C. ETI's Research

Q113. PLEASE DESCRIBE ETI'S RESEARCH OF OTHER TEXAS UTILITIES REGARDING LED STREETLIGHT OFFERINGS.

A. ETI also reviewed the current rate schedules of investor-owned utilities outside of Electric Reliability Council of Texas ("ERCOT"), including El Paso Electric Company, Southwestern Electric Power Company ("SWEPCO"), and Southwestern Public Service Company ("SPS"). ETI found that, currently, none of these companies offer rates for LED-leased street lighting. However, in Amarillo, SPS has begun an eighteen-month pilot program to gather information to develop a LED street light rate and fixture option.

ETI found two investor-owned utilities within ERCOT which have rates, although limited, that either provide leased LED street lights or provide a service point and energy to customer-owned LED street lights.

CenterPoint Energy currently offers a 60-watt LED street light with a nominal lumen output of 4,800 lumens. This light is offered as a single lamp mounted on ornamental standard and served by underground conductors or decorative residential street lights. The monthly charge for this light is $17.31, not including fuel.

Oncor Electric Delivery Company has an established monthly rate for unmetered service to a customer-owned and maintained LED street light and other low wattage street light installations and overhead sign

lights that are 100 watts or less. Oncor assumes that this installation will use 40 kWhs per lamp/month and the charge is $0.92 per month per lamp.

Q114. DID ETI REVIEW ANY RATE SCHEDULES WITHIN ENTERGY'S OPERATING COMPANIES?

A. Yes. Entergy Gulf States Louisiana and Entergy Louisiana both have customer-owned LED street light rate schedules providing energy only. Entergy Arkansas has filed a rate proposal including company-owned LED street lights, for which approval is pending.

Q115. DID THE COMPANY PERFORM ANY TYPE OF COST STUDY?

A. Yes. ETI examined the lease costs, energy usage and cost of a fixture.

Q116. WHAT IS THE DIFFERENCE IN THE COST OF A LED FIXTURE AND A HPS FIXTURE?

A. Table 1 below shows the cost differential between the current cost of a HPS fixture and its equivalent wattage (nominal) LED fixture. As can be seen, LED fixtures are significantly more expensive than a HPS fixture.

Table 1
ETI LED Light Offering Fixture Cost Comparison

Description	Lumens	Price	LED Description	Lumens	Price
100w HPS cobra head	9500	$46.00	67 watt LED cobra head	6193	$310.00
150w HPS cobra head	16000	$59.00	110 watt LED cobra head	9233	$350.00
250w HPS cobra head	28500	$92.00	140 watt LED cobra head	12642	$525.00
400w HPS cobra head	50000	$148.00	213 watt LED cobra head	18642	$700.00

Q117. WHAT IS THE ENERGY USAGE OF A LED FIXTURE TO ITS COMPARED HPS FIXTURE?

A. As shown by the studies reviewed, LED fixtures are more energy efficient resulting in less kilowatts of electricity consumed. Table 2 below is a comparison of kilowatt energy usage.

Table 2
ETI LED Light Offering Energy Savings

Description	Lumens	KWH	LED Description	Lumens	KWH	KWH Diff
100w HPS cobra head	9500	38.3	67 watt LED cobra head	6193	22.3	16.0
150w HPS cobra head	16000	58.6	110 watt LED cobra head	9233	36.7	21.9
250w HPS cobra head	28500	100.0	140 watt LED cobra head	12642	46.7	53.3
400w HPS cobra head	50000	150.0	213 watt LED cobra head	18642	71.0	79.0

Q118. DID ETI PERFORM ANY OTHER TYPE OF COST COMPARISON?

A. Yes. Utilizing ETI's current HPS rate, including fuel and applicable riders, a comparison was made to the equivalent wattage LED fixture rate being purposed by ETI including fuel and applicable riders. ETI determined that the 100 watt and 150 watt HPS replacement does not offer the customer any cost savings. However, the 250 watt and 400 watt replacement does offer the customer a slight savings. Table 3 below illustrates the comparison.

Table 3
ETI HPS Monthly Lease Cost vs. Equivalent LED Light Cost

Description	KWH	Cost	LED description	KWH	Cost
100 watt HPS cobra head	38.3	$9.62	67 watt LED cobra head	22.3	$13.45
150 watt HPS cobra head	58.6	$11.64	110 watt LED cobra head	36.7	$15.55
250 watt HPS cobra head	100.0	$19.21	140 watt LED cobra head	46.7	$19.04
400 watt HPS cobra head	150.0	$25.61	213 watt LED cobra head	71.0	$24.06

Q119. DO YOU SUPPORT THE ACTUAL COST FIGURES PRESENTED IN TABLE 3?

A. No. The monthly lease cost is supported by Company witness Talkington.

Q120. IS THE COMPANY PROVIDING ANY OTHER TYPE OF ANALYSIS?

A. Yes. ETI is conducting a demonstration project in Beaumont, Texas to replace twenty-six HPS lights with their LED equivalent. This includes replacing thirteen 100-watt HPS with 67-watt LED light and thirteen 250-watt HPS with a 140-watt LED light. These lights were installed in two residential neighborhoods and on a major thoroughfare within the City limits. The thoroughfare is used by many citizens and will enable ETI to gather citizens' and the City's reaction to these new lights. The lights were installed in June and July 2013 and the demonstration project was advertised via news release and door hangers in order to receive feedback, positive or negative, from citizens and City representatives.

D. Final Conclusion

Q121. WHAT IS ETI'S FINAL CONCLUSION OF THE LED FEASIBILITY STUDY?

A. As a result of ETI's review, the information in the Department of Energy, EPRI reports, various articles, discussion with other utility companies and lighting vendors, ETI is proposing Company-owned LED street lighting rates for approval by the PUCT.

Research reveals that, currently, there is very limited amount of LED street light technology from which to benchmark. However, ETI expects the market to mature and stronger demand to develop.

ETI further recommends, based upon the price of the LED street light fixtures available to the Company (on average 5.5 times higher in cost than the current inventory of lighting equipment), that ETI put forth a limited LED light offering of four wattages of cobra head fixtures. The four LED light offerings will be the equivalent of the four HPS cobra head street light offerings currently in its Schedule SHL. The cobra head fixture was the subject of most of these studies and is widely used in ETI's service territory for its street lighting application.

VII. CONCLUSION

Q122. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes it does.

This page has been intentionally left blank.

ENTERGY TEXAS, INC.
2013 LED STREET LIGHTING FEASIBILITY STUDY

BACKGROUND

In its final order in Docket No. 39896, the Public Utility Commission of Texas ("PUCT") ordered Entergy Texas, Inc. ("ETI" or "Company") to prepare and file a study regarding the feasibility of establishing Light Emitting Diode ("LED") street lighting rates as part of its next rate case. ETI chartered a team in November 2012 to investigate the light and rate offerings of ETI, research the availability of LED street light fixtures, review the viability of the new street lighting technology, and identify any roadblocks to offering this technology to ETI's customers.

The study reviewed ETI's current rate tariffs and its ability to offer LED technology, past case studies to better understand the LED market and ETI's own research.

A. Street and Highway Lighting Tariff (Schedule SHL)

ETI reviewed its current rates and established that the Company has no specific LED lighting rates for Company owned street lights. However, ETI does have an energy only section in its Street and Highway Lighting Service Tariff, (Schedule SHL), Rate Group "D" or "E." This rate applies in circumstances in which ETI provides service to customer owned and maintained street lighting fixtures. This energy only rate is a fixed rate per kWh with the kWh consumption based upon the customer's inventory of fixtures, wattages and hours of operation (if those lights are not on a photo control cell). The energy only rate is available for any type of light the customer owns and does not specify the type of light. ETI recommends new language to be added to Rate Schedule SHL to clarify that customers can install any light type (i.e. incandescent, fluorescent, High Pressure Sodium (HPS), Metal Halide (MH) or LED). It is the customer's responsibility to update its inventory of lighting equipment and provide ETI its inventory changes to properly adjust its monthly billing.

B. Traffic Signal Service Tariff (SCHEDULE TSS)

ETI's Traffic Signal Service (Schedule TSS) rate also was reviewed. This rate has an energy only component and a fixed charge per kWh. It is available to customers for any light type or combination of lights the customer wishes to install in its traffic signals and/or control devices. The light bulbs can be incandescent, fluorescent or LED. The kWh consumption for the customer's bill is based on information provided to ETI by the customer (number of lights, wattage, and hours of operation).

LED traffic signals are in use in ETI's territory both by the State of Texas and certain cities. The City of Beaumont replaced all of its traffic signals which used incandescent bulbs with LED traffic signals after Hurricane Rita. This conversion included not only the traffic signal heads, but pedestrian signals as well. Additionally, Beaumont added numerous LED illuminated street signs. The average wattage for an incandescent traffic signal bulb was 135 watts and the average wattage for an LED traffic signal light is approximately 10 watts. This city was able to reduce its monthly electric bill through the conversion to LED lights utilizing the existing Schedule TSS. ETI recommends that wording be added to Schedule TSS to clarify that this rate is applicable to any light type or combination of light types that the customer proposes to use in its traffic signals. The customer is responsible

for providing ETI an inventory of all traffic control devices, pedestrian signs and control equipment, the wattages of these lights and hours of operation in order to keep its bill as accurate as possible.

Currently, ETI has several energy efficiency programs to help customers reduce the amount of energy they consume. In some instances, ETI may provide monetary incentives to help offset the initial costs of installation of new energy efficient equipment. Updating traffic signals and/or customer-owned street and highway lighting to lower wattage LED based lights may qualify for such incentives.

C. Leased Lighting Standards

ETI reviewed its Distribution Standards to determine if there was an existing standard for LED technology applicable to street and highway lighting fixtures or area lighting fixtures. The Company also reviewed its current catalog of lighting products applicable to ETI or other Entergy operating companies. Some of the questions asked were:

> Are there any Entergy specifications written for LED street light fixtures?
>
> Does Entergy currently offer LED leased street lighting rates in Texas or any other state in which Entergy provides service?

There were no specific rates, specifications, or existing LED leased street lighting rates in Texas. Because there were no specifications written for LED lighting fixtures, ETI found there were no LED street light fixtures currently available to be tested or installed as a "demonstration project".

With no LED specifications, ETI requested its Distribution Standards and Engineering group to research and write a proposed "Specification" for LED lighting equipment that could be used throughout the Entergy system. As a result of this request, a "Specification" was written by the Distribution Standards and Engineering Group and approved in January 2013. The specification was supplied to Entergy's lighting equipment vendors to establish the type of LED lighting equipment available and equipment pricing. Entergy's Distribution Standards and Engineering group currently utilizes two vendors that have LED lighting equipment which met or exceeded the Company's specification.

The current vendors are Cooper Lighting and Acuity Brands, both of which have been in business for many years. Entergy has worked with these companies for over twenty years and relies upon their expertise in lighting system design, product support, new product training classes, support with failure analysis of their products, commitment to solving problems and providing Entergy the necessary lighting products it needs. Both Acuity Brands and Cooper Lighting supply LED lighting products to other utilities and cities throughout the United States. Below is a partial list of their LED street lighting customers:

- The City of Austin, Texas
- The City of New Orleans, Louisiana
- The City of Chula Vista, California
- Duke Energy
- South Carolina Electric and Gas
- Progress Energy
- The Southern Company

[2]

- Minnesota Department of Transportation
- Caltran (California Department of Transportation)
- South Carolina Department of Transportation
- Texas Department of Transportation
- Washington State Department of Transportation

Because of the relative newness of LED street lighting technology and the continuing evolution of this technology, ETI worked with its lighting vendors to take advantage of their past research, knowledge and expertise in LED street lighting. Their knowledge and technical expertise was used in deciding what wattage and type of LED street lighting fixture could be used as an "equivalent" replacement for ETI's current inventory of HPS and Mercury Vapor ("MV") street lights.

ETI RESEARCH ANALYSIS

As noted above, no other Entergy operating company currently offers a rate for company-owned LED leased lighting. However, Entergy Gulf States Louisiana ("EGSL") and Entergy Louisiana LLC ("ELL") do have rates available for customer owned lights similar to ETI's SHL Rate Code D and E which can be used for LED street lighting. Also, Entergy Arkansas, (EAI) has recently filed a rate case in which it proposed to offer Company owned LED leased street lighting to its customers.

ETI also reviewed the current rate schedules of investor-owned utilities outside of Electric Reliability Council of Texas ("ERCOT"), including El Paso Electric, Southwestern Electric Power Company ("SWEPCO") and Southwestern Public Service Company ("SPS") and found that currently none of these companies offer rates for LED leased street lighting. However, in Amarillo, SPS has begun an eighteen-month pilot program to gather information to develop a LED street light rate and fixture option.

ETI found two investor-owned utilities within ERCOT that have rates, albeit limited, that either provide leased LED street lights or provide a service point and energy to customer-owned LED lights.

CenterPoint Energy currently offers a 60 watt LED street light with a nominal lumen output of 4800 lumens. This light is offered as a single lamp mounted on an ornamental standard and served by underground conductors or decorative residential street lights. The monthly charge for this light is $17.31.

Oncor Electric Delivery has an established monthly rate for unmetered service to customer-owned and maintained LED and other low wattage street light installations and overhead sign lights that are 100 watts or less. Oncor assumes that this installation will use 40 kWhs per lamp/month and the charge is $0.92 per month per lamp.

Because of the reduced lumen output of LED fixtures, ETI determined the need to use a fixture (Cobra head) that is designed to direct the available light down and on the road surface rather than waste the available light which occurs with NEMA head type lights and some decorative style lights. An analysis of comparing cost per fixture, energy usage, and monthly lease costs of ETI's current street light offerings in Texas with HPS type lights to potential LED street lights was performed.

Table 1 below compares the cost of ETI's HPS cobra head fixtures versus the equivalent LED cobra head fixture. Table 2 identifies the kWh savings of a LED fixture over the equivalent HPS fixture.

Table 1
ETI LED Light Offering Fixture Cost Comparison

Description	Lumens	Price Each	LED description	Lumens	Price Each
100 watt HPS Cobra head	9500	$46.00	67 watt LED Cobra head	6193	$310.00
150 watt HPS Cobra head	16000	$59.00	110 watt LED Cobra head	9233	$350.00
250 watt HPS Cobra head	28500	$92.00	140 watt LED Cobra head	12642	$525.00
400 watt HPS Cobra head	50000	$148.00	213 watt LED Cobra head	18642	$700.00

Table 2
ETI LED Light Offering Energy Usage

Description	Lumens	kWh	LED description	Lumens	kWh	kWh savings
100 watt HPS Cobra head	9500	38.3	67 watt LED Cobra head	6193	22.3	16.0
150 watt HPS Cobra head	16000	58.6	110 watt LED Cobra head	9233	36.7	21.9
250 watt HPS Cobra head	28500	100.0	140 watt LED Cobra head	12642	46.7	53.3
400 watt HPS Cobra head	50000	150.0	213 watt LED Cobra head	18642	71.0	79.0

As shown in the preceding tables, the LED lights that ETI, with the help of its vendors, chose as equivalent lights to the common wattages used today consume less electricity, but are more expensive. A preliminary monthly lease cost analysis has been performed comparing the monthly cost of four cobra head HPS fixtures used for street lighting in Texas to the equivalent or replacement LED street light fixture. This monthly cost for both types of lights includes fuel and all applicable riders as of July 10, 2013.

Table 3
ETI HPS Monthly Lease Cost vs. Equivalent LED Monthly Lease Cost

Description	kWh	Cost	LED description	kWh	Cost
100 watt HPS Cobra head	38.3	$9.62	67 watt LED Cobra head	22.3	$13.45
150 watt HPS Cobra head	58.6	$11.64	110 watt LED Cobra head	36.7	$15.55
250 watt HPS Cobra head	100.0	$19.21	140 watt LED Cobra head	46.7	$19.04
400 watt HPS Cobra head	150.0	$25.61	213 watt LED Cobra head	71.0	$24.06

As illustrated in Table 3, the LED lights which are the equivalents of the 100 and 150 watt HPS street lights are more expensive on a monthly basis. However, the LED equivalents of the 250 and 400 watt HPS lights offer the customer savings.

CASE STUDY EVALUATIONS

ETI reviewed four LED street lighting case studies prepared or sponsored by the Department of Energy (DOE), Electric Power Research Institute (EPRI) and municipalities. The Company also reviewed a number of articles from newspapers, newsletters and trade magazines discussing the general pros and cons of LED lighting and specifically LED street light technology.

A. Knoxville, Tennessee Case Study

In 2008, an assessment of LED performance was done by EPRI, the Tennessee Valley Authority ("TVA") and Knoxville Utilities Board (Knoxville, Tennessee). Researchers replaced ten 250 watt HPS cobra head type fixtures with ten 99 watt LED cobra head fixtures. In this 24-month test, in addition to energy savings, it was found that the main advantage of LED fixtures was the fixture's "capacity to send a more pleasing light only where it is needed making them an ideal candidate to replace conventional outdoor lighting." However, the study also identified increased cost and potential maintenance issues associated with the LED fixtures.

This study found "one of the most productive advantages of LED lighting and a characteristic not accounted for with traditional assessment methods is the light shines where you want it to and little is wasted. Conventional lamps for street and area lighting radiate light in nearly all directions, resulting in 30% of the light traveling skyward or trespassing into unintended places. Early reports from the field readily confirmed a superior overall efficiency and uniformity of coverage provided by LED fixtures." Another finding was that "the whiter, almost blue color emitted from the LED gives the appearance of more light, although the LED fixture actually produces less light when measured using traditional techniques. In addition to appearing whiter, the light output from the LED fixtures appears more even on the ground." These observations were verified by the photometric design received from the manufacturer along with measurements taken on site. However, the study noted that the significant advantage of LED technology of only putting light where it is needed was lost when utilizing decorative fixtures.

It was also found during the 24-month test period that "LED fixtures consumed more power during the winter than during the summer months, but the light output also increased in cold temperatures. Temperature does not affect the power consumption of fixtures such as metal halide or high pressure sodium."

The Knoxville Utilities Board study concluded that "in some applications, LED light fixtures provide acceptable illumination and energy savings. However, saving energy is not necessarily the same as saving money." In addition to higher fixture costs, the total costs over time must be taken into account. The study noted that replacement drivers for the fixtures can cost between $120.00 and $300.00 and increased labor costs to maintain the fixtures. From a performance aspect, LED technologies are up to the task of replacing conventional lighting and saving a significant amount of energy. "However like many new technologies, the cost of retrofitting existing light fixtures, at least for now remains a challenge."

B. Benton County Case Study

Another assessment of LED street and area lighting was started in 2008 by EPRI in conjunction with the TVA and the Benton County Electric System in Benton County, Tennessee. This 28-month study included the replacement of seven 150 watt HPS cobra head fixtures with seven 100 watt LED cobra head fixtures on a residential street in Camden, Tennessee. In addition to monitoring the energy consumption of the LED fixtures, photometric data and light levels measured in foot candles was gathered for both the existing HPS fixtures and LED fixtures.

The study found through its measurement of light levels that "HPS fixtures provided intense lighting directly below the fixture, with intensity falling sharply with distance from the area directly below the fixture. Although the average light output of the LED fixtures was less than that of the HPS fixtures, they provided an even distribution of light over the whole measured area." Researchers observed that "because LEDs are designed to last longer than metal halide or high pressure sodium lighting – a lifespan as much as 100,000 hours according to some manufacturers – they offer the potential of substantially reduced maintenance costs, if they meet or exceed their advertised lifespan." The study notes that this reduced cost of maintenance could provide a valid reason for real world adoption of LED based fixtures over conventional technologies.

As a result of studying LED fixtures in the lab and in the field, this study found several disadvantages of LED lighting, including lower efficiency values than traditional lamps, unexpected driver failures, sensitivity to power quality issues, less flexibility in replacing the light source and high initial installation costs. Additionally, this study discovered that the lights interfered with the operation of HAM radios. This issue was resolved by the addition of a specifically tuned ferrite bead on the input power lead.

The EPRI study concludes that "in some applications, LED light fixtures provide acceptable illumination and energy savings." The study also states in its conclusions that "there are many factors that influence a decision to accept or reject LED lighting technologies and authorities are neither vocal nor unified in their guidance. Standards for LEDs are evolving but a consensus does not yet exist on the proper application of LED lighting."

C. The City of Asheville, North Carolina Case Study

Progress Energy Carolinas ("PEC"), in conjunction with the City of Ashville, North Carolina initiated a program in 2010 to replace over 8000 MV and high intensity discharge, (HPS and MH) street light fixtures with LED street light fixtures that were leased by the City of Ashville over a four-year period. Even though the LED street light would use less energy than the light it would replace, the monthly lease rate for that LED street light including the energy cost more than the light it replaced because of the high fixture price. As a result, PEC developed (with utility commission approval), a new rate labeled "Customer owned LED rate." The program was designed where the city would purchase the fixtures and PEC would replace the existing light and maintain the LED lights going forward. PEC would own the poles, but the city would be responsible for supplying the new LED light fixtures if any existing LED light fixture failed for any reason. The city pays an energy charge plus a monthly light maintenance fee. In addition to this rate, PEC has LED based street lighting rates for lights that it owns, installs and maintains. This program will help the City of Ashville meet

its goal of reducing its carbon footprint by 20% by 2015, in addition to cutting the lease rate per individual street light by approximately 50%.

D. Baytown, Texas Case Study

In close proximity to ETI's service territory, the Company found the City of Baytown, Texas (population 73,000) had undertaken a project to pilot the replacement of lights on Interstate 10 and Loop 330, within its city limits. The City of Baytown, because of its population, is now responsible for maintaining and paying the electric bill for over 370 lights. These lights in these 370 locations originally were conventional 400 watt HPS cobra head fixtures installed and maintained by the Texas Department of Transportation (TxDot). The city initially looked at LED lighting technology because of the need for less light maintenance. The city did not have a "street light crew" to do the maintenance and had to hire a contractor each time light maintenance was needed. It initiated a three-month pilot in order to convince TxDot officials that LED street lights were viable. At the end of the pilot, TxDot agreed with the city and gave it permission to replace the lights. The city replaced the current lights with a 250 watt LED light and found they reduced maintenance issues and the city recognized an approximate 50 percent savings in its electric bill for these lights. These lights are metered which captures all consumption including the bulb and ballast. Two years into the program, the city is pleased with the installation and found the failure rate has been less than 1% and is saving electricity. According to the city, the vendor initially projected in 2010 that the fixture cost would be approximately $2200.00. After the pilot program was completed, the city placed an order and the fixture cost was reduced to approximately $800.00 for each fixture. They are looking at additional re-lighting opportunities. The fixtures produce crisp, white, bright light which seems to be very evenly distributed across the roadway.

ETI's overall evaluation of the four case studies is:

Positive Results:

- LED street lighting is efficient;
- LED street lighting, specifically cobra head type fixtures direct more light to the road surface, less back light and less light to the sky which results in approximately the same level of light, measured in foot candles on the surface as other types of light it replaces;
- LED street lighting offers a better light spectrum;
- LED street lighting offers better color rendition when compared to HPS street lights;
- LED street lights come on instantly;
- LED street lights appear to offer the potential for maintenance savings;
- LED fixtures and the light emitting diodes offer a longer life span than conventional lighting types, with manufacturers' claims varying from 50,000 hours to 100,000 hours;
- LED street lights do not contain mercury;
- LED street lighting technology continues to improve; and
- LED street lighting efficacy or its light conversion efficiency, measured in lumens/watt continues to improve.

Negative Results:

- While LEDs have been in use in various applications for decades, their application as street lighting is a relatively new concept and in the field maintenance and longevity claims are unproven;

- LED lighting produces less lumens and additional poles or infrastructure may be needed to satisfy both existing standards and the customer's expectations;
- LED lighting can be displeasing to viewers because of perceived glare from the fixture;
- LED lighting equipment is more expensive than its equivalent HPS or MH fixtures; and
- LED street light fixtures produce less "back light" and therefore illumination on sidewalks may be reduced.

In summary, the majority of the LED case studies reviewed are optimistic that the life expectancy of LED fixtures and its components will be proven and the maintenance savings will be verified. The authors also believe that as LED street lights gain a larger share of the existing street lighting market, fixture costs will decrease.

PERIODICAL REVIEW

In addition to reviewing case studies, the Team also reviewed several actual installation reports and news articles regarding LED street lighting. ETI found that in addition to the positive aspects, there were reports of design and manufacturing issues with installed LED street lights.

A. CPS Energy/San Antonio, Texas

In late 2012, CPS Energy, the municipal-owned electric utility serving San Antonio, began a project to convert 25,000 city-owned street lights to LED fixtures. San Antonio sought the conversion due to the fixtures being demonstrated as an energy efficient, low maintenance product which provided a superior light source. Shortly after the first group of LED fixtures was installed, a problem developed with the fixtures failing which resulted in CPS Energy discontinuing the installation. Upon further investigation, it was determined that a design defect allowed moisture to enter the fixture resulting in its failure. The 2,000 LED lights already installed had to be removed and the lights received from the manufacturer had to be returned for modification. Additionally, CPS Energy requested that the manufacturer redesign the light sensor due to some unidentified issues experiences with the installed lights. Despite these issues, CPS Energy has continued with this project.

B. Fort Fairfield, Maine

In September of 2010, the town of Fort Fairfield, Maine completed a project to replace 175 HPS type street lights with LED street lights. The purpose of the installation was to reduce the town's electrical energy consumption and save money. Two years after the completion of the project, the town had experienced premature failures of approximately half of the LED lights. The manufacturer of the LED fixtures, Sylvania, was consulted and investigated the failures of the LED fixtures and determined that there was an error in the manufacturing process which caused the lights to fail prematurely. Because the lights were under warranty, they were replaced by the manufacturer. The Sylvania representative stated, "LED lighting is still a new technology. As we learn more, the amount of errors in manufacturing has decreased."

These real life applications of LED street lighting highlights the fact that LED street lighting is a new technology and there will be growing pains until the design and manufacturing of the lights matures. Therefore it is very important that anyone, whether utility, city, or state, use manufacturers that can meet

these specific specifications, have the experience in street light manufacturing, and have the financial and technological wherewithal to correct issues which are likely to occur.

ETI's DEMONSTRATION PROJECT

As a result of ETI's review of the many demonstration projects and pilot programs, the Company initiated a demonstration project in Beaumont, Texas during June and July, 2013 during which 25 HPS lights were replaced with their equivalent LED lights. These LED street lights were installed in two residential neighborhoods and on one major thoroughfare that is heavily traveled and provides an opportunity for citizens to compare the LED street lights to the current widely used HPS street lights. The design of this thoroughfare will allow both citizens and city officials to easily compare the LED street light technology to the current HPS street light technology. ETI is soliciting and will continue to solicit reactions from both citizens and city officials to the LED lights as part of its demonstration project. Customer reactions will be shared not only internally but with ETI's street light customers so that they can make the most informed decision regarding whether or not to install LED street lights or to continue to use the current technology HPS street light.

CONCLUSION

As a result of ETI's review, the information in the reviewed case studies, various articles, discussion with other utility companies and lighting vendors, it is ETI's recommendation that it move forward in proposing that Company-owned LED street lighting rates, upon approval by the PUCT, be offered to its customers. ETI further recommends that because the price of the LED street light fixtures available to the Company is on average 5.5 times higher in cost than the current inventory of lighting equipment, that ETI's entrance into this new field be limited to four wattages of cobra head type fixtures. The cobra head fixture was the subject of most of the reviewed studies and is widely used in ETI's service territory for its street lighting application.

However, at this point in time, ETI believes that customer acceptance and use of LED street lighting will be slow until the technology is improved resulting in a decrease in fixture costs which will allow lease rates to also decrease.

Cited References

Demonstration Results from Wall Avenue in Knoxville, Tennessee. Electric Power Research Institute, Comparing Light Emitting Diode (LED) Street and Area Lighting to Traditional Lighting Technologies

Demonstration Results from Melon Drive in Benton County, Tennessee. Electric Power Research Institute, Comparing Light Emitting Diode (LED) Street and Area Lighting to Traditional Lighting Technologies

Fort Fairfield Journal, 12 December 2012

Fort Fairfield Journal, 9 January 2013

LED Street Light Energy Efficiency Case Study, Ashville, NC. USDN Innovation Working Group

LeBlanc, Mark. Telephone interview. 14 November 2012

Harvill, Kevin. Telephone interview. 2 January 2013

Potts, Drew. Telephone interview. 20 February 2013

WOAI Television News Report, 29 November 2012

Additional references reviewed

Assessing LED Performance at Gulf Power in Pensacola, Florida. Electric Power Research Institute, Comparing Light-Emitting Diode Street and Area Lighting to Traditional Lighting Technologies

Assessing Light-Emitting Diode (LED) Efficiency at the University of Southern Mississippi Gulf Coast. Electric Power Research Institute, Comparing Light-Emitting Diode Street and Area Lighting to Traditional Lighting Technologies

Application Assessment Report # 0714. LED Street Lighting Oakland Ca. Pacific Gas and Electric Co., Emerging Technology Program

Application Assessment Report # 0726. LED Street Lighting Phase III Oakland Ca. Pacific Gas and Electric Co., Emerging Technology Program

Application Assessment Report # 0727. LED Street Lighting San Francisco, Ca. Pacific Gas and Electric Co., Emerging Technology Program, U.S. Department of Energy, Gateway Demonstration

Assessment of LED Technology in Ornamental Post Top Luminares. Sacramento, Ca. U.S. Department of Energy Municipal Solid-State Street Lighting Consortium

Demonstration Assessment of LED Roadway Lighting. Philadelphia, Pennsylvania U.S. Department of Energy GATEWAY Solid-State Street Lighting Technology Demonstration Program

Demonstration Assessment of Light Emitting Diode (LED) Roadway Lighting. FDR Drive, New York, New York U.S. Department of Energy, Gateway Demonstration

Demonstration Assessment of Light Emitting Diode (LED) Street Lighting on Lija Loop in Portland, Or. U.S. Department of Energy, Gateway Demonstration

Demonstration Assessment of Light-Emitting Diode (LED) Roadway Lighting on Residential and Commercial Streets. Palo Alto, Ca. U.S. Department of Energy, Gateway Demonstration

Energy Savings Estimates of Light Emitting Diodes in Niche Lighting Applications. U.S. Department of Energy, Building Technologies Program, Office of Energy Efficiency and Renewable Energy

LED Street Light Assessment. Southern California Edison, Design & Engineering Services

LED Street Lighting. City of Sunnyvale California

Lighting the Clean Revolution, The Rise of LEDs and What it means for cities. The Climate Group

This page has been intentionally left blank.

DOCKET NO. 41791

APPLICATION OF ENTERGY TEXAS, INC. FOR AUTHORITY TO CHANGE RATES AND RECONCILE FUEL COSTS	§ § § §	PUBLIC UTILITY COMMISSION OF TEXAS

DIRECT TESTIMONY

OF

MYRA L. TALKINGTON

ON BEHALF OF

ENTERGY TEXAS, INC.

SEPTEMBER 2013

ENTERGY TEXAS, INC.
DIRECT TESTIMONY OF MYRA L. TALKINGTON
2013 RATE CASE

TABLE OF CONTENTS

EXHIBITS

I. NAME AND QUALIFICATIONS

Q1. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is Myra L. Talkington. My business address is 425 West Capitol Avenue, Little Rock, Arkansas 72201. I am employed by Entergy Services, Inc. ("ESI") as Manager, Rate Design and Analysis.

Q2. ON WHOSE BEHALF ARE YOU SUBMITTING THIS DIRECT TESTIMONY?

A. I am submitting this Direct Testimony on behalf of Entergy Texas, Inc. ("ETI" or the "Company").

Q3. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. A summary of my education and work experience is shown in Exhibit MLT-1.

Q4. WHAT IS THE PURPOSE OF TESTIMONY YOU ARE PRESENTING IN THIS PROCEEDING?

A. The purpose of my testimony in this proceeding is to discuss and sponsor:

- Development of test year external allocation factors that were utilized in the Company's class cost-of-service study;
- Adjustments to test year present revenue;

- Proposed rate design;
- Discontinued, modified and new rate schedules; and
- Tariff sheets supporting the proposed rate design.

Q5. WHICH OF THE RATE FILING SCHEDULES ARE YOU SPONSORING?

A. I am sponsoring all or portions of the following schedules:

O-1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 1.9, 1.10, 3.1, 3.2, 3.3, 4.1, 4.2;

P-6, 7.1, 7.2, 9, 11.2, 11.3, 11.4, 11.5, 12;

Q-1, 1.1, 4.1, 4.2, 5.1, 5.2, 5.3, 6, 7, 8.5, 8.8, and 8.9.

II. ALLOCATION FACTORS

Q6. PLEASE SUMMARIZE THE ALLOCATION METHODOLOGIES USED IN THE COMPANY'S RETAIL CLASS COST OF SERVICE STUDY.

A. The following table lists the allocation methods that I recommend for each of the major function/classification cost categories in the retail class cost-of-service study:

TABLE 1

Function	Classification	Allocation Method
1) Production		
A) Capacity related	Demand	Average & Excess 4CP
B) Energy related	Energy	Energy
2) Transmission	Demand	Average & Excess 4CP
3) Distribution/Customer Service		
A) Substations	Demand	Maximum Diversified Demand
B) Lines		
Primary	Demand	Maximum Diversified Demand at Primary
Secondary	Demand	50/50 Weighting of Maximum Diversified Demand and Non-Coincident Maximum Demand at Secondary
C) Line Transformers	Demand	50/50 Weighting of Maximum Diversified Demand and Non-Coincident Maximum Demand
D) Services	Customer	Weighted Customers
E) Meters	Customer	Weighted Customers
F) Street Lighting	N/A	Assigned to Lighting Class
G) Customer Related Services	Customer	Weighted Customers

Q7. HAVE YOU PROVIDED DOCUMENTATION SUPPORTING THE DEVELOPMENT OF YOUR PROPOSED ALLOCATION FACTORS?

A. Yes. Such support is presented in Rate Filing Package Schedule P-7.2 in this filing. Please refer to that schedule as I provide the following narrative explaining the development of the allocation factors.

Q8. PLEASE DISCUSS THE AVERAGE AND EXCESS 4CP METHOD THAT YOU HAVE DEVELOPED FOR THE ALLOCATION OF CAPACITY-RELATED PRODUCTION COSTS AND TRANSMISSION COSTS.

A. The allocation of capacity-related production costs and transmission costs is based on the average and excess four coincident peak ("A&E 4CP") methodology. This allocation method is developed by adding each rate class's average demand for the test year (the "average" component representing the rate class's average energy consumption), weighted by the ETI system load factor, to each rate class's amount of average coincident peak demand for the months of June through September in excess of its average demand, weighted by one minus the ETI system load factor.

Q9. WHY IS THE COMPANY RECOMMENDING THE A&E 4CP METHOD TO ALLOCATE CAPACITY-RELATED PRODUCTION COSTS AND TRANSMISSION COSTS?

A. The A&E 4CP allocation is appropriate because it is a method that reasonably reflects the mix of the Company's customers, their respective electrical load characteristics and the relative costs incurred to serve such loads. The A&E 4CP method used by the Company provides a reasonable balance between the two primary costing concerns, contribution to the system peak and energy requirements. While the contribution made to the system peak is inherently recognized with the

use of the average four coincident peaks, energy is also recognized by reflecting the average demands.

Q10. DID YOU DEVELOP A SEPARATE A&E 4CP TO ALLOCATE INTERRUPTIBLE CREDITS TO THE RATE CLASSES?

A. Yes. A separate A&E 4CP was developed to allocate the credits paid to customers taking service under Schedules LIPS and LIPS-TOD who are also Rate Schedule Interruptible Service ("Schedule IS") customers. This new A&E 4CP is calculated in the same manner as the capacity-related A&E 4CP, except that interruptible demands and energy are not included in the development of this A&E 4CP used to allocate the interruptible credits.

Q11. PLEASE DESCRIBE THE DISTRIBUTION-RELATED ALLOCATION METHODOLOGIES THE COMPANY IS PROPOSING.

A. Distribution substation and primary line costs are localized in nature and are designed and constructed to handle loads close to the point of ultimate use. Consequently, I have used the simultaneous peak load of each rate class, which is referred to as the Maximum Diversified Demand ("MDD") as the basis for allocation of these costs.

Line transformer and secondary line costs are even more localized than distribution substations and primary lines. In some cases, line transformers and secondary lines are installed to supply power to a single

customer. At most, these facilities serve a very limited number of customers. Accordingly, I have developed an allocation factor that consists of a 50/50 weighting of the MDD and the Non-Coincident Maximum Demand ("NCP") of each rate class. The NCP for each rate class represents the summation of the maximum individual demands of all customers in each rate class. Constructing the allocation factor in this manner recognizes that each class exhibits some diversity of load among customers, which is captured in the use of NCPs, while at the same time including loads that are somewhat coincident in nature, which is captured in the use of the MDDs.

The allocation factor for services and meters is based on the adjusted average number of customers in each rate class during the test year, weighted by the applicable estimated typical meter investment for that class.

Q12. WHAT IS THE BASIS FOR DETERMINING THE DEMANDS CONTRIBUTED BY EACH RATE CLASS USED TO DEVELOP THE ALLOCATION FACTORS?

A. The demands were established on the basis of the Company's customer load research data for all but the LIPS rate class. Actual customer load research demands were compiled for customers with loads that are metered with interval recording devices that provide billing demand data. For the LIPS rate class, each customer has an interval recording meter

and, therefore, this rate class is 100% metered with no sampling required. Customer load research sample data was utilized to develop the demands of the remaining rate classes whose loads are not 100% metered by interval recording devices.

Q13. WHAT IS THE BASIS FOR THE DEVELOPMENT OF THE ENERGY ALLOCATION FACTOR?

A. The energy allocation factor is based on adjusted sales (kWh) billed, by rate class, during the test year.

Q14. IN DEVELOPING THE ALLOCATION FACTORS, WHAT ADJUSTMENTS WERE MADE TO THE ENERGY AND LOAD RESEARCH DEMAND DATA?

A. In the development of the allocation factors, I have made several pro forma adjustments.

I have excluded the billing and load research data related to customers served under Standby and Maintenance Service ("Schedule SMS") and Economic As-Available Power Service ("EAPS").

Schedule SMS is for standby service to customers with self-generation. The actual usage of standby power is intermittent and difficult to predict. There may be a significant amount of standby usage in one year, while another year may have an insignificant amount. In fact, this same fluctuation often occurs from month to month.

Schedule EAPS allows the Company to more fully use available generation capacity by selling power to customers who have self-generation, but who find it more economical to purchase power from the Company during periods when their operating costs are higher. These customers elect to take or stop taking power on a real-time basis depending on the economics. Also, the Company has the option to deny EAPS service when sufficient capacity is not available to serve the customers. Thus, their usage is also intermittent and difficult to predict.

Accordingly, Schedules SMS and EAPS do not lend themselves to the traditional costing logic employed by the Company with regard to standard rate schedules. They have therefore been excluded for cost allocation purposes.

Adjustments were also made for significant changes that occurred prior to the end of the test year to certain individual customers. Adjustments were made to annualize changes resulting from customers moving from one rate schedule to another, and/or to annualize customers' demand and energy consumption.

I also adjusted the energy usage, CPs, and MDDs to reflect normal weather for the appropriate customer classes. No weather adjustment was made to the NCPs due to the variability of when the individual customer peak demand may occur and the inability to accurately reflect what effects weather may have on the individual customer peaks. The

development of weather adjustment factors is discussed by Company witness Richard A. Lynch in his Direct Testimony.

I adjusted energy, CPs, MDDs and NCPs to reflect the number of customers at the end of the test year for those rate classes where individual customer adjustments were not performed. The applicable class CPs, MDDs and NCPs monthly demands were adjusted by the same proportions as that resulting from the year-end customer level adjustments used in the energy allocation factor changes.

Q15. HAVE YOU ADJUSTED DEMANDS AND ENERGY FOR LINE AND TRANSFORMATION LOSSES?

A. Yes. The demands and energy have been adjusted for losses to the generation level.

Q16. WHY IS IT APPROPRIATE TO MAKE THE VARIOUS ADJUSTMENTS YOU HAVE DISCUSSED TO THE ALLOCATION FACTORS?

A. These adjustments were made to produce a normalized level of demand and energy that will be representative of the rate year, which is the twelve months beginning April 1, 2014.

Q17. IN ITS FILING, HAS ETI ALLOCATED ANY COSTS TO WHOLESALE CUSTOMERS?

A. No. The Company has not allocated costs to a wholesale load. Company witness Michael J. Goin explains that the Company's contract with its only wholesale customer—the East Texas Electric Cooperative ("ETEC")—will expire on the date ETI and the other Entergy Operating Companies move to the Midcontinent Independent System Operator ("MISO"), which is scheduled for December 19, 2013. Therefore, I have removed the ETEC test year demand and energy used for the purpose of calculating cost allocation factors. Similar treatment was afforded with regard to Brazos Electric Cooperative, Inc. in ETI's last base rate case, Docket No. 39896.

III. ADJUSTMENTS TO PRESENT TEST YEAR SALES REVENUE

Q18. PLEASE SUMMARIZE THE ADJUSTMENTS TO PRESENT TEST YEAR SALES REVENUES THAT YOU DEVELOPED FOR USE IN THE COMPANY'S RATE FILING.

A. The energy and demands used for the development of revenues were developed in the same manner as the energy and demands used for the development of allocation factors.

Q19. WHAT ADJUSTMENTS WERE MADE TO REFLECT THE CHANGE IN RATES AS A RESULT OF THE FINAL ORDER FROM DOCKET NO. 39896?

A. Revenues were developed for the test year using the rates approved by the Commission in Docket No. 39896.

Q20. WHY ARE THESE ADJUSTMENTS TO THE DEVELOPMENT OF THE TEST YEAR REVENUE APPROPRIATE?

A. These adjustments were made to produce a normalized level of revenue that would be representative of the rate year under present rates.

IV. PROPOSED RATE DESIGN

Q21. WERE YOU PROVIDED A REVENUE REQUIREMENT BY RATE CLASS, AND IF SO, WHAT WERE THE RESULTS?

A. Yes. The initial revenue requirement for each rate class was established by Company witness Heather G. LeBlanc and provided to me. All rate classes with the exception of the lighting class will receive a base rate increase.

Q22. WERE ADJUSTMENTS MADE TO THE RESIDENTIAL REVENUE REQUIREMENT WITH REGARD TO THE PUBLIC BENEFIT FUND?

A. Yes. As discussed by Company witness H. Vernon Pierce, the Company is currently funding a Public Benefit Fund ("PBF") at an annual rate of $2.5

million. The Company is not proposing to change this annual funding level; therefore, the residential revenue requirement was modified by the current funding of the PBF.

Q23. HOW WAS THE RESIDENTIAL RATE DESIGNED TO ATTAIN THE REVENUE REQUIREMENT?

A. The Company proposes to increase the customer charge to $8.50 from $6.00. This change moves the customer charge closer to the cost to serve, which is $11.02. The increase in customer charge is reasonable as it is a gradual step toward moving the customer charge to cost. The change in residential energy charge revenue is the revenue deficiency less the change in revenue from the increase in the customer charge.

Q24. HOW WERE THE LIGHTING RATES DESIGNED TO ATTAIN THE REVENUE REQUIREMENT?

A. The percent change between the revenue requirement and the present revenue was calculated for the lighting rate class. This percent change was then applied to each of the current lighting rates with the result being the proposed rates.

Q25. HOW WERE THE SMALL GENERAL SERVICE ("SGS") RATE CLASS RATES DESIGNED TO ATTAIN THE REVENUE REQUIREMENT?

A. The Company proposes to increase the customer charge for Small General Service ("Schedule SGS") to $12.00 from $8.20. This change moves the customer charge closer to the cost to serve, which is $15.68. The Company also proposes to increase the customer charge for Unmetered Service ("Schedule UMS") using the same percentage increase as was used for Schedule SGS. Then, in order to meet the revenue requirement for the SGS rate class the energy charge was appropriately decreased.

Q26. HOW WERE THE GENERAL SERVICE ("GS") RATE CLASS RATES DESIGNED TO ATTAIN THE REVENUE REQUIREMENT?

A. Consistent with the rate design methodology approved in Docket No. 39896, the Company proposes to decrease the customer charge for General Service ("Schedule GS") from $39.91 to $35.00. This moves the customer charge closer to the cost to serve, which is $33.28. The Company also proposes to increase the demand charge to $6.08 from $5.05. The remaining components of Schedule GS were then increased in order to attain the revenue requirement for the GS rate class.

Q27. HOW WERE THE LARGE GENERAL SERVICE ("LGS") RATE CLASS RATES DESIGNED TO ATTAIN THE REVENUE REQUIREMENT?

A. The Company proposes to decrease the customer charge for Large General Service ("Schedule LGS") from $260.00 to $200.00. This continues to move the customer charge closer to the cost to serve, which is $125.21. The Company also proposes to increase the demand charge from $11.43 to $12.48. The remaining demand and energy components of Schedule LGS were then increased by an equal percentage in order to attain the revenue requirement for the LGS rate class.

Q28. HOW WERE RATES FOR THE LARGE INDUSTRIAL POWER SERVICE ("LIPS") DESIGNED TO ATTAIN THE REVENUE REQUIREMENT?

A. The interruptible credit from Schedule IS is a rider to the LIPS rate and included in the LIPS revenue calculation. The interruptible credit was not changed. However, the Company has proposed certain changes to Schedule IS in Docket No. 41488 in anticipation of the move to MISO. Those changes will be incorporated into Schedule IS in accordance with the Commission's rulings in Docket No. 41488.

The Company proposes to increase the customer charge for Large Industrial Power Service ("Schedule LGS") from $630.00 to $850.00. This change moves the customer charge closer to the cost to serve, which is $5425. The remaining demand and energy components of the LIPS rate

were then changed by an equal percentage to attain the LIPS revenue requirement.

Q29. HAVE THE NUMERIC DETAILS OF THE RATE DESIGN BEEN PROVIDED FOR ALL RATE CLASSES?

A. Yes. The numeric details of the rate design are contained in Schedule Q-7, as well as in my supporting work papers. A summary of the proposed revenues and associated revenue impacts by rate class is contained in Schedule Q-1.

Q30. HAVE YOU PROVIDED TYPICAL BILLS REFLECTING THE IMPACT OF YOUR PROPOSED RATE DESIGN?

A. Yes. The typical bills for all classes with and without an estimated Incremental Franchise Fee Rider charge are contained in Schedule Q-8.9.

V. DISCONTINUED, MODIFIED OR NEW RATE SCHEDULES

Q31. IN ADDITION TO THE RATE CHANGES DISCUSSED ABOVE, DOES THE COMPANY PROPOSE ANY WORDING CHANGES TO ITS RATE SCHEDULES?

A. Yes. The Company is proposing to make modifications to thirteen schedules and add six new rate schedules.

Q32. WHAT RATE SCHEDULES IS THE COMPANY PROPOSING TO MODIFY?

A. As to wording changes, the table below sets out the rate schedules, agreements, and Terms and Conditions provisions that the Company proposes to modify, together with the Company witnesses who sponsors those changes:

Schedule	Description	Sponsor
RS	Residential Service	H. Vernon Pierce
RS-TOD	Residential Service - Time of Day	H. Vernon Pierce
UMS	Rider for Unmetered Services	H. Vernon Pierce
MES	Miscellaneous Electric Services	H. Vernon Pierce
ALS	Area Lighting Service	H. Vernon Pierce
LIPS	Large Industrial Power Service	H. Vernon Pierce/ Myra L. Talkington
LIPS-TOD	Large Industrial Power Service-Time of Day	H. Vernon Pierce/ Myra L. Talkington
GS	General Service	H. Vernon Pierce/ Myra L. Talkington
GS-TOD	General Service-Time of Day	H. Vernon Pierce/ Myra L. Talkington
LGS	Large General Service	H. Vernon Pierce/ Myra L. Talkington
LGS-TOD	Large General Service-Time of Day	H. Vernon Pierce/ Myra L. Talkington
EAPS	Economic As-Available Power Service	Myra L. Talkington
CGS	Competitive Generation Service	Myra L. Talkington
N/A	Terms and Conditions Applicable for Electric Service	H. Vernon Pierce

Q33. WHICH OF THE AFOREMENTIONED REVISIONS DO YOU DIRECTLY SPONSOR?

A. I directly sponsor certain modifications for Schedules GS, GS-TOD, LGS, LGS-TOD, LIPS, LIPS-TOD, CGS, and EAPS.

Q34. HOW IS THE COMPANY PROPOSING TO MODIFY SCHEDULES LIPS, LIPS-TOD, GS, GS-TOD, LGS and LGS-TOD?

A. The Company has reformatted the Net Monthly Bill section of Schedules GS, GS-TOD, LGS, LGS-TOD, LIPS and LIPS-TOD in order to be consistent with each other in appearance.

Q35. REGARDING SCHEDULE LIPS, WHAT IS THE RESULTING LIPS EMBEDDED PRODUCTION COST AMOUNT THAT WOULD BE USED AS THE COMPETITIVE GENERATION SERVICE ("CGS") CREDIT IN RIDER CGS?

A. The CGS Credit resulting from the Schedule LIPS production revenue requirement and billing determinants in the Company's filing is $6.86 per kW.

Q36. HOW IS THE COMPANY PROPOSING TO MODIFY SCHEDULE EAPS?

A. Once the Company has completed its transition to MISO, the current method of pricing energy under Schedule EAPS—average incremental fuel pricing—will no longer be available. Therefore, the Company is

proposing to revise the energy charge provision in Section V(a) to the following: The energy taken under Schedule EAPS in each hour shall be multiplied times the hourly Locational Marginal Price ("LMP") at the applicable load zone and totaled for the billing month. The applicable load zone is the load zone created to represent the Customer in the MISO settlement system; otherwise, the load zone created to represent the rest of ETI's retail load. The total shall be multiplied times the Customer's service voltage specific loss multiplier in accordance with Section IX E. Current load zone LMP values are available from MISO and may be accessed by the Customer. LMP values are subject to true-up by MISO.

Q37. IS THE COMPANY PROPOSING TO MODIFY SCHEDULE SMS?

A. Not in this filing. However, the Company has proposed certain changes to the calculation of avoided cost for Schedules LQF and SMS in Docket No. 41437 in anticipation of the move to MISO. Those changes will be incorporated into Schedule SMS in accordance with the Commission's rulings in Docket No. 41437.

Q38. WHAT NEW SCHEDULES IS THE COMPANY PROPOSING?

A. The table below lists the rate schedules that the Company is proposing to offer:

Schedule	Description	Sponsor
MVLMR	Market Valued Load Modifying Rider	Myra L. Talkington
MVDRR	Market Valued Demand Response Rider	Myra L. Talkington
RPCEA	Rough Production Cost Equalization Adjustment Rider	Peggy McCloskey
RCE-3	Rate Case Expense Rider 3	Michael P. Considine
DTA	Deferred Tax Accounting Rider	Myra L. Talkington
SHL-LED	Street and Highway Lighting Service – Light Emitting Diode (LED)	H. Vernon Pierce/ Myra L. Talkington

There is also a new potential Transmission Cost Recovery Factor Rider ("Rider TCRF") addressed in the testimony of Company witness Jay A. Lewis. Mr. Lewis sponsors that schedule, but it is not included in RFP Schedule Q-8.8 because it is contingent on ETI transferring transmission assets to ITC Holdings Corp.

Q39. WHY IS THE COMPANY PROPOSING TO OFFER THE EXPERIMENTAL MARKET VALUED LOAD MODIFYING RIDER ("MVLMR")?

A. Since the existing interruptible rates remain closed to new load, the Company is proposing to offer the MVLMR for customers that wish to participate through the Company in a MISO Load Modifying Resource ("LMR") demand response product. The MVLMR rider provides a mechanism for customers with interruptible load to participate in a MISO load modifying program and benefit at a price that is equitable to all other

customers. To participate, a customer must qualify as an LMR as described in the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff.

Q40. WILL THE MVLMR BE AVAILABLE TO ALL LOADS?

A. MVLMR will be available to provide a load modifying resource service option, in accordance with MISO requirements, for any customer's firm load served under one of the Company's existing firm service rate schedules. However, this service may not be taken in lieu of standby service.

Q41. WHY IS THE COMPANY PROPOSING TO OFFER THE EXPERIMENTAL MARKET VALUED DEMAND RESPONSE RIDER ("MVDRR")?

A. The Company is proposing the MVDRR rider for customers wishing to participate through the Company in a MISO Demand Response Resource ("DRR") – Type I day-ahead energy product. This is an energy only resource where an eligible customer voluntarily offers to reduce load on the MISO system based on the customer's economics, although the MVDRR does include an emergency demand response provision. The Company is requesting that the Commission require customers to participate as a MISO DRR only through the Company's retail MVDRR rider.

Q42. WILL THE MVDRR BE AVAILABLE TO ALL LOADS?

A. MVDRR will be available to provide a demand response resource option, in accordance with MISO requirements, for any customer's firm load served under one of the Company's existing firm service rate schedules. However, this service may not be taken in lieu of standby service. To the extent authorized by MISO, this rider is also available to Aggregators of Retail Customers as described in the schedule.

Q43. HOW WAS THE TEXAS RETAIL PORTION OF THE FERC BANDWIDTH PAYMENT DETERMINED?

A. The allocation of the 2013 ETI Rough Production Cost Equalization ("RPCE") Payment between the retail and wholesale jurisdictions was calculated based on the disparity method described in the October 7, 2011 FERC Order in Docket No. ER08-1056 (Opinion 514). Under the disparity method, the bandwidth receipts/payments are allocated to the retail and wholesale jurisdictions such that the resulting disparity for each jurisdiction is the same as that for the total company. The portion of the total ETI bandwidth payments allocated to the ETI-retail jurisdiction was $11.378 million and to the ETI-wholesale jurisdiction was $3.221 million. This allocation resulted in a final disparity for both jurisdictions equal to the ETI Total Company final disparity of (9.44)%.

Q44. WHAT IS THE PURPOSE OF RIDER DTA?

A. The Deferred Tax Accounting Tracker is established to recover, on a prospective basis, the after-tax return currently approved by the PUCT for the applicable period on amounts paid to the IRS that result from an unfavorable FIN-48 Uncertain Tax Position (UTP) audit. Rider DTA will track unfavorable IRS FIN-48 rulings and the return will be applied prospectively to FIN-48 amounts paid to the Internal Revenue Service after such amounts are actually paid. If the Company prevails in an appeal of an unfavorable FIN-48 UTP decision, then any amounts collected under Rider DTA related to that overturned decision shall be credited back to customers. This tracker is addressed in more detail by Company witness Rory L. Roberts.

Q45. WHAT IS THE PURPOSE OF SCHEDULE SHL-LED?

A. Schedule SHL-LED offers a new service and rates for Light Emitting Diode ("LED") Street and Highway Lighting Service. Company witness Pierce discusses the study that underlies this new service, which study was ordered to be conducted as part of this filing as a result of the Commission's order in ETI's last base rate case.

Q46. HAVE YOU PROVIDED THE TARIFF SHEETS THAT REFLECT YOUR RATE DESIGN?

A. Yes. They are contained in Schedule Q-8.8.

VI. CONCLUSION

Q47. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, at this time.

This page has been intentionally left blank.

EDUCATIONAL AND PROFESSIONAL BACKGROUND OF MYRA L. TALKINGTON

I received a Bachelor of Science Degree in Business Administration from Southwest Baptist University in 1981 and worked continuously for Gulf States Utilities Company ("GSU") from that time until January 1995. I spent the first two years of my tenure with GSU as an accountant in the Credit and Collection Department and the remaining years as a Staff Accountant in the Tax Services Department. In January 1995, I accepted a position as Rate Analyst in the Rate Administration department of Entergy Services Inc. ("ESI"). I transferred to the Rate Design department in November 1999 as a Senior Staff Rate Analyst. I assisted with general regulatory support and with the analysis and development of rate design and external allocation factors for use in cost-of-service analyses for all of the Entergy Operating Companies.[1] In August 2007, I became a Regulatory Project Coordinator in the Revenue Requirements & Analyses department. I was responsible for assisting in the preparation of cost-of-service studies for all of the Entergy Operating Companies. In addition, I provided analytical support to all Operating Companies in the area of revenue requirements.

In October 2010, I was promoted to my current position, Manager, Rate Design and Analysis. In this position, I am responsible for general rate-related regulatory support, rate design and the development of revenues and allocation factors for use in cost-of-service analyses.

---

[1] The Entergy Operating Companies include Entergy Arkansas, Inc.; Entergy Gulf States Louisiana, L.L.C.; Entergy Louisiana, LLC; Entergy Mississippi, Inc.; Entergy New Orleans, Inc.; and Entergy Texas, Inc.

I have provided expert testimony in the following Dockets:

Arkansas Public Service Commission

Docket No. 09-084-U

Docket No. 09-059-U

Docket No. 09-084-U

Docket No. 10-050-U

Public Utility Commission of Texas

Docket No. 21384

Docket No. 23000

Docket No. 23550

Docket No. 23798

Docket No. 24953

Docket No. 26612

Docket No. 28504

Docket No. 29408

Docket No. 30163

Docket No. 31598

Docket No. 32465

Docket No. 32710

Docket No. 33966

Docket No. 30123

Docket No. 31315

Docket No. 31544

Docket No. 32907

Docket No. 33586

Docket No. 39896

Louisiana Public Service Commission

Docket No. U-32708

Council of the City of New Orleans

Docket No. UD-13-01

DOCKET NO. 41791

APPLICATION OF ENTERGY TEXAS, INC. FOR AUTHORITY TO CHANGE RATES AND RECONCILE FUEL COSTS	§ § § §	PUBLIC UTILITY COMMISSION OF TEXAS

DIRECT TESTIMONY

OF

PATRICK J. CICIO

ON BEHALF OF

ENTERGY TEXAS, INC.

SEPTEMBER 2013

ENTERGY TEXAS, INC.
DIRECT TESTIMONY OF PATRICK J. CICIO
2013 RATE CASE

TABLE OF CONTENTS

EXHIBITS

Exhibit PJC-1	Families and Functions Chart
Exhibit PJC-2	Functions and Classes Chart
Exhibit PJC-3	SPO Organization Chart
Exhibit PJC-A	Affiliate Billings by Witness, Class and Department
Exhibit PJC-B	Affiliate Billings by Witness, Class and Project
Exhibit PJC-C	Affiliate Billings by Witness, Class, Department and Project
Exhibit PJC-D	Pro Forma Summary

I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME AND CURRENT BUSINESS ADDRESS.

A. My name is Patrick J. Cicio. My business address is Parkwood II Bldg., Suite 300, 10055 Grogan's Mill Road, The Woodlands, Texas 77380.

Q2. ON WHOSE BEHALF ARE YOU PROVIDING THIS TESTIMONY?

A. I am testifying on behalf of Entergy Texas, Inc. ("ETI" or the "Company").

Q3. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am Director, Mid Office and Energy Settlements for the System Planning and Operations ("SPO") organization of Entergy Services, Inc. ("ESI"),[1] the service company affiliate of the Entergy Operating Companies, which coordinate, plan, and operate their electric generation and bulk transmission facilities as a single, integrated electric system (the "Entergy System" or the "System").[2] As Director, I am responsible for administering the Intra-System Billing associated with the Entergy System Agreement, overseeing fuel and power settlements and reporting, as well as

[1] ESI is the services company affiliate of the Entergy Operating Companies that provides engineering, planning, accounting, technical, regulatory, and other administrative support services to each of the Entergy Operating Companies.

[2] In addition to ETI, the Entergy Operating Companies are Entergy Arkansas, Inc. ("EAI"); Entergy Mississippi, Inc. ("EMI"); Entergy New Orleans, Inc. ("ENO"); Entergy Gulf States Louisiana, L.L.C. ("EGSL"); and Entergy Louisiana, LLC ("ELL"). On December 19, 2005, EAI gave notice that it will terminate its participation in the System Agreement effective December 18, 2013. Entergy Mississippi provided similar notice to the Operating Companies on November 8, 2007 that it would terminate its participation effective November 7, 2015.