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BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the matter of the 2010 Long-Term Forecast Report of the Duke Energy Ohio, Inc.	)))	Case No. 10-503-EL-FOR

DIRECT TESTIMONY
of
CHRISTOPHER G. IVANOV

Lead Economist, DSM and Load Forecasting
Power System Engineering, Inc.

On Behalf of
The Office of the Ohio Consumers' Counsel

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March 14, 2011

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PART I - INTRODUCTION

Q1. PLEASE STATE YOUR NAME, PRESENT POSITION, AND BUSINESS ADDRESS.

A1. My name is Christopher G. Ivanov. I am currently working as the Lead Economist, DSM and Load Forecasting for Power System Engineering, Inc. My business address is 1532 W. Broadway, Madison, WI 53713.

Q2. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A2. I have a master's degree in Applied Economics received from Marquette University in 2004 and a Master of Business Administration from Edgewood College in Madison, WI. My statement of qualifications, including my education, is attached as Attachment CGI-1.

I have extensive experience in public utility business operations and regulations. At Power System Engineering, Inc. ("PSE"), I provide consulting services to electric utilities in the United States in the areas of load forecasting and research, customer and end-use surveys, market research, rate design, and economic evaluation of demand response and energy efficiency. A digest of some of the projects that I have worked on are included in Attachment CGI-2.

Prior to joining PSE in 2007, I was employed at WPPI, Inc., a Joint Action Agency with over fifty municipal electric utility members operating in a regulated environment. My professional experiences cover diverse areas of utility business, such as forecasting and market analyses, resource planning, marketing and sales support, cost-of-service studies, rate designs, management audits and regulatory filings.

Q3. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A3. The purpose of my testimony is to review the Long-Term Load Forecast (LTFR) submitted by Duke Energy Ohio ("Duke" or the "Company"), including the data and methodologies used and the underlying assumptions; to present the review results; and to make a recommendation for this regulatory proceeding.

PART II - OVERVIEW OF DUKE'S LOAD FORECASTING

Q4. WHAT HAVE YOU FOUND FROM YOUR REVIEW OF DUKE'S LOAD FORECAST?

A4. I have found that it would be imprudent to accept Duke's load forecast as a reliable and reasonable forecast. I have major concerns in the following five areas:

1) The Company's forecast is based on a crucial and unsupported assumption that retail customers who have left Duke's system and

chosen a different supplier for generation service will all return to Duke by 2012.

2) The Company's forecast uses estimated, not actual, historical data for local economic and demographic variables (such as income, population, and appliance stock) to estimate the coefficients for monthly class energy sales models.

3) The Company's filing lacks clarity regarding the vintage of the economic and demographic forecast obtained from Moody's Economy.com and how it incorporates the most recent recession into its projections.

4) The Company's forecast uses a Polynomial Distributed Lag Model, a technique that relies heavily on a forecaster's subjective judgment.

5) The Company's original model specifications exhibit autocorrelation problems, which has implications regarding the absence of major explanatory variables from the model equations.

PART III - ANALYSIS OF DUKE'S LOAD FORECASTING

Q5. DOES THE COMPANY PROVIDE SUPPORT FOR THEIR ASSUMPTION THAT SWITCHED CUSTOMERS WILL RETURN TO DUKE IN 2012?

A5. No. Duke states on page 3 of the Long-Term Forecast Report that the first two years of the forecast reflect reduced energy and demand levels that are due to the current switching levels. After these two years, the forecast is adjusted to show all the customers returning to the regulated utility for their generation service at the end of current Electric Security Plan ("ESP") (i.e. by the end of 2011). The Company does not provide any supporting evidence or analysis to show the reason that the switching levels would reverse themselves. Switching levels (i.e. percentages) for the last two years of available data, at intervals of six months, are shown on Attachment CGI-3 from statistics posted on the website for the Public Utilities Commission of Ohio ("PUCO" or "Commission"). Plots of these levels, for sales to residential customers and to all customers, are shown on Attachment CGI-4. As this information shows, switching is significant and has increased over the recent historical period.

Duke provides no sound analytical reason for its assumption regarding the complete return of load to the Company's standard service, which is incomprehensible given the significant impact of the assumed level of future customer growth on retail energy sales. As of September 30, 2010, the Commission's records listing Electric Choice Sales Switch Rates showed that 59 percent of Duke's total energy sales had switched to other retail electric providers (see Attachment CGI-3). This high level of customer switching reflects Duke's current position in the Ohio retail electric competition. It is difficult to understand how their competitive position will significantly improve after January 1, 2012 without further explanation.

Q6. WHAT IS THE PROJECTED ENERGY AND CAPACITY REQUIREMENTS IMPACT OF CUSTOMERS RETURNING BY 2012?

A6. Column 12 in Form FE-T1 on page 55 of the October 2010 revised LTFR shows that the 2012 energy for Duke's Ohio customers is 22,050,374 megawatt-hours, which is 9,225,632 megawatt-hours higher than the 2010 energy of 12,824,742 megawatt-hours. The projected 2012 energy delivery is 71.9 percent above the 2010 energy delivery. The peak demand for 2010, as shown in PUCO Form FE-T2 (after DSM version) on page 57 of the October 2010 revised LTFR, is 2,688 megawatts, and is projected to increase to 4,259 megawatts by 2012 for a total increase of 1,571 megawatts. Again, little justification is provided by the Company for this significant increase in energy and capacity requirements.

Q7. DO YOU BELIEVE THAT DUKE USED ACTUAL OR ESTIMATED VALUES FOR THE MONTHLY HISTORICAL DATA FOR THE INDEPENDENT VARIABLES IN THE FORECASTING MODELS?

A7. I believe that Duke used estimated data. The actual historical data for local demographic and economic variables, such as the service area personal income and population variables included in Duke's load forecasting model equations, are available only on an annual basis from the official sources such as U.S. Bureau of Economic Analysis, U.S. Bureau of Census, Ohio Department of Development, etc. The appliance efficiency data are also published on an annual basis (or even longer time intervals) by the U.S. Department of Energy and Association of Home Appliance Manufacturers ("AHAM"). The appliance saturation rate data are collected only for the years when Duke conducted the appliance saturation surveys.[1] Therefore, Duke would have to rely on either in-house estimates or third-party estimates of the monthly historical data derived from the annual data available from those official sources in its modeling of monthly class energy sales.

Q8. WHAT ARE THE IMPACTS OF DUKE'S USE OF THE ESTIMATED DATA TO PROJECT LOAD IN MODEL EQUATIONS?

A8. In order to mask a mismatch between monthly changes in class energy sales and estimated monthly changes in economic and demographic variables, Duke had to introduce numerous monthly dummy terms (called "qualitative variables" by Duke) into the model equations. For example, 21 of 23 explanatory variables included in the residential customer equation are monthly dummy variables. In the model equation of residential energy use per consumer, 17 of 25 explanatory variables are monthly dummy terms.[2] All other class energy sales model equations are riddled with numerous monthly dummy terms.

Duke claims that they needed to have those "qualitative variables" to eliminate the impact of the "outliers."[3] In order to eliminate certain observations from the modeling data, there must be a sufficient, a priori reason to believe that each of

[1] Page 22 of Duke's LTFR, Case No. 10-503-EL-FOR (October 7, 2010).

[2] Id. at 28 and 29.

[3] Id. at 26.

those observations is an outlier. Duke mentioned possible reasons behind the outliers, but the reasons are far too general and vague to warrant the inclusion of monthly dummy variables that dominate the model. In addition, the outlier months covered by the dummy terms in the model equations vary from class to class. For example, monthly dummy terms in the residential use-per-customer model equation are mainly from the last several years, while about half of the monthly dummy terms in the commercial kWh sales model equation are from the 1990's.

The reasons for inclusion of monthly dummy terms to take care of unusual deviations in the data are cited on page 26 of the Load Forecast section of Duke's October 2010 revised LTFR. The reasons cited are errors in data reporting, labor-management disputes, severe energy shortages or restrictions, and other perturbations that do not repeat with predictability. The number of monthly observations removed as outliers is excessive while the reasons cited represent very unusual cases. In the commercial kilowatt-hour sales model equation alone, 22 of 288 monthly observations were removed as outliers. There is also a lack of consistency among the months when the class energy data quality was in question. Therefore, the reasons given by Duke are hardly convincing as to why the residual errors of the model equations were so high for those months and had to be dropped from the final model estimates.

I believe that the errors involved in the estimated monthly economic and demographic data are one of the real reasons why Duke was forced to drop so many monthly observations to fit the model specifications presented in this LTFR filing. Another possible reason is that some important variables are missing from the model specifications, as revealed by the autocorrelation problems suffered by most of the model specifications used by Duke. The issue of autocorrelation problems will be discussed later in my testimony.

Q9. HOW COULD DUKE HAVE REMEDIED THE LACK OF MONTHLY ECONOMIC AND DEMOGRAPHIC DATA?

A9. Duke could have developed an annual class energy forecasting model. By fitting an annual model, they would have matched the actual energy sales history with the actual data of economic and demographic variables. There would then be no estimation error involved in the modeling data. Another advantage of annual modeling is that most of the regional economic and demographic projections from the government agencies and commercial vendors are readily available on an annual basis. After the model is developed and an annual energy sales forecast is produced, the projected annual energy sales volumes are distributed to months on the basis of the monthly load shapes, which are predicted separately by an analysis of actual histories of monthly energy sales, weather and appliance stocks, etc. This technique would yield both monthly and annual forecasted values and be free from the estimation error caused by the use of estimated independent variables. My approach does not introduce any of the potential errors involved in estimating the historical data. This approach would also meet the need for reported monthly values as stated by the Commission.[4]

Q10. PLEASE SUMMARIZE THE ISSUES SURROUNDING THE VINTAGE OF ECONOMIC AND DEMOGRAPHIC DATA AS WELL AS ITS INCORPORATION OF THE ECONOMIC RECESSION STARTING IN 2007.

A10. The major issue is the lack of a clear explanation of how the economic and demographic data used by Duke incorporates the most recent recession. Unless the data from Moody's Economy.com was refreshed quite recently, the historical data may or may not include the impact from this severe and lengthy economic recession. This is extremely important because almost every industry in the United States was influenced by this recession, which was possibly the worst national downturn since the Great Depression.

Q11. HOW WILL THIS LACK OF CLARITY IMPACT THE LOAD FORECAST?

A11. The load forecast relies on economic and demographic projections to predict the growth trends of electric sales. When the economy experiences negative growth, as it does during a recession, this will have an adverse impact on electric sales. Therefore, understanding how an economic and demographic dataset accounts for this recession is paramount to being able to review the plausibility of its predicted outcomes. Duke should have explained somewhere in its load forecast filing how the recent recession was taken into account. If the load forecast presented in the

[4] PUCO, Ohio Adm. Code Chapter 4901:5-5, Electric Utility Forecast Reports.

filing does not reflect the recession impacts, Duke should acquire the most recent data and rerun their forecast.

Q12. PLEASE DESCRIBE THE TECHNIQUE KNOWN AS POLYNOMIAL DISTRIBUTED LAGS.

A12. In econometrics, economists and statisticians try to determine the impact that one variable has on another variable. Sometimes the relationship they try to define is a linear shape, but sometimes that shape looks more like a polynomial function. Duke describes this technique on page 25 of their long-term load forecast report.[5] It should be noted that the technique that they use is also known as the Almon lag distribution approach.

Q13. WHAT ARE THE ISSUES RELATED TO THE ALMON LAG DISTRIBUTION APPROACH?

A13. The main issue with the Almon lag distribution approach is that it relies heavily on a forecaster's judgment when selecting the appropriate number of lags in each equation. Thus, a forecaster could have undue influence on the model by exerting their own motivation or opinion into the forecast. Another problem with this technique is that it can cause a multicollinearity problem. Multicollinearity is a problem caused by multiple independent variables in a model being highly correlated with one another. Because of their nature, Almon models are more likely to suffer from this problem by using multiple lagged variables in a single

[5] Page 25 of Duke's LTFR, Case No. 10-503-EL-FOR (October 7, 2010).

equation. This becomes a major problem when it leads unfairly to high standard errors and therefore, low t-statistics for some of the estimated model coefficients. Thus, this could cause a forecaster to erroneously exclude some valid independent variables.

Q14. WHAT ARE THE AUTOCORRELATION PROBLEMS AND THE ISSUES ENCOUNTERED IN THESE MODELS?

A14. Duke describes autocorrelation or serial correlation problems on page 25 of their filing.[6] Simply put, an autocorrelation problem happens when the residual error of a time series model in period one is not independent of the residual errors in previous periods. The issue is how a forecaster corrects this problem when estimating a model equation. Duke adds autoregressive ("AR") terms into their models to correct this statistical problem. While this may reduce the statistical problems caused by autocorrelation on the surface, it can also mask a misspecification problem inherent in the model. A misspecification problem occurs when a forecaster assumes that the problem has been fixed by simply including an AR term and ignores the possibility that the autocorrelation problem is caused by excluding an important explanatory variable or variables from the model. An example of this would be household size and/or income variables in the residential use-per-customer equation. This over-simplified approach compromises the model's reliability for forecasting because more theoretically

[6] Page 25 of Duke's LTFR, Case No. 10-503-EL-FOR (October 7, 2010).

valid and important variables are omitted from the model equation while abusing the AR terms just to improve the Durbin-Watson statistics.

PART IV - RECOMMENDATIONS

Q15. WHAT IS YOUR RECOMMENDATION ON HOW TO TREAT DUKE'S LONG RANGE LOAD FORECAST AS IT WAS FILED IN THIS PROCEEDING?

A15. I recommend that the Commission should not accept Duke's long range load forecast as filed until they resolve the problems discussed above:

1) No clear justification for their assumption of gaining back in January 2012 the customers lost to other retail electric providers.
2) Use of estimated, not actual, historical data to estimate the monthly class energy sales models.
3) Lack of clarity on inclusion of the impacts of the recent recession in its load forecast.
4) Use of a modeling methodology that relies heavily on a forecaster's subjective judgment.
5) Autocorrelation problems prevalent in Duke's class energy sales model equations and their implications on absence of major explanatory variables.

Q16. DOES THIS CONCLUDE YOUR PRE-FILED TESTIMONY?

A16. Yes, it does. However, I reserve the right to incorporate new information or supplement my testimony with information that may subsequently be made available to the OCC through discovery. I also reserve the right to supplement my testimony in response to positions taken by the PUCO Staff and any other party to this proceeding.

Attachment CGI-1
Witness: Mr. Christopher G. Ivanov

CGI-1: STATEMENT OF QUALIFICATIONS

I am currently the lead Economist, DSM and Load Forecasting at Power System Engineering, Inc. in Madison, Wisconsin. I have specialized in utility load forecasting and market research, statistical and economic analysis of utility business and operations. I have also been involved in demand-side management ("DSM") studies. I have assisted in preparing expert testimony for general rate cases and integrated resource planning load forecasts. I have been the project manager on a numerous electric load forecasting, DSM, and sales weather normalization studies. Those studies were performed for both investor-owned and publicly-owned electric utilities. Prior to assuming my current position in November 2007, I was a Rates and Forecasting Analyst at WPPI in Sun Prairie, Wisconsin.

I received an M.S. degree in applied economics from the Marquette University, Milwaukee, Wisconsin in 2004, and a Master's degree in Business Administration from Edgewood College, Madison, Wisconsin in 2010.

CGI-2: LOAD FORECASTING AND DEMAND-SIDE MANAGEMENT PROJECTS

1. Allegheny Electric Cooperative Load Forecasting; long-range load forecasting for Allegheny and its 14 member cooperatives with comprehensive reports (2011 in progress).

2. Black Hills Power 2007 Master Plan Phase 1 (2007). (Small Area Load Forecast)

3. Black Hills Power 2008 Master Plan Phase 2 (2008). (Small Area Load Forecast)

4. Central Iowa Power Cooperative (CIPCO) Load Forecasts; long-range load forecasting for CIPCO and its 12 member cooperatives with comprehensive report to CIPCO and summary reports to members (2007, 2008, and 2009) and Load Forecast Work Plan (2008).

5. Central Iowa Power Cooperative (CIPCO) Demand Response, EE, and Avoided Cost Study (2008).

6. Central Iowa Power Cooperative (CIPCO) Energy Efficiency Assessment Study (2008).

7. Connexus Energy CPP Pilot Study; Monitoring and verification of CPP impacts (2010).

8. Connexus Energy Research Regarding CPP Pilot (2010).

9. Connexus Energy O Power Pilot Study; Monitoring and verification of O Power pilot project impacts (2010).

10. Connexus Energy O Power Monitoring & Verification for Lake Country Power; Monitoring and verification of O Power pilot project impacts at Lake Country Power (2010).

11. Corn Belt Power Cooperative Energy Efficiency Study (2008).

12. Corn Belt Power Cooperative Water Heater Load Shape Study (2008).

13. Corn Belt Power Cooperative 2011 Energy Efficiency Portfolio Development (2011 in progress).

14. Great River Energy (GRE) Mid-Term Load Forecasting Services (2010).

15. Heartland Rural Electric Cooperative (KS) 2011 DSM Programs (2010 to present).

16. Iowa Energy Efficiency Filing Assistance for IAEC (2008).

17. L & O Power Cooperative Energy Efficiency Filing Assistance (2008).

18. National Rural Electric Cooperative Association Cooperative Research Network (NRECA-CRN) Energy Efficiency – Demand Response Guidebook (2008).

19. National Rural Electric Cooperative Association Cooperative Research Network (NRECA-CRN) Guide to Smart Grid Planning (2010).

20. National Rural Electric Cooperative Association Cooperative Research Network (NRECA-CRN) Grant Study (2010 thru present).

21. New Hampshire Electric Cooperative (NHEC) Small Area Forecast (2009).

22. New Hampshire Electric Cooperative (NHEC) Long-Range Forecast (2009).

23. Northwest Iowa Power Cooperative (NIPCO) Energy Efficiency Filing Assistance (2008).

24. Sioux Valley Energy Cooperative (SVEC) Dynamic Pricing Pilot (2010).

25. Sunflower Electric Power Cooperative Load Forecasting; long-range load forecasting for Sunflower, MKEC, 6 native member cooperatives, and the 6 MKEC cooperatives (2010 and 2011 in progress).

26. Sunflower Electric Power Cooperative MKEC 2009 Sales Normalization (2010).

27. Sulphur Springs Valley Electric Cooperative (SSVEC) DSM Pilot Deployment Plan (2011 in progress).

28. Wolverine Power Supply Cooperative (Wolverine) Load Forecasts; long-range load forecasting for Wolverine and its 4 member cooperatives with comprehensive report to Wolverine (2007, 2008, 2009, 2010, 2011 in progress).

29. Wolverine Power Supply Cooperative (Wolverine) Residential End-Use Survey (2007 and 2011 in progress) and Residential End-Use Survey Report (2008).

30. Wolverine/Great Lakes Energy Cooperative (GLE) Load Forecast Report; Update to load forecast prepared through Wolverine and comprehensive report for RUS submittal (2009).

DUKE ENERGY OHIO - SWITCH RATES by SALES (MWh)

Quarter Ending	Residential	Total
3/31/2009	2.92%	3.18%
9/30/2009	6.33%	21.54%
3/31/2010	8.51%	49.78%
9/30/2010	22.73%	59.16%

Summary of Switch Rates from EDUs to CRES Providers in Terms of Sales
For the Month Ending March 31, 2009
(MWh)

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Cleveland Electric Illuminating Company	CEI	31-Mar	2009	444320	387162	581831	1432718
CRES Providers	CEI	31-Mar	2009	24	0	0	24
Total Sales	CEI	31-Mar	2009	444344	387162	581831	1432742
EDU Share	CEI	31-Mar	2009	99.99%	100.00%	100.00%	100.00%
Electric Choice Sales Switch Rates	**CEI**	**31-Mar**	**2009**	**0.01%**	**0.00%**	**0.00%**	**0.00%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Duke Energy Ohio	DUKE	31-Mar	2009	540480	448235	284948	1380420
CRES Providers	DUKE	31-Mar	2009	16232	27914	1256	45402
Total Sales	DUKE	31-Mar	2009	556712	476149	286204	1425822
EDU Share	DUKE	31-Mar	2009	97.08%	94.14%	99.56%	96.82%
Electric Choice Sales Switch Rates	**DUKE**	**31-Mar**	**2009**	**2.92%**	**5.86%**	**0.44%**	**3.18%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Columbus Southern Power Company	CSP	31-Mar	2009	593010	668841	429781	1696923
CRES Providers	CSP	31-Mar	2009	0	14016	0	14016
Total Sales	CSP	31-Mar	2009	593010	682857	429781	1710939
EDU Share	CSP	31-Mar	2009	100.000%	97.947%	100.000%	99.181%
Electric Choice Sales Switch Rates	**CSP**	**31-Mar**	**2009**	**0.000%**	**2.053%**	**0.000%**	**0.819%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
The Dayton Power and Light Company	DPL	31-Mar	2009	467456	292134	177676	1016834
CRES Providers	DPL	31-Mar	2009	0	5022	78667	114121
Total Sales	DPL	31-Mar	2009	467456	297156	256343	1130955
EDU Share	DPL	31-Mar	2009	100.00%	98.31%	69.31%	89.91%
Electric Choice Sales Switch Rates	**DPL**	**31-Mar**	**2009**	**0.00%**	**1.69%**	**30.69%**	**10.09%**

Source: PUCO, Division of Market Monitoring & Assessment.
Note1: Total sales includes residential, commercial, industrial and other sales.
Note2. The switch rate calculation is intended to present the broadest possible picture of the state of retail electric competition in Ohio. Appropriate calculations made for other purposes may be based on different data, and may yield different results.
Note3: American Electric Power, through its Columbus Southern Power subsidiary, purchased Monongahela Power Company's Ohio transmission and distribution operations in January 2006. Monongahela Power is no longer an electric distribution utility in Ohio. Previously reported Monongahela sales and customers are now being reported by CSP.
Note4: Duke Energy Ohio (formerly CG&E)

Summary of Switch Rates from EDUs to CRES Providers in Terms of Sales
For the Month Ending September 30, 2009
(MWh)

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Cleveland Electric Illuminating Company	CEI	30-Sep	2009	276840	260760	463815	1012241
CRES Providers	CEI	30-Sep	2009	160068	181307	113350	454725
Total Sales	CEI	30-Sep	2009	436908	442067	577165	1466966
EDU Share	CEI	30-Sep	2009	63.36%	58.99%	80.36%	69.00%
Electric Choice Sales Switch Rates	**CEI**	**30-Sep**	**2009**	**36.64%**	**41.01%**	**19.64%**	**31.00%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Duke Energy Ohio	DUKE	30-Sep	2009	454279	522451	288943	1400966
CRES Providers	DUKE	30-Sep	2009	30695	116787	232554	384565
Total Sales	DUKE	30-Sep	2009	484974	639238	521497	1785531
EDU Share	DUKE	30-Sep	2009	93.67%	81.73%	55.41%	78.46%
Electric Choice Sales Switch Rates	**DUKE**	**30-Sep**	**2009**	**6.33%**	**18.27%**	**44.59%**	**21.54%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Columbus Southern Power Company	CSP	30-Sep	2009	570424	751130	373903	1699850
CRES Providers	CSP	30-Sep	2009	0	12198	0	12198
Total Sales	CSP	30-Sep	2009	570424	763328	373903	1712048
EDU Share	CSP	30-Sep	2009	100.000%	98.402%	100.000%	99.288%
Electric Choice Sales Switch Rates	**CSP**	**30-Sep**	**2009**	**0.000%**	**1.598%**	**0.000%**	**0.712%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
The Dayton Power and Light Company	DPL	30-Sep	2009	406244	330685	215494	1041453
CRES Providers	DPL	30-Sep	2009	0	6979	88493	134760
Total Sales	DPL	30-Sep	2009	406244	337664	303987	1176213
EDU Share	DPL	30-Sep	2009	100.00%	97.93%	70.89%	88.54%
Electric Choice Sales Switch Rates	**DPL**	**30-Sep**	**2009**	**0.00%**	**2.07%**	**29.11%**	**11.46%**

Source: PUCO, Division of Market Monitoring & Assessment.
Note1: Total sales includes residential, commercial, industrial and other sales.
Note2: The switch rate calculation is intended to present the broadest possible picture of the state of retail electric competition in Ohio
Appropriate calculations made for other purposes may be based on different data, and may yield different results.
Note3: American Electric Power, through its Columbus Southern Power subsidiary, purchased Monongahela Power Company's
Ohio transmission and distribution operations in January 2006. Monongahela Power is no longer an electric distribution utility in Ohio
Previously reported Monongahela sales and customers are now being reported by CSP
Note4: Duke Energy Ohio (formerly CG&E)

Summary of Switch Rates from EDUs to CRES Providers in Terms of Sales
For the Month Ending March 31, 2010
(MWh)

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Cleveland Electric Illuminating Company	CEI	31-Mar	2010	235680	144625	299589	691108
CRES Providers	CEI	31-Mar	2010	237557	357642	201182	807161
Total Sales	CEI	31-Mar	2010	473237	502267	500771	1498269
EDU Share	CEI	31-Mar	2010	49.80%	28.79%	59.83%	46.13%
Electric Choice Sales Switch Rates	**CEI**	**31-Mar**	**2010**	**50.20%**	**71.21%**	**40.17%**	**53.87%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Duke Energy Ohio	DUKE	31-Mar	2010	535921	288683	126862	1014893
CRES Providers	DUKE	31-Mar	2010	49879	362056	533731	1006046
Total Sales	DUKE	31-Mar	2010	585800	650739	660593	2020939
EDU Share	DUKE	31-Mar	2010	91.49%	44.36%	19.20%	50.22%
Electric Choice Sales Switch Rates	**DUKE**	**31-Mar**	**2010**	**8.51%**	**55.64%**	**80.80%**	**49.78%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Columbus Southern Power Company	CSP	31-Mar	2010	597875	652519	351810	1606907
CRES Providers	CSP	31-Mar	2010	0	13446	0	13446
Total Sales	CSP	31-Mar	2010	597875	665965	351810	1620353
EDU Share	CSP	31-Mar	2010	100.000%	97.981%	100.000%	99.170%
Electric Choice Sales Switch Rates	**CSP**	**31-Mar**	**2010**	**0.000%**	**2.019%**	**0.000%**	**0.830%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
The Dayton Power and Light Company	DPL	31-Mar	2010	502968	259453	133232	949222
CRES Providers	DPL	31-Mar	2010	55	61570	123010	234322
Total Sales	DPL	31-Mar	2010	503023	321023	256242	1183544
EDU Share	DPL	31-Mar	2010	99.99%	80.82%	51.99%	80.20%
Electric Choice Sales Switch Rates	**DPL**	**31-Mar**	**2010**	**0.01%**	**19.18%**	**48.01%**	**19.80%**

Source: PUCO, Division of Market Monitoring & Assessment.
Note1: Total sales includes residential, commercial, industrial and other sales.
Note2: The switch rate calculation is intended to present the broadest possible picture of the state of retail electric competition in Ohio.
Appropriate calculations made for other purposes may be based on different date, and may yield different results.

Summary of Switch Rates from EDUs to CRES Providers in Terms of Sales
For the Month Ending September 30, 2010
(MWh)

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Cleveland Electric Illuminating Company	CEI	30-Sep	2010	189056	86944	297922	585250
CRES Providers	CEI	30-Sep	2010	341893	472352	237320	1078884
Total Sales	CEI	30-Sep	2010	530949	559296	535242	1664134
EDU Share	CEI	30-Sep	2010	35.61%	15.55%	55.66%	35.17%
Electric Choice Sales Switch Rates	**CEI**	**30-Sep**	**2010**	**64.39%**	**84.45%**	**44.34%**	**64.83%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Duke Energy Ohio	DUKE	30-Sep	2010	475091	179939	53654	722554
CRES Providers	DUKE	30-Sep	2010	139716	502178	336422	1046660
Total Sales	DUKE	30-Sep	2010	614807	682117	390076	1769214
EDU Share	DUKE	30-Sep	2010	77.27%	26.38%	13.75%	40.84%
Electric Choice Sales Switch Rates	**DUKE**	**30-Sep**	**2010**	**22.73%**	**73.62%**	**86.25%**	**59.16%**

Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
Columbus Southern Power Company	CSP	30-Sep	2010	651709	733387	389826	1777962
CRES Providers	CSP	30-Sep	2010	0	51299	1834	53133
Total Sales	CSP	30-Sep	2010	651709	784686	391660	1831095
EDU Share	CSP	30-Sep	2010	100.000%	93.462%	99.532%	97.098%
Electric Choice Sales Switch Rates	**CSP**	**30-Sep**	**2010**	**0.000%**	**6.538%**	**0.468%**	**2.902%**

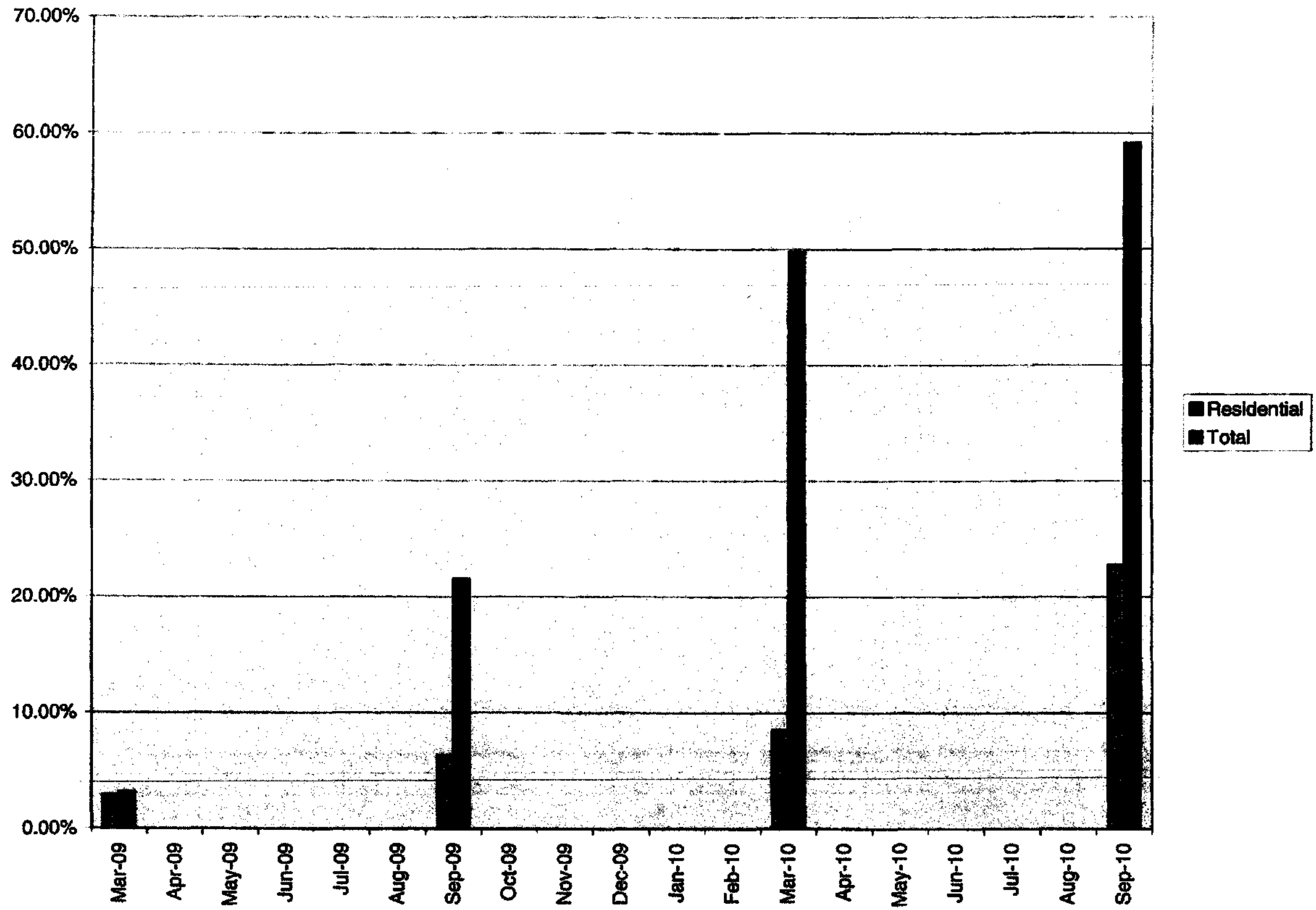
Provider Name	EDU Service Area	Quarter Ending	Year	Residential Sales	Commercial Sales	Industrial Sales	Total Sales
The Dayton Power and Light Company	DPL	30-Sep	2010	463249	212595	61795	782592
CRES Providers	DPL	30-Sep	2010	71	143665	256822	490926
Total Sales	DPL	30-Sep	2010	463320	356260	318617	1273518
EDU Share	DPL	30-Sep	2010	99.98%	59.67%	19.39%	61.45%
Electric Choice Sales Switch Rates	**DPL**	**30-Sep**	**2010**	**0.02%**	**40.33%**	**80.61%**	**38.55%**

Source: PUCO, Division of Market Monitoring & Assessment.
Note1: Total sales includes residential, commercial, industrial and other sales.
Note2: The switch rate calculation is intended to present the broadest possible picture of the state of retail electric competition in Ohio. Appropriate calculations made for other purposes may be based on different data, and may yield different results.

***Revised from corrected CRES Provider information**

Attachment CGI - 4

Duke Energy Ohio - Switch Rates by Sales (MWhs)



CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Direct Testimony of Christopher G. Ivanov was served via electronic transmission to the persons listed below, on this 14th day of March, 2011.

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