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PUBLIC SERVICE COMMISSION

# VIA OVERNIGHT MAIL

January 23, 2007

Ms. Elizabeth O'Donnell Executive Director Kentucky Public Service Commission 211 Sower Boulevard Frankfort, KY 40602

RE: In the Matter of the Adjustment of Electric Rates of The Union Light, Heat and Power Company D/B/A Duke Energy Kentucky KyPSC Case No. 2006-00172- アンロクマーンロクタイ

Dear Ms. O'Donnell:

I am enclosing an original and twelve copies of the Back-up Power Supply Plan of Duke Energy Kentucky, Inc. to be docketed with the Commission. Also enclosed for docketing is a Petition for Confidential Treatment for confidential information contained in the Back-up Power Supply Plan. The redacted version of the Plan is included in the filing and the un-redacted version is included in the sealed envelope stamped "Confidential."

Please date stamp and return the two extra copies of each filing in the enclosed envelope.

If you have any questions, please do not hesitate to call me.

Sincerely,

John J. Finnigan, Jr.

Associate General Counsel

JJF/sew cc: All parties of record (w/encl.) 139 East Fourth Street, R. 25 At II P.O. Box 960 Cincinnati, Ohio 45201-0960 Tel: 513-287--3601 Fax: 513-287--3810 John Finnigan@duke-energy.com

John J. Finnigan, Jr. Associate General Counsel

www.duke-energy.com

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## COMMONWEALTH OF KENTUCKY

**BEFORE THE PUBLIC SERVICE COMMISSION** 

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PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE ADJUSTMENT OF ELECTRIC RATES OF THE UNION LIGHT, HEAT AND POWER COMPANY D/B/A DUKE ENERGY KENTUCKY

CASE NO. <del>2006-00172 -</del> 2007-00044

# **BACK-UP POWER SUPPLY PLAN OF**

## DUKE ENERGY KENTUCKY, INC.

Duke Energy Kentucky, Inc. (formerly known as "The Union Light, Heat and Power Company" and hereinafter "DE–Kentucky") submits the following back-up power supply plan, as required pursuant to Paragraph 6 of the Settlement Agreement filed in this proceeding on October 26, 2006.

# I. <u>Executive Summary</u>

DE-Kentucky used standard forecasting methods to calculate the amount of backup supply needed for the 2007-2009 period. The Company evaluated various supply options, and selected a back-up supply plan consistent with the Settlement Agreement in this proceeding. DE-Kentucky considered supply options available from: (1) the Midwest Independent System Operator, Inc.'s ("MISO") daily energy markets; (2) a Request for Proposals ("RFP") issued by DE-Kentucky in May 2006; and (3) fixed forward contracts purchased through the Intercontinental Exchange ("ICE").

DE-Kentucky ultimately selected a back-up supply plan consisting of capacity purchases through bilateral contracts, and energy purchases through the MISO daily energy markets, with fixed forward contracts purchased through ICE for scheduled outages. DE–Kentucky will purchase capacity during the months when scheduled outages will occur. This will enable the Company to maintain a 16.2% reserve margin. The 16.2% reserve margin was used in the Company's most recent integrated resource plan, which the Commission approved in Case No. 2004-00014 (Order dated January 14, 2005). The Company selected the back-up supply plan that balances cost and risk mitigation.

For the 2007-2009 period, DE–Kentucky projects that it will incur \$15.4 million in costs for capacity and energy purchases for back-up supply during forced outages, which will be unrecoverable through DE–Kentucky's Fuel Adjustment Clause ("FAC") filings. For scheduled outages, the Company will make fixed forward price purchases when market conditions appear favorable, but the purchases will occur well in advance of the scheduled outages. DE–Kentucky has already made the fixed forward contract purchases for the scheduled outages in 2007. DE–Kentucky will continue to evaluate its back-up supply plan during the 2007-2009 period and will make any adjustments necessary due to changing conditions.

## II. <u>Methodology</u>

## A. <u>Commercial Business Model</u>

DE-Kentucky used its Commercial Business Model ("CBM") to analyze the different back-up supply alternatives and to select the optimal back-up supply plan. The CBM is a proprietary software program that the Company developed to project power production requirements and costs under a variety of expected system and market conditions. The CBM uses current load forecasts; extensive historical data related to

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production costs (available generating resources; generating unit availability; fuel costs; *etc.*); wholesale power prices; and statistical modeling techniques; to project future power needs and costs.

# B. Load Forecast

The load forecasting group develops a load forecast by: (1) obtaining a service area economic forecast from Moody's Economy.com; (2) preparing an energy forecast by applying statistical analysis to certain variables such as number of customers; economic measures; energy prices; weather conditions; *etc.*; and (3) developing monthly peak demand forecasts by statistically analyzing weather data. The Company uses the same load forecasting techniques used to prepare its integrated resource plans. The Company updates the load forecasts on a regular basis and the updated load forecasts are added to the CBM.

# C. <u>Generating Resources and Fuel Costs</u>

DE-Kentucky's available generating assets consist of the following:

Plant	Fuel	Туре	Rating <sup>1</sup>	Avg. Fuel Cost per kWh Net Gen <sup>2</sup>
East Bend	Coal	Base load	447 MW	\$0.017
Miami Fort 6	Coal	Intermediate	168 MW	\$0.021
Woodsdale	Gas	Peaking	490 MW	\$0.310
		Total:	1,105 MW	

**Table 1 – General Description of Plants** 

DE-Kentucky determined that it needs a back-up power supply for East Bend and Miami Fort 6 because these are relatively low cost units to operate; the Company

<sup>&</sup>lt;sup>1</sup> These are the nameplate ratings for the Plants. The actual available generating output used for planning purposes may be slightly lower than the nameplate rating due to operating conditions that limit the available power output. The actual nameplate rating for East Bend is 648 MW. DE–Kentucky owns 69% and The Dayton Power & Light Company owns 31% of East Bend. DE–Kentucky's ownership share is 447 MW.

<sup>&</sup>lt;sup>2</sup> Average fuel cost for 2006.

frequently runs these Plants to serve customer load; and market prices for power could be substantially higher than the Plants' operating costs when outages occur. DE–Kentucky determined that no back-up power supply is necessary for the Woodsdale Generating Station because these are peaking units with higher operating costs; these units run much less frequently than East Bend and Miami Fort 6; and the limited running time allows the Company to more easily plan scheduled outages during periods when the Company does not plan to run the peaking units.

## D. <u>Scheduled and Forced Outages</u>

DE-Kentucky estimated the number and expected timing of scheduled outages, using the definition of forced outages contained in the Commission's FAC regulation, 807 KAR 5:056, as follows: (1) non-scheduled losses of generation or transmission which require substitute power for a continuous period in excess of six hours; and (2) which result from faulty equipment, faulty manufacture, faulty design, faulty installations, faulty operation, or faulty maintenance.

The Company used the Plants' known scheduled outages for 2007, and estimated additional scheduled outages for 2008-2009 because the actual scheduled outages for this time period have not yet been determined. The Company used historical scheduled outage data to estimate the weeks and expected timing of projected scheduled outages during 2008-2009. DE–Kentucky plans the following scheduled outages in 2007, and projects the following scheduled outages in 2008-2009:

<u>Plant</u>	<u>2007</u>	2008	<u>2009</u>
East Bend	7 Weeks	1 Week	3 Weeks
Miami Fort 6		3 Weeks	

Table 2 - Scheduled Outages for Plants

The Company estimated the forced outages using the five-year average Equivalent Forced Outage Rates ("EFOR") for the Plants. The EFOR is a measurement that takes the number of forced outage hours and equivalent forced derate hours relative to the number of service hours and forced outage hours. The five-year average EFOR data for the Plants is as follows:

Table 3 – EFOR for Plants for 2007 - 2009

<u>Plant</u>	EFOR		
East Bend	7%		
Miami Fort 6	10.5%		

# E. <u>CBM Projection of Capacity and Energy Needs</u>

The Company used the CBM software tool to project its capacity and energy needs for the peak summer and shoulder months for 2007:

	<u>April</u>	May	June	July	August	September
Available						
Capacity			1,078	1,078	1,078	1,078
Scheduled						
Outages			0	0	0	0
Net						
Capacity			1,078	1,078	1,078	1,078
Peak						
Demand			(853)	(892)	(892)	(806)
Interruptible						
and RTP			17	17	18	18
Net						
Capacity			241	203	203	289
Reserve						
Margin			28.8%	23.2%	23.2%	36.7%
Capacity						
Needed for			0	0	0	0
16.2% RM				L	I	

Table 4 – Capacity Needs for 2007

#### Table 5 - Energy Needs for 2007

	<u>April</u>	May	June	July	<u>Aug.</u>	<u>Sept.</u>
Average						
Demand						
Avg. Available						
Economic Gen.						
Net Avg. Demand						
Available Off-						
System Gen.						
Net Demand						

#### III. <u>Request for Proposals</u>

DE-Kentucky retained Burns & McDonnell tooversee a competitive bidding process for back-up power. DE-Kentucky issued an RFP through Burns & McDonnell on May 31, 2006. The Company filed a copy of the RFP in response to information requests at Attachment KyPSC-DR-03-029(a). The Company sought bids for the following types of supply options: (1) a back-up energy supply contract for outages at East Bend and/or Miami Fort 6, with pricing terms similar to the Back-up PSA in Case No. 2003-00252; (2) a back-up energy supply contract for outages at East Bend and/or Miami Fort 6, with a fixed energy price; (3) a reliability exchange contract for East Bend and/or Miami Fort 6; and (4) intermediate and peaker daily call products. The RFP sought supply options to take effect on January 1, 2007, for various durations of time, up to 15 years.

Six bidders submitted bids in response to the RFP. Burns & McDonnell performed an initial screening and evaluation of the bids, then submitted a "short list" of recommended supply options to DE–Kentucky, without identifying the names of the bidders. Burns & McDonnell eliminated two of the bids for failing to meet the RFP minimum requirements because: (1) one bidder was not a registered Midwest ISO market participant, as required by RFP section 5.1.2(a); and (2) one bidder submitted a bid for a

daily call product that was not available on a year-round basis, as required by RFP section 2.6.2.3. The Company provided a preliminary summary of the bids in response to information requests at Attachment KyPSC-DR-029(d). The RFP allowed the bidders to update their prices prior to DE–Kentucky's final decision. The following is a summary of the bidders' updated prices (using the lowest cost product presented by each bidder), which the bidders submitted in late September/early October:

## Table 6 – Updated Prices from RFP

#### **Backstand Product**

Company	<u>A (Bid 1)</u>	<u>A (Bid 2)</u>	<u>C (Bid 1)</u>
Quantity (MW)	577	577	577
Term (Yrs)	3	3	3
Strike Price (\$/MWh)	East Bend - \$20 Miami Fort 6- \$40	Market – varies by month and peak versus off-peak	East Bend - \$20 Miami Fort 6- \$40
Annual Demand Charge	\$18.0 M	\$10.3 M	\$57.5 M
Payout Limit (\$M)	\$50 M	\$50 M	Payout capped at historical EFOR
Notes			Includes coverage of scheduled outages at strike price

## **Daily Call Product**

Company	<u>A (Bid 3)</u>	<u>B</u>	<u>C (Bid 3)</u>
Quantity (MW)	325	100	200
Term (Yrs)	3	3 or 5	3
Strike Price (\$/MWh)	Tolling	Tolling	Tolling
Annual Demand Charge	\$13.7 M	\$5.0 M	\$4.8M
Notes	Intermediate Call – 7200 heat Rate	Intermediate Call – 7500 heat Rate	Peaking Call – 12000 heat rate

# IV. Other Supply Options

DE-Kentucky also evaluated a back-up power supply plan consisting of a combination of capacity purchases and energy purchases. One alternative considered energy purchases through the MISO Day 2 energy markets for all outages. Another alternative considered fixed forward contracts to lock-in the price of power during scheduled outages and MISO Day 2 energy market purchases during forced outages. The Company used this same type of strategy for procuring back-up power supply during 2006.

Under these plans, the Company would purchase approximately 30MW of peak capacity for April 2007 and 130MW of peak capacity for May 2007, at an estimated cost of \$100,000. The capacity purchases would be obtained through bilateral transactions and would cover time periods when DE–Kentucky will be short on peak capacity due to scheduled outages. These capacity purchases would allow DE–Kentucky to maintain its targeted reserve capacity margin of 16.2%. The Company would not recover these costs through FAC filings. DE–Kentucky would also evaluate its capacity needs prior to the spring season in 2008 and 2009, and would make similar capacity purchases to the extent needed.

The Company considered relying solely on the MISO daily energy markets for back-up power; however, this plan could expose the Company to significant possible price spikes during scheduled outage periods. DE–Kentucky therefore evaluated fixed forward price purchases during scheduled outages, to mitigate the risk of potential price spikes. DE-Kentucky would use the ICE to make these fixed forward contract purchases. The ICE is a well-established electronic marketplace for trading energy-related products. The ICE recently announced a merger agreement with the New York Board of Trade, a futures trading market for financial, food and other products that is over a century old. Among other product types, ICE offers trading in bilateral contracts for energy at fixed forward prices. The contract terms (such as hours of the day covered; the index price; credit; and liquidated damages provisions) are clearly defined, to enable trading in standardized products.

DE-Kentucky selected a product known as a "firm price financial swap" for the five peak days of the week and the 16 peak hours of the day, fixed at the MISO Cin Hub daily LMP price. This product allows DE-Kentucky to lock-in a fixed price for forward power during the term of the purchase.<sup>3</sup> Under this plan, DE-Kentucky would purchased such financial swaps for the scheduled outages at the expected Cin Hub daily LMP price, plus a risk premium (built in to the LMP index price) to the seller to lock-in this forward price. DE-Kentucky would purchase back-up power for forced outages through the MISO daily energy markets. The Company determined that it would not be feasible to purchase fixed forward price purchases for forced outages because the Company would not know in advance when such outages would occur, and it would not be economical to purchase power at fixed forward prices for the entire peak month period. After a forced outage occurs, the Company would consider fixed forward price purchases or call options for the remaining duration of the outage.

<sup>&</sup>lt;sup>3</sup> If the contract price is less than the actual Cin Hub daily LMP price, this product requires the seller to pay DE–Kentucky the difference between the contract price versus the actual Cin Hub daily LMP price for the time period and volumes covered by the contract. If the contract price is greater than the actual Cin Hub daily LMP price, this product requires DE–Kentucky to pay the seller a corresponding amount.

# V. <u>Comparison of Supply Plans</u>

The estimated total cost of the various supply plans, including the impacts of expected profits from off-system sales, is as follows:

Supply Plan	Total Net Cost (\$M)
	Cost (\$M)
Plan A – RFP Bid A-1 (577 MW Backstand Agreement)	
Plan B – RFP Bid A-2 (577 MW Backstand Agreement)	-
Plan C – RFP Bid C-1 (577 MW Backstand Agreement)	
Plan D – RFP Bid A-3 (325 MW Intermediate Daily Call)	
Plan E – RFP Bid B – (100 MW Intermediate Daily Call)	
Plan F – RFP Bid C-3 – (200 MW Intermediate Daily Call)	
Plan G - MISO daily energy market purchases for all outages (scheduled and forced)	
Plan H - MISO daily energy market purchases for forced outages, with fixed forward price purchases for scheduled outages	

Table 8	- Compa	rision of	of 2007-	2009	Plan Costs

DE-Kentucky selected Plan H because it appeared to be the most reasonable plan in terms of cost and risk mitigation.

The RFP bids for the backstand agreements were the costliest back-up supply plans. The RFP backstand products were more costly than any of the other supply options evaluated because the bidders for the RFP backstand products factored significant risk premiums into their bids. Additionally, the backstand products could only be used during outages, so the energy would not be available for economy purchases or offsystem sales. The backstand products were only offered in the 577 MW amount (representing the combined capacity of East Bend and Miami Fort 6), which is more back-up supply than the Company needs at any given point in time. The daily call products were the next most costly back-up supply plans. The amount of power offered by the bidders better matched the Company's need for back-up power, and could be used for economy purchases and off-system sales. However, the daily call products presented a significant risk of market price fluctuations.

These supply plans would have required the Company to lock-in a price for the daily call product for a three-year time period, at the time the daily call product was purchased. The price modeling reflects off-system sales value for every hour throughout the year that the call option strike price is less then the projected market price. If market prices for power would prove to be less than the Company's projections, then the daily call product would have significantly reduced value.

Purchasing the daily call products would provide less flexibility than MISO daily energy market purchases because the calls would have locked-in projected values for market prices, scheduled outages, and off-system sales revenues for a three-year period, subjecting the Company to greater risk that these projections might be inaccurate.

DE-Kentucky's long-term supply plan could involve exchanging some capacity at the existing Plants for capacity owned by other companies. Although the RFP responses did not offer such opportunities, the Company may continue to seek such a capacity exchange to mitigate the present "lumpy" structure of its portfolio, where a great amount of its capacity is concentrated in a few Plants, with significant increases in the operating costs between each Plant. If a capacity exchange occurs during the 2007-2009 period, this could also impact the value of the daily call product. This is another reason why DE-Kentucky does not consider it prudent to lock-in the daily call product for a three-year period.

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Plans G and H, which involve purchasing power through the MISO daily energy markets, were the least cost supply plans. Plan G was less costly than Plan H, but presented greater risk than Plan H. Plan G called for the Company to obtain its full backup power requirements from the MISO daily energy markets; however, it would have provided no protection against possible price spikes. If DE–Kentucky's projections of the MISO daily energy market prices are too low, then this plan would prove more costly than the other plans.

Plan H mitigates the risks presented by the other plans. Plan H provides that DE– Kentucky will obtain back-up power through the MISO daily energy market during forced outages and use fixed forward contract purchases during scheduled outages. This mitigates the risk of price spikes during scheduled outages because the price for back-up power would be fixed. The cost for this risk mitigation is reasonable, because the cost difference between Plan G and Plan H is only \$1.3 million over the entire three-year period.

Plan H also mitigates the risk presented by the daily call products because it does not require the Company to lock-in market price projections for a full three-year time period. Since the ICE market is very liquid, DE–Kentucky can make its forward contract purchases a few months in advance of the scheduled outages, without paying a premium to lock-in the prices now for a three-year time period. If prices appear to be increasing, Plan H provides the flexibility to make the forward contract purchases for long-term periods. If prices are flat or falling, the Company can postpone these purchases. If the Company changes the dates for its scheduled outages, Plan H provides flexibility because, even if the Company has already purchased the fixed forward contract product, the liquidity of the ICE market allows the Company to easily unwind its position and make a new purchase to match the new scheduled outage dates.

Given that Plan H appeared to be the most prudent supply plan and because market conditions appeared to be optimal, DE–Kentucky executed the following fixed forward contract purchases during the week of December 18th:

 Mo./Yr
 Volume
 LMP Index Price

 April
 300MW
 \$52.50

 May
 200MW
 \$53.15

Table 9 – 2007 Fixed Forward Contract Purchases

These prices are representative of the actual MISO LMP prices that occurred during the corresponding months in 2005 and 2006.

DE-Kentucky projects that, under this supply plan, it will incur costs of \$15.4 million during 2007-2009 that are unrecoverable through the FAC. Based on the foregoing, DE-Kentucky respectfully requests that the Commission approve this back-up supply plan.

Respectfully submitted,

John/J. Finnigan, Jr.

Associate General Counsel Duke Energy Shared Services, Inc. Room 2500 139 East Fourth Street P.O. Box 960 Cincinnati, Ohio 45201-0960 (513) 287-3601 john.finnigan@duke-energy.com

# **CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing was served on the following parties of record by first class, U.S. mail, postage prepaid this  $23^{\text{full}}$  day of January, 2007.

John J. Finnigan, Jr.

Hon. Dennis G. Howard Hon. Elizabeth E. Blackford Office of Attorney General Utility Intervention and Rate Division 1024 Capital Center Drive Frankfort, Kentucky 40601

Hon. David G. Boehm Hon. Michael L. Kurtz Boehm, Kurtz & Lowry Suite 1510 36 East Seventh Street Cincinnati, Ohio 45202-4434

### **COMMONWEALTH OF KENTUCKY**

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# **BEFORE THE PUBLIC SERVICE COMMISSION**

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PUBLIC SERVICE COMMISSION

In the Matter of the Adjustment of Electric Rates of The Union Light, Heat and Power Company d/b/a Duke Energy Kentucky

Case No. 2006-00172-2007-00044

# PETITION OF DUKE ENERGY KENTUCKY, INC. FOR CONFIDENTIAL TREATMENT OF INFORMATION

Duke Energy Kentucky, Inc. ("DE-Kentucky" or "Requesting Party"), pursuant to 807 KAR 5:001, Section 7, requests the Commission to protect as confidential certain information contained in the Back-Up Power Supply Plan of Duke Energy Kentucky, Inc. In support thereof, DE-Kentucky states:

1. DE-Kentucky has filed today its Back-Up Power Supply Plan as required pursuant to Paragraph 6 of the Settlement Agreement filed in this proceeding on October 26, 2006. This filing contains projections of DE-Kentucky's monthly capacity and energy needs during 2007, and the cost of various back-up power supply plans for 2007-2009. As required by 807 KAR 5:001, Section 7(2)(b), DE-Kentucky is providing one copy of the information under seal.

2. The Kentucky Open Records Act exempts from disclosure certain commercial information. KRS 61.878 (1)(c). To qualify for this exemption and, therefore, maintain the confidentiality of the information, a party must establish that disclosure of the commercial information would permit an unfair advantage to competitors of that party.

3. If DE-Kentucky is forced to disclose its monthly capacity and energy needs, this would unfairly advantage DE-Kentucky's competitors and counterparties in the capacity and energy markets. These counterparties could demand higher prices from DE-Kentucky than they otherwise might be able to charge in the absence of this information, because the counterparties would know how much capacity and energy DE-Kentucky needs to purchase. Competiting purchasers of capacity and energy would thus have access to the lower cost supplies. DE-Kentucky also seeks confidential treatment for the prices for various back-up power supply plans because these prices resulted from a competitive bidding process. If the prices are publicly disclosed this would deter bidders from submitting bids in response to future requests for proposals. Additionally, these prices could be used as a floor for future bids, resulting in higher prices than would be the case if the information is not publicly disclosed. Once again, this would cause competiting purchasers of capacity and energy to have access to the lower cost supplies. The Commission has previously treated this type of information as confidential in a September 1, 2006 letter ruling in this proceeding.

4. The information for which DE-Kentucky are seeking confidential treatment is not known outside of DE-Kentucky, and it is not disseminated within DE-Kentucky except to those employees with a legitimate business need to know and act upon the information.

5. The public interest will be served by granting this Petition, in that keeping this information confidential should result in lower electricity rates for DE-Kentucky's consumers than would occur if the information were publicly disclosed.

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WHEREFORE, DE-Kentucky respectfully requests that the Commission classify

and protect as confidential the specific information described herein.

Respectfully submitted,

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John J. Finhigan, Jr. Associate General Counsel Duke Energy Shared Services, Inc. Room 2500 139 East Fourth Street P.O. Box 960 Cincinnati, Ohio 45201-0960 (513) 287-3601 john.finnigan@duke-energy.com

# **CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing was served on the following parties of record by first class, U.S. mail, postage prepaid this  $\frac{23}{4}$  day of January, 2007.

John J. Finnigan, Jr.

Hon. Dennis G. Howard Hon. Elizabeth E. Blackford Office of Attorney General Utility Intervention and Rate Division 1024 Capital Center Drive Frankfort, Kentucky 40601

Hon. David G. Boehm Hon. Michael L. Kurtz Boehm, Kurtz & Lowry Suite 1510 36 East Seventh Street Cincinnati, Ohio 45202-4434