Exhibit No.:
Issue: Hawthorn 5 SCR
Witness: Darrel L. Hensley
Type of Exhibit: Rebuttal Testimony
Sponsoring Party: Kansas City Power & Light Company
Case No.: ER-2012-0174
Date Testimony Prepared: September 5, 2012

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2012-0174

REBUTTAL TESTIMONY

OF

DARREL L. HENSLEY

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

Kansas City, Missouri
September 2012

REBUTTAL TESTIMONY

OF

DARREL L. HENSLEY

Case No. ER-2012-0174

Q: Please state your name and business address.

A: My name is Darrel L. Hensley. My business address is 1200 Main Street, Kansas City, Missouri 64105.

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

A: I am employed by Kansas City Power & Light Company ("KCP&L" or the "Company") as Senior Director, Generation.

Q: What are your responsibilities?

A: My responsibilities include oversight of Generation and Safety departments for the Supply division. I also have oversight responsibilities for the Central Machine Facility which manufactures and repairs metal parts for KCP&L's generating stations, Operations Maintenance Department, and Apprenticeship training programs.

Q: Please describe your education, experience and employment history.

A: I received an Associate of Applied Science degree in Electronics in 1987 from DeVry University. I received a Bachelor of Science degree in Technical Management from DeVry University in 1999, followed by a Masters in Business Administration degree from the University of Missouri Kansas City in 2008. I began working at KCP&L in 1995 as a Continuous Emissions Monitor Supervisor for the Supply division. In 1997, I became the Hawthorn Station Electrical Supervisor and then progressively moved through management positions at Hawthorn—Results Supervisor (1999), Operations

Superintendent (2003), and Maintenance Superintendent (2005)—until 2007 when I became the Superintendent of Maintenance Programs for KCP&L's Supply division working on divisional maintenance initiatives. In 2009, I moved back to Hawthorn when I was promoted to Plant Manager of the Station. I served in this role until 2011 when I was promoted to Director of Supply Services. In June 2012 I was promoted to my current role of Senior Director, Generation.

Q: Have you previously testified in a proceeding before the Missouri Public Service Commission ("Commission" or "MPSC") or before any other utility regulatory agency?

A: No, I have not testified before the MPSC or any other utility regulatory agency.

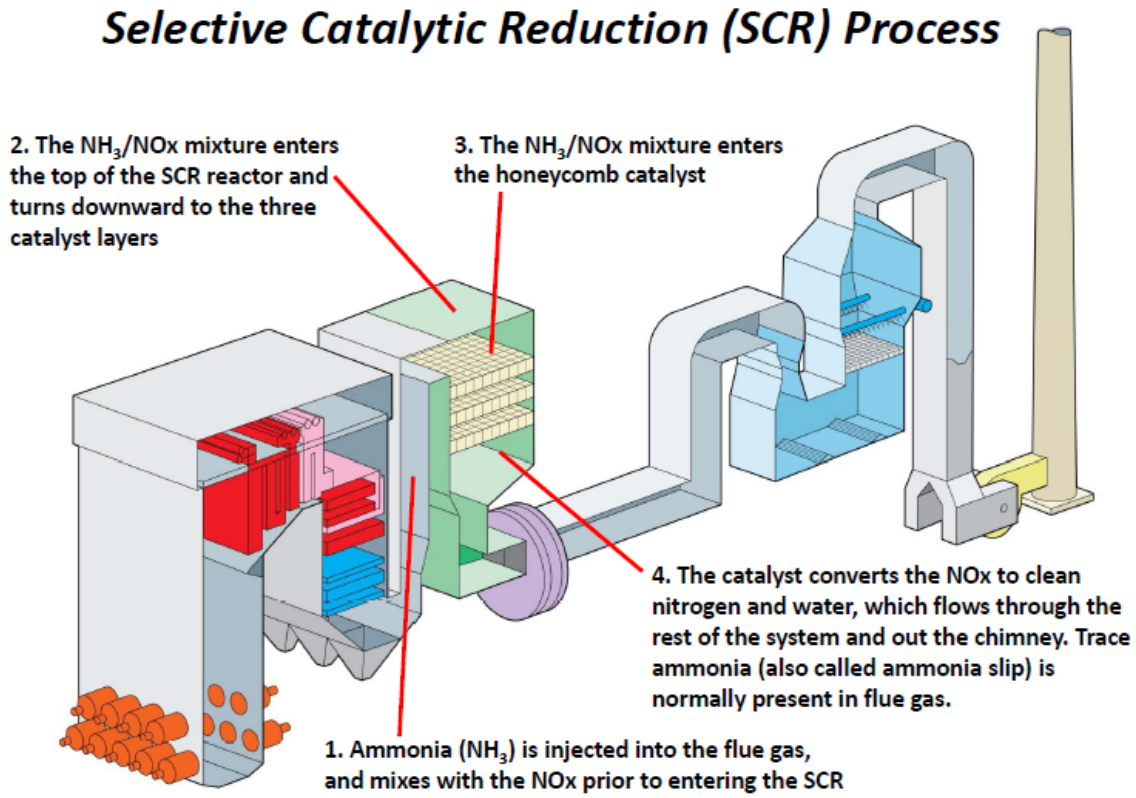
Q: What is the purpose of your Rebuttal Testimony?

A: The purpose of my Rebuttal Testimony is to respond to certain adjustments that the Missouri Public Service Commission Staff ("Staff") has proposed related to the Hawthorn 5 Selective Catalytic Reduction System ("SCR"). Specifically, I will address claims by Staff that KCP&L's customers have paid and will continue to pay for higher capital costs and operations and maintenance ("O&M") expenses directly due to the Hawthorn 5 SCR.

Q: What is an SCR and what does it do?

A: The SCR process utilizes the SCR reactor, which is a large box located at the outlet of the coal-fired boiler before the air heater. All of the gases generated by the combustion of the coal in the boiler pass through this box. This reactor can contain up to three layers of catalyst. Ammonia is sprayed into the flue gas stream and the ammonia/flue gas mixture passes through the catalyst. A chemical reaction takes place which results in the nitrogen

oxide ("NO_X") emissions being reduced by 50% to 90% depending on the system design. (See diagram below.)



Q: What are the major cost components of an SCR?

A: Ammonia and the catalyst are the major cost components associated with operating an SCR. The ammonia is a consumable and is considered an ongoing O&M expense. Over time, the SCR catalyst is "used up" and the chemical reaction becomes less efficient requiring the use of more and more ammonia. Eventually, NO_X emissions compliance cannot be maintained and the catalyst must be cleaned (also called rejuvenated), regenerated (the addition of catalyst to what is already there), or replaced. Cleaning/Rejuvenation have traditionally been an O&M expense, while regeneration or replacement has been treated as a capital expense.

Q: What is the average useful life of a layer of catalyst?

A: The average useful life of a layer of catalyst varies depending on many factors some of which include type of coal burned, combustion process of the boiler (*i.e.*, pulverized or cyclone-fired), ash pluggage, and many other operational considerations. We monitor the reactor's overall ability to efficiently reduce NO_X (known as reactor "potential"). Each layer of catalyst contributes to reactor potential. A catalyst layer is added/replaced as necessary to maintain the reactor potential above a minimum threshold determined by operating conditions and emission reduction requirements.

Q: What is Staff recommending in this case regarding the Hawthorn 5 SCR?

A: Staff has or will propose adjustments to reduce or exclude what they believe are excessive capital costs related to the SCR, ammonia costs that KCP&L has incurred and has adjusted outages directly related to the Hawthorn SCR, which in effect, reduces Staff's ongoing fuel expense level in this rate case. KCP&L witness Burton Crawford will address the outage issue.

Q: Please provide background information on the Hawthorn 5 SCR installation project?

A: In February 1999, an explosion occurred at Hawthorn 5 which entirely destroyed the boiler. The Environmental Protection Agency ("EPA") permit for the reconstruction of the Unit 5 boiler island required the installation of Best Available Control Technology ("BACT") which included the addition of an SCR.

Babcock and Wilcox ("B&W") and KCP&L entered into an engineering, procurement, and construction agreement ("Agreement") for the construction of the Hawthorn 5 boiler island and included the installation of the SCR. Under the Agreement,

B&W guaranteed specific performance standards, including ammonia slip tests. After the SCR was placed in service in 2001, the SCR failed the ammonia slip tests.

From 2002 through 2004, KCP&L and B&W attempted to enhance the SCR performance by doing additional work on the SCR, but were unsuccessful. Because of the failure to meet the ammonia slip test, KCP&L has had to replace catalysts more often and has used more ammonia than was in B&W's original design model.

Q: Do you agree with Staff's position that the Hawthorn 5 SCR has incurred excess costs because it is not performing as originally designed?

A: No, I do not.

Q: Please explain.

A: Prior to the installation of the Hawthorn 5 SCR, KCP&L had no prior experience with this type of environmental equipment. Moreover, industry knowledge with respect to SCRs in the United States was in its infancy on units burning Powder River Basin coal. The SCR at Hawthorn 5 was the first installation of an SCR on a Powder River Basin pulverized-coal burning boiler in the United States. As part of the Agreement, B&W was responsible for the modeling and made the determination of the necessary design and equipment needed for the boiler island construction to meet compliance with the EPA permit requirement of the installation of BACT.

As stated earlier, the actual performance of an SCR depends upon several variables including the type of fuel burned, the combustion process of the boiler, ash pluggage as well as operational variables. Because of the limited industry knowledge of the use of SCRs with pulverized Powder River Basin coal in the United States at the time of the design of the Hawthorn 5 SCR, actual performance of the SCR has been below

what the B&W original design model represented. It is KCP&L's position that it is more accurate to judge the performance of the SCR after the unit was placed in service in 2001 rather than a design model based upon several variables with which the US industry had limited experience at the time.

Q: Do you believe KCP&L has incurred increased capital costs and O&M costs since the Hawthorn 5 SCR was placed in service?

A: O&M and capital costs have increased with the additional equipment to maintain. The cost increases year-over-year are related to routine industry inflationary price increases.

Q: Please explain.

A: There has not been degradation in the performance of the SCR since it was placed in service. Additionally, KCP&L continues to seek performance efficiency increases and cost reduction opportunities in the operation of the Hawthorn 5 SCR. As the SCR industry knowledge has grown since the Hawthorn 5 SCR was designed, technology and design advances have been made which include the potential to rejuvenate and/or regenerate rather than purchase new catalyst. When B&W designed the SCR, it was not anticipated that the catalyst could be rejuvenated or regenerated, which KCP&L has done at Hawthorn 5. Thus, the ratepayers have benefited and will continue to benefit from reduced costs (versus purchasing new catalysts). It is unreasonable to attempt to hold KCP&L accountable for the original design specifications on an installation that was the first of its kind for the industry. Furthermore, Staff's position does not take into consideration the benefits of technology advances that were not also part of the original design.

Q: Does that conclude your testimony?

A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Kansas City Power & Light Company's Request for Authority to Implement A General Rate Increase for Electric Service	)))	Case No. ER-2012-0174

AFFIDAVIT OF DARREL L. HENSLEY

STATE OF MISSOURI)
) **ss**
COUNTY OF JACKSON)

Darrel L. Hensley, being first duly sworn on his oath, states:

1. My name is Darrel L. Hensley. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Senior Director – Generation.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Kansas City Power & Light Company consisting of Seven (7) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Darrel L. Hensley
Darrel L. Hensley

Subscribed and sworn before me this 5th day of September, 2012.

Nicole A. Wehry
Notary Public

My commission expires: Feb. 4, 2015

NICOLE A. WEHRY
Notary Public - Notary Seal
State of Missouri
Commissioned for Jackson County
My Commission Expires: February 04, 2015
Commission Number: 11391200