Exhibit No.:	_____
Issue(s):	Other
Witness/Type of Exhibit:	Robinett/Rebuttal
Sponsoring Party:	Public Counsel
Case No.:	EO-2018-0092

REBUTTAL TESTIMONY

OF

JOHN A. ROBINETT

Submitted on Behalf of the Office of the Public Counsel

EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. EO-2018-0092

****** ******

Denotes Confidential Information that has been redacted

February 7, 2018

PUBLIC VERSION

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of The Empire District Electric Company for Approval of Its Customer Savings Plan	)))	Case No. EO-2018-0092

AFFIDAVIT OF JOHN A. ROBINETT

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

John A. Robinett, of lawful age and being first duly sworn, deposes and states:

1. My name is John A. Robinett. I am a Utility Engineering Specialist for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

John A. Robinett
Utility Engineering Specialist

Subscribed and sworn to me this 7th day of February 2018.

NOTARY PUBLIC NOTARY SEAL STATE OF MISSOURI

JERENE A. BUCKMAN
My Commission Expires
August 23, 2021
Cole County
Commission #13754037

Jerene A. Buckman
Notary Public

My Commission expires August 23, 2021.

REBUTTAL TESTIMONY
OF
JOHN A. ROBINETT
THE EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. EO-2018-0092

Q. What is your name and what is your business address?

A. John A. Robinett, PO Box 2230, Jefferson City, Missouri 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Office of the Public Counsel ("OPC") as a Utility Engineering Specialist.

Q. Have you previously provided testimony before the Missouri Public Service Commission?

A. Yes.

Q. What is your work and educational background?

A. A copy of my work and educational experience is attached to this testimony as Schedule JAR-R-1.

Q. What is the purpose of your rebuttal testimony?

A. I provide a history of Empire's Asbury Generation Facility. Additionally, I discuss the Empire District Electric Company's ("Empire") proposal to retire its 218 megawatts ("MW") Asbury facility 16 years early as part of its "Customer Savings Plan" and replace the SPP accredited 198 MW capacity of the Asbury facility with 800 MW of wind generation facilities which, with SPP's current accreditation of wind at 15%, would be valued for SPP capacity requirements at 120 MW.

Q. How many generating units have been at the Asbury Facility?

A. Two. Asbury 1 was a 207 MW plant placed into service in 1970. Asbury 2, an 18 MW plant which could only run if Asbury 1 was operating, was placed into service in 1986.

Q. Are there still two generating units at the Asbury Facility?

A. No. Asbury 2 was retired and dismantled as part of the air quality control system upgrade to Asbury 1 because it sat in the footprint needed for the upgrade. Currently this is the only plant at the Asbury site.

Q. According to Empire why is it requesting the Commission to approve its Customer Savings Plan now?

A. According to Liberty Utilities' Central Region President Mr. David Swain at page seven of his direct testimony:

> "The Customer Savings Plan is premised on taking advantage of federal production tax credits ("PTCs") that will be phased out by 2020. In order to maximize these credits and to realize the corresponding $172 - $325 million in savings over the next 20 years that are identified in our Generation Fleet Savings Analysis described in Mr. McMahon's testimony (which Mr. McMahon explains could be as high as $607 million in savings over the next 30 years), Empire must act now to build or acquire eligible wind projects.
>
> At the same time, the Company seeks to avoid more than $20 million in additional capital investments at the Asbury coal plant that must be completed by 2019 to meet environmental obligations as well as to avoid further costs to operate Asbury.[1]

Q. What at the Asbury facility is Empire proposing to retire as part of its Customer Savings Plan?

A. Asbury Unit 1, which is a Babcock & Wilcox cyclone steam generator which originally had a nominal rating of 206 MW and was first placed into service in 1970.[2]

Q. Historically, when has the Asbury facility been modified or undergone significant additions?

A. In 2008, 2012, and in 2014.

Q. What modifications or additions did Empire make to the Asbury facility in 2008?

A. In 2008 Empire installed a selective catalytic reduction ("SCR") for $31 million.

Q. Why?

A. In his direct testimony in Empire's rate case ER-2008-0093, Empire witness Blake Mertens discusses the purpose of the 2008 SCR additions:

> The EPA issued its final Clean Air Interstate Rule ("CAIR") on March 10, 2005. The CAIR governs NOx and SO_2 emissions from fossil fueled units greater than 25 megawatts and will affect 28 states, including Missouri, where our Asbury, Energy Center, State Line and Iatan Plants are located and Arkansas where the future Plum Point Energy Station will be located.

[1] Swain Direct EO-2017-0092 Page 7.
[2] Mertens Direct EO-2017-0092 Page 12.

The CAIR is not directed to specific generation units, but instead, requires the states (including Missouri and Arkansas) to develop State Implementation Plans ("SIPs") to comply with specific NOx and SO_2 state-wide annual budgets. Missouri and Arkansas have finalized their respective regulations and have submitted their SIPs to the EPA for approval; however, until these SIPs are approved by the EPA, we cannot definitively determine the allowed emissions of NOx and SO_2 for the Asbury, Energy Center, State Line and Iatan Plants in Missouri or the Plum Point Energy Station in Arkansas.

To help meet CAIR NOx requirements, we are constructing a SCR at Asbury. We expect the SCR to be in-service the fourth quarter of 2007. We have awarded a contract and the SCR is under construction and will be tied into the existing unit during our scheduled 2007 major outage this fall. Our current cost estimate for the SCR at Asbury is $31 million (excluding AFUDC). This project was also contemplated as part of our Experimental Regulatory Plan approved by the Commission in Case No. EO-2005-0263.[3]

Q. What was the retirement date of the Asbury facility for depreciation purposes after installation of the SCR in 2008?

A. The retirement date remained at 2030, a life of 60 years.

Q. What modifications or additions did Empire make to the Asbury facility in 2012?

A. Empire constructed a new office and maintenance facility. This construction replaced the original office and maintenance facility that were approximately 40 years old.

Q. Did Empire study the need for other modifications or additions at the Asbury facility?

A. Yes. Empire hired an outside consultant to perform its 2010 depreciation study it submitted to Commission Staff in Case No. ER-2011-0004, and Empire submitted the same study in Case No. ER-2012-0345. In his testimony, the consultant said:

Asbury. This station, located in Asbury, MO, has two steam generating units with a maximum net capability of 207 MW. The age of this station at the end of 2009 was 39 years and the remaining life is estimated to be 21 years based on the forecast retirement of the plant in 2030. In order to achieve this life, it is expected that Asbury will have major capital additions of approximately $114 million in 2015 to install mercury emissions controls to Unit 1. Unit 2 was placed in service in 1986 and will be retired coincident with the Unit 1 environmental upgrade in 2015. Other than this major capital addition, nominal levels of interim additions and interim retirements are expected to be made over the remaining life of the station. The Appendix summarizes the derivation of whole life rates and remaining life rates (with and without cost of removal) applicable to Asbury. A whole life accrual rate of 4.57 percent and a remaining life accrual rate of 5.93 percent (with cost

[3] ER-2008-0093, Mertens Direct, Page 6.

of removal) are shown in Table 5-1. The accumulated depreciation reserve for the Asbury is $13,050,958 compared to the plant balance of $149,946,466 as of December 31, 2009.[4]

Q. What modifications or additions did Empire make to the Asbury facility in 2014?

A. It added an air quality control system which Empire witness Mertens described as follows:

Q. PLEASE DESCRIBE THE AQCS PROJECT TAKING PLACE AT THE ASBURY PLANT.

A. The Federal Clean Air Act ("CAA") and comparable state laws regulate air emissions from stationary sources such as electric power plants through permitting and/or emission control and related requirements. These requirements include maximum emission limits for sulfur dioxide (SO_2), particulate matter, nitrogen oxides (NOx), carbon monoxide (CO), and hazardous air pollutants, including mercury. In order to comply with current and forthcoming environmental regulations, Empire is taking actions to implement its compliance plan and strategy ("Compliance Plan"). The Mercury Air Toxic Standards ("MATS") and the Clean Air Interstate Rule ("CAIR"), and its subsequent replacement rule, are the drivers behind our Compliance Plan and its implementation schedule. Empire's Compliance Plan largely follows the preferred plan presented in our Integrated Resource Plan ("IRP"), filed in July, 2013 with the Commission. As a result, we are in the process of installing a scrubber, fabric filter, and powder activated carbon injection system at our Asbury plant. The addition of this air quality control equipment is expected to be completed by the end of 2014, and it is contractually required to be completed no later than February 1, 2015, without financial penalties to the constructor of the equipment.

Q. WHAT IS THE CAPITAL COST ASSOCIATED WITH THIS PROJECT?

A. The total estimated cost of this project is $122,412,831, which includes $92,540,436, expended through the end of April 2014, excluding AFUDC. Please refer to Schedule BAM-2 for additional details.[5]

Q. After the AQCS additions in 2014-2015 was the Asbury facility retirement date extended?

A. Yes. Empire's outside depreciation consultant Mr. Sullivan did so in his direct testimony in Case No. ER-2016-0023 as follows:

The retirement dates and resulting lifespan for Asbury 1 has been increase by 5 years, from a 60 year lifespan (in the 2010 Depreciation Study) to a 65 year lifespan. The proposed change to the lifespan for Asbury 1 was recommended in my testimony in Case No. ER-2012-0345; however, the lifespan underlying the current depreciation rates for Asbury is 60 years.[6]

[4] ER-2012-0345, Sullivan Direct, Schedule TJS-2 page 12.
[5] ER-2014-0351, Mertens Direct, Pages 8-9.
[6] ER-2016-0023, Sullivan Direct, Page 11.

Schedule TJS-2, the depreciation study filed in Case No. ER-2016-0023 describes the emission control additions and the need for future additions to reach 2035 retirement date.

Asbury.

The Asbury station, located in Asbury, MO, has one steam generating unit with a maximum net capability of 198 MW. The age of this station at the end of 2014 was 44 years and the remaining life is estimated to be 21 years based on the forecast retirement of the plant in 2035. In order to achieve this life, there were major capital additions at Asbury in 2014 to install mercury, sulfur dioxide, and particulate matter emissions controls as well as a retrofit and upgrade of the steam turbine. Asbury Unit 2 was placed in service in 1986 and was retired coincident with the Unit 1 environmental upgrade. Other than this major capital addition, nominal levels of interim additions and interim retirements are expected to be made over the remaining life of the station. The Appendix summarizes the derivation of remaining life rates applicable to Asbury. A remaining life accrual rate of 5.43 percent is shown in Table 5-1. The accumulated depreciation reserve for the Asbury is $41,725,501 compared to the depreciable plant balance of $285,502,250 as of June 30, 2015.[7]

Q. Did that depreciation study indicate the probable timing of future Asbury improvements to reach the 2035 retirement date?

A. Yes. Attached as Schedule JAR-R-2 are pages A-4 to A-13 from the depreciation study Empire filed in Case No. ER-2016-0023. These sheets lay out the historical additions and retirements at the Asbury facility, and provide a projection of future expenditures by year and account for the Asbury facility.

Q. Did the AQCS additions at the Asbury facility in 2014-2015 improve efficiency?

A. Yes. As part of its last Fuel Adjustment Clause prudence review of Empire (Case No. EO-2017-0065), OPC asked in its data request No. 8503 for an explanation of the experienced monthly heat rate declining at the Asbury facility since the AQCS system came into service in 2014. Empire provided the following narrative:

> Monthly heat rates at Asbury have decreased since the addition of the AQCS because of other projects that were completed concurrently to the AQCS equipment, such as a turbine upgrade, boiler balanced draft conversion and cooling tower fill replacement.
>
> The turbine upgrade involved replacing the rotors and inner cylinders of both the high pressure and low pressure turbines. Redesigned blading and steam path improvements allow the turbine to produce more energy with the same steam flow as the original turbine. The increase in output more than offset the increases in auxiliary load from the AQCS, resulting in a permanent decrease in heat rate.

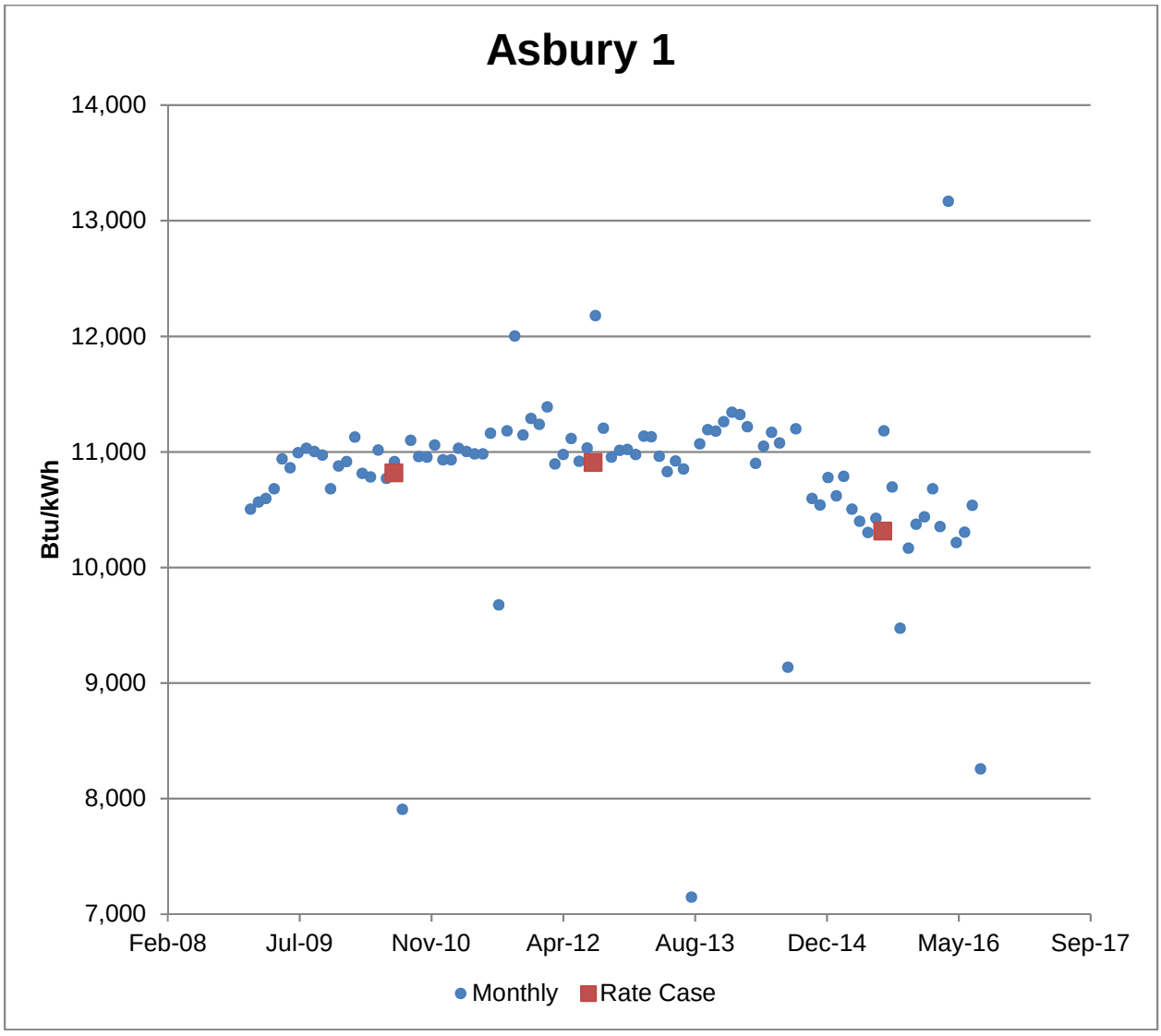
[7] ER-2016-0023, Sullivan Direct, Schedule TJS-2 Page 16.

As a result of the addition of the AQCS, it was necessary to convert the boiler at Asbury from forced draft to balanced draft operation. During the conversion, new, smaller rotors were installed in the forced draft fans, reducing their energy consumption. Also, the balanced draft conversion included a large number of modifications to the boiler structure, which required the entire boiler to be stripped of insulation. During reinstallation of the insulation, an additional inch of insulation was installed, reducing heat losses from the boiler.

Finally, the fill material in the cooling tower was replaced. Over time, cooling tower fill becomes restricted or plugged with sediment and biological growth. Replacing the fill in the cooling tower improved water-to-air contact in the tower, lowering cooling water temperatures and condenser backpressure, which also improves turbine efficiency.[8]

OPC compiled the monthly heat rate information from the Asbury generating facility that Empire provided through its six fuel adjustment clause prudence reviews. (Case Nos. EO-2010-0084, EO-2011-0285, EO-2013-0114, EO-2014-0057, EO-2015-0214, and EO-2017-0065) Additionally, OPC has plotted the heat rate test results from Case Nos. ER-2011-0007, ER-2014-0345, ER-2016-0023. Below is the monthly reported heat rates in blue dots and the heat rate test results provided in rate cases in red squares.

[8] Empire Response to OPC data request 8503 in Case No. EO-2017-0065.



As shown in the graph, post the AQCS additions heat rates values declined, meaning the facility was operating more efficiently.

Q. What are the additional expenditures that will be necessary at Asbury?

A. Empire witness Mertens describes the investments needed at Asbury in order to comply with the EPA's coal combustion residuals (CCR) rule that became effective October 19, 2015. Empire must construct a new landfill and convert the existing bottom ash handling from a wet to a dry system by April 2019 to be in compliance with CCR rule.

Q. Has Empire estimated the costs for the additions needed to bring the Asbury facility into compliance with the CCR rule?

A. As part of its 2016 depreciation study, Empire estimated future expenditures at the Asbury facility (Asbury account 312 Boiler equipment) based on its 2015 capital budget at $13,200,000 for years 2018 and 2019 combined. This is attached as Schedule JAR-R-2.

Empire Witness Krygier, Director of Rates and Regulatory Affairs for Liberty Utilities Central Region, at page six of his direct testimony states, "At the same time, Empire proposes to retire its Asbury coal plant, saving customers millions of dollars in annual operating expense and avoiding tens of millions of dollars of capital investment needed by April 2019 to meet environmental regulations."

Liberty Utilities Central Region President Swain states at page seven of his direct testimony, "At the same time, the Company seeks to avoid more than $20 million in additional capital investments at the Asbury coal plant that must be completed by 2019 to meet environmental obligations as well as to avoid further costs to operate Asbury."

Empire witness Mertens, Vice-President Operations-Electric, describes the costs for CCR compliance on page 15 of his direct testimony, "Empire is at a point in time where it must either spend a significant amount of money (between $20 and $30 million) to keep Asbury in compliance or adopt a different resource acquisition strategy."

The Generation Fleet Savings Analysis attached to Empire's outside consultant McMahon's direct testimony as Attachment JM-2 discusses the expenditures need to comply with environmental regulations at page 20. **

**

OPC issued data request number 8532 asking, "Has Empire or any outside engineering firm conducted engineering studies or cost studies for Asbury related to the CCR rule compliance? If yes, please provide each study and supporting analysis." Empire provided a study that was done by Black and Veatch to determine a compliance path for CCR and ELG rules at the Asbury facility, including selection of closure methodology and bottom ash handling technology. Empire's cost estimate for the two projects is ** **.

Q. Is there certainty related to the price of the new coal ash land fill or dry bottom ash system?

A. No. The costs of the two projects seems to vary depending on the witness or the source of the estimate.

Q. What accounting treatment is Empire requesting related to the retirement of its Asbury generation facility?

A. Empire is seeking the Commission's authorization to record the net book value of the Asbury generation facilities to a regulatory asset account. Empire witness Krygier at page 10 of his direct testimony discusses that Empire is seeking both return of and return on the retired Asbury facility through a regulatory asset. Empire witness Swain at page 9 of his direct testimony provides Empire's proposal that the regulatory asset be based on amortizing the net book value over a period of 30 years.

Q. Did Empire estimate the initial estimate of the Asbury regulatory asset?

A. Empire witness Sager at page three of his direct testimony provides an estimate of the regulatory asset balance of $204,000,000. He goes on to state that the balance will decrease more once the estimate for accumulated deferred income taxes is calculated.

Q. Did OPC independently derive an estimate?

A. Yes. I used plant-in-service and accumulated depreciation reserve balances from Staff's direct case in Empire's last rate case, Case No. ER-2016-0023 to calculate the reserve shortfall related to Empire's proposal to retire Asbury by April of 2019.

Q. What factors did you include in your estimate?

A. I projected depreciation accruals using ordered depreciation rates from Case No. ER-2016-0023. Additionally, I calculated the total net salvage needed to be collected for the entire life of asset out to 2035. I assumed no retirements or additions after September 30, 2015.

Q. What are OPC's projections of Asbury facility reserve shortfall related to Empire's plan?

A. If Asbury were to be retired December 31, 2018, I calculated the shortfall to be $226,532,279. If Asbury were to be retired April 30, 2019, I calculated the shortfall to be $222,048,236. It is important the Commission is aware that like Empire's estimate, my estimates do not include the future costs to dismantle and reclaim the Asbury facility, nor do these values take into account the effects of accumulated deferred income taxes.

Q. Did Empire provide estimates for dismantling and reclaiming the Asbury facility?

A. In response to OPC data request number 1302 Empire said:

> "Empire has estimated the cost of removal to be approximately $24M, net of expected salvage, but has not performed any detailed engineering estimates at this time. Empire will seek to repurpose the use of the remaining existing plant buildings including the office space and operations and maintenance buildings. It is not yet know whether the site will be a greenfield or brownfield."

Q. Did Empire estimate the accumulated deferred income taxes associated with the Asbury facility?

A. In response to OPC data request number 8503 Empire stated:

> "An estimate of the 4/30/19 anticipated ADIT balance related to the Asbury plant assets can be provided after the 2017 year-end close is completed, in February. Alternatively, a high-level estimate of these ADITs were provided in response to MECG's 2-02 data request. The estimated ADIT (depreciation/basis ADIT only) provided as of 9/30/17 was $44,982,000."

Q. What is the total dollar impact of Empire's regulatory asset request?

A. OPC witness Mr. John S. Riley provides a calculation of Asbury regulatory asset costs over the Empire recommended 30 year recovery period in his rebuttal testimony. OPC is waiting on updated responses to data requests for year end 2017 in order to provide a more accurate value.

Q. Why is Empire seeking Commission approval to create the regulatory asset?

A. As Empire explained generally in its response to OPC data request number 8502:

> "Commission approval is not legally required for Empire to record a regulatory asset; however, any such decision will be reviewed by Empire's auditors and could be considered a practical necessity. As such, under the set of facts and circumstances related to this Application, it is in the Company's and customers' best interest for Empire to seek such Commission approval. …
>
> Receiving express Commission authorization for booking of deferrals strengthens the ability of utilities to justify reflection of the regulatory assets on their public financial statements in conformity with GAAP standards. …"

Q. Does OPC agree with Empire that "it is in the Company's and customers' best interest for Empire to seek such Commission approval"?

A. In part, OPC firmly states that this is not in Empire's customers' best interest. Empire's customers are being asked to pay for the Asbury facility one way or another. Customers either pay depreciation expense and return on Empire's investment in the Asbury facility if it continues to operate, or under Empire's plan customers pay for the return of and return on of an asset that is no longer used and useful. Empire's plan assures that Empire and its shareholders get recovery of Empire's investment in the Asbury facility and a return on that investment. The only part of Empire's plan that might be considered in its customers' interest is that the time period for recovery is lengthened from 17 years to 30 years. However, in reality, Empire's customers will pay more over s 30-year recovery period than the 17-year period because Empire is seeking both a return of its investment and a return on its investment. Customers would pay more with the longer timeframe relative to the shorter timeframe because the decrease in the net balance occurs at a slower rate. Empire receives a longer steady stream of cash under the 30-year amortization of the regulatory asset.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

John A. Robinett

I am employed as a Utility Engineering Specialist for The Missouri Office of the Public Counsel (OPC). I began employment with OPC in August of 2016. In May of 2008, I graduated from the University of Missouri-Rolla (now Missouri University of Science and Technology) with a Bachelor of Science degree in Mechanical Engineering.

During my time as an undergraduate, I was employed as an engineering intern for the Missouri Department of Transportation (MoDOT) in their Central Laboratory located in Jefferson City, Missouri for three consecutive summers. During my time with MoDOT, I performed various qualification tests on materials for the Soil, Aggregate, and General Materials sections. A list of duties and tests performed are below:

- Compressive strength testing of 4" and 6" concrete cylinders and fracture analysis
- Graduations of soil, aggregate, and reflective glass beads
- Sample preparations of soil, aggregate, concrete, and steel
- Flat and elongated testing of aggregate
- Micro-deval and LA testing of aggregate
- Bend testing of welded wire and rebar
- Tensile testing of welded, braided cable, and rebar
- Hardness testing of fasteners (plain black and galvanized washers, nuts, and bolts)
- Proof loading and tensile testing of bolts
- Sample collection from active road constructions sites
- Set up and performed the initial testing on a new piece of equipment called a Linear Traverse / Image Analysis
- Wrote operators manual for the Linear Traverse / Image Analysis Machine
- Trained a fulltime employee on how to operate the machine prior to my return to school
- Assisted in batching concrete mixes for testing, mixing the concrete, slump cone testing, percent air testing, and specimen molding of cylinders and beams

Upon graduation, I accepted a position as an Engineer I in the Product Evaluation Group for Hughes Christensen Company, a division of Baker Hughes, Inc. (Baker), an oil field service company. During my employment with Baker, I performed failure analysis on oil field drill bits as well as composed findings reports which were forwarded to the field engineers in order for them to report to the company the conclusions of the failure causes.

I previously was employed as a Utility Engineering Specialist I, II, III for the Missouri Public Service Commission (Commission). My employment with the Commission spanned from April of 2010 to August of 2016. My duties involved analyzing deprecation rates and studies for utility companies and presenting expert testimony in rate cases before the Commission.

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Listed below are the cases in which I have supplied testimony, comments, and/or depreciation rates accompanied by a signed affidavit.

Company	Case Number	Issue	Party
Gascony Water Company, Inc.	WR-2017-0343	Rebuttal Testimony rate base, depreciation	Office of Public Counsel (OPC)
Missouri American Water Company	WR-2017-0285	Direct, Rebuttal Testimony depreciation, ami, negative reserve	OPC
Indian Hills Utility Operating Company, Inc.	WR-2017-0259	Direct, Rebuttal, Surrebuttal, and Live Testimony Rate Base (extension of electric service, leak repairs)	OPC
Laclede Gas Company Missouri Gas Energy	GR-2017-0215 GR-2017-0216	Direct, Rebuttal, Surrebuttal, True-up Rebuttal, and Live Testimony depreciation, retirement work in progress, combined heat and power, ISRS	OPC
Empire District Electric Company	EO-2018-0048	IRP Special issues	OPC
Kansas City Power & Light Company	EO-2018-0046	IRP Special issues	OPC
Kansas City Power & Light Company Greater Missouri Operations	EO-2018-0045	IRP Special issues	OPC
Kansas City Power & Light Company Greater Missouri Operations	EO-2017-0230	2017 IRP annual update comments	OPC
Empire District Electric Company	EO-2017-0065	Direct, Rebuttal, Surrebuttal, and Live Testimony FAC Prudence Review Heat Rate	OPC
Ameren Missouri	ER-2016-0179	Direct, Rebuttal, Testimony Heat Rate Testing &Depreciation	OPC

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Company	Case Number	Issue	Party
Kansas City Power & Light Company	ER-2016-0156	Direct, Rebuttal, Surrebuttal, and Live Testimony Heat Rate Testing &Depreciation	OPC
Empire District Electric Company Merger with Liberty	EM-2016-0213	Rebuttal Testimony	Missouri Public Service Commission (MOPSC)
Empire District Electric Company	ER-2016-0023	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Hillcrest Utility Operating Company, Inc.	SR-2016-0065	Depreciation Review	MOPSC
Hillcrest Utility Operating Company, Inc.	WR-2016-0064	Depreciation Review	MOPSC
Missouri American Water Company	WR-2015-0301	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Bilyeu Ridge Water Company, LLC Midland Water Company, Inc. Moore Bend Water Utility, LLC Riverfork Water Company Taney County Water, LLC Valley Woods Utility, LLC(Water) Valley Woods Utility, LLC(Sewer) Consolidated into Ozark International, Inc.	WR-2015-0192 WR-2015-0193 WR-2015-0194 WR-2015-0195 WR-2015-0196 WR-2015-0197 SR-2015-0198 Consolidated into WR-2015-0192	Depreciation Review *filed depreciation rates not accompanied by signed affidavit	MOPSC
I. H. Utilities, Inc. sale to Indian Hills Utility Operating Company, Inc.	WO-2016-0045	Depreciation Rate Adoption CCN	MOPSC
Missouri American Water Company CCN City of Arnold	SA-2015-0150	Depreciation Rate Adoption CCN	MOPSC
Empire District Electric Company	ER-2014-0351	Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
West 16th Street Sewer Company, W.P.C. Sewer Company, Village Water and Sewer Company, Inc. and Raccoon Creek Utility Operating Company, Inc.	SM-2015-0014	Depreciation Rate Adoption	MOPSC

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Company	Case Number	Issue	Party
Brandco Investments LLC and Hillcrest Utility Operating Company, Inc.	WO-2014-0340	Depreciation Rate Adoption, Rebuttal Testimony	MOPSC
Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities	GR-2014-0152	Direct, Rebuttal, Surrebuttal and Live Testimony	MOPSC
Summit Natural Gas of Missouri, Inc.	GR-2014-0086	Depreciation Study, Direct and Rebuttal Testimony	MOPSC
P.C.B., Inc.	SR-2014-0068	Depreciation Review	MOPSC
M.P.B., Inc.	SR-2014-0067	Depreciation Review	MOPSC
Roy-L Utilities	WR-2013-0543	Depreciation Review	MOPSC
Roy-L Utilities	SR-2013-0544	Depreciation Review	MOPSC
Missouri Gas Energy Division of Laclede Gas Company	GR-2014-0007	Depreciation Study, Direct and Rebuttal Testimony	MOPSC
Central Rivers Wastewater Utility, Inc.	SA-2014-00005	Depreciation Rate Adoption	MOPSC
Empire District Electric Company	ER-2012-0345	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Empire District Electric Company	WR-2012-0300	Depreciation Review	MOPSC
Laclede Gas Company	GO-2012-0363	Depreciation Authority Order Rebuttal, Surrebuttal and Live Testimony	MOPSC
Moore Bend Water Company, Inc. sale to Moore Bend Water Utility, LLC (Water)	WM-2012-0335	Depreciation Rate Adoption	MOPSC
Oakbrier Water Company, Inc.	WR-2012-0267	Depreciation Review	MOPSC
Lakeland Heights Water Co., Inc.	WR-2012-0266	Depreciation Review	MOPSC
R.D. Sewer Co., L.L.C.	SR-2012-0263	Depreciation Review	MOPSC
Canyon Treatment Facility, LLC	SA-2010-0219	Depreciation Rate Adoption- CCN	MOPSC
Taney County Water, LLC	WR-2012-0163	Depreciation Review	MOPSC
Sale of Saddlebrooke Water and Sewer Infrastructure, LLC to Missouri American Water Company (Sewer)	SA-2012-0067	Rebuttal Testimony	MOPSC

JOHN A. ROBINETT
SUMMARY OF CASE PARTICIPATION

Company	Case Number	Issue	Party
Sale of Saddlebrooke Water and Sewer Infrastructure, LLC to Missouri American Water Company (Water)	WA-2012-0066	Rebuttal Testimony	MOPSC
Midland Water Company, Inc.	WR-2012-0031	Depreciation Review	MOPSC
Sale of KMB Utility Corporation to Algonquin Water Resources of Missouri, LLC, d/b/a Liberty Water (Sewer)	SO-2011-0351	Depreciation Rate Adoption	MOPSC
Sale of KMB Utility Corporation to Algonquin Water Resources of Missouri, LLC, d/b/a Liberty Water (Water)	WO-2011-0350	Depreciation Rate Adoption	MOPSC
Sale of Noel Water Company, Inc. to Algonquin Water Resources of Missouri, LLC, d/b/a Liberty Water (Water)	WO-2011-0328	Depreciation Rate Adoption	MOPSC
Sale of Taney County Utilities Corporation to Taney County Water, LLC (Water)	WM-2011-0143	Depreciation Rate Adoption	MOPSC
Empire District Electric Company	ER-2011-0004	Depreciation Study, Direct, Rebuttal, and Surrebuttal Testimony	MOPSC
Rex Deffenderfer Enterprises, Inc.	WR-2011-0056	Depreciation Review	MOPSC
Tri-States Utility, Inc.	WR-2011-0037	Depreciation Review	MOPSC
Southern Missouri Gas Company, L.P.	GE-2011-0096	Depreciation Study Waiver	MOPSC
Southern Missouri Gas Company, L.P.	GR-2010-0347	Depreciation Review	MOPSC
KMB Utility Corporation (Sewer)	SR-2010-0346	Depreciation Review	MOPSC
KMB Utility Corporation (Water)	WR-2010-0345	Depreciation Review	MOPSC
Middlefork Water Company	WR-2010-0309	Depreciation Review	MOPSC

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 311 Structures & Improvements

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			End of Year
			Transaction Year			Vintage Year	Advance			Transfers and	Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*
1	1970	65	733,336	-	-	(89,549)	-	733,336	-	-	733,336
2	1971	64	8,946	-	-	-	-	8,946	-	-	742,282
3	1972	63	1,192	-	-	-	-	1,192	-	-	743,474
4	1973	62	-	-	-	-	-	-	-	-	743,474
5	1974	61	-	-	-	-	-	-	-	-	743,474
6	1975	60	-	-	-	-	-	-	-	-	743,474
7	1976	59	-	-	-	-	-	-	-	-	743,474
8	1977	58	-	-	-	-	-	-	-	-	743,474
9	1978	57	120,977	-	-	-	-	120,977	-	-	864,451
10	1979	56	41,006	-	-	-	-	41,006	-	-	905,457
11	1980	55	29,783	-	-	(677)	-	29,783	-	-	935,240
12	1981	54	5,687	-	-	-	-	5,687	-	-	940,927
13	1982	53	1,644	-	-	-	-	1,644	-	-	942,571
14	1983	52	-	-	-	-	-	-	-	-	942,571
15	1984	51	25,765	42,787	-	(8,928)	-	68,552	-	-	1,011,123
16	1985	50	-	-	-	-	-	-	-	-	1,011,123
17	1986	49	2,392,445	-	-	(24,002)	-	2,392,445	-	-	3,403,568
18	1987	48	91,974	-	-	(86,414)	-	91,974	-	-	3,495,542
19	1988	47	12,344	-	-	-	-	12,344	-	-	3,507,886
20	1989	46	-	-	-	-	-	-	-	-	3,507,886
21	1990	45	8,888,648	-	-	(412,012)	-	8,888,648	-	-	12,396,534
22	1991	44	29,680	-	-	(752)	-	29,680	-	-	12,426,214
23	1992	43	99,952	-	-	(43,081)	-	99,952	-	-	12,526,166
24	1993	42	235,141	-	-	-	-	235,141	-	-	12,761,307
25	1994	41	60,961	-	-	-	-	60,961	-	-	12,822,268
26	1995	40	93,854	-	-	-	-	93,854	-	-	12,916,122
27	1996	39	134,029	-	-	(14,900)	-	134,029	-	-	13,050,151
28	1997	38	180,858	-	-	(38,440)	-	180,858	-	-	13,231,009
29	1998	37	72,408	-	-	(31,037)	-	72,408	-	-	13,303,417
30	1999	36	-	-	(59,445)	-	-	-	(59,445)	-	13,243,972
31	2000	35	-	99,245	(4,600)	-	-	99,245	(4,600)	-	13,338,617
32	2001	34	-	46,200	-	(2,415)	-	46,200	-	-	13,384,817
33	2002	33	-	102,502	-	-	-	102,502	-	-	13,487,319
34	2003	32	-	11,386	-	-	-	11,386	-	-	13,498,705
35	2004	31	-	119,746	(10,235)	-	-	119,746	(10,235)	-	13,608,216
36	2005	30	-	75,007	-	(1,774)	-	75,007	-	-	13,683,223
37	2006	29	-	44,811	-	-	-	44,811	-	-	13,728,034
38	2007	28	-	70,748	(2,415)	-	-	70,748	(2,415)	-	13,796,367
39	2008	27	-	66,059	(5,008)	-	-	66,059	(5,008)	-	13,857,418
40	2009	26	-	33,136	-	-	-	33,136	-	-	13,890,553
41	2010	25	-	446,383	(3,100)	(401,728)	-	446,383	(3,100)	-	14,333,836
42	2011	24	-	80,471	(317,930)	-	-	80,471	(317,930)	-	14,096,377
43	2012	23	-	3,943,793	(210,174)	-	301,669	4,245,461	(210,174)	-	18,131,665
44	2013	22	-	-	(345,737)	-	280,159	280,159	(345,737)	-	18,066,087
45	2014	21	-	-	(197,064)	-	204,824	204,824	(197,064)	218,717	18,292,563
46	Total		$ 13,260,630	$ 5,182,273	$ (1,155,708)	$ (1,155,708)	$ 786,652	$ 19,229,555	$ (1,155,708)	$ 218,717	$ 375,275,770
47	Major Additions/Retirements										
48	2011				$ (317,930)						
49	2012			3,943,793	$ (210,174)						
50	2013				$ (345,737)						
51	2014				$ (197,064)						
52	Routine Activity			$ 2,025,132	$ (84,803)						
53	Historical Interim Activity			0.54%	-0.02%						
54	Forecast Interim Activity			0.54%	-0.02%						
							Major Additions**			Major Retirements	
55	2015	20						98,714	(4,134)		18,387,143
56	2016	19						99,224	(4,155)		18,482,212
57	2017	18						99,737	(4,177)		18,577,773
58	2018	17						100,253	(4,198)		18,673,828
59	2019	16						100,771	(4,220)		18,770,379
60	2020	15						101,292	(4,242)		18,867,430
61	2021	14						101,816	(4,264)		18,964,982
62	2022	13						102,342	(4,286)		19,063,039
63	2023	12						102,871	(4,308)		19,161,602
64	2024	11						103,403	(4,330)		19,260,676
65	2025	10						103,938	(4,352)		19,360,261
66	2026	9						104,475	(4,375)		19,460,362
67	2027	8						105,016	(4,398)		19,560,980
68	2028	7						105,559	(4,420)		19,662,118
69	2029	6						106,104	(4,443)		19,763,779
70	2030	5						106,653	(4,466)		19,865,966
71	2031	4						107,204	(4,489)		19,968,681
72	2032	3						107,759	(4,512)		20,071,928
73	2033	2						108,316	(4,536)		20,175,708
74	2034	1						108,876	(4,559)		20,280,024
75	2035	0								(20,280,024)	-
							$ -	$ 21,303,879	$ (1,242,571)		$ 761,654,642

* Through vintage year 1999 the balances are 1999 remaining plant balances.
** From 2015 capital budget

The Empire District Electric Company

Unit Property Depreciation Rate Analysis

Unit Property: Steam Production, Asbury Plant

Historical and Forecast Plant Additions & Balances

Account: 311 Structures & Improvements

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			
			Transaction Year			Vintage Year					End of Year
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Advance Additions	Additions	Retirements	Transfers and Adjustments	Plant Balance*

Whole Life Depreciation Rate Calculation

Historical Additions	19,229,555
Forecast Additions	2,074,324
Total Additions	21,303,879
Gross Salvage Value	1,014,001
Less Cost of Removal	2,028,002
Net Salvage Value	(1,014,001)
Total to be Recovered	22,317,880
Forecast Plant Balances	761,654,642
Whole Life Accrual Rate	2.93%
Cost of Removal Accrual Rate	0.27%
Whole Life Accrual Rate (Excluding Cost of Removal)	2.66%
Depreciable Service Life, years	34.1

Remaining Life Depreciation Rate Calculation

Account Balance 12/31/14	18,292,563
Forecast Additions	2,074,324
Gross Salvage Value	1,014,001
Less Cost of Removal	2,028,002
Net Salvage Value	(1,014,001)
Depreciation Reserve Balance 12/31/14	(4,054,373)
Forecast Total Remaining Life Balance	17,326,516
Forecast Plant Balances	386,378,872
Remaining Life Accrual Rate	4.48%

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 312 Boiler Plant Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			
				Transaction Year							
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Vintage Year Retirements	Advance Additions	Additions	Retirements	Transfers and Adjustments	End of Year Plant Balance*
1	1970	65	12,597,910	49,965	-	(4,869,252)	-	12,647,875	-	-	12,647,875
2	1971	64	248,135	-	-	(33,744)	-	248,135	-	-	12,896,010
3	1972	63	67,779	-	-	(29,910)	-	67,779	-	-	12,963,789
4	1973	62	56,263	-	-	(18,959)	-	56,263	-	-	13,020,052
5	1974	61	207,476	-	-	(179,204)	-	207,476	-	-	13,227,528
6	1975	60	61,298	-	-	(39,703)	-	61,298	-	-	13,288,826
7	1976	59	224,592	-	-	(135,418)	-	224,592	-	-	13,513,418
8	1977	58	208,546	-	-	(93,096)	-	208,546	-	-	13,721,964
9	1978	57	394,454	-	-	(265,979)	-	394,454	-	-	14,116,418
10	1979	56	3,845,385	-	-	(3,656,207)	-	3,845,385	-	-	17,961,803
11	1980	55	150,595	-	-	(58,000)	-	150,595	-	-	18,112,398
12	1981	54	288,683	-	-	(238,480)	-	288,683	-	-	18,401,081
13	1982	53	263,675	-	-	(90,270)	-	263,675	-	-	18,664,756
14	1983	52	347,742	-	-	(197,318)	-	347,742	-	-	19,012,498
15	1984	51	300,303	-	-	(258,014)	-	300,303	-	-	19,312,801
16	1985	50	77,137	-	-	(1,080)	-	77,137	-	-	19,389,938
17	1986	49	1,346,623	-	-	(374,872)	-	1,346,623	-	-	20,736,561
18	1987	48	1,593,575	-	-	(942,143)	-	1,593,575	-	-	22,330,136
19	1988	47	1,526,147	-	-	(174,507)	-	1,526,147	-	-	23,856,283
20	1989	46	872,427	-	-	(433,525)	-	872,427	-	-	24,728,710
21	1990	45	12,451,299	156,409	-	(506,066)	-	12,607,708	-	-	37,336,419
22	1991	44	712,943	-	-	(462,280)	-	712,943	-	-	38,049,362
23	1992	43	798,020	11,867	-	(228,003)	-	809,887	-	-	38,859,248
24	1993	42	1,286,297	-	-	(797,153)	-	1,286,297	-	-	40,145,545
25	1994	41	1,297,618	5,213	-	(396,244)	-	1,302,831	-	-	41,448,377
26	1995	40	1,127,004	-	-	(254,478)	-	1,127,004	-	-	42,575,381
27	1996	39	3,035,892	28,079	-	(574,050)	-	3,063,971	-	-	45,639,352
28	1997	38	1,115,228	-	-	(385,211)	-	1,115,228	-	-	46,754,580
29	1998	37	2,318,768	57,288	-	(47,104)	-	2,376,056	-	-	49,130,635
30	1999	36	-	3,904,565	(2,199,465)	(443,075)	-	3,904,565	(2,199,465)	-	50,835,735
31	2000	35	-	1,819,015	(116,307)	(274,855)	-	1,819,015	(116,307)	-	52,538,443
32	2001	34	-	1,221,566	-	(458,633)	-	1,221,566	-	-	53,760,009
33	2002	33	-	10,841,295	-	(273,729)	-	10,841,295	-	-	64,601,304
34	2003	32	-	943,693	(446,115)	(251,428)	-	943,693	(446,115)	-	65,098,882
35	2004	31	-	1,283,175	(1,944,362)	(830,467)	-	1,283,175	(1,944,362)	-	64,437,694
36	2005	30	-	4,623,075	-	(2,273,662)	-	4,623,075	-	-	69,060,769
37	2006	29	-	478,043	-	(127,309)	-	478,043	-	-	69,538,812
38	2007	28	-	6,644,621	(1,880,069)	(610,592)	-	6,644,621	(1,880,069)	-	74,303,364
39	2008	27	-	32,347,214	(79,015)	(1,696,019)	-	32,347,214	(79,015)	-	106,571,563
40	2009	26	-	494,582	-	(18,009)	0	494,582	-	-	107,066,145
41	2010	25	-	571,874	(312,584)	(33,905)	114,161	686,035	(312,584)	-	107,439,596
42	2011	24	-	243,748	(42,511)	-	98,476	342,224	(42,511)	-	107,739,310
43	2012	23	-	1,090,614	(1,698,211)	-	313,197	1,403,811	(1,698,211)	-	107,444,910
44	2013	22	-	-	(1,957,363)	-	1,148,314	1,148,314	(1,957,363)	391,860	107,027,722
45	2014	21	-	-	(12,355,952)	-	122,554,139	122,554,139	(12,355,952)	(218,717)	217,007,193
46	Total		$ 48,821,814	$ 66,815,900	$ (23,031,952)	$ (23,031,952)	$ 124,228,288	$ 239,866,001	$ (23,031,952)	$ 173,144	$ 2,146,313,202

47	Major Additions/Retirements		
48	2002	$ 10,841,295	
49	2007	$ 6,644,621	$ (1,880,069)
50	2008	$ 32,347,214	$ (1,957,363)
51	2014	$ 122,554,139	$ (12,355,952)
52	Routine Activity	$ 18,656,918	$ (6,838,569)
53	Historical Interim Activity	0.87%	-0.32%
54	Forecast Interim Activity	0.87%	-0.32%

				Major Additions**		Major Retirements	
55	2015	20			1,886,344	(691,427)	218,202,110
56	2016	19			1,896,731	(695,234)	219,403,607
57	2017	18			1,907,175	(699,062)	220,611,720
58	2018	17		7,600,000	1,917,677	(702,912)	221,826,485
59	2019	16		5,600,000	1,928,236	(706,782)	223,047,939
60	2020	15			1,938,854	(710,674)	224,276,118
61	2021	14			1,949,530	(714,587)	225,511,061
62	2022	13			1,960,264	(718,522)	226,752,804
63	2023	12			1,971,058	(722,478)	228,001,384
64	2024	11			1,981,912	(726,457)	229,256,839
65	2025	10			1,992,825	(730,457)	230,519,207
66	2026	9			2,003,798	(734,479)	231,788,526
67	2027	8			2,014,832	(738,523)	233,064,834
68	2028	7			2,025,926	(742,590)	234,348,171
69	2029	6			2,037,081	(746,679)	235,638,573
70	2030	5			2,048,298	(750,790)	236,936,082
71	2031	4			2,059,577	(754,924)	238,240,734
72	2032	3			2,070,918	(759,081)	239,552,571
73	2033	2			2,082,321	(763,261)	240,871,631
74	2034	1			2,093,787	(767,464)	242,197,954
75	2035	0				(242,197,954)	-
				$ 13,200,000	$ 279,633,144	$ (37,608,333)	$ 6,746,361,550

* Through vintage year 1999 the balances are 1999 remaining plant balances.
** From 2015 capital budget

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 312 Boiler Plant Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			
			Transaction Year			Vintage Year	Advance			Transfers and	End of Year Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*

Whole Life Depreciation Rate Calculation

Historical Additions	239,866,001
Forecast Additions	52,967,142
Total Additions	292,833,144
Gross Salvage Value	12,109,898
Less Cost of Removal	24,219,795
Net Salvage Value	(12,109,898)
Total to be Recovered	304,943,041
Forecast Plant Balances	6,746,361,550
Whole Life Accrual Rate	4.52%
Cost of Removal Accrual Rate	0.36%
Whole Life Accrual Rate (Excluding Cost of Removal)	4.16%
Depreciable Service Life, years	22.1

Remaining Life Depreciation Rate Calculation

Account Balance 12/31/14	217,007,193
Forecast Additions	52,967,142
Gross Salvage Value	12,109,898
Less Cost of Removal	24,219,795
Net Salvage Value	(12,109,898)
Depreciation Reserve Balance 12/31/14	(23,923,643)
Forecast Total Remaining Life Balance	258,160,590
Forecast Plant Balances	4,600,048,349
Remaining Life Accrual Rate	5.61%

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 314 Turbogenerator Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			
			Transaction Year			Vintage Year	Advance			Transfers and	End of Year Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*
1	1970	65	8,192,128	-	-	(4,101,424)	-	8,192,128	-	-	8,192,128
2	1971	64	43,107	-	-	(20,408)	-	43,107	-	-	8,235,235
3	1972	63	1,450	-	-	-	-	1,450	-	-	8,236,685
4	1973	62	1,799	-	-	(1,799)	-	1,799	-	-	8,238,484
5	1974	61	-	-	-	-	-	-	-	-	8,238,484
6	1975	60	7,376	-	-	(6,647)	-	7,376	-	-	8,245,860
7	1976	59	7,330	-	-	(7,330)	-	7,330	-	-	8,253,190
8	1977	58	-	-	-	-	-	-	-	-	8,253,190
9	1978	57	-	-	-	-	-	-	-	-	8,253,190
10	1979	56	20,706	-	-	(5,915)	-	20,706	-	-	8,273,896
11	1980	55	-	-	-	-	-	-	-	-	8,273,896
12	1981	54	351,350	-	-	(351,350)	-	351,350	-	-	8,625,246
13	1982	53	-	-	-	-	-	-	-	-	8,625,246
14	1983	52	10,677	-	-	-	-	10,677	-	-	8,635,923
15	1984	51	10,598	-	-	(10,598)	-	10,598	-	-	8,646,521
16	1985	50	27,959	-	-	(27,959)	-	27,959	-	-	8,674,480
17	1986	49	3,889,736	-	-	(3,468,084)	-	3,889,736	-	-	12,564,216
18	1987	48	4,677	-	-	-	-	4,677	-	-	12,568,893
19	1988	47	226,936	-	-	(176,141)	-	226,936	-	-	12,795,829
20	1989	46	75,782	-	-	(67,172)	-	75,782	-	-	12,871,611
21	1990	45	4,931	-	-	-	-	4,931	-	-	12,876,542
22	1991	44	632,830	-	-	(552,593)	-	632,830	-	-	13,509,372
23	1992	43	11,469	-	-	(11,469)	-	11,469	-	-	13,520,841
24	1993	42	16,859	-	-	-	-	16,859	-	-	13,537,700
25	1994	41	73,804	-	-	-	-	73,804	-	-	13,611,504
26	1995	40	12,296	-	-	-	-	12,296	-	-	13,623,800
27	1996	39	910,483	-	-	(514,915)	-	910,483	-	-	14,534,283
28	1997	38	4,944,045	23,126	-	(480,516)	-	4,967,171	-	-	19,501,454
29	1998	37	1,501,271	-	-	-	-	1,501,271	-	-	21,002,725
30	1999	36	-	52,578	(1,550,734)	-	-	52,578	(1,550,734)	-	19,504,569
31	2000	35	-	1,241,408	-	-	-	1,241,408	-	-	20,745,977
32	2001	34	-	585,311	-	(348,460)	-	585,311	-	-	21,331,288
33	2002	33	-	811,453	-	(119,003)	-	811,453	-	-	22,142,741
34	2003	32	-	-	-	-	-	-	-	-	22,142,741
35	2004	31	-	-	(1,004,131)	-	-	-	(1,004,131)	-	21,138,610
36	2005	30	-	-	-	-	-	-	-	-	21,138,610
37	2006	29	-	352,969	-	(350,227)	-	352,969	-	-	21,491,579
38	2007	28	-	9,649	(55,892)	-	-	9,649	(55,892)	-	21,445,335
39	2008	27	-	705,769	(146,067)	-	0	705,769	(146,067)	-	22,005,037
40	2009	26	-	21,390	-	-	0	21,390	-	-	22,026,428
41	2010	25	-	5,293	(57,662)	-	-	5,293	(57,662)	-	21,974,059
42	2011	24	-	53,875	-	-	-	53,875	-	-	22,027,934
43	2012	23	-	25,559	(27,959)	-	53,760	79,318	(27,959)	-	22,079,293
44	2013	22	-	-	(3,035,784)	-	540,953	540,953	(3,035,784)	-	19,584,462
45	2014	21	-	-	(4,743,782)	-	21,199,234	21,199,234	(4,743,782)	-	36,039,914
46	Total		$ 20,979,599	$ 3,888,379	$ (10,622,011)	$ (10,622,011)	$ 21,793,947	$ 46,661,925	$ (10,622,011)	$ -	$ 677,238,996
47	Major Additions/Retirements										
48	2013			$ 540,953	$ (3,035,784)						
49	2014			21,199,234	$ (4,743,782)						
50											
51											
52	Routine Activity			$ 3,942,139	$ (2,842,445)						
53	Historical Interim Activity			0.58%	-0.42%						
54	Forecast Interim Activity			0.58%	-0.42%						
							Major Additions**			Major Retirements	
55	2015	20						209,785	(151,263)		36,098,436
56	2016	19						210,125	(151,509)		36,157,052
57	2017	18						210,467	(151,755)		36,215,763
58	2018	17						210,808	(152,001)		36,274,570
59	2019	16						211,151	(152,248)		36,333,472
60	2020	15						211,493	(152,496)		36,392,470
61	2021	14						211,837	(152,743)		36,451,564
62	2022	13						212,181	(152,991)		36,510,754
63	2023	12						212,525	(153,240)		36,570,039
64	2024	11						212,870	(153,488)		36,629,422
65	2025	10						213,216	(153,738)		36,688,900
66	2026	9						213,562	(153,987)		36,748,475
67	2027	8						213,909	(154,237)		36,808,147
68	2028	7						214,256	(154,488)		36,867,916
69	2029	6						214,604	(154,739)		36,927,781
70	2030	5						214,953	(154,990)		36,987,744
71	2031	4						215,302	(155,242)		37,047,805
72	2032	3						215,651	(155,494)		37,107,962
73	2033	2						216,002	(155,746)		37,168,218
74	2034	1						216,352	(155,999)		37,228,571
75	2035	0								(37,228,571)	-
							$ -	$ 50,922,976	$ (13,694,405)		$ 1,410,454,057

* Through vintage year 1999 the balances are 1999 remaining plant balances.
** From 2015 capital budget

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 314 Turbogenerator Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			End of Year
			Transaction Year			Vintage Year	Advance			Transfers and	Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*

Whole Life Depreciation Rate Calculation

Historical Additions	46,661,925
Forecast Additions	4,261,051
Total Additions	50,922,976
Gross Salvage Value	1,861,429
Less Cost of Removal	3,722,857
Net Salvage Value	(1,861,429)
Total to be Recovered	52,784,405
Forecast Plant Balances	1,410,454,057
Whole Life Accrual Rate	3.74%
Cost of Removal Accrual Rate	0.26%
Whole Life Accrual Rate (Excluding Cost of Removal)	3.48%
Depreciable Service Life, years	26.7

Remaining Life Depreciation Rate Calculation

Account Balance - 12/31/14	36,039,914
Forecast Additions	4,261,051
Gross Salvage Value	1,861,429
Less Cost of Removal	3,722,857
Net Salvage Value	(1,861,429)
Depreciation Reserve Balance 12/31/14	(3,879,472)
Forecast Total Remaining Life Balance	38,282,922
Forecast Plant Balances	733,215,061
Remaining Life Accrual Rate	5.22%

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 315 Accessory Electric Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			End of Year
			Transaction Year			Vintage Year	Advance			Transfers and	Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*
1	1970	65	1,382,577	31,225	-	(257,424)	-	1,413,802	-	-	1,413,802
2	1971	64	-	-	-	-	-	-	-	-	1,413,802
3	1972	63	-	-	-	-	-	-	-	-	1,413,802
4	1973	62	-	-	-	-	-	-	-	-	1,413,802
5	1974	61	4,334	-	-	-	-	4,334	-	-	1,418,136
6	1975	60	-	-	-	-	-	-	-	-	1,418,136
7	1976	59	-	-	-	-	-	-	-	-	1,418,136
8	1977	58	-	-	-	-	-	-	-	-	1,418,136
9	1978	57	-	-	-	-	-	-	-	-	1,418,136
10	1979	56	-	-	-	-	-	-	-	-	1,418,136
11	1980	55	736	-	-	-	-	736	-	-	1,418,872
12	1981	54	2,375	-	-	-	-	2,375	-	-	1,421,247
13	1982	53	-	-	-	-	-	-	-	-	1,421,247
14	1983	52	-	-	-	-	-	-	-	-	1,421,247
15	1984	51	-	-	-	-	-	-	-	-	1,421,247
16	1985	50	-	-	-	-	-	-	-	-	1,421,247
17	1986	49	836,455	-	-	(40,896)	-	836,455	-	-	2,257,702
18	1987	48	7,082	-	-	-	-	7,082	-	-	2,264,784
19	1988	47	6,227	-	-	-	-	6,227	-	-	2,271,011
20	1989	46	-	-	-	-	-	-	-	-	2,271,011
21	1990	45	-	-	-	-	-	-	-	-	2,271,011
22	1991	44	-	-	-	-	-	-	-	-	2,271,011
23	1992	43	-	-	-	-	-	-	-	-	2,271,011
24	1993	42	3,638	-	-	-	-	3,638	-	-	2,274,649
25	1994	41	-	-	-	-	-	-	-	-	2,274,649
26	1995	40	10,190	-	-	-	-	10,190	-	-	2,284,839
27	1996	39	37,644	-	-	(37,644)	-	37,644	-	-	2,322,483
28	1997	38	15,577	-	-	-	-	15,577	-	-	2,338,060
29	1998	37	7,290	-	-	-	-	7,290	-	-	2,345,350
30	1999	36	-	-	-	-	-	-	-	-	2,345,350
31	2000	35	-	-	-	-	-	-	-	-	2,345,350
32	2001	34	-	-	-	-	-	-	-	-	2,345,350
33	2002	33	-	-	-	-	-	-	-	-	2,345,350
34	2003	32	-	-	-	-	-	-	-	-	2,345,350
35	2004	31	-	-	-	-	-	-	-	-	2,345,350
36	2005	30	-	-	-	-	-	-	-	-	2,345,350
37	2006	29	-	-	-	-	-	-	-	-	2,345,350
38	2007	28	-	11,085	(1,705)	-	-	11,085	(1,705)	-	2,354,730
39	2008	27	-	-	-	-	-	-	-	1,852,342	4,207,072
40	2009	26	-	2,620,194	-	-	(0)	2,620,194	-	-	6,827,266
41	2010	25	-	10,087	(89,408)	-	-	10,087	(89,408)	-	6,747,944
42	2011	24	-	-	-	-	-	-	-	-	6,747,944
43	2012	23	-	25,181	(38,352)	-	-	25,181	(38,352)	-	6,734,773
44	2013	22	-	28,341	(38,673)	-	597,427	625,767	(38,673)	-	7,321,867
45	2014	21	-	-	(167,827)	-	-	-	(167,827)	-	7,154,041
46	Total		$ 2,314,125	$ 2,726,112	$ (335,965)	$ (335,965)	$ 597,427	$ 5,637,663	$ (335,965)	$ 1,852,342	$ 119,265,139

47	Major Additions/Retirements		
48	2009	$ 2,620,194	
49	2010		$ (89,408)
50	2013	$ 597,427	
51	2014		$ (167,827)
52	Routine Activity	$ 105,918	$ (78,730)
53	Historical Interim Activity	0.09%	-0.07%
54	Forecast Interim Activity	0.09%	-0.07%

			Major Additions**		Major Retirements		
55	2015	20		6,353	(4,723)		7,155,672
56	2016	19		6,355	(4,724)		7,157,303
57	2017	18		6,356	(4,725)		7,158,934
58	2018	17		6,358	(4,726)		7,160,566
59	2019	16		6,359	(4,727)		7,162,199
60	2020	15		6,361	(4,728)		7,163,831
61	2021	14		6,362	(4,729)		7,165,465
62	2022	13		6,364	(4,730)		7,167,098
63	2023	12		6,365	(4,731)		7,168,732
64	2024	11		6,366	(4,732)		7,170,366
65	2025	10		6,368	(4,733)		7,172,001
66	2026	9		6,369	(4,734)		7,173,636
67	2027	8		6,371	(4,735)		7,175,271
68	2028	7		6,372	(4,737)		7,176,907
69	2029	6		6,374	(4,738)		7,178,543
70	2030	5		6,375	(4,739)		7,180,179
71	2031	4		6,377	(4,740)		7,181,816
72	2032	3		6,378	(4,741)		7,183,453
73	2033	2		6,380	(4,742)		7,185,091
74	2034	1		6,381	(4,743)		7,186,729
75	2035	0				(7,186,729)	-
			$ -	$ 5,765,008	$ (430,621)		$ 262,688,930

* Through vintage year 1999 the balances are 1999 remaining plant balances.
** From 2015 capital budget

The Empire District Electric Company

Unit Property Depreciation Rate Analysis

Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances

Account: 315 Accessory Electric Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			
			Transaction Year			Vintage Year	Advance			Transfers and	End of Year Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*

Whole Life Depreciation Rate Calculation

Historical Additions	5,637,663
Forecast Additions	127,344
Total Additions	5,765,008
Gross Salvage Value	359,336
Less Cost of Removal	718,673
Net Salvage Value	(359,336)
Total to be Recovered	6,124,344
Forecast Plant Balances	262,688,930
Whole Life Accrual Rate	2.33%
Cost of Removal Accrual Rate	0.27%
Whole Life Accrual Rate (Excluding Cost of Removal)	2.06%
Depreciable Service Life, years	42.9

Remaining Life Depreciation Rate Calculation

Account Balance - 12/31/14	7,154,041
Forecast Additions	127,344
Gross Salvage Value	359,336
Less Cost of Removal	718,673
Net Salvage Value	(359,336)
Depreciation Reserve Balance 12/31/14	(2,195,678)
Forecast Total Remaining Life Balance	5,445,044
Forecast Plant Balances	143,423,792
Remaining Life Accrual Rate	3.80%

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 316 Miscellaneous Plant Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			End of Year
			Transaction Year			Vintage Year	Advance			Transfers and	Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*
1	1970	65	378,805	-	-	(86,416)	-	378,805	-	-	378,805
2	1971	64	5,008	-	-	(4,906)	-	5,008	-	-	383,813
3	1972	63	6,698	-	-	(2,998)	-	6,698	-	-	390,511
4	1973	62	9,550	-	-	(5,148)	-	9,550	-	-	400,061
5	1974	61	8,466	-	-	(319)	-	8,466	-	-	408,527
6	1975	60	11,191	-	-	(232)	-	11,191	-	-	419,718
7	1976	59	9,438	-	-	-	-	9,438	-	-	429,156
8	1977	58	4,645	-	-	(473)	-	4,645	-	-	433,801
9	1978	57	4,158	-	-	(862)	-	4,158	-	-	437,959
10	1979	56	10,249	-	-	-	-	10,249	-	-	448,208
11	1980	55	10,393	-	-	-	-	10,393	-	-	458,601
12	1981	54	28,348	-	-	(15,503)	-	28,348	-	-	486,949
13	1982	53	20,435	-	-	(12,295)	-	20,435	-	-	507,384
14	1983	52	1,916	-	-	-	-	1,916	-	-	509,300
15	1984	51	5,070	-	-	-	-	5,070	-	-	514,370
16	1985	50	8,126	-	-	-	-	8,126	-	-	522,496
17	1986	49	58,491	-	-	(1,582)	-	58,491	-	-	580,987
18	1987	48	60,920	-	-	(318)	-	60,920	-	-	641,907
19	1988	47	57,101	-	-	-	-	57,101	-	-	699,008
20	1989	46	139,742	-	-	(782)	-	139,742	-	-	838,750
21	1990	45	4,102	-	-	-	-	4,102	-	-	842,852
22	1991	44	4,845	-	-	-	-	4,845	-	-	847,697
23	1992	43	77,564	-	-	-	-	77,564	-	-	925,261
24	1993	42	54,920	-	-	(794)	-	54,920	-	-	980,181
25	1994	41	38,387	-	-	(21,620)	-	38,387	-	-	1,018,568
26	1995	40	73,167	-	-	(12,458)	-	73,167	-	-	1,091,735
27	1996	39	22,810	-	-	(2,682)	-	22,810	-	-	1,114,545
28	1997	38	117,747	-	-	(20,426)	-	117,747	-	-	1,232,292
29	1998	37	102,928	-	-	(52,570)	-	102,928	-	-	1,335,220
30	1999	36	-	78,705	(15,503)	-	-	78,705	(15,503)	-	1,398,422
31	2000	35	-	69,546	(4,094)	-	-	69,546	(4,094)	-	1,463,874
32	2001	34	-	60,689	-	(16,402)	-	60,689	-	-	1,524,563
33	2002	33	-	13,953	-	(0)	-	13,953	-	-	1,538,516
34	2003	32	-	14,273	-	(5,988)	-	14,273	-	-	1,552,789
35	2004	31	-	16,876	(53,043)	-	-	16,876	(53,043)	-	1,516,622
36	2005	30	-	42,810	-	-	-	42,810	-	-	1,559,432
37	2006	29	-	5,234	-	-	-	5,234	-	-	1,564,666
38	2007	28	-	146,257	(20,000)	(75,604)	0	146,258	(20,000)	-	1,690,924
39	2008	27	-	329,743	-	-	(0)	329,743	-	-	2,020,666
40	2009	26	-	121,705	-	-	(0)	121,705	-	-	2,142,371
41	2010	25	-	32,678	(21,094)	(14,150)	-	32,678	(21,094)	-	2,153,955
42	2011	24	-	10,965	(9,703)	-	-	10,965	(9,703)	-	2,155,218
43	2012	23	-	183,921	(42,043)	-	64,616	248,538	(42,043)	-	2,361,713
44	2013	22	-	1,433	-	-	154,950	156,383	-	-	2,518,096
45	2014	21	-	-	(225,794)	-	(1,460)	(1,460)	(225,794)	-	2,290,843
46	Total		$ 1,335,220	$ 1,128,788	$ (391,273)	$ (354,529)	$ 218,107	$ 2,682,116	$ (391,273)	$ -	$ 48,731,332
47	Major Additions/Retirements										
48	2008			$ 329,743							
49	2012			248,538							
50	2014				$ (225,794)						
51											
52	Routine Activity			$ 768,615	$ (165,479)						
53	Historical Interim Activity			1.58%	-0.34%						
54	Forecast Interim Activity			1.58%	-0.34%						
							Major Additions**		Major Retirements		
55	2015	20						36,132	(7,779)		2,319,196
56	2016	19						36,580	(7,875)		2,347,900
57	2017	18						37,032	(7,973)		2,376,960
58	2018	17						37,491	(8,072)		2,406,379
59	2019	16						37,955	(8,171)		2,436,162
60	2020	15						38,424	(8,273)		2,466,314
61	2021	14						38,900	(8,375)		2,496,839
62	2022	13						39,381	(8,479)		2,527,741
63	2023	12						39,869	(8,584)		2,559,027
64	2024	11						40,362	(8,690)		2,590,699
65	2025	10						40,862	(8,797)		2,622,764
66	2026	9						41,368	(8,906)		2,655,225
67	2027	8						41,880	(9,016)		2,688,088
68	2028	7						42,398	(9,128)		2,721,358
69	2029	6						42,923	(9,241)		2,755,040
70	2030	5						43,454	(9,355)		2,789,138
71	2031	4						43,992	(9,471)		2,823,659
72	2032	3						44,536	(9,588)		2,858,606
73	2033	2						45,087	(9,707)		2,893,987
74	2034	1						45,645	(9,827)		2,929,805
75	2035	0								(2,929,805)	-
							$ -	$ 3,496,386	$ (566,581)		$ 100,996,217

* Through vintage year 1999 the balances are 1999 remaining plant balances.
** From 2015 capital budget

The Empire District Electric Company
Unit Property Depreciation Rate Analysis
Unit Property: Steam Production, Asbury Plant

Gross Salvage	5%
Cost of Removal	10%
Net Salvage	-5%
Install Date	1970
Retirement Date	2035
Service Life, Yrs	65

Historical and Forecast Plant Additions & Balances
Account: 316 Miscellaneous Plant Equipment

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
			Reported Per Books				Account 106	Adjusted Transaction Year			End of Year
			Transaction Year			Vintage Year	Advance			Transfers and	Plant
Line	Vintage Year	Vintage Age	Balance	Additions	Retirements	Retirements	Additions	Additions	Retirements	Adjustments	Balance*

Whole Life Depreciation Rate Calculation

Historical Additions	2,682,116
Forecast Additions	814,270
Total Additions	3,496,386
Gross Salvage Value	146,490
Less Cost of Removal	292,980
Net Salvage Value	(146,490)
Total to be Recovered	3,642,876
Forecast Plant Balances	100,996,217
Whole Life Accrual Rate	3.61%
Cost of Removal Accrual Rate	0.29%
Whole Life Accrual Rate (Excluding Cost of Removal)	3.32%
Depreciable Service Life, years	27.7

Remaining Life Depreciation Rate Calculation

Account Balance - 12/31/14	2,290,843
Forecast Additions	814,270
Gross Salvage Value	146,490
Less Cost of Removal	292,980
Net Salvage Value	(146,490)
Depreciation Reserve Balance 12/31/14	(961,930)
Forecast Total Remaining Life Balance	2,289,673
Forecast Plant Balances	52,264,884
Remaining Life Accrual Rate	4.38%