ComEd Ex. 17.0

STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

COMMONWEALTH EDISON COMPANY	:	
	:	No. 12-0321
Annual formula rate update and revenue	:	
requirement reconciliation authorized by	:	
Section 16-108.5 of the Public Utilities Act.	:	

Rebuttal Testimony of

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I. Introduction

A. Witness Identification

Q. What is your name and business address?

A. My name is Michael F. Born. My business address is Two Lincoln Centre, Oakbrook Terrace, Illinois 60181-4260.

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

A. I am employed by Commonwealth Edison Company ("ComEd"). At the time I filed direct testimony, I held the position of Principal Engineer in the Distribution Capacity Planning Department. I have been recently promoted to Manager, Distribution Capacity Planning, where my duties include planning, directing, and assessing the activities of three managers and about 30 engineers and technicians responsible for forecasting distribution feeder and substation annual peak loads, development of least-cost, reliable capacity expansion plans and appropriate alternatives, and analysis of distribution feeder adequacy.

Q. Are you the same Michael F. Born who provided direct testimony in this proceeding?

A. Yes.

B. Summary of Testimony

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to the direct testimony of Staff witness Greg Rockrohr, Staff Exhibit ("Ex.") 5.0, regarding ComEd's proposed

Distribution System Loss Study, ComEd Ex. 10.6[1]. In particular, I address the following concerns raised by Mr. Rockrohr: (1) inconsistencies between the number of customers per service shown in the list of customer category models in Appendix 1 of the Secondary and Service Loss Study dated June 13, 2012 and the loss model diagrams in Appendix 2; (2) discrepancies between the entries for the secondary and service system elements in Appendix C of ComEd Ex. 10.6, the 2011 Distribution System Loss Factor Study, and the percent of the load in each customer category that utilize those elements; and (3) the size of the samples of customers that were utilized to develop representative models for the estimation of losses in secondary and service conductors in the Secondary and Service Loss Study.

Q. **In brief, what conclusions do you reach?**

A. The 2011 ComEd Distribution System Loss Factor Study and the ComEd Secondary and Service Loss Study accurately reflect the distribution losses on ComEd's system and appropriately separate secondary and service elements, respectively. Nonetheless, to address Mr. Rockrohr's concerns, both studies have been revised to appropriately and more transparently reflect the data used to compute both distribution losses and to separate secondary and service losses. As regards to the sample size, the results of the Secondary and Service Loss Study are reasonably accurate. However, I understand Mr. Rockrohr's concern in this regard. Examining additional samples will take considerable time. Given the time constraints of this proceeding and the revenue neutral effect of the

[1] ComEd Ex. 10.6 was filed on June 13, 2012 in compliance with the Administrative Law Judges' Notice of Ruling dated June 6, 2012 and the Illinois Commerce Commission's final Order in ICC Docket No. 11-0721 dated May 29, 2012.

Distribution System Loss Study, I will be happy to work with Staff to examine additional samples and, depending on the results of that analysis, prepare a new Secondary and Service System Loss Study for submission at the outset of the next proceeding in which the subject can appropriately be considered, specifically the revenue neutral cost of service and rate design proceeding that will be conducted in 2013.

C. Itemized Attachments

Q. **What exhibits are attached to your testimony?**

A. I have two attachments to my rebuttal testimony. ComEd Ex. 17.1 is a revised ComEd Secondary and Service Loss Study. ComEd Ex. 17.2 is a revised Distribution System Loss Study.

II. Secondary and Service Loss Study

Q. **Mr. Rockrohr raises a concern regarding the values assigned to the Single Family ("SF") customer category in Appendix 1 of the ComEd Secondary and Service Loss Study as they appear inconsistent with the schematic models for the SF customer category in Appendix 2 of that study. Staff Ex. 1.0, 3:47-4:70. Before addressing Mr. Rockrohr's concern, can you explain what the ComEd Secondary and Service Loss Study is?**

A. Yes. On page 291 its Final Order in ComEd's 2010 Rate Case (dated May 24, 2011), ICC Docket No.10-0467, the Illinois Commerce Commission directed that with regard to the Distribution System Loss Study, ComEd separately consider the secondary and service elements of the Distribution Loss Factors. Secondary elements consist of low-voltage secondary conductors that can supply multiple customers, such as those that exist

along streets, alleys and within utility easements. The service elements consist of those conductors on private property and supply individual customers. Thus, the Secondary and Service Loss Study provides the basis for estimating the peak losses in secondary and service conductors by customer category.

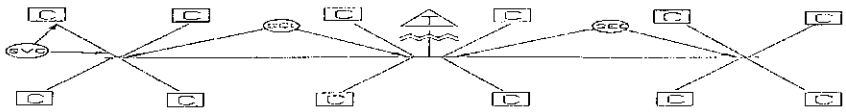
Q. **Can you explain the analysis used to estimate the peak losses in secondary and service conductors by customer category for the Secondary and Service Loss Study?**

A. Yes. In order to compute losses associated with secondary and service conductors, ComEd began by analyzing various system configurations of secondary and service conductors that provide service to ComEd customers. Various configurations need to be considered because the location of customer and company facilities; magnitude of peak load; and design standards in effect at the time of installation can result in differences in the facilities that supply individual customers. For the purpose of this study, conductor types and configurations contained in current ComEd engineering standards were used. Because of the numerous configurations, a random sample of 10 customers in each of the customer categories was used to determine how often secondary and service conductors occurred on ComEd's system in overhead, underground or high-rise configurations. For example, in a densely populated urban area there will be more secondary conductor sections and more customers served from an overhead secondary conductor than in a suburban or rural area.

An electrical power flow model for each of the representative configurations used to provide service to each customer category was then developed based on an analysis of the sample of customers. For example, the model in Diagram 1 below was developed as

a configuration for single family customers in a suburb with overhead conductors (*see* Appendix 2 of ComEd Ex. 17.1). Diagram 1 demonstrates that in this configuration, two secondary conductors ("SEC") each serving four customers ("C") and four customers are served directly from the transformer. Further, Diagram 1 shows that each customer ("C") is served by and individual service ("SVC").

Diagram 1



The power flow simulation used by ComEd identifies the losses in each conductor section. From the simulation results, the secondary and service power losses can be determined by summing the losses for the conductors used for secondary and service purposes separately. The losses for each model were then divided by the total customer load in the model to determine losses as a percent of the load. For customer categories that are supplied by more than one model of secondary and service conductors, the losses for that category were determined by weighting the losses of the applicable models by the frequency of occurrence of the applicable model in the sample of customers by category. These percentages are used for separating secondary and service conductor losses in Appendix C and Appendix D of the Distribution System Loss Study.

Q. **Returning to Mr. Rockrohr's concerns regarding Appendix 1 of the ComEd Secondary and Service Loss Study, how do you respond?**

A. Mr. Rockrohr observation is correct. In Appendix 1 of ComEd Ex. 10.6, the values shown in the column labeled as "# of Customers on Service" actually represent the number of customers on the Secondary conductor in that model. In ComEd Ex. 17.1, the label for this column in Appendix 1 has been revised to show "# of Customers on Each Secondary". To provide additional explanation and clarity, an additional column has been added to the tables in Appendix 1 to show the number of customers per service for each of the loss models.

Q. **Also, with respect to the ComEd Secondary and Service Loss Study, Mr. Rochrohr expresses a concern regarding the use of only ten service installations in samples for most customer categories in order to determine its use of secondary and service elements to supply the category. Staff Ex. 1.0, 6:123-132. How do you respond?**

A. I agree with Mr. Rockrohr that ten service installations is a small sample for customer categories. I nonetheless believe that, based on sound engineering judgment, experience, and information from others interviewed for this study pertaining to a wide variety of secondary and service configurations, the percentages resulting from the study are realistic.

Q. **Why are the percentages resulting from the study realistic?**

A. The loss percentages from this analysis are realistic since various representative configurations including overhead and underground configurations; suburban, urban and high-rise locations are all included in the random samples that were used to develop the loss models. Further, the conductor types and sizes have realistic load to capability ratios for the customer loads used in each of the models.

Q. **What impact is likely to result from increasing the sample size in the Secondary and Service Loss Study?**

A. Being familiar with ComEd secondary and service configuration practices for over 40 years, any changes would be de minimis. However, to address Mr. Rockrohr's concerns, ComEd will work with Staff to increase the number of customers in the sample for each of the four largest customer categories to determine if the current weighting of models is appropriate. Additional samples will be examined in the Single Family without Space Heat, Multi-Family without Space Heat, Small Load and Multi-Family with Space Heat categories. However, considering the work required to expand the sample size for these customer categories, this effort cannot, as a practical matter, be completed in the timeframe of this proceeding. ComEd is prepared to work with Staff to complete this additional analysis as promptly as practical. I recommend that work on that analysis proceed and that the results of that analysis be presented in an updated Secondary and Service Loss Study and Distribution System Loss Factor Study to be submitted at the outset of the revenue neutral cost of service and rate design proceeding that will be initiated in the first half of next year. I believe that this is a reasonable approach as it is my understanding that any changes in the calculation of the distribution loss factors will primarily impact cost allocations in the Embedded Cost of Service Study.

III. Distribution System Loss Study

Q. **With respect to the Distribution System Loss Study, Mr. Rockrohr raises concerns regarding several percentages in Appendix C, entitled "2011 Loss Factors – Percent of Category Load Through Elements." In particular, Mr. Rockrohr testifies that**

the service elements should have been at or near 100% for the Single Family ('SF") customer category and Single Family with Electric Space Heat ("SF_SH") and not at 100% for the 0-100kW customer category. Staff Ex. 1.0, 4:71-5:105. How do you respond?

A. Mr. Rochrohr is correct that every customer category uses service conductors, although not every customer category uses secondary conductors. Accordingly, in ComEd's revised Secondary and Service Loss Study, ComEd Ex 17.1, the size and length of the service conductor is listed in Appendix 1 for each customer category and loss model. To clarify the values of secondary and service conductor losses for each customer category that were used in the Distribution System Loss Factor Study, an additional table is included in Appendix C that lists the results of the 2012 ComEd Secondary and Service Loss Study.

Q. **Also, with respect to Appendix C of the Distribution System Loss Study, Mr. Rockrohr recommends deletion of rows 19 and 20. Staff Ex. 1.0, 5:106-6:122. Do you agree?**

A. Yes. ComEd Ex. 17.2 reflects this change.

Q. **Does this complete your rebuttal testimony?**

A. Yes.