BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF ITS 2011 ELECTRIC RESOURCE PLAN	**)** **)** **)** **)**	**DOCKET NO. 11A-869E**

REBUTTAL TESTIMONY OF JANNELL MARKS

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

July 16, 2012

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REBUTTAL TESTIMONY OF JANNELL MARKS

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jannell Marks. My business address is 1800 Larimer Street, Denver, Colorado 80202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by Xcel Energy Services, Inc., a wholly-owned subsidiary of Xcel Energy Inc., the parent company of Public Service Company of Colorado ("Public Service" or "Company"). My job title is Director, Sales, Energy and Demand Forecasting.

Q. FOR WHOM ARE YOU PROVIDING TESTIMONY?

A. I am testifying on behalf of Public Service in this proceeding.

Q. DID YOU FILE DIRECT AND SECOND SUPPLEMENTAL DIRECT TESTIMONY IN THIS CASE?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my testimony is to respond to the Answer Testimony of PUC Staff witnesses William W. Harris and Keith M. Hay regarding the Company's sales and peak demand forecasts and DSM forecasts.

II. SALES AND PEAK DEMAND FORECASTS

Q. PLEASE SUMMARIZE PUC STAFF WITNESS HARRIS' RECOMMENDATIONS REGARDING THE COMPANY'S SALES AND PEAK DEMAND FORECASTS.

A. Mr. Harris recommends that the Commission consider the Company's forecasts of sales, customers and peak loads to only be a rough estimate for future resource needs and to not take them as being overly firm or reliable. He also recommends that the Commission determine the forecasts presented by the Company require considerable revision. Mr. Harris' concerns with the Company's sales and peak demand forecasts fall into two primary categories: 1) the statistical methods the Company uses and 2) the data inputs used in the Company's forecast models.

Q. WHAT ARE MR. HARRIS' CONCERNS WITH THE DATA INPUTS USED IN THE COMPANY'S FORECAST MODELS?

A. Mr. Harris is concerned because the Company's forecast filed in this proceeding did not incorporate revised employment data or a revised Colorado households forecast. He recommends that the Company submit revised forecasts based on updated input data.

Q. DO YOU AGREE WITH MR. HARRIS' RECOMMENDATION TO SUBMIT A REVISED FORECAST IN THIS PROCEEDING BASED ON UPDATED INPUT DATA?

A. Yes. It is not uncommon for input data, such as economic and demographic data, to be revised during the time when one of our resource plan proceedings is pending. For example, revised Colorado labor statistics were released in mid-March, 2012 based on an annual benchmarking process that occurs when labor statistic numbers acquired by a survey process are compared with those gathered by actual reporting to government agencies. Since both the original forecast filed in this proceeding and the March 2012 sales and peak demand forecast filed July 5, 2012 with my Second Supplemental Direct Testimony and Exhibits were developed prior to the release of the revised employment data, neither forecast incorporates this updated employment information. It has always been the Company's intention to further update the sales and peak demand forecasts prior to the Phase 2 Competitive Solicitation portion of this proceeding, as I indicated in my Direct Testimony in this proceeding on Page 4, lines 12-16 and reiterated in my Second Supplemental Direct Testimony on Page 2, lines 13-21. The further update that we file in advance of our Phase 2 Competitive Solicitation will incorporate the most recent employment and household data that are available at the time we prepare the update.

Q. WHAT ARE MR. HARRIS' CONCERNS WITH THE STATISTICAL METHODS THE COMPANY USES?

A. Mr. Harris does not support the statistical methods used by the Company in this docket, stating that the Company's dynamic regression methods are not capable of properly predicting causal relationships due to problems with misspecification, excessive binary variable use, and inappropriate variables. He also finds fault with the fact that the Company's statistical methods use statewide data, rather than data that match the geography of its system.

Q. WHAT IS YOUR RESPONSE TO MR. HARRIS' CONCERNS?

A. It is difficult to provide a detailed response to Mr. Harris' concerns regarding "problems with misspecification" and "inappropriate variables" because that is all that he says, without any specific examples or further explanation. The Company relies on regression models that are designed to identify and quantify the statistical relationship between historical sales, peak demand or customers and a set of independent predictor variables, such as historical economic and demographic indicators, historical electricity prices, or historical weather. The Company applies a number of quantitative and qualitative tests to the forecasting models to ensure the models are statistically valid and the results are reasonable. The Company has been using the same methodology to develop its forecasts for the last twelve years. The Company and the Commission have relied on the Company's forecasts of customers, sales and peak demand developed using the same forecasting methodology as we have used in this proceeding in multiple previous regulatory proceedings, including the 2003 and 2007 Resource Plans considered in Docket Nos. 04A-214E et al and 07A-447E, the last six proceedings initiated to consider the

Company's annual Renewable Energy Standards Compliance Plans and in Docket Nos. 08S-420E, 09AL-299E and 11AL-947E, which were the last three of the Company's Phase I electric rate cases. The Company's forecasting methodology is described in detail in Section 2.6 of Volume II Technical Appendix in this filing.

Q. MR. HARRIS IS ALSO CONCERNED WITH "EXCESSIVE BINARY VARIABLE USE." WERE BINARY VARIABLES USED IN ANY OF THE REGRESSION MODELS?

A. Yes. Binary variables were included as explanatory variables in some of the regression models. Seasonal binary variables were included in the Residential sales per customer model, the Commercial and Industrial sales model, the Public Authority sales model, the Street Lighting sales model, and the Residential peak demand model to account for non-weather-related seasonal factors.

Binary variables also were used in several models to account for changes in customer counts and sales resulting from the conversion to a new billing system. The conversion occurred in two phases, the first phase being in mid-2003 and the second phase in mid-2004. The conversion resulted in changes in how customers were counted and how sales were reported on a billing-month basis. The inclusion of binary variables to account for these changes allows for the use of both the pre-conversion data and the post-conversion data in the same regression model.

In addition, binary variables for specific months were used in several of the models to account for unusual billing activity.

Finally, the Public Authority sales model includes binary variables to account for significant increases in sales in this class that occurred in 2002 and 2006. The Public Authority class includes sales to the Regional Transportation District ("RTD"). Sales in this class increased significantly when RTD first extended light rail service in 2002 and later expanded it in 2006.

I do not agree with Mr. Harris' assessment that the use of these binary variables is excessive. Rather, these binary variables have been used appropriately to account for seasonal factors, definitional changes in the historical data, unusual billing activity, and step changes in historical sales levels resulting from a customer's operational changes.

Q. WHY DOES THE COMPANY USE STATEWIDE DATA RATHER THAN DATA THAT MATCHES THE GEOGRAPHY OF ITS SYSTEM?

A. There are several reasons. First, to develop economic and demographic data at the service territory level would require summing the various economic and demographic indicators on a county-level basis for the counties in which Public Service provides retail electric service. Statewide economic and demographic data generally is more readily available from reliable and credible sources and is more commonly reported and analyzed than is county-level data.

Second, it is appropriate to use statewide data because the counties in which Public Service provides retail electric service account for the majority of the state's economy, with nearly all large counties and cities represented in Public Service's service territory. In fact, 70 percent of the state's population is located in the counties in which Public Service provides retail electric service.

Third, an assessment of population trends for both the state and the service territory indicates very little difference between the two, on both a historical and a forecast basis. Historical and forecast population is available from the Colorado State Demography Office and is one of the few indicators available at an annual frequency and on a county-level basis. Historically, the average annual percent growth in the service territory population has been almost identical to the growth in the state's population. For the time period 2000 to 2011, service territory population increased at an annual average rate of 1.4 percent, while statewide population increased at 1.5 percent per year on average. The forecast of population growth from 2011 to 2018 is also nearly identical, with the service territory level projected to increase at an average annual rate of 1.64 percent, and the state projected to grow at an average annual rate of 1.76 percent. As is evident from these statistics, there is very little difference in either the historical or projected rate of growth between the two series of data.

Q. WHAT ARE YOUR RECOMMENDATIONS REGARDING THE SALES AND PEAK DEMAND FORECAST?

A. I recommend that the Commission approve the forecasting methodology presented in Phase I of this proceeding. The Company's forecasting methodology and underlying regression models are statistically valid and produce results that can be reasonably relied on. I also recommend that the Commission allow the Company to update the forecast prior to the Phase II Competitive Solicitation portion of this proceeding in order to incorporate the most current information available at that time.

III. DEMAND SIDE MANAGEMENT

Q. PLEASE SUMMARIZE THE RECOMMENDATIONS OF PARTIES RELATED TO DEMAND SIDE MANAGEMENT.

A. PUC Staff witness Hay, WRA witness Gwendolyn Farnsworth, and RUC witness Gina B. Hardin all recommend that the Company use the energy savings goals approved by the Commission in Decision No. C1-0442, Docket No. 10A-554EG for the years 2015 through 2020. Company witness Deb Sundin addresses this topic in her rebuttal testimony.

PUC Staff witness Hay also discusses how the Company accounts for DSM savings in its energy and demand forecasts. I will address Mr. Hay's suggestions and attempt to clarify the Company's methodology.

Q. PLEASE DESCRIBE HOW THE COMPANY ACCOUNTS FOR DSM IN ITS FORECAST.

A. Consistent with the way the Company has always accounted for DSM in its forecasts, we first develop our sales and peak demand forecast based on historical sales and peak demand data which has embedded in it the

reduction of sales and peak demand associated with historical DSM activities undertaken by the Company. Therefore, the forecasts already account for and project forward the embedded sales and peak demand savings from past DSM programs. The Company quantifies the embedded impact of these past DSM savings, and then calculates the incremental impact of future DSM initiatives as the future total DSM savings less the amount of embedded DSM savings. The forecasts are then adjusted for the future incremental DSM savings achievements, that is, the amount that is not already accounted for by being embedded in the historical sales. In this way, the resulting forecasts include the total impact of all future DSM savings, both those already embedded in the history and the future incremental savings.

The Company's Loads & Resources table uses the forecast inclusive of all DSM savings (both embedded and incremental), subtracts Interruptible Load, and subtracts Saver's Switch load to derive Firm Obligation Load.

Q. MR. HAY OFFERS A SUGGESTION ON HOW TO RESOLVE HIS CONFUSION RELATED TO HOW DSM IS HANDLED IN THE FORECAST. DOES MR. HAY'S SUGGESTION RESULT IN ANY ADDITIONAL INFORMATION BEING AVAILABLE THAT IS NOT ALREADY AVAILABLE?

A. No. If I understand correctly, Mr. Hay suggests that the historical savings from energy efficiency programs be added back in to the historical energy and demand, the forecast be generated, and then total savings from energy efficiency programs be subtracted from the forecast. This requires an

assessment of historical energy efficiency savings and total energy efficiency savings. The Company's methodology already uses an assessment of historical energy efficiency savings (i.e., embedded savings) and total energy efficiency savings. The Company's methodology simply reduces the forecast by the difference between embedded and total (i.e., incremental), rather than adding back in the embedded and then subtracting the total. Changing the forecasting methodology will not result in any additional information being available.

IV. CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. I have addressed Mr. Harris' concerns with the data inputs used in the Company's forecast models and responded to his concerns related to the statistical methods used by the Company. I recommend that the Commission approve the forecasting methodology presented in Phase I of this proceeding and allow the Company to update the forecast prior to the Phase II Competitive Solicitation process. I also have addressed Mr. Hay's concerns with how DSM is accounted for in the Company's sales and peak demand forecasts.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.