



Mailing Address:  
139 East Fourth Street  
1212 Main / P.O. Box 960  
Cincinnati, Ohio 45202  
o: 513-287-4315  
f: 513-287-4386

March 28, 2014

RECEIVED  
MAR 31 2014  
PUBLIC SERVICE  
COMMISSION

**VIA OVERNIGHT DELIVERY**

Mr. Jeff Derouen  
Executive Director  
Kentucky Public Service Commission  
211 Sower Blvd  
Frankfort, KY 40601

**RE: Administrative Case No. 387 – Annual Load/Demand Forecast Report**

Dear Mr. Derouen:

Enclosed please find the 2013 redacted responses to the Commission data requests filed annually, as ordered in Administrative Case No. 387, paragraph 2, dated October 7, 2005. These updated responses are being filed separately from the Annual Reporting of Duke Energy Kentucky upon request.

We have included the unredacted and highlighted responses in a separate envelope to be filed under seal. Also enclosed is a Petition for Confidential Treatment for your consideration in the above referenced matter.

Please date-stamp the two copies of the letter data requests and return to me in the enclosed envelope.

Should you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Kristen Ryan  
Senior Paralegal  
[kristen.ryan@duke-energy.com](mailto:kristen.ryan@duke-energy.com)

Enclosures


569178

[www.duke-energy.com](http://www.duke-energy.com)

VERIFICATION

STATE OF NORTH CAROLINA     )  
  )     SS:  
COUNTY OF MECKLENBURG     )

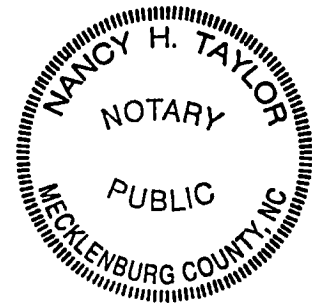
The undersigned, Jose Merino, being duly sworn, deposes and says that he is the Director of Load Forecast & Fundamentals, and that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

  
\_\_\_\_\_  
Jose Merino, Affiant

Subscribed and sworn to before me by Jose Merino, on this 3rd day of March, 2014.

  
\_\_\_\_\_  
NOTARY PUBLIC


My Commission Expires:



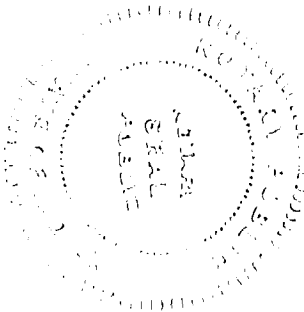
**VERIFICATION**

STATE OF INDIANA                     )  
  )     **SS:**  
COUNTY OF HENDRICKS            )

The undersigned, Ed Kirschner, being duly sworn, deposes and says that he is the Director of Transmission Planning, and that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

  
\_\_\_\_\_  
Ed Kirschner, Affiant

Subscribed and sworn to before me by Ed Kirschner, on this 11 day of February, 2014.



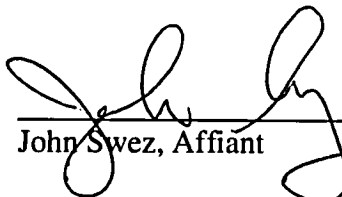
  
\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires: April 17, 2014

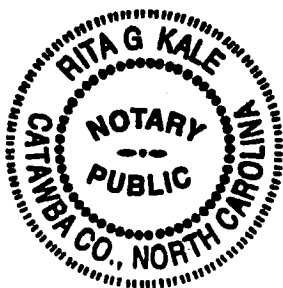
**VERIFICATION**

STATE OF NORTH CAROLINA     )  
  )  
COUNTY OF MECKLENBURG    )     SS:

The undersigned, John Swez, being duly sworn, deposes and says that he is the Director of Generation Dispatch & Operations, and that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

  
\_\_\_\_\_  
John Swez, Affiant

Subscribed and sworn to before me by John Swez, on this 5 day of February, 2014.



  
\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires: 6/17/17

**VERIFICATION**

STATE OF OHIO                    )  
  )  
COUNTY OF HAMILTON        )        **SS:**

The undersigned, Tim Abbott, being duly sworn, deposes and says that he is the Director of System Operations Services, and that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

Tim Abbott  
Tim Abbott, Affiant

Subscribed and sworn to before me by Tim Abbott, on this 11<sup>th</sup> day of March, 2014.

**ADELE M. FRISCH**  
Notary Public, State of Ohio  
My Commission Expires 01-05-2019

Adele M. Frisch  
NOTARY PUBLIC

My Commission Expires: 1/5/2019

**VERIFICATION**

STATE OF NORTH CAROLINA     )  
  )  
COUNTY OF MECKLENBURG    )    SS:

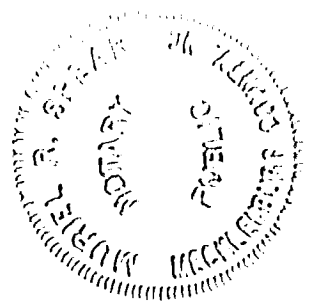
The undersigned, Scott Park, being duly sworn, deposes and says that he is the Director of Midwest Integrated Resource Planning, and that he has personal knowledge of the matters set forth in the foregoing data requests, and that the answers contained therein are true and correct to the best of his knowledge, information and belief.

\_\_\_\_\_  
Scott Park, Affiant

Subscribed and sworn to before me by Scott Park, on this 6<sup>th</sup> day of ~~February~~ <sup>March</sup>, 2014.

\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires: October 20, 2018





## TABLE OF CONTENTS

<u>DATA REQUEST</u>	<u>WITNESS</u>	<u>TAB NO.</u>
STAFF-DR-01-003	Jose Merino .....	3
STAFF-DR-01-004	Jose Merino .....	4
STAFF-DR-01-006	Jose Merino .....	6
STAFF-DR-01-006 SUPPLEMENTAL	Jose Merino/Scott Park .....	6
STAFF-DR-01-007	Scott Park .....	7
STAFF-DR-01-008	Scott Park .....	8
STAFF-DR-01-011	John Swez .....	11
STAFF-DR-01-012	Scott Park .....	12
STAFF-DR-01-013	Tim Abbott/Ed Kirschner .....	13
STAFF-DR-01-014	Ed Kirschner .....	14





**Duke Energy Kentucky  
Administrative Case No. 387**

**STAFF-DR-01-003**

**REQUEST:**

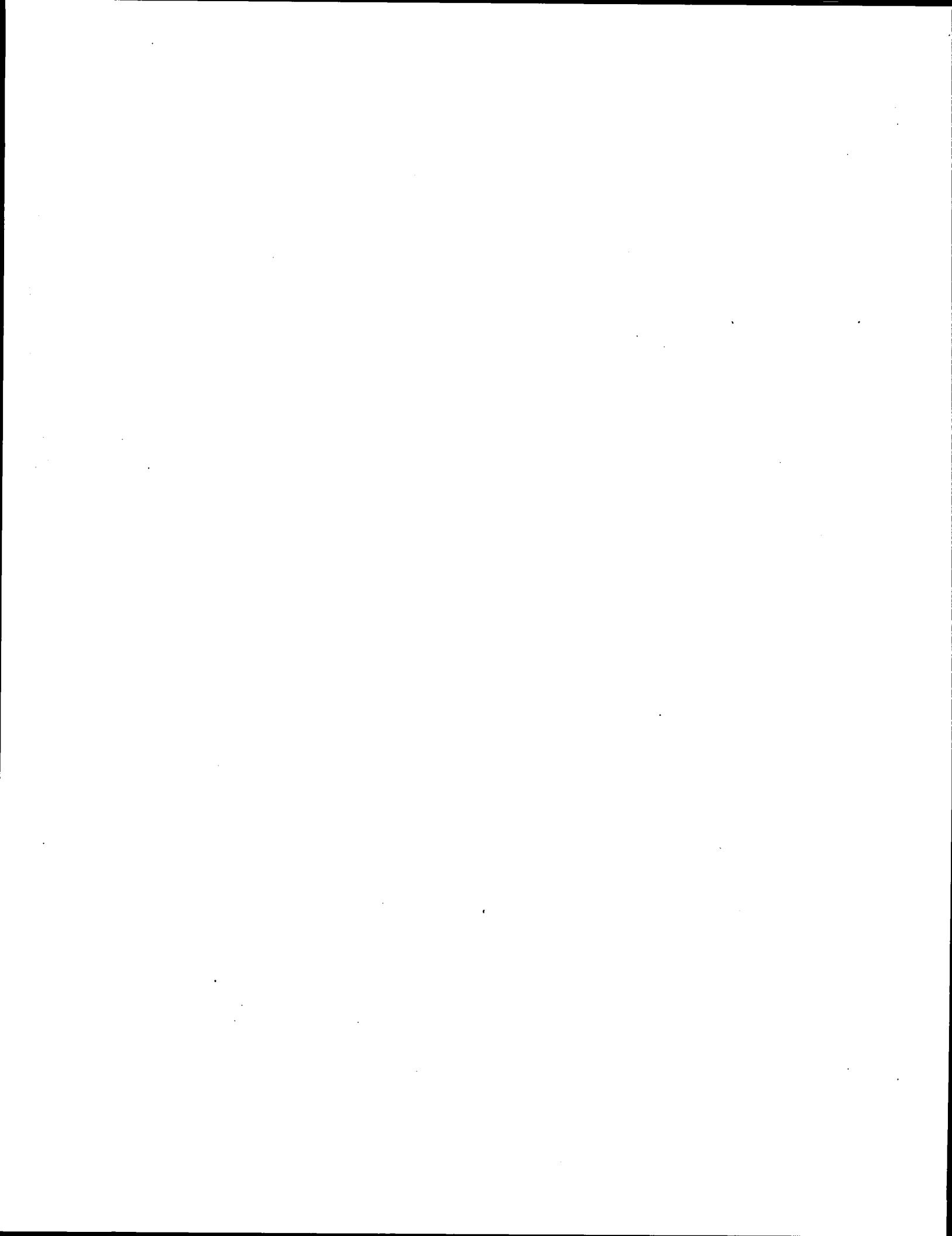
Actual and weather-normalized monthly coincident peak demands for the just completed calendar year. Demands should be disaggregated into (a) native load demand (firm and non-firm) and (b) off-system demand (firm and non-firm).

**RESPONSE:**

Actual and weather-normalized monthly coincident peak native load demands for 2013 are provided in the table below. Duke Energy Kentucky does not have any off-system firm demands. The table does provide off-system non-firm demands. Weather normal values for the off-system demands are not available.

<b>Duke Energy Kentucky Electric Energy Demands - MW</b>						
	1	2	3 = 1+2	4	5	6 = 3 + 5
	<b>Native Peak</b>	<b>Demand Response <sup>1</sup></b>	<b>Internal Peak</b>	<b>Weather Normal Internal Peak</b>	<b>Off-System Non-Firm</b>	<b>Total</b>
Jan-13	710		710	758		758
Feb-13	681		681	685		685
Mar-13	619		619	715		715
Apr-13	563		563	571		571
May-13	727		727	718		718
Jun-13	813		813	811		811
Jul-13	858	6	864	871		871
Aug-13	853		853	865		865
Sep-13	851		851	865		865
Oct-13	662		662	666		666
Nov-13	610		610	681		681
Dec-13	681		681	712		712

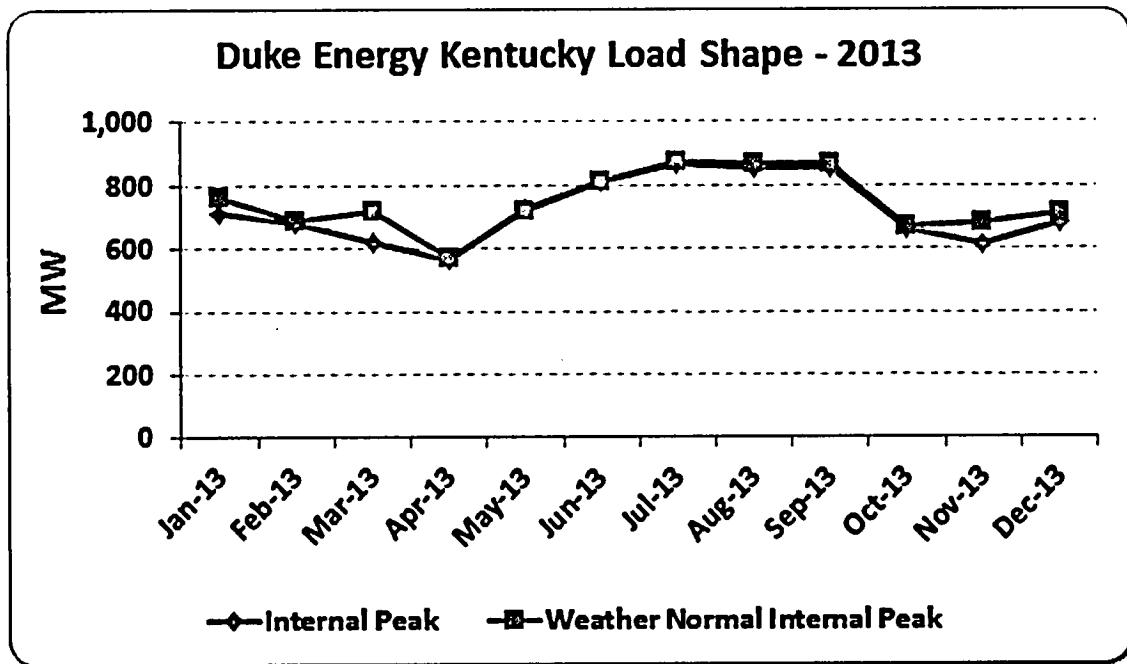
**PERSON RESPONSIBLE:** Jose Merino



**REQUEST:**

Load shape curves that show actual peak demands and weather-normalized peak demands (native load demand and total demand) on a monthly basis for the just completed calendar year.

**RESPONSE:**



**PERSON RESPONSIBLE:** Jose Merino



**REQUEST:**

Based on the most recent demand forecast, the base case demand and energy forecasts and high case demand and energy forecasts and high case demand and energy forecasts for the current year and the following four years. The information should be disaggregated into (a) native load (firm and non-firm demand) and (b) off-system load (both firm and non-firm demand).

**RESPONSE:**

Base case native load demand and energy forecasts and high case native load demand and energy forecasts are provided in the table below. Duke Energy Kentucky does not have any off-system firm energy sales or demands. The second table provides forecasts of off-system non-firm energy. A forecast of off-system non-firm demands is not available.

<b>Duke Energy Kentucky - Native Load Forecast</b>				
	<b>Demand - MW</b>		<b>Energy - MWH</b>	
	<b>Base</b>	<b>High</b>	<b>Base</b>	<b>High</b>
<b>2014</b>	<b>893</b>	<b>931</b>	<b>4,321,836</b>	<b>4,539,295</b>
<b>2015</b>	<b>903</b>	<b>943</b>	<b>4,356,943</b>	<b>4,598,249</b>
<b>2016</b>	<b>915</b>	<b>957</b>	<b>4,410,746</b>	<b>4,672,709</b>
<b>2017</b>	<b>924</b>	<b>968</b>	<b>4,465,936</b>	<b>4,722,463</b>
<b>2018</b>	<b>935</b>	<b>980</b>	<b>4,520,524</b>	<b>4,791,815</b>

**Duke Energy Kentucky - Non-Firm Electric Forecast**

	Demand - MW		Energy - MWH	
	Base	High	Base	High
2014	n/a	n/a	n/a	n/a
2015	n/a	n/a	n/a	n/a
2016	n/a	n/a	n/a	n/a
2017	n/a	n/a	n/a	n/a
2018	n/a	n/a	n/a	n/a

**PERSON RESPONSIBLE:** Jose Merino





**PUBLIC STAFF-DR-01-006  
SUPPLEMENTAL**

**REQUEST:**

Due to the increasing impact that price elasticity will have on electric utility sales and revenues, provide a detailed discussion of the consideration given to price elasticity in the forecasted demand, energy and reserve margin information provided with the annual Admin 387 resource assessments.

**RESPONSE:**

**CONFIDENTIAL PROPRIETARY TRADE SECRET**

**Energy:**

Duke Energy Kentucky's energy sales forecast models were prepared at the combined Ohio-Kentucky regional level for the Spring 2013 projection, which is the basis for the information herein. The forecast for Duke Energy Kentucky was determined by using historical shares of actual regional sales. For example, if the historical share of Kentucky sales relative to Ohio plus Kentucky total is 0.17, then the forecast for Kentucky will be calculated by multiplying the Ohio-Kentucky sales projection times 0.17. This allocation was performed separately for the residential, commercial, industrial, governmental and street lighting customer segments.

The price for electricity is an input to the Ohio-Kentucky energy sales forecast models. From an economic theory perspective, the price of electricity should be included as a forecast input because it is one of the factors that determines the level of electricity consumption in the long run.

Price elasticity is the projected percentage change in energy sales given a 1 percentage increase in electricity prices. Holding all other variables constant, if the price of electricity increases, energy sales are expected to decline. The Kentucky energy sales and peak demand projections include the impact of future electricity prices. The reported price elasticity reflects a 50/50 probability or a value that has a 50% chance of being lower or higher. The price elasticities are calculated based on the historical relationship between sales, electricity prices and other variables such as weather, population, income, employment and industrial production. The historical period used in the energy sales model estimation ranges between 10 and 20 years and it varies by customer class.

Based on the Spring 2013 econometric model specification, the estimated price elasticities for Duke Energy Kentucky are: residential ■■■, commercial ■■■, industrial ■■■ and governmental ■■■.

**Demand:**

The peak demand projection is a function of weather variables and weather normal retail sales. The Duke Energy Kentucky peak demand forecast does not use the price of electricity as a direct forecast input.

Since the price of electricity is an input to the retail sales projection, it indirectly influences the peak demand growth projection in the long run. Based on Duke Energy's current forecast methodology, the price of electricity is not a material driver of peak demand in the short run.

The Duke Energy models predict that sales volumes would be approximately 1% higher than the reference case if prices were held constant in real terms. The reference case projection assumes an electricity price forecast that does not stay constant in real terms.

**Duke Energy Kentucky - Native Electric Forecast**

	Demand – MW		Energy – MWH	
	Base	Fixed Price	Base	Fixed Price
2014	893	902	4,321,836	4,365,055
2015	903	912	4,356,943	4,400,512
2016	915	924	4,410,746	4,454,853
2017	924	933	4,465,936	4,510,596
2018	935	944	4,520,524	4,565,729

Notes:

- MWH energy reflects load at generation level or after adding back line losses.
- Fixed price MW demand and MWH energy show how much load would have been, if retail rates did not increase from historical levels after accounting for inflation.

The projected growth in electricity prices is obtained from internal company records. This information is consistent with the financial planning assumptions used by Duke Energy Kentucky.

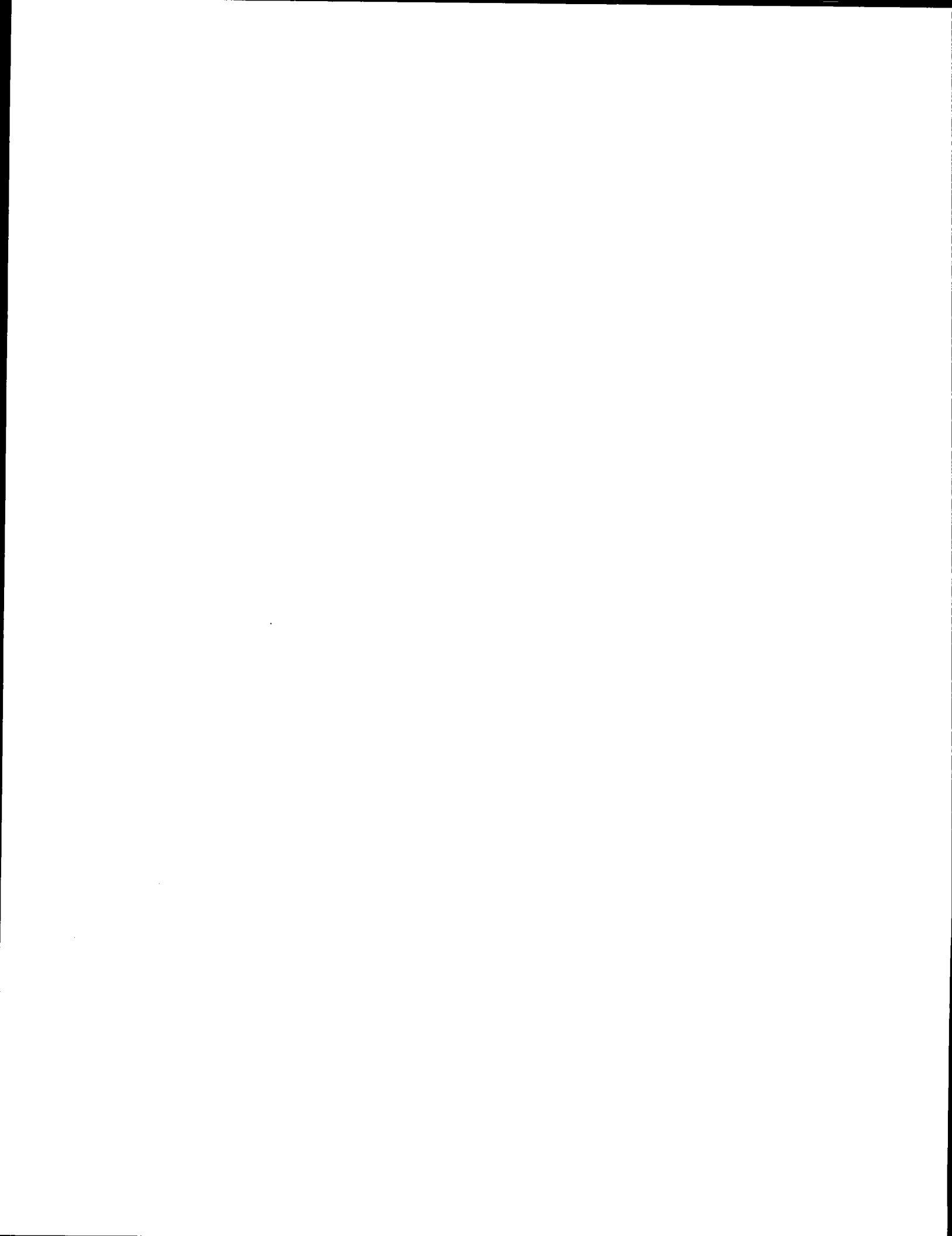
Since the long-term growth rate for peak demand is expected to mirror that of energy sales, changes in sales growth associated with price moves will eventually impact the peak demand forecast. Therefore, the peak demand projection would also be approximately 1% higher than the reference case if prices were assumed to stay constant in real terms.

**Planning Reserve Margin:**

Duke Energy Kentucky’s 2013 *planning* reserve margin of 13.7% is based on the PJM Forecast Pool Requirement. This is determined from PJM and Duke Energy Kentucky equivalent forced outage rates and installed load capacities, and is independent of Duke Energy Kentucky’s load forecast. The *forecasted* reserve margin is based on the base case load forecast. All else being equal, and given negative long term price elasticities, the forecasted reserve margin varies directly with the price of electricity. For

example, assuming that the price of electricity increases, then load decreases due to the negative price elasticity. Since the reserve margin calculation measures the difference between generation capacity and peak load, lower loads increase the reserve margin.

**PERSON RESPONSIBLE:** Energy/ Demand- Jose Merino  
Reserve Margin- Scott Park



**REQUEST:**

The target reserve margin currently used for planning purposes, stated as a percentage of demand. If changed from what was in use in 2001, include a detailed explanation for the change.

**RESPONSE:**

The planning reserve margin used for 2013 resource planning is 12.1%. The IRP (Integrated Resource Plan) models utilize the full capacity of the unit ratings to perform dispatch, so the reserve margin needs to be developed on an installed capacity rating, calculated as follows:

1. The PJM Forecast Pool Requirement ( $FPR_{UCAP}$ ) is calculated using the PJM equivalent demand forced outage rate ( $EFOR_d^{PJM}$ ) and the PJM installed reserve margin ( $RM_{ICAP}^{PJM}$ ). The Forecast Pool Requirement is 9.16%.
2.  $FPR_{UCAP}$  is translated to a Duke Energy Kentucky (DEK) installed-capacity-basis reserve margin ( $RM_{ICAP}^{COINCIDENT}$ ) using the 5-year average  $EFOR_d^{DEK}$  (6.98%). Based on this calculation,  $RM_{ICAP}^{COINCIDENT}$  is 17.4%.
3. For long range planning, PJM's forecast assumes that the Duke Energy Ohio-Kentucky zone is 95.5% coincident with the PJM peak. Applying this coincidence factor to DEK's 17.4%  $RM_{ICAP}^{COINCIDENT}$  results in a planning reserve margin of 12.1%.

**PERSON RESPONSIBLE:** Scott Park



**REQUEST:**

Projected reserve margins stated in megawatts and as a percentage of demand for the current year and the following 4 years. Identify projected deficits and current plans for addressing these. For each year identify the level of firm capacity purchases projected to meet native load demand.

**RESPONSE:**

The projected reserve margins for Duke Energy Kentucky (DEK) are shown below:

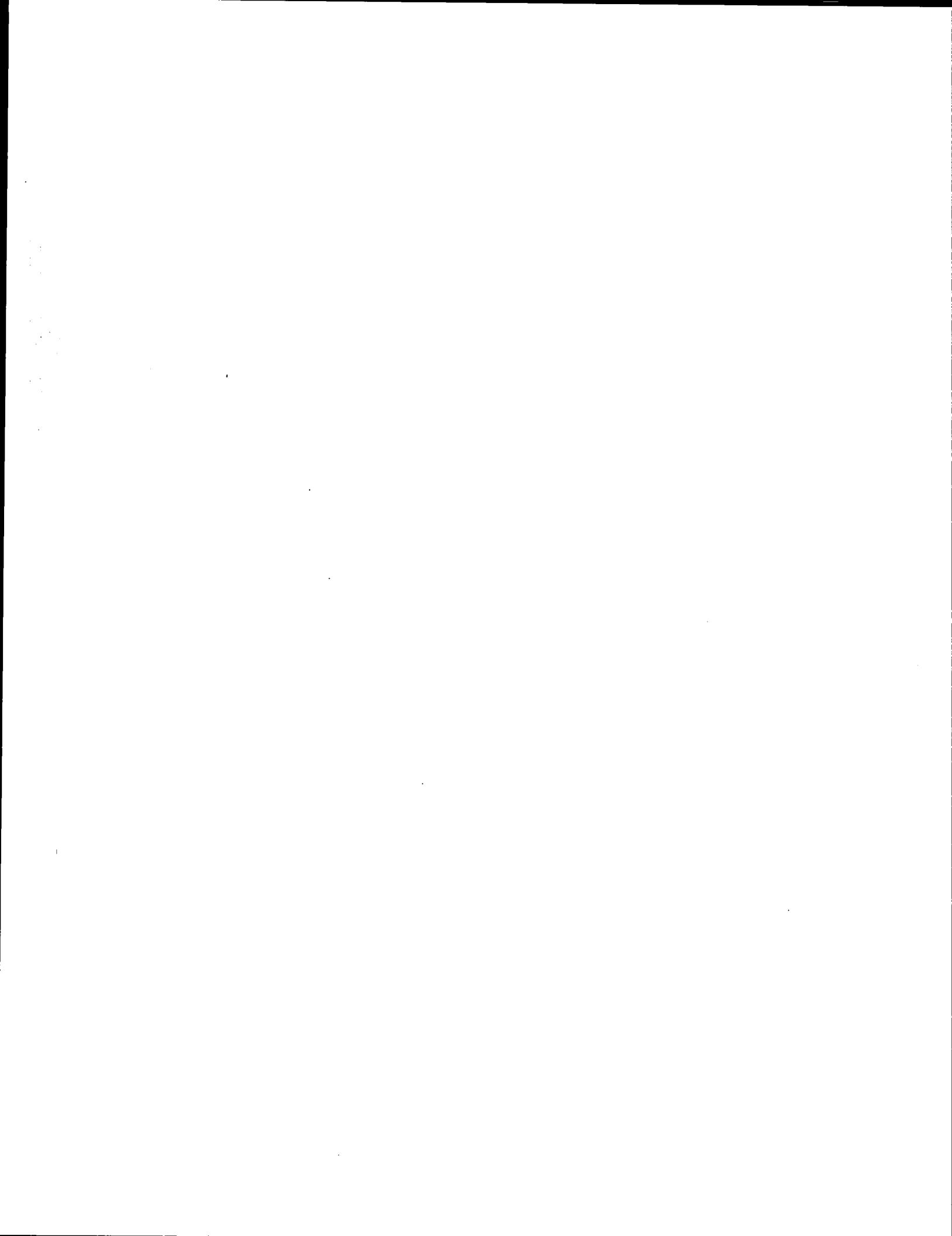
Year	Projected Reserves (MW)	Projected Reserve Margin (%)
2014	179	17.3
2015	51	5.5
2016	47	5.0
2017	42	4.5
2018	36	3.9

Beginning in 2015, projected reserve margins may drop below the 12.1% planning criteria due primarily to the potential retirement of Miami Fort Unit 6 (MF6). A final decision regarding the unit retirement has not yet been reached. Firm capacity purchases are being considered as one method of addressing this potential shortfall. The MF6 summer Maximum Net Dependable Capacity (MNDC) of 163 MWs represents approximately 15% of DEK's generation resources.



Duke Energy Kentucky is currently evaluating options including energy efficiency and demand response resources, purchase power agreements, new CT or CC generation, or purchase of existing assets to satisfy the 2015-2018 capacity needs. Duke Energy Kentucky is continuing to evaluate whether there are cost effective compliance and fuel procurement strategies that may allow delaying the MF6 retirement.

**PERSON RESPONSIBLE:** Scott Park



**Duke Energy Kentucky  
Administrative Case No. 387**

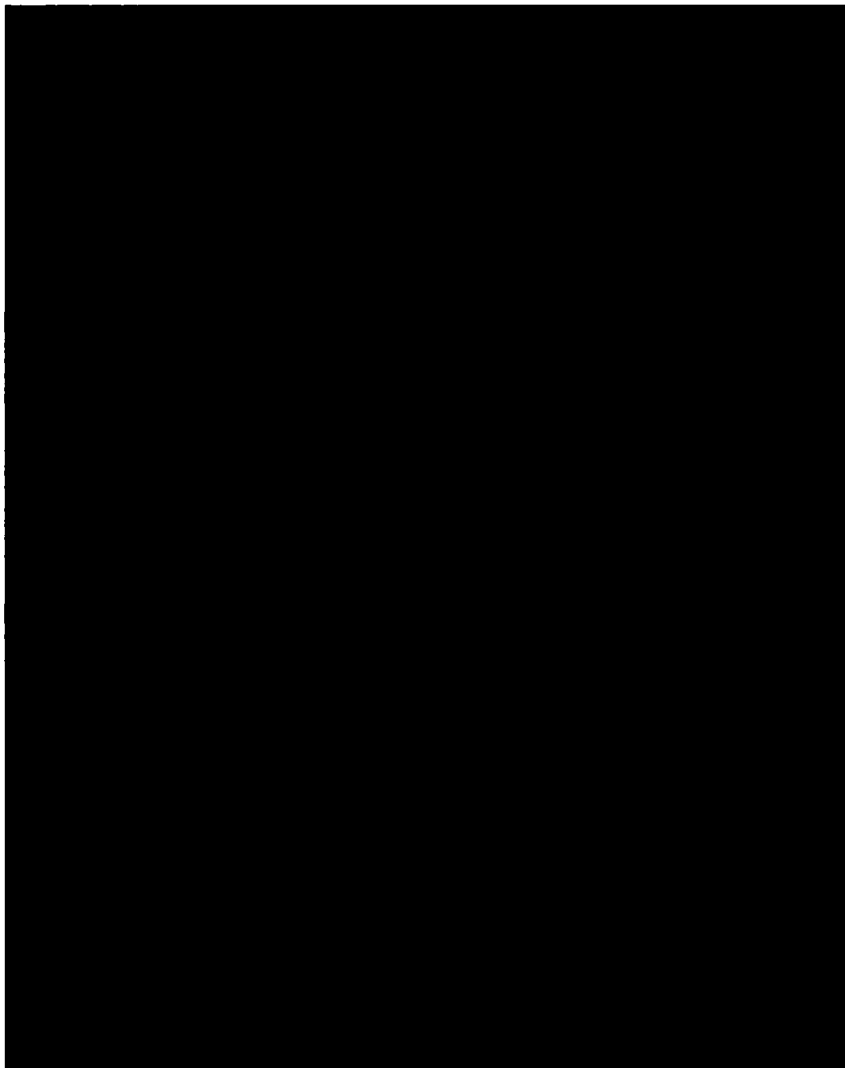
**STAFF-DR-01-011  
PUBLIC**

**REQUEST:**

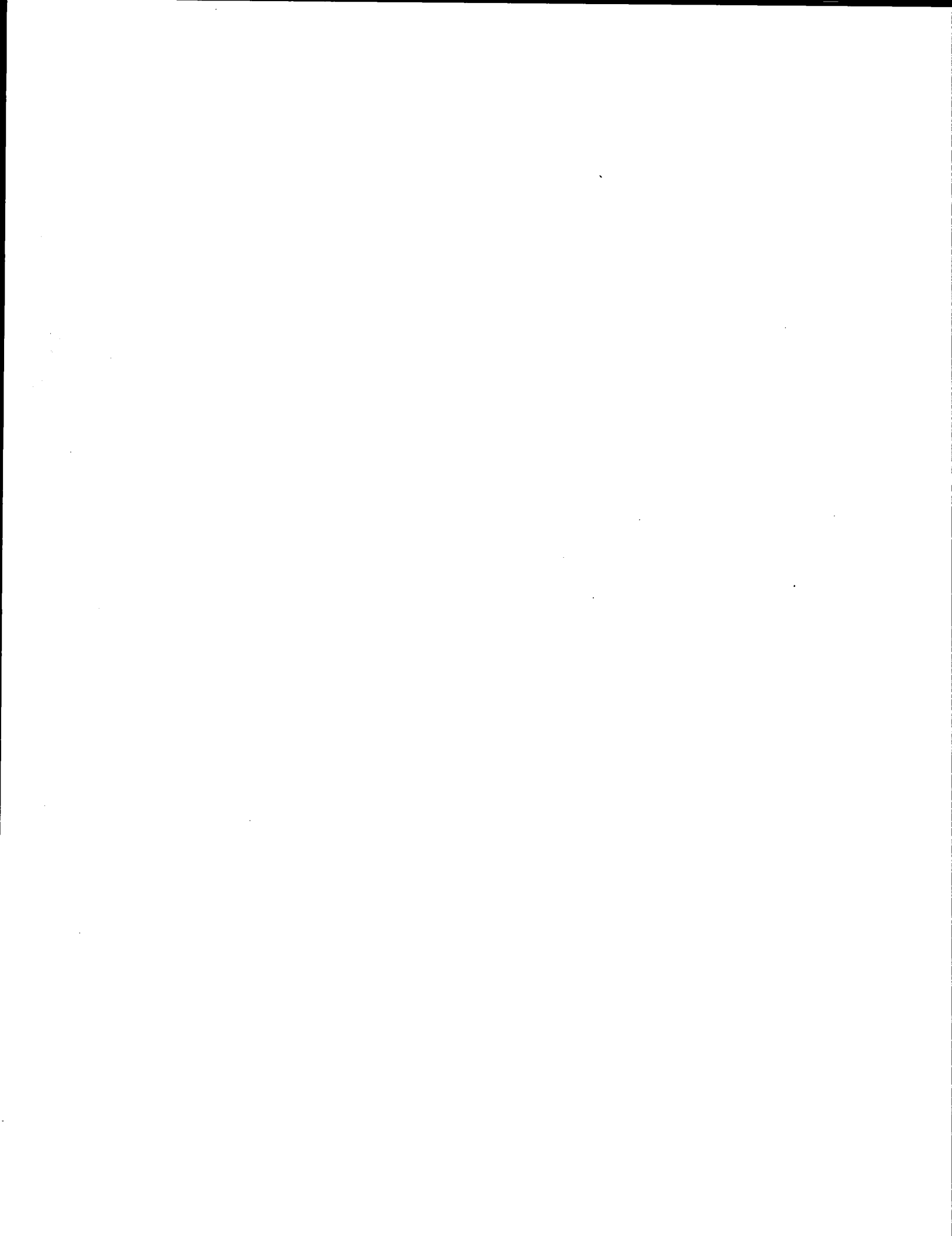
A list that identifies scheduled outages or retirements of generating capacity during the current year and the following four years.

**RESPONSE:**

**CONFIDENTIAL PROPRIETARY TRADE SECRET**



**PERSON RESPONSIBLE:** John Swez



**REQUEST:**

Identify all planned base load or peaking capacity additions to meet native load requirements over the next 10 years. Show the expected in-service date, size and site for all planned additions. Include additions planned by the utility, as well as those by affiliates, if constructed in Kentucky or intended to meet load in Kentucky.

**RESPONSE:**

The only base load or peaking capacity need for the next 10 years is in 2015 due to the possible retirement of Miami Fort 6 (MF6). Duke Energy Kentucky is currently evaluating options including energy efficiency and demand response resources, purchase power agreements, new CT or CC generation, or purchase of existing assets to satisfy this need. Duke Energy Kentucky is continuing to evaluate whether there are cost effective compliance and fuel procurement strategies that may allow delaying the MF6 retirement. The evaluation of these options is ongoing during 2014.

Duke Energy Kentucky will file its 2014 Integrated Resource Plan by July 2, 2014.

**PERSON RESPONSIBLE:** Scott Park

1000

1000

**Duke Energy Kentucky  
Administrative Case No. 387**

**STAFF-DR-01-013**

**REQUEST:**

The following transmission energy data for the just completed calendar year and the forecast for the current year and the following four years:

- a. Total energy received from all interconnections and generation sources connected to the transmission system.
- b. Total energy delivered to all interconnections on the transmission system.
- c. Peak load capacity of the transmission system.
- d. Peak demand for summer and winter seasons on the transmission system.

**RESPONSE:**

a.

Net Mwh		Collection Name	Member Name	
		Duke Energy Kentucky	Duke Energy Kentucky Total	Grand Total
Year	Month	DEK Transmission Load		
2013	January	389,035	389,035	389,035
	February	350,268	350,268	350,268
	March	365,346	365,346	365,346
	April	311,044	311,044	311,044
	May	344,980	344,980	344,980
	June	380,036	380,036	380,036
	July	417,224	417,224	417,224
	August	420,124	420,124	420,124
	September	362,286	362,286	362,286
	October	333,930	333,930	333,930
	November	338,628	338,628	338,628
	December	381,608	381,608	381,608
2013 Total		4,394,507	4,394,507	4,394,507
Grand Total		4,394,507	4,394,507	4,394,507



DEK load : Includes the load of Longbranch and excludes the load of EKP Smith & Downing. The load included for Williamstown does not include losses.

- b. Since Duke Energy Kentucky does not have any generation connected to its transmission system and since the transmission system is planned, designed and operated to primarily serve the area load, and since the only interconnection to another utility (aside from Duke Energy Ohio) is operated normally open, there is no energy delivered from Duke Energy Kentucky to the interconnection.
- c. Neither Duke Energy Kentucky nor the electric utility industry has defined a term “peak load capacity of the transmission system.” There is no single number that defines the capacity of a transmission system due to the interconnected nature of the electric grid. Duke Energy Kentucky does perform assessments of its transmission system to ensure all firm loads can be served in a reliable manner. This ensures that the transmission system has the “capacity” required to reliably serve the load.

d. **SUMMER PEAK**

Date	Hour	MW's
July, 18 2013	16	858

**WINTER PEAK**

Date	Hour	MW's
January, 22 2013	8	710

**PERSON RESPONSIBLE:**

- a - Tim Abbott
- b, c - Ed Kirschner
- d - Tim Abbott

100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120

**Duke Energy Kentucky  
Administrative Case No. 387**

**STAFF-DR-01-014**

**REQUEST:**

Identify all planned transmission capacity additions for the next 10 years. Include the expected in-service date, size and site for all planned additions and identify the transmission need each addition is intended to address.

**RESPONSE:**

There are no transmission capacity additions planned at this time.

**PERSON RESPONSIBLE:** Ed Kirschner