or co-sponsor the following RFP schedules:

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<td></td>
</tr>
<tr>
<td>III-E-5</td>
<td>Other Revenue Items (credit)</td>
<td>Hamlett</td>
</tr>
</tbody>
</table>

Q. PLEASE DESCRIBE THE SCHEDULES YOU ARE SPONSORING OR CO-Sponsoring.

A. Schedule II-E-5 contains all other revenue credits, functionalized on the same basis as the underlying expense consistent with RFP General Instruction No. 11.
Schedules II-H-1.1 and II-H-1.2 provide by rate class the test year sales data including average and year end number of customers, test year and monthly unadjusted kWh sales, adjustments for abnormal weather, adjustments for changes in the number of customers or for changes in customer composition, and total adjusted kWh sales.

Schedule II-H-1.5 provides a narrative explanation for all adjustments made to test year operating statistics provided above in Schedule II-H-1.

Schedules II-H-3.1 through II-H-3.3 provide customer information including monthly test year number of customers by rate class, the methodology used for the customer adjustments performed, and the data necessary to produce the customer adjustments.

Schedules II-H-4.1 provides the test year revenue impact data including unadjusted test year revenues, revenues associated with rate annualization adjustments, revenues associated with customer adjustments, revenues associated with weather adjustments, revenues associated with other kWh or kW adjustment, and total adjusted revenue.

Schedule II-H-4.2 provides a narrative explanation of the methodologies used to calculate the adjustments to revenues.

Schedule II-I-1 provides the class revenue requirement analysis (i.e., class cost-of-service study) for the test year and the functional revenue requirement allocated to each rate class.

Schedule II-I-2 provides a listing of the allocation factors and associated data for each factor used to assign costs to a rate class.
Schedule III-E-5 is the same as II-E-5 except that any network transmission service revenues are not credited to the transmission function for the purposes of determining the Transmission Cost of Service (TCOS) values.

Q. GIVEN THE COMMISSION'S REQUIREMENT IN DOCKET NO. 46050 THAT AEP TEXAS MAINTAIN SEPARATE DIVISIONS, HOW ARE THE VARIOUS SCHEDULES YOU SPONSOR PRESENTED?

A. The various schedules I sponsor are presented on a combined basis. Divisional information is available in the supporting workpapers.

III. CLASS COST-OF-SERVICE STUDY OVERVIEW

Q. WHAT IS THE PURPOSE OF A CLASS COST-OF-SERVICE STUDY?

A. A class cost-of-service study is a basic analytical tool used in utility ratemaking to determine the costs that different classes of customers impose on the utility (i.e., cost- causation) as measured by the revenue requirement based on the utility's plant investments, expenses, and revenues.

Q. WHAT IS THE SOURCE OF THE DATA USED IN A COST-OF-SERVICE STUDY?

A. Cost-of-service studies rely on historical or projected accounting records of the utility company. Investor-owned electric utilities are required to keep their accounting records according to the Uniform System of Accounts (USOA) as prescribed by FERC. The USOA sets the guidelines for booking assets, liabilities, income and expenses into each account. The booked numbers are examined to verify compliance.
with these guidelines and are typically adjusted for the applicable regulatory commission's policies and for "known and measurable changes."

Q. HOW IS THIS INFORMATION THEN SEPARATED TO DETERMINE THE REVENUE REQUIREMENT FOR THE DIFFERENT RATE CLASSES?

A. Total revenue requirement is attributed to the various classes of customers in a way that reflects the costs of providing utility service to the classes. A three-step process is followed to distribute costs to the customer classes: functionalization of costs, classification of costs, and finally, allocation of costs.

Q. PLEASE DESCRIBE THE FUNCTIONALIZATION PROCESS.

A. In the first step, the costs are assigned to specific business functions (e.g., generation, transmission, and distribution). For each FERC account, costs are directly assigned to functions to the extent possible. Costs that cannot be directly assigned are assigned or allocated to functions based on directly assigned costs or an appropriate cost- causation factor.

Q. PLEASE DESCRIBE THE CLASSIFICATION PROCESS.

A. The second step is to separate the functionalized costs based on the characteristics of the electric service provided. The major classifications are demand-related costs, energy-related costs, and customer-related costs. Demand-related costs are associated with the kilowatt (kW) demand imposed by the customer on the electric system at a point in time. Energy-related costs are associated with the kilowatt-hours (kWh) of energy consumed by the customer for a given time period. Customer-related costs are directly related to the number of customers served. Fixed costs can
be classified as customer related or demand related and variable costs can be
classified as energy related or revenue related.

For example, transmission costs are demand-related because they are fixed
and do not vary with energy usage. Distribution system costs are driven by the need
to deliver the peak demand of customers served from each facility and by the number
of customers served. Distribution costs for substations, primary lines and
transformers tend to vary with the size and location of the load served, while service
drops and meter costs vary based on the number of customers receiving the service.
Customer service costs vary with the number of customers and the complexity of
meeting their needs.

Q. PLEASE DESCRIBE THE ALLOCATION PROCESS.

A. The final step of the three-step process is to allocate the functional classified costs
among the generic rate classes ordered by the Commission. The nature of the service
provided and the load characteristics for each cost item such as peak demand (kW),
energy consumed (kWh) or number of customers serves as the basis for this
allocation process. The objective of this process is to determine a reasonable,
appropriate and understandable method to assign the costs to the rate classes. Some
costs are directly assignable to a single class or even a single customer. An example
of costs assigned to a single class is the cost associated with the poles and luminaires
used for street lighting, which are directly assigned to the street lighting class. Most
costs, however, are attributable to more than one type of customer. These joint costs
must be allocated to customers by an allocation methodology that is based on the
manner in which the customers cause these costs to be incurred.
In many instances, the classification process will lead to an allocation methodology. For example, the cost of billing varies with the number of customers. Thus, the costs associated with billing are allocated to the rate classes based on a weighted number of customers. A weighted number of customers allocation factor is developed by multiplying the number of customers in each class by a factor representing the difference in cost associated with providing that service to different types of customers.

Q. WHAT IS THE RESULT OF THE FUNCTIONALIZATION, CLASSIFICATION AND ALLOCATION PROCESS?

A. When this process is completed and all costs are allocated to the customer classes, the result is a fully allocated embedded cost study that establishes cost responsibility for each rate class and makes it possible to determine rates based on costs that are just and reasonable.

IV. AEP TEXAS COST-OF-SERVICE STUDY

A. Overview

Q. PLEASE DESCRIBE THE CLASS COST-OF-SERVICE STUDY FILED BY AEP TEXAS IN THIS PROCEEDING.

A. Schedule II-I-1 presents the class cost-of-service study at present rates, showing the returns by rate class and function, along with a cost-of-service study at equalized rates of return by rate class and function. The transmission functional cost-of-service is based on the Electric Reliability Council of Texas (ERCOT) Wholesale
Transmission Charge matrix as described by AEP Texas witness Jackson and supported by AEP Texas witness Hamlett.

Q. DO THE RESULTS OF THE COST-OF-SERVICE STUDY PRESENTED IN THIS DOCKET FOLLOW YOUR DISCUSSION ABOVE AND COMPLY WITH THE RFP REQUIREMENTS?
A. Yes, they do. My testimony that follows provides specific information regarding the process described above.

Q. DOES THE CLASS COST-OF-SERVICE STUDY REFLECT ALL TEST YEAR ADJUSTMENTS?
A. Yes. All of the adjustments discussed in my testimony that follows, and the adjustments discussed by AEP Texas witness Hamlett, are reflected in the class cost-of-service study submitted in this proceeding.

B. Functionalization

Q. HOW WERE THE FUNCTIONAL AMOUNTS DETERMINED THAT ARE REFLECTED IN THE CLASS COST-OF-SERVICE STUDY?
A. AEP Texas books and records are the initial functional source since they are maintained on an unbundled basis with separate ledgers for the generation, transmission, and distribution functions. Pursuant to the RFP requirements, the functional reporting categories are: transmission (TRAN), distribution (DIST), distribution utility metering system services (MET), and transmission and distribution utility customer services (TDCS). As discussed by Mr. Hamlett in his direct testimony, the assignment of costs to each of these functions follows the RFP guidelines and are provided in the required RFP schedules. AEP Texas' North
division's generation-related amounts have been removed and reported as Non-
Regulated or Non-Electric.

C. Classification and Allocation

Q. WHAT CRITERIA ARE USED TO ENSURE THAT THE ALLOCATION OF COSTS TO THE RATE CLASSES IS APPROPRIATE?

A. The following criteria are generally used to determine the appropriateness of an allocation methodology:

1) The method should recognize customer class characteristics such as energy usage, peak demand on the system, diversity characteristics, and number of customers;

2) Customers who benefit from the use of the system should also bear their share of the cost of utilizing the system;

3) The method should produce stable results on a year-to-year basis; and

4) The method should reflect the planning and operating characteristics of the utility's system.

Q. DO THE ALLOCATION METHODS EMPLOYED BY AEP TEXAS MEET THESE OBJECTIVES?

A. Yes, they do. The allocation methodologies used in AEP Texas' class cost-of-service study reflects the criteria listed above. The results of the class cost-of-service study can be relied upon to determine the cost to serve AEP Texas' generic rate classes.

Q. HAS AEP TEXAS PROVIDED THE ALLOCATION METHODS YOU HAVE DISCUSSED AND UTILIZED IN THIS FILING?

A. Yes, a listing of each allocation method employed in the cost-of-service study is provided in RFP Schedule II-I-2.
Q. HOW ARE DISTRIBUTION DEMAND-RELATED COSTS ALLOCATED IN THE CLASS COST-OF-SERVICE STUDY?

A. Distribution plant costs recorded in FERC Accounts 360 through 368 and 372 are allocated on the basis of customer class Maximum Diversified Demands (MDD) during the test year. MDDs can be thought of as a group's maximum demand placed on the system regardless of the relationship of that point in time to the time of the system peak. This allocation was selected because AEP Texas' distribution system is sized and operated to meet the localized load imposed upon it, which is directly related to demands and not how customers are connected. For example, a distribution line (e.g., poles, wires and conduit) serving a residential neighborhood is sized to meet the maximum load likely to be imposed by the customers in that neighborhood, regardless of when it occurs, and does not vary directly with the number of customers.

Q. HOW ARE THE REMAINING DISTRIBUTION PLANT COSTS CLASSIFIED AND ALLOCATED IN THE CLASS COST-OF-SERVICE STUDY?

A. Distribution plant costs in FERC Account 369 (Services) are classified as customer-related and allocated based on a weighted number of customers for each rate class. The weighted number if customers is based on the year-end number of customers and a weighting factor using the current installed service cost with the residential rate class as the basis for the weighting.

Distribution plant costs in FERC Account 370 (Meters) are classified as customer-related and allocated based on a weighted number of customers for each rate class. The weighted number of customers is based on the year-end number of customers...
Customers and a weighting factor using the current installed meter cost with the residential rate class as the basis for the weighting.

Distribution plant costs in FERC Accounts 371 (Installations on Customer Premises) and 373 (Street Lights) are direct assigned to the lighting rate class.

Q. HOW ARE DISTRIBUTION-RELATED INTANGIBLE AND GENERAL PLANT COSTS ASSIGNED IN THE CLASS COST-OF-SERVICE STUDY?
A. Distribution-related intangible and general plant costs are assigned to the rate classes based on distribution functionalized labor ratios developed from the rate classes’ proportionate share of distribution labor recorded in FERC Accounts 580 through 598.

Q. HOW ARE DISTRIBUTION OPERATIONS AND MAINTENANCE EXPENSES ALLOCATED IN THE CLASS COST-OF-SERVICE STUDY?
A. Distribution operations and maintenance expenses (FERC Accounts 580 through 598) are allocated to classes on a variety of allocation factors such as distribution plant investments, specific accounts or in total, or distribution labor. These allocation ratios are described in RFP Schedule II-I-2.

Q. HOW ARE CUSTOMER-RELATED EXPENSES ALLOCATED IN THE COST-OF-SERVICE STUDY?
A. Customer accounting expenses, customer information expenses and customer service expenses are allotted on either a functionalized distribution labor allocator, the weighted number of year-end customers, or functional revenue, as appropriate. The customer class weightings for each individual cost item were developed independently using customer accounting, property accounting, or customer billing.
data. These weightings reflect the cost-causation differences by customer class for each cost item.

Q. HOW ARE ADMINISTRATIVE AND GENERAL (A&G) EXPENSES ALLOCATED IN THE COST-OF-SERVICE STUDY?
A. Functionalized A&G expenses were allocated, predominantly, on the basis of the functionalized distribution labor allocator. A&G costs are incurred in support of the personnel in the various functional areas of the Company and the labor-related allocator best reflects that characteristic. Certain A&G expenses, such as Property Insurance (FERC Account 924), Rents (FERC Account 931), and Maintenance of General Plant (FERC Account 935), were allocated on a plant-based allocator.

V. REVENUE ASSIGNMENTS
Q. HOW WERE REVENUES ASSIGNED TO THE RATE CLASSES IN THE COST-OF-SERVICE STUDY?
A. Electric sales revenue based on usage are directly assigned to the applicable rate class. All other revenues that could not be directly assigned were first functionalized (see RFP Schedule II-E-5) and then allocated based on the functional assignment of the asset used to generate the revenue.

Q. WERE ADJUSTMENTS MADE TO THE TEST YEAR ELECTRIC SALES REVENUE AND SALES DATA THAT IS REFLECTED IN THE CLASS COST-OF-SERVICE STUDY?
A. Yes. Adjustments were made to the test year electric sales and usage data to reflect known and measurable changes that are needed to ensure the data more accurately
represents the test year or includes those changes necessary to reflect permanent
differences from the data when new rates go into effect. Other revenues were also
adjusted to reflect an ongoing level since they are deducted from the class cost-of-
service study to arrive at AEP Texas’ proposed revenue requirement.

Q. WHAT TYPE OF ADJUSTMENTS WERE MADE TO THE TEST YEAR ELECTRIC SALES REVENUE AND SALES DATA?

A. The following adjustments were made to the test year electric sales revenue and sales data: (1) customer count adjustment; (2) weather adjustment; and (3) removing rider and certain miscellaneous revenues from electric sales revenue.

Q. WHAT IS THE PURPOSE OF THE CUSTOMER COUNT ADJUSTMENT?

A. The customer count adjustment recognizes the change in customer counts during the test year and adjusts the electric sales revenue and sales data as if the test-year end customer count had been the constant value the entire twelve-month period. The adjusted customer counts and kWh sales values are presented in RFP Schedule II-H-1.1 and RFP Schedule II-H-3.1. The resulting electric sales revenue adjustment is provided in RFP Schedule II-H-4.1.

Q. WHAT IS THE PURPOSE OF THE WEATHER ADJUSTMENT?

A. The weather adjustment adjusts electric sales revenue and sales data as if the test year had experienced normal weather. This allows rates to be based on normal operations by removing the impact (positive or negative) of abnormal weather. The adjusted kWh sales are provided in RFP Schedule II-H-1.1 and the resulting electric sales revenue adjustment is provided in RFP Schedule II-H-4.1. AEP Texas witness Chad Burnett supports the weather adjustment reflected in the RFP schedules I sponsor.
Q. WHAT IS THE PURPOSE OF THE ADJUSTMENT THAT REMOVES RIDER REVENUES FROM ELECTRIC SALES REVENUE?

A. This adjustment, reducing the revenues that are reflected in the class cost-of-service study, excludes rider revenues collected for specific purposes such as transition charges, energy efficiency cost recovery, transmission cost recovery, and nuclear decommissioning charges. Because the associated expenses incurred by AEP Texas for these activities are not included in the distribution class-cost-of-service, the revenues collected for these activities are also excluded from the revenue requirement calculation. This adjustment also increases revenues reflected in the class cost-of-service study by removing credits occurring in the test year for merger savings, and the state colleges and university discount rider.

Q. WERE ADJUSTMENTS ALSO MADE TO OTHER REVENUES CONTAINED IN RFP SCHEDULE II-E-5?

A. Yes. An analysis of the miscellaneous revenues recorded in the test year in FERC Account Nos. 450, 451, 454 and 456 was performed. After review of the detailed listing of miscellaneous revenues, adjustments were made for non-recurring entries, known rate changes, and reclassification of revenue between accounts to normalize revenues to reflect the appropriate ongoing level.

VI. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.
PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF

AEP TEXAS INC.

FOR AUTHORITY TO CHANGE RATES

DIRECT TESTIMONY OF

JENNIFER L. JACKSON

FOR

AEP TEXAS INC.

MAY 2019